



**DIGITAL  
TRANSFORMATION  
FOR A BETTER  
FUTURE IN  
EDUCATION**  
20 - 21 SEPTEMBER 2021

**ICE 2021  
CONFERENCE PROCEEDING**





**DIGITAL  
TRANSFORMATION  
FOR A BETTER  
FUTURE IN  
EDUCATION**



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# FOREWORD

**YABhg Tun Jeanne Abdullah**  
*Chancellor*  
*Open University Malaysia*

Assalamualaikum Warahmatullahi Wabarakatuh. Greetings from Open University Malaysia (OUM)! American poet Alexander Posey cautions us that, “There is no time for holding back”. Though sparse, these words carry a lot of meaning in this particular time, as even with the continuously changing ways Covid-19 is shaping our world, we should not allow anything to stop us from moving forward in our missions and responsibilities. It is with this spirit that I bid a warm welcome to all participants of the 2021 International Conference on Education (ICE 2021) and congratulate OUM for hosting this virtual event. How wonderful it is that despite challenging circumstances, educational stakeholders, policymakers, scholars, and enthusiasts can still come together virtually to share thoughts and ideas on the very important theme chosen for this conference. As the new normal becomes truly part of everyday life, we must also prepare for its long-term repercussions on higher education. The current global crisis has exposed gaps in teaching and learning that many were not ready for, but it has also compelled us to harness innovative solutions to ensure everyone can continue to study and improve themselves. Thus, as we navigate a changing world, we must also continue to explore even more relevant and exciting technology-led ideas in higher education, so that we can all discover more meaningful ways to contribute to a better future. On that note, I implore ICE 2021 participants to make the most of the learning opportunities at this conference to inspire a real positive difference in your own fields, institutions, and countries. I wish you fruitful deliberations ahead!



**Prof Ojat Darojat**

***M.Bus., Ph.D.***

***Rector, Universitas Terbuka***

***President, Asian Association of Open Universities***

Dear Colleagues, As the President of Asian Association of Open Universities (AAOU) and Rector of Universitas Terbuka (UT), I would like to welcome you all to the “2021 International Conference on Education”. This year’s theme “Digital Transformation for a Better Future in Education” is very relevant as we are all moving further into the digital era. The change from the old paradigm in higher education of knowledge creation and transmission in a semi-isolated space to the new paradigm of re-creation and connecting knowledge in an open space is inevitable. On the other hand, universities are also encouraged to improve efficiency so that they can no longer rely on the existence of regular classes and conventional learning. Thus, a blended learning system, online learning, and collaboration with other universities are required. It is during this pandemic that online learning has become very crucial. Therefore, this circumstance will of course encourage a revolution in the role of universities, lecturers, and students. I congratulate our colleagues at Open University Malaysia (OUM) for successfully hosting and organising this international conference. I strongly believe this forum will give you a memorable academic experience, provide plenty opportunities for academic publication, and develop new network for collaborative research. I wish you all a productive and enjoyable conference!





**Prof Dato' Dr Mansor Fadzil**  
*President/Vice-Chancellor*  
*Open University Malaysia*

Assalamualaikum Warahmatullahi Wabarakatuh. Greetings from Open University Malaysia (OUM)! It is with great pleasure that I welcome all distinguished guests and participants to the 2021 International Conference on Education (ICE2021). This inaugural online conference aims to provide a platform for industry professionals, academicians, and researchers to discuss and exchange knowledge, innovative ideas, and expertise in the field of higher education. Digital transformation has been gaining traction in both academic and industrial sectors due to its relevance during this current pandemic. As such, this year's theme of "Digital Transformation for a Better Future in Education" is indeed timely in our hopes to reinforce the importance of technology-led innovations for the future of education. This conference will assemble keynote speakers and presenters from different parts of the world to deliberate on the expanding issues pertaining to effective online learning, distributed online assessment, innovative digital solutions, as well as new norms and emotional well-being. As a university that has long embraced digital transformation across our operations, OUM is committed to continuously support the development of digital technology in teaching and learning and encourage strategic collaboration with other higher education providers. Acknowledging that innovation is a necessity in the new normal, we should all aspire to work together in defining a clear road map for higher education. I sincerely hope that participants will have a chance to discuss all the different aspects of the digital revolution in the context of higher education and come up with recommendations that will help optimise learners' experiences in online environments and deliver high quality education. Finally, I would like to express my heartfelt appreciation to the organising committee for their extensive efforts and dedication in ensuring the success of this conference.





# TABLE OF CONTENTS

## About the Conference

xv

## Keynote Papers

1

### Sub-Theme: Effective Online Learning

- |    |   |    |
|----|---|----|
| 1. | Effective Online Learning Enabling Sustainability Education in the Post-Covid-19 Era<br><i>By Prof Dr Vassilios Makrakis</i><br><i>Frederick University, Cyprus</i> | 1  |
| 2. | Effective Online Learning – Back to Basics<br><i>By Dr Hanna Teräs</i><br><i>Tampere University of Applied Sciences, Finland</i>                                    | 7  |
| 3. | Effective Online Learning: Student Engagement, Support, and Retention<br><i>By Prof Daryono SH</i><br><i>Universitas Terbuka, Indonesia</i>                         | 11 |

### Sub-Theme: Distributed Online Assessment

- |    |  |    |
|----|--|----|
| 1. | Beyond Proctoring: Assessment Design and Academic Integrity<br><i>By Prof Patricia B. Arinto</i><br><i>University of the Philippines</i>                                     | 20 |
| 2. | Establishment of the Internet-Based-Test System for Open and Distance Higher Education<br><i>By Dr Kyoung Phil Joo</i><br><i>Korea National Open University, South Korea</i> | 27 |
| 3. | Distributed Online Assessment<br><i>By Adam Brimo</i><br><i>OpenLearning Limited, Australia</i>  | 32 |



---

### Sub-Theme: Innovative Digital Solutions

---

1. Innovative Digital Solutions 37  
*By Prof Naveed Malik*  
*Commonwealth of Learning, Canada*
2. Quality Assurance for Online Examinations 43  
*By Dr Dinh Tuan Long*  
*Hanoi Open University, Vietnam*
3. Innovations in Digital Education: The Way Forward 47  
*By Prof Uma Kanjilal*  
*Indira Gandhi National Open University, India*

---

### Sub-Theme: New Norms and Emotional Well-Being

---

1. Fitter, Happier, More Productive: Post-pandemic Norms and Wellbeing in Higher Education 54  
*By Dr James Brunton*  
*Dublin City University, Ireland*
2. Home Isolation: New Norms for Coping the 4<sup>th</sup> Wave of Covid-19 Pandemic in Thailand 62  
*By Prof Dr Boontip Siritarungsri*  
*Sukhothai Thammathirat Open University, Thailand*
3. The Emerging Challenges of New Academia in The Covid-19 Pandemic 71  
*By Prof Datuk Dr Mohd Tajudin Ninggal*  
*Open University Malaysia*




---

**Sub-Theme: Effective Online Learning**


---

1. An Online Training Module for Micro Suturing Incorporating Motor Imagery and Mental Practice – A Design and Development Research Study  
*By: Vaikunthan Rajaratnam, Hannah Jia Hui Ng, Norana Abdul Rahman, Chaoyan Dong* 79
2. Student-Teachers' Perception of the Preparedness to Engage in Online Teaching, and Challenges They Face When Teaching Online: A Corpus Analysis of Their Reflexive Journal Entries  
*By: Hazidi Abdul Hamid, Md Rosli Bin Ismail, Abdul Aziz Bin Md. Nor, Rosinah Mahmood, Eti Fairudz Binti Zainudin* 95
3. "Make Sense of It!": The Role of Mediation and Perceived-Benefit in an Online Learning Environment  
*By: Ignasius Heri Satrya Wangsa* 110
4. Do Motivation and Goal Commitment Influence Students' Retention in Open Distance Learning during Pandemic Covid-19 Crisis?  
*By: Nooraini Binti Youp* 118
5. Does the Number of Hours Spent on Learning Affect Academic Achievement?  
*By: P Rajesh Kumar K Parameswaran Nair, Harvinder Kaur Dharam Singh, Nantha Kumar Subramaniam* 128
6. Determinants of Intention to Further Study among Open Distance Learning Higher Institutions' Alumni in Malaysia  
*By: Zulhairi Zakariah, Yanty Roslinda Harun, Zahir Osman* 139
7. Shifting it Online: Instructional and Assessment Strategies in the Context of the Covid-19 Pandemic  
*By: Wong Woei Ling* 153
8. A Systematic Review of the Influence of Teacher Self-Efficacy on the Use of Assistive Technology  
*By: Choo Bee Giek* 163
9. Psychology Students Feedback on the Overall Programme Structure in ODL Context: A Case Study at OUM  
*By: Wong Huey Siew, Fatimah Binti Yusoff, Mohd Tajudin Bin Md Ninggal* 176
10. Nurturing Numeracy Literacy Via Online Learning: A Case Study on the Effectiveness of the Online Forum Discussion  
*By: Raziana Che Aziz, Chiam Chooi Chea, Zulaihan Ismail* 185



11. Effects and Challenges of Covid-19 Pandemic on Students Learning and Assessment Results: Case Study in a Malaysian Government School  
*By: Jaspal Kaur A/P Naranjan Singh, Jagdave Singh A/L Avtar Singh* 195
12. Teachers' Perception of Technology Integration Easiness in Teaching Preschool Children  
*By: Aliza Ali, Mahani Abdul Malik, Tee Cheau Mei* 205
13. A Portal for Web-Based Information System for Secondary Schools in Malaysia  
*By: Ariel Aaron Schen Schatenstein, Ravichandran Purushothaman* 215
14. The Perception of Islamic Studies Learners Towards a New Approach in Knowledge Transfer for Islamic Studies Programmes at OUM  
*By: Hamidah Mat, Wan Mohd Al Faizee Wan Ab Rahaman, Wan Mohammad Ubaidillah bin Wan Abas, Khairul Hamimah Mohd Jodi, Cik Norazlina Mohamad* 223

---

### Sub-Theme: Innovative Digital Solutions

---

1. A Study on the Relationship between Transformational Leadership and Creativity and Innovation from an Organisational Perspective: A Conceptual Model  
*By: Thiaku Ramalingam, Shishi Kumar Piaralal, Zahir Osman* 241
2. Adoption of Mobile Devices During and Beyond an Online Music Pedagogy Course by Music Teacher Trainees from a Teacher Training Institution  
*By: Edna Shamani Wellington* 255
3. Design and Implementation of Instructional Message Design for Online Learning in Postgraduate Programmes at Open University Malaysia  
*By: Zahari Hamidon* 265

---

### Sub-Theme: New Norms and Emotional Well-Being

---

1. A Case Study: Issues, Challenges and Coping Strategies of Student-Teachers During the COVID-19 Pandemic  
*By: Rosinah Binti Mahmood, Eti Fairudz Binti Zainudin, Md Rosli Bin Ismail, Abdul Aziz Bin Md. Nor, Hazidi Bin Abdul Hamid* 285
2. Sustainability in Open Distance Learning (ODL) Education: Canvassing the Right Market Segmentation and Effective Advertising Strategy  
*By: Mohd Nazri Mohd Noor, Norsiah Aminudin, Azlina Abdul Aziz, Yanty Roslinda Harun, Zulaikha Zakariah* 303
3. Enhancing Motivation among Online Distance Learning Students during the Covid-19 Pandemic in Malaysia  
*By: Zahir bin Osman, Shishi Kumar A/L Piaralal, Nurliza Binti Ahmad* 317



- |     |  |     |
|-----|--|-----|
| 4.  | The Private Preschool Teachers' Perception of ICT Integration Usefulness in Teaching and Learning During MCO<br><i>By: Lim Woei Jein, Aliza Ali, Mahani Abdul Malik, Nurhusna Abdul Malek</i>  | 330 |
| 5.  | Examining the Personality Factor and the Relationship with Selection of Counselling Theory among Counsellors in Selangor<br><i>By: Hazrul Hizam Karim, Fatimah Yusoooff, Mohd Tajudin Md Ninggal, Wong Huey Siew</i>   | 338 |
| 6.  | Decision Making and Self-Efficacy in Choosing Renal Replacement Therapy (RRT) Option among Chronic Kidney Disease Patients<br><i>By: Munswaran Chandaran, Fatimah Yusoooff, Mohd Tajudin Md Ninggal, Wong Huey Siew</i>  | 348 |
| 7.  | Performance Levels and Perspective of Graduate Learners' on Fully Online Learning During Covid-19 Pandemic: The OUM Experience<br><i>By: Jaspal Kaur A/P Naranjan Singh, Safiah Md Yusof, Raziana Che Aziz, Siti Aishah Hashim Ali</i>                               | 358 |
| 8.  | Promoting Well-being and Flexibility through Effective Implementation of Micro-credentials in Open and Distance Learning Institutions<br><i>By: Mohamad Afzhan Khan Mohamad Khalil</i>   | 372 |
| 9.  | Undergraduate Learners' Perspective of Fully Online Learning During Covid-19 Pandemic: The OUM Experience<br><i>By: Safiah Md Yusof, Jaspal Kaur A/P Naranjan Singh, Raziana Che Aziz, Siti Aishah Hashim Ali</i>  | 380 |
| 10. | Emotional Stability, Resilience, and Online Learning Skills among First Year Undergraduates during the COVID-19 Pandemic<br><i>By: Mohd Tajudin Md Ninggal, Fatimah Yusoooff, Wong Huey Siew, Nor Ezdianie Omar</i>  | 394 |
| 11. | Working from Home Support during the COVID-19 Pandemic in Malaysia<br><i>By: Chiam Chooi Chea, Norbaini Abdul Halim</i>  | 409 |
| 12. | A Case Study: Perception, Challenges and Strategies in Online Teaching and Learning among Private In-Service Preschool Teachers<br><i>By: Md Rosli Bin Ismail, Abdul Aziz Bin Md. Nor, Hazidi Bin Abdul Hamid, Rosinah Binti Mahmood, Eti Fairudz Binti Zainudin</i> | 416 |







# ABOUT THE CONFERENCE

The 2021 International Conference on Education (2021 ICE) provides an excellent avenue for scholars, practitioners, and policymakers to widen their network and engage in knowledge sharing to explore new opportunities, latest developments, and current issues in education.

This conference is timely as the global community is forced to transform to meet the needs of changing times. Digital Transformation is recognised as an enabler for innovative solutions.

## Sub-themes

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### Effective Online Learning

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The increase in demand for an accessible and affordable higher education pushes the current approach of distance education to lean more towards online teaching and learning. Educators can utilise technology tools to achieve teaching goals, which comprise methods of teaching and learning, lesson planning, and assessments. Despite its challenges and demands, online teaching provides a medium that caters to the needs of society to gain quality education. While it pushes educators and students out of their comfort zones, it can also be used to support learning growth through interaction with peers and attract active participation. Online learning allows learners to do practice questions, get quicker responses and feedback which help reduce the pressure and stress related to exams. Online learning also promotes a personalised pathway that meets learners' needs.

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### Distributed Online Assessment

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The evolution of pedagogy from traditional learning to virtual learning should stimulate new paradigms on online assessment methods that fit better to the online, distributed, and open learning environment. The demand for skills is shifted towards more versatile tasks requiring creativity, adaptability, innovation, communication, collaboration and problem-solving as compared to traditional forms of assessment which focus on subject-specific knowledge. Assessment is a critical component of the education process in which both summative and formative modes of assessment must be balanced, well planned, and executed by the educators. The design of the online distributed assessment strategies and tools must adapt to new technologies of the digital era besides addressing different types of learning outcomes, learning processes, streamlining assessment administration, and enhancing feedback.



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## **Innovative Digital Solutions**

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Successful digital transformation entails innovative digital solutions that could improve the way we operate. The use of whiteboard, classrooms, and libraries as we know today may only exist as reminiscences of the past. The foreseen changes open up a whole new creative and innovative solutions. Nonetheless, the technology-based solutions we seek must feature learning designs and technological features that promote authentic learning. Active engagement in a learning environment that allows each and every learner to explore, collaborate, construct meaningful content, and develop essential skills for them to function effectively in the real world is the desired outcome. This sub-theme explores innovative digital solutions that make it possible for us to achieve such outcomes, and thus the realisation of a successful digital transformation.

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## **New Norms and Emotional Well-Being**

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The impact of the COVID-19 pandemic has caused massive and rapid changes to our daily lives. Life adjustments often come with a wide range of experiences and emotions. People may find themselves in survival mode, gathering information and resources necessary to function at school, work, and home, managing various relationships with others. This can cause fatigue, frustration, sadness, anger, grief, and anxiety (among other things). The impact of experiencing a traumatic event can be pervasive and destructive to individual lives, families, communities, and nations. If we are able to communicate our distress to people who can provide the necessary support, we are able to return to a state of equilibrium following a stressful event. This sub-theme explores concerns related to New Norms and Emotional Well-being.



# KEYNOTE PAPERS



## SUB-THEME: Effective Online Learning

### Effective Online Learning Enabling Sustainability Education in the Post-Covid-19 Era

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#### Introduction

In recent decades, the traditional concept of environmental education has been constantly shifting, and the terms “Education for Sustainable Development”, “Sustainability Education”, and “Education for Sustainability” have been used interchangeably (Makrakis, 2014a). E-learning, online education and ICTs play an important role in advancing education for sustainability in three ways, especially in times of education in emergency, such as during the Covid-19 pandemic: a) by providing an alternative access to education due to lockdowns, b) by helping to promote new ways of interactive learning addressing sustainable development issues, and c) by opening access to information and knowledge. Social distancing and lockdowns due to Covid-19 have disrupted education for the past two years turning online learning into a “forced” alternative while at the same time helping to rethink and reimagine education. All education systems globally were at a state of emergency, and educational authorities had to respond appropriately. Education in Emergencies is a field that has been promoted in recent years focusing mostly on crises related to wars, religious conflicts, and natural hazards. The Covid-19 pandemic caught education systems unprepared to face the lockdown of schools. One of the lessons drawn is that education systems and sectors are lagging behind to capitalise on online education and its ICT affordances in promoting education for sustainability (Makrakis, 2014b), especially for disadvantaged people, marginalised groups and communities. During the pandemic, the impact of the digital divide has been exacerbated and turned to be more visible at the micro (e.g., virtual classrooms) and macro levels (e.g., school system).



The digital divide is an issue of sustainability justice that reflects the four pillars of sustainable development (environment, society, economy, and culture). Covid-19 has reaffirmed the need to bridge the existing gaps, enhance digital literacy and the professionalisation of educators to respond in the online teaching, learning and curriculum adjustments. In this context, there are three key questions that need to be further explored:

1. What is effective online learning in the context of sustainability education and education in emergencies?
2. What are the challenges of an effective online learning for sustainability in the post-Covid-19 era?
3. How do we tackle the challenges in applying Aristotle's "Golden Mean"?

Much of the prior research on online education reflects an instrumental perspective that focuses on students' satisfaction and accessibility, and not on why, to whom and in what context. There is a need to better understand the implications of this new type of education and the context in which learners and technology are connected to produce an "effective" learning environment. This implies that there is a need to focus on the fruitfulness and meaningfulness of online education, applying a value- or ethics-oriented approach (Makrakis & Kostoulas-Makrakis, 2020). So far, little research has addressed such an approach driven from an Aristotelian value rationality stance (Makrakis & Kostoulas-Makrakis, 2021). Therefore, to make progress in this direction Aristotle's concept of "phronesis" is used to explore online education in the context of education for sustainability in the post-Covid-19 era.

### **Online Education Enabling Education for Sustainability in Emergency Times**

Online learning has been argued to be concerned with two of the great global issues of our time: sustainability and disruptive technologies (Bell & Douce, 2017). Disruptive technologies generate both new technologies and disrupt established environments. On the one hand, they provide the global learning community with better access to knowledge, and on the other hand, they disrupt the ways education is provided. Massive Open Online Courses (MOOCs) enabled by synchronous and asynchronous technologies can be seen as good examples for making massively accessible education for sustainability, globally.

Online education was deployed by schools during the pandemic as a form of "temporary" and "forced" emergency measure. It is true, that although "Education in Emergencies" is a concept that existed before Covid-19, educational authorities and the education system as a whole were not prepared to respond in such a situation. The Covid-19 pandemic has exacerbated such crises and caused a new worldwide education crisis. It is not only the lockdown of schools at all levels that brought teaching and learning problems, but also such measures created a number of social and psychological problems, especially among the most vulnerable learners. With the rising popularity of online learning, there is constant debate about the effectiveness of online education. Are virtual classes as meaningful and fruitful as the ones in the conventional classroom setting? Looking into the effectiveness of online education in comparison to face-to-face (f2f) education, research results are controversial. There are results that do not show a significant difference (Zhao, 2020), and also results that show online education produces positive impact to teaching and learning (Ahshan, 2021; Mykota, 2018; Means *et al.*, 2013). Does this controversy mean that online education is not effective? Interpreting such research results leads to simplified and meaningless conclusions. Online education is not easily comparable with f2f education since the former is affected by a larger number of factors and stakeholders than the latter. Most of the evaluation studies focus on student satisfaction, neglecting the fact that online education in



contrast to f2f education involves teachers, online education providers, technology affordances and suppliers, tech support, and families, with all these having a direct involvement and vested interest in the online education process and outcome. In addition, online education technology is changing so rapidly that both comparisons and even single assessment studies are rendered invalid. It is also worth pointing out that most of the studies employ quantitative research approaches that do not go in-depth with regard to the processes and practices involved in online education. Without taking into consideration the diversity of online education stakeholders, the pace of technology development and research methods, it is problematic to reach meaningful and valid research assumptions on the effectiveness of online education. There are thus many factors to be considered, such as how the online education is delivered, what outcomes are measured and what methods are used, the suitability of the online learning content, the context, the design, the technology, as well as the readiness of the instructor and the student.

The use of online education and e-learning tools are becoming widely accepted in formal and non-formal education due the potential they could have in expanding Education for Sustainability (EfS). Sustainability education adopts a systemic, holistic, trans-disciplinary and transformative approach which requires a new framework (Makrakis, 2017). Above all, it requires a transformative pedagogy that can be facilitated through merging the 3Hs: Head (cognition), Heart (feelings, compassion, empathy), and Hand (critical reflection and action) (Kostoulas-Makrakis, 2014; 2010). It is widely acknowledged that online learning has the potential to transform education towards developing a sustainability just society through a transformative pedagogy and the expansion of educational opportunities (e.g., MOOCs). For example, MOOCs have been widely used to support initiatives related to education for sustainable development and the United Nations' 17 Sustainable Development Goals (Sosa-Díaz & Fernández-Sánchez, 2020). A review by Zhan *et al.* (2015) revealed more than 50 MOOCs focusing on sustainable development issues such as climate change, energy, ethics, and natural resources.

### **In Search of the “Golden Mean”**

Much of the existing literature associated with f2f and online education highlights their effectiveness in enabling knowledge transmission, leaving aside the learning aimed to transform oneself and society. Such an orientation draws on instrumental rationality in which the main concern is to find the most efficient means to reach a specific end. This instrumental rationality needs to be balanced by value rationality that recognises ends that are sustainability just, employing human agency as a deliberation of reasons for actions. Although these ways of reasoning seem to be perceived independently, their balancing will be articulated by questions, such as: Why f2f and online education? What is worth pursuing? What works for what and for whom? What and who gets affected by our choices? These questions imply that teaching, learning and curriculum concern ethics and reasoning. In this context, the concept of the “Golden Mean”, a position that is neither a geometrical midpoint, nor a point of moderation, and driven by “phronesis” (practical wisdom), seems to be critical and essential to transforming education and learners towards building a more sustainable and just society.

Those favouring f2f education will argue that conventional teaching has been and will always be the most desirable and perhaps most effective form of teaching. In contrast, those favouring online education will argue that technology is the future in light of the recent expansion of trends reflecting remote working (e.g., digital nomads), the revival of digital skills, and digital literacy. Confronted with these two extremes, it will be prudent to search for a compromise. In searching for a compromise, the Aristotelian “Golden Mean”, that is, a sliding scale for determining what is virtuous seems to be a point of interest to be introduced here. About 2,500 years ago, Aristotle discussed that being morally good implied searching a balance



between two vices, i.e., one of deficiency and the other of excess. This has been made explicit in Aristotle's (2000; 384–322 B.C.) first book, *Nicomachean Ethics*, in which he defines that the goal of education is to lead people to happiness (“eudaimonia”). Sustainable happiness is a new concept that draws much from Aristotle's theory of ethics and happiness (Kostoulas-Makrakis, 2016). Aristotle's concept of ethics is based on phronesis, interpreted as practical wisdom and virtues. In Aristotle's theory of virtue ethics, there is no set of duties, as in the Kantian perception of ethics, to which one is obliged to adhere in order to do the right thing. For Aristotle, doing the right thing means engaging in virtuous action and the use of phronesis. But what is the relevance of phronesis in online education?

In search of the “Golden Mean” between the arguments favouring f2f and online education, the importance of phronesis (Aristotle, 2000) refers to giving increasing emphasis on finding the best of two paradigms of education as the basis for success in the digital society and education, whether in normality or emergency. In this context, there is a need to continuously balance rational analysis with value judgment to achieve a *good* outcome that leads to an education of happiness, which is an essential component of sustainability. Hybrid and blended learning could be such a compromise. However, the important question is whether this is only a compromise for smoothening the pros and cons of the f2f and online education or the best conceivable solution that is meant to be widely applied. My argument is that by applying phronesis, education could be directed towards combining the best of f2f and online education (blended model) and finding the right mix for developing a more sustainable, just and happy society (eudaimonia), unblocking all the possibilities and actualities in transformational learning, guided by phronesis, no matter if they are offline or online.

## Conclusion

The lessons learnt during the Covid-19 pandemic show that the whole teaching-learning process needs to be re-examined and re-imagined. Although technology has always remained part and parcel of the teaching environment, the teaching and learning patterns however are being constantly redefined in response to the challenges posed by the Covid-19 pandemic. Although the concept of online teaching or e-learning has been here for a couple of decades, it is perhaps the biggest challenge amidst the global Covid-19 crisis.

Certainly, online teaching has its advantages and weaknesses. Among the advantages one can see are the unprecedented opportunities for people who would otherwise have no or limited access to education. Besides accessibility, learners can participate in virtual classes from anywhere, anytime, and any place, provided they have a computer and Internet connection. In addition, online education allows for accessibility 24 hours a day, seven days a week, and a dynamic interaction between the key education stakeholders, instructors and students, enabled by various technologies and media. Accessibility to learning resources can also be cited as a significant advantage of online education. However, it is important to consider that:

- Online learning can be an inappropriate learning environment for more dependent learners and/or learners who are more sociable and like f2f interactions.
- Lack of access, whether it be for economic reasons, poor connectivity, lack of digital skills or distance learning capacities leads to gaps, inequalities, and distress (e.g. problems uncovered during Covid-19).



- Sometimes online education is seen as a means to increase revenue and not as a means of providing quality education to people who would otherwise not be able to access it.
- It is important to recognise that online learning is neither effective nor suitable for all subjects and even learning tasks.

Above all, we need Aristotle's concept of phronesis as a point of reference for raising questions: a) whether online education and its associated technology affordances can be used to enhance an emancipatory and transformative perspective in teaching, learning and curriculum, b) for rethinking how online technology could be used as a response in emergency situations, and c) how online education can be used to build sustainable happiness.

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## Effective Online Learning – Back to Basics

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### Introduction

Humans have the tendency to put a lot of hope in technology. This phenomenon is also a common denominator for many of the most iconic heroic narratives of our day: Iron Man saves the universe with his multi-million technological designs, and James Bond escapes the direst situations with the amazing technological gadgets developed by Q. The same goes for learning: in *The Matrix*, Neo learns all kinds of wonderful skills simply by downloading training programmes into his brain. Although these are fictional stories, they reflect a very real and commonplace way of linking technology with strong expectations to make the world better.

We have seen this in educational developments as well. From Skinner's teaching machine in the 1950's to learning analytics and artificial intelligence today, we have seen a series of technologies that were all supposed to "revolutionise learning". Another persistent narrative that keeps repeating in different policy documents, reports and roadmaps is that education is somehow *broken*, and it could/should be fixed with technology. These trends have been further accelerated by the Covid-19 pandemic, which has forced education providers worldwide to "pivot online". However, a closer look reveals that there is often a gap between the promise of technology and the actual benefits it brings to learning (Cuban & Jandric, 2015; Selwyn, 2010; Mertala, 2019). The purpose of this paper is to bring the focus back to basics: good learning design and pedagogy.

### What Students Have to Say about Learning

A recent national flagship project in learning analytics conducted a needs analysis with university students in Finland. Data was collected through focus group interviews with 150 university students in seven different Finnish universities. The purpose of the needs analysis was to find out what factors hinder or promote student learning. The analysis of the data revealed that the needs of the students are very strongly related to good pedagogy and good learning design, regardless of the mode of the course. (Teräs & Teräs, 2019; Teräs *et al.*, 2020). The most important factors identified were:

- Clarity of aims and objectives;
- Relevant and engaging learning tasks;
- Accessible and clear learning materials and resources;
- Interaction with teacher and peers;
- Timely formative feedback;



- Tools to evaluate progress;
- Usability of the LMS;
- Availability of support and guidance; and
- Support for time management and study skills.

The importance of the aforementioned factors is perhaps even greater in a fully online learning mode, as the absence of face-to-face contact makes it difficult to ask questions, negotiate meaning, and validate one's understanding through conversing with others. Online learning is often acclaimed to be flexible, and typically praised for providing the ability to study independent of time and space. However, the problems often encountered in online learning are sides of the same coin. The flexibility can easily turn into confusion with unclear navigation, ambiguous goals and expectations, and a sense of not knowing what to do. Similarly, the independence may well become isolation when the support of others is absent. Tackling these issues requires enormous amounts of cognitive capacity, not to mention that it can easily lead to a lack of motivation, underachievement, or even discontinuation of studies.

### **Engaging Online Learning is Active Learning**

Effective online learning thus starts with pedagogy and learning design, while the role of technology is to support these and serve as cognitive tools that the students can utilise for learning. Instead of perceiving online learning technologies as a way to distribute knowledge to students, they should be seen as environments and tools that engage learners in learning that is at best active, constructive, intentional, authentic, and collaborative (Howland, Jonassen, & Marra, 2012).

Sometimes there are misconceptions concerning "learning engagement". An often-heard claim is that for learning to be engaging, it must be entertaining. While there is nothing wrong with learning being fun, this idea misses the mark. One of the definitions of the word "engage" is, according to the Merriam-Webster Dictionary, "to begin and carry on an activity". The goal is to engage the learner in carrying on an activity; in other words, to take an active role in the learning process.

Biggs (1999) contends that learning takes place as a result of students' activities, which can be directed and guided through an aligned course design. In such a design, all elements of the course – learning objectives, teaching, and assessment tasks – are aligned in order to facilitate student learning and guide them towards active learning strategies. This process helps students begin and carry on the learning activities; in other words, be engaged in the learning process. There are several helpful learning design models that can be consulted in order to achieve an engaging course design, a well-researched and tested example being the authentic learning framework (Herrington, Reeves, & Oliver, 2010).

A starting point and the central organising element in an authentic learning-based course is an authentic task. This is a challenging, relevant, and complex task for the students to work on during the entire course, instead of relying on several disconnected assignments. During the course, the students will apply the theories and knowledge of the course as they work on the problem. Authentic tasks are open-ended and thus promote investigation from multiple sources and perspectives. They promote collaboration and reflection, and instead of a single right answer or solution, they allow for different outcomes. They also lead to a meaningful product. Assessment is integrated into the task, and can be broken down to checkpoints or project phases, which



provide a good opportunity for formative feedback. (Herrington, Reeves, & Oliver, 2010). In an authentic learning process, students learn through learning interactions with each other, the teachers, and the course materials and resources (Teräs & Kartoglu, 2017). The role of technology is to facilitate these interactions.

## Conclusion

Technology is inherently an important element in online learning. However, technology alone does not have the capacity to make learning effective, although it can facilitate the interactive processes through which learning takes place. In order to achieve effective online learning, we should move from techno-centric thinking towards a strong emphasis on good pedagogical design. Aligned, authentic learning designs guide students through an active, engaging and meaningful learning process.

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# Effective Online Learning: Student Engagement, Support, and Retention

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## Introduction

Online learning has been a very popular mode of instruction in the last decade. Moreover, it became a prominent issue when the COVID-19 pandemic started as all instructions needed to be converted into the online format. In this term, the pandemic can be considered as a blessing since the overall implementation of online instruction was enormously developed, especially in terms of the supporting technologies that enable synchronous and asynchronous communication in various platforms (Teräs et al., 2020). However, among the most important parts of online learning – the conceptual and theoretical development, was left behind. One of the prominent conceptual frameworks of online learning that has lasted for a decade is the Community of Inquiry (COI) theory (Garrison et al., 1999). The COI concept seems to be the dominant conceptual framework to consolidate the three major domains of online instructions: teaching, cognition, and social presence. These three domains of online instruction need to be aligned to each other and integrated into an impressive online learning design to effectively achieve the designated learning goals (Fiock, 2020).

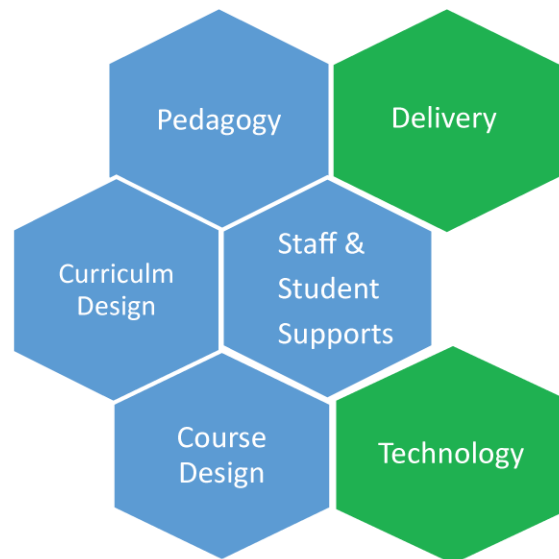
In online instruction practices, the COI framework is quite challenging to be fully applied due to the social presence being difficult to achieve. Furthermore, when the learning content is not well designed, teaching presence and cognitive presence are prone to be more disordered. Daryono (2021) and Khan (2021) mentioned that an improper instructional design resulted in low retention and performance, which further triggered another cluster of problems in executing online learning. The problems include boredom, low self-motivation, low engagement, technical issues, and insufficient digital literacy (Khan, 2021). This situation is particularly evident during the conversion of instruction method from being face-to-face into online during the emergence of the COVID-19 pandemic. During that phase, there was a misconception about online learning that it is only a medium of instruction, while the available technologies at that time denied the importance of instructional design and learning strategies as imperative requirements of online learning. Relating to the current prevailing issues, the three important factors of effective online learning were found to be student engagement, support, and retention (Daryono, 2021).

Therefore this paper discussed the problems in online education and proposed the Immersive online learning design. The Immersive online learning design adopts the combination of ABC learning design (<https://abc-ld.org>) and ARCS instructional design (<https://www.arcsmodel.com>). The ABC learning design provides a practical way to facilitate the integration of the available online learning tools and online learning strategies. Meanwhile, the problem of low retention due to lack of motivation – which is a major problem in online learning (Daryono, 2020), will be addressed by the ARCS learning design. This combination makes online learning personalized, engaging, and motivating.

## Immersive Online Learning Design

Another widespread misconception about online learning was also found during the offline-online transition. Online learning was perceived as only changing the platform of instruction from being physically in the class into synchronous online sessions by using technology (Teräs et al., 2020). This misconception may have resulted from a lack of understanding about online learning. It had also produced diverted results of students' and instructors' satisfaction in online learning. The majority of students and instructors preferred online learning less even though many of them perceived more benefits from its flexibility, practicality, and interactivity (Belawati & Nizam, 2020). These conflicting results may be caused by various factors, but the lack of preparation, improper learning design, and cultural disposition may contribute substantially to the situation.

Therefore, online learning needs to be prepared in advance of execution to ensure that supporting factors are well organized and arranged. The online learning system design may include the following:



**Graph 1:** Online Learning Ecosystem

The preparation of online learning may take more time and effort compared to face-to-face instruction. The instructional design in online learning is a critical part of how online learning should be organized and delivered within a range of technology available (Belawati, 2020). Additionally, the support system including, staff, students, and technological supports must be properly placed. The absence of those support systems will most likely affect low retention and satisfaction.



In terms of how the online course should be delivered, the ABC learning design provides a practical way to integrate the learning strategies and the availability of online learning tools. The ABC learning design associates the Moodle learning apps and their plug-in with the learning types as described in Table 1.

**Table 1:** Matrix Integration of ABC Learning Design and the Moodle Learning Tools

Learning Type	Acquisition	Collaboration	Discussion	Investigation	Practice	Production
<b>Learning Activities</b>	- Reading - Listening - Watching	- Discussion - Teamwork - Project	- Discussion - Debate	- Explore - Compare - Contrast - Critique	- Implement - Doing - Working - Practice	- Develop - Create
<b>Learning Tools</b>	- Podcast - Page - File - Video - Ebook - Scorm - URL - Lesson	- Forum - Chat - Wiki - Glossary - Database - Collaborate	- Forum - Chat - Hot Question	- Survey - Questionnaire - Library - Search - Forum	- Assignment - Quiz - Forum - Workshop - Glossary - Portfolio - Newsfeed	- Glossary - Wiki - Database - Portfolio - Blog

This matrix provides useful tools for an instructor to design the appropriate learning activities with a range of available learning tools on the learning management system; particularly Moodle, an online learning management system. However, those learning activities and tools could not be able to guarantee that online learning will produce effective results. Saniya (2021) argued that according to a survey, a majority of the students; an overwhelming 77%, found that online learning is much worse than in-class instruction. A similar result is found during the survey conducted by the Directorate of Higher Education in Indonesia to show that majority of students were dissatisfied with online learning (Belawati & Nizam, 2020).

The mixed result regarding the effectiveness of online learning is argued to be the outcome of the improper instructional design that has caused low student retention and performance due to lack of motivation to learn. The lack of motivation needs to be considered by accommodating the motivation-based instructional design. The ARCS instructional design will be best fitted to supplement the ABC learning design by emphasizing the motivational factors of attention, relevance, confidence, and satisfaction (Keller, 2010). The matrix combination of ABC and ARCS learning design is presented in the following Table 2.

**Table 2:** Matrix Combination of ABC and ARCS Instructional Design

Learning Type	Acquisition	Collaboration	Discussion	Investigation	Practice	Production
<b>Attention</b>	- Variety	- Active participation	- Active participation - Conflict - Case	- Variety	- Real-world examples	- Real-world examples
<b>Relevance</b>	- Link to previous experience	- Choice		- Modelling	- Perceived present worth	- Perceived future usefulness
<b>Confidence</b>	- Communicate objectives and prerequisites	- Give learners control	- Provide feedback	- Give learners control	- Facilitate self-growth	- Facilitate self-growth
<b>Satisfaction</b>	- Praise or rewards	- Praise or rewards	- Praise or rewards	- Praise or rewards	- Praise or rewards - Immediate application	- Praise or rewards - Immediate application

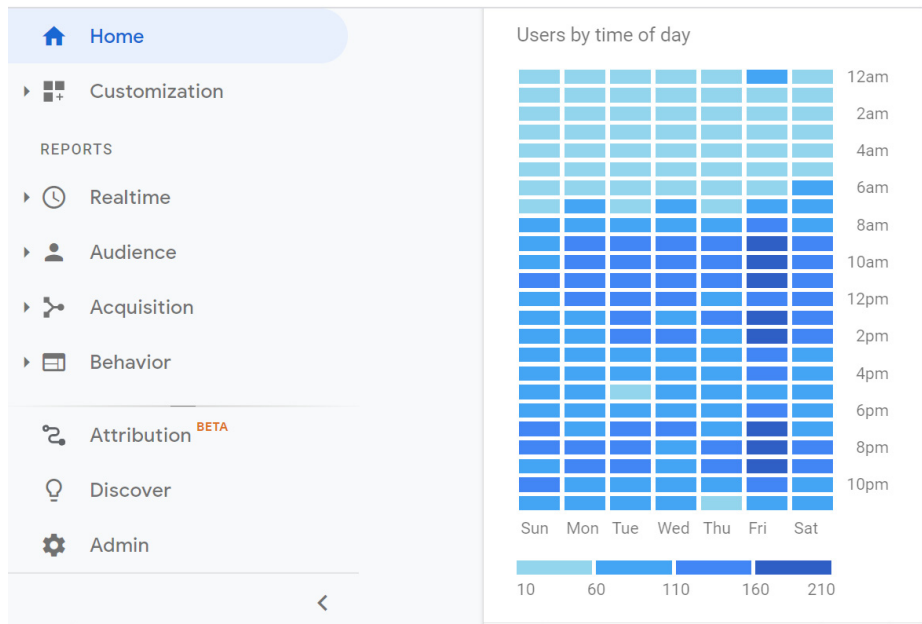
The immersive online learning design presented in Table 2 will create a more personalized and attractive online learning experience due to its flexibility and diversity. Furthermore, the creation of an online social learning space contributes to the extension of learning into real-world activities. These propositions are elaborated in the following parts.

### Personalized Learning

Referring to the COI model, one of the important characteristics of online learning is the types of communication and interaction between educators, students, and learning materials that can occur both personally and individually (<https://coi.athabasca.ca/coi-model/>); personal in the sense that students can freely interact and communicate with educators and learning materials according to the needs, readiness, and preferences of students; and individual in the sense of all directions of interaction and communication between the three being in a person-to-person manner. Personalized learning accommodates both personal and individual forms. This condition contrasts with offline lectures that are more public and non-personal (Feldstein & Hill, 2016).

Conflicting to the various advantages of online learning that can make learning more personalized, some challenges require a new learning approach. One of the challenges is related to "time-space". In personalized learning, the availability of time-space becomes unlimited and can be accessed within twenty-four hours for seven days a week. This time-space factor thus requires special attention considering the difference in student preference and geographical-based time zones. From the time students accessed learning materials, it can be seen as if the students participate in learning activities the whole day as shown through Figure 2 below.



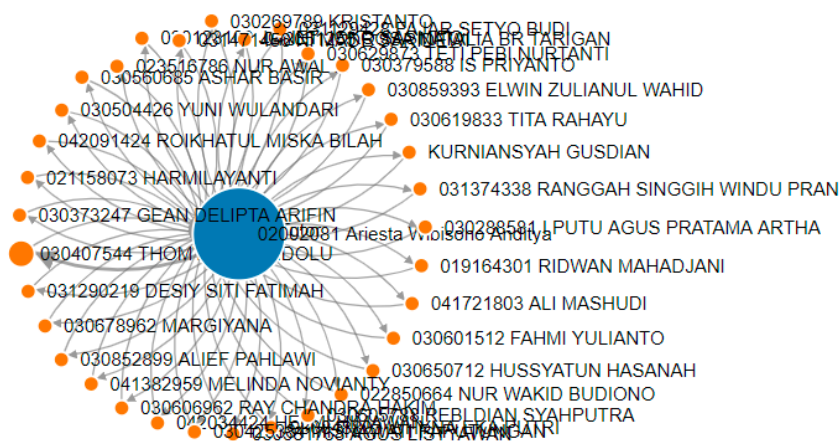


**Figure 2:** Student Access-Time Profile in Online Learning

The analytics graph in Figure 2 showed that student activities are distributed evenly from Sunday to Saturday (seven days a week). However, Fridays are most preferred by students to study on top of other days having an also fairly high level of access. While in terms of time, most students perform their learning process from 8 am to 10 pm.

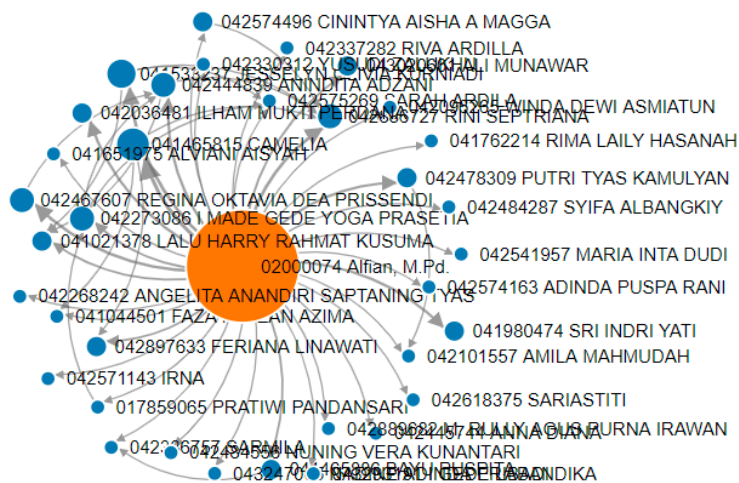
The condition related to time-space in online learning is certainly a challenge for educators and tutors to assertively interact with students without reducing their motivation who post online messages or discussions when they study. In online learning, Immediate response is an important reward that may increase their retention and satisfaction. By looking at the time access of students, educators and tutors must be prepared to provide or manage their presence in online learning so that students are aware of their presence.

Nevertheless, a report from an online learning platform indicated that the student interactions were still merely single-directional from student to tutor or instructor in the early sessions. The discussion forum that was expected to impose the interaction among students unfortunately only consists of students’ responses to tutor questions. The tutor was still the main role of interaction as presented in Figure 3.



**Figure 3:** Forum Graph Interaction on the Early Session

In the early discussion forum as presented in Figure 3, it seemed that only the tutor plays the dominant role in assisting the discussion. However, the pattern of interactions improved during the late session of 7–8 when the students were more eager to respond to the other students' comments. This interaction can be seen in the following Figure 4.



**Figure 4:** Forum Interaction Graph on the Late Session

As seen in Figure 4, student interactions became more active and multi-directional. This changing pattern of interaction may be a result of the reward given during the last week of each discussion forum. This situation showed that a reward initiative was significant in maintaining engagement. Thus, to retain the student in online learning, the reward of all activities has to be designed including the gamification to give a ranking of accomplishment.

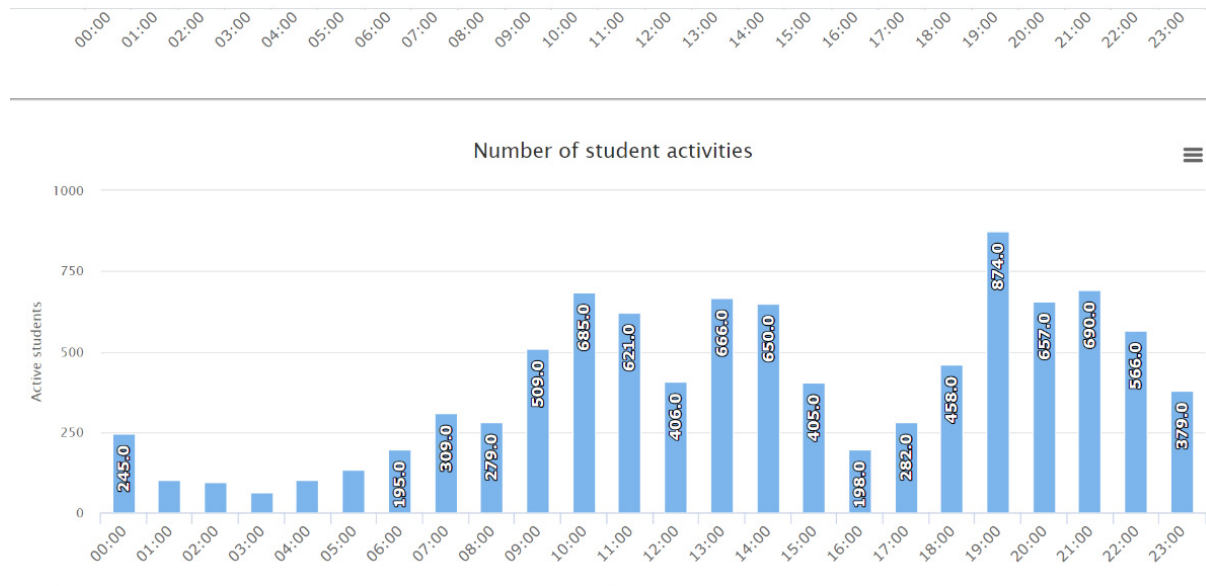
### Online Social Learning Space

Students' participation in online learning activities is one of the indicators of their success to complete tasks and exams. Empirically, the level of participation was not very satisfactory. The engagement and retention of students in online learning was generally less than 50%. This low percentage may be due to many factors, such as the absence of a 'social learning space' that allows interaction and communication between students with themselves, with the educators, and with the learning materials.

Social learning space is a medium that allows students to interact and communicate on a digital platform. During the study from home in the COVID-19 pandemic, students' activity rate was found to be very high. This fact is driven by the availability of time and activities carried out from home which allowed students' interaction and communication to create a social learning space (Williamson & Nodder, 2002). This finding supported the proposition that the existence of a social learning space will improve the learning process. According to the 'post message' activity for students during the COVID-19 period, it shows a high intensity of participation. As seen in Figure 5, during the weekend the concurrent users of online learning could reach up to seven thousand users.



The high level of learning activities and discussion is a good asset to deepen students' understanding of materials tailored to their preferences. On each day, the intensity of student activity is distributed well from 6 am to 12 pm as seen in the following Figure 5.



**Figure 5:** Distribution of Student Activities in Online Learning

The student activities, engagement, and retention did not found to be mutually exclusive but it was a result of the rewards given to the students for being active. It is seen in the following graph that the student retained to engage in learning activities when there was a reward that affects the final grade. The student engagements to the assignment (tugas), formative test (test formatif), and discussion forum (diskusi) were considerably higher than that of learning materials due to the assignment, test formative, and discussion being graded by a tutor. The distribution of access to the content is presented in the following graph.

Distribution of access to contents (resources, url...s)

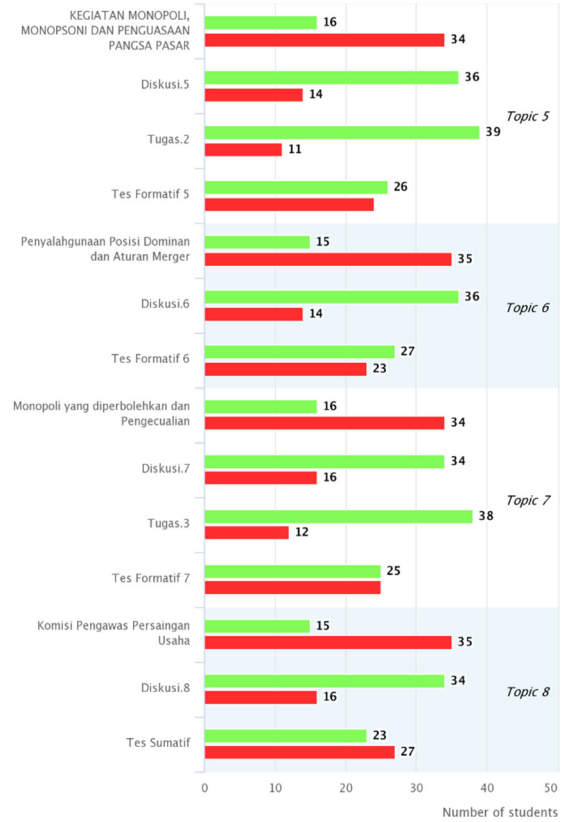
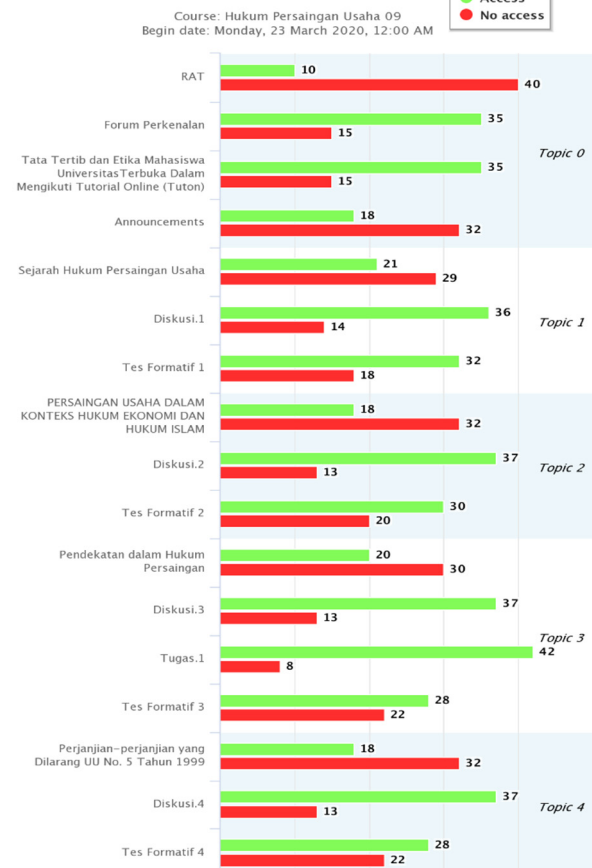


Figure 6: Distribution of Student Access to the Content

Figure 5 and Figure 6 ascertained that motivational tools inevitably affect retention and engagement. Therefore, the online learning design must provide a reward to all students' activities to maintain their engagement and satisfaction. Other than that, student satisfaction may also contribute to higher achievement and performance. The grade distribution of seven graded learning activities is presented in the following Figure 7.

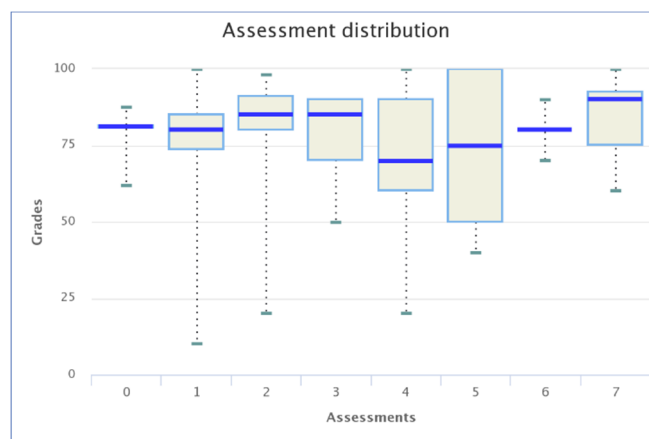


Figure 7: Assessment Distribution for Graded Activities

Figure 7 showed that students' engagement and retention may substantially affect higher achievement and satisfaction. To maintain the engagement, the reward needs to be attributed to all learning activities while meeting the students' expectations.



## Conclusion

Immersive online learning may not be a single solution for effective online learning, but it provides a constructive tool on how engagement and retention in online learning should be designed. The combination of ABC and ARCS learning design addresses the prevailing problems of lacking motivation in online learning due to improper instructional design. In addition, effective online learning requires a certain level of digital competency that allows students and educators to interact and communicate optimally with each other and with the learning materials using digital platforms. The use of various relevant learning tools is expected to increase student retention to form a social learning space. Along with this journey, pedagogical principles must also be adjusted to allow multi-faceted and active participation in the real world.

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## SUB-THEME: Distributed Online Assessment

### **Beyond Proctoring: Assessment Design and Academic Integrity**

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#### **Introduction**

When the Covid-19 pandemic forced a massive shift to distance education and online learning in schools and universities worldwide, many teachers felt anxious about many aspects of what to them is a new or unfamiliar mode of teaching and learning. Many educators were especially concerned about how to assess learning and engage students in a remote learning setup. With regard to assessment, a key issue is the integrity and effectiveness of the assessment process. Many teachers wonder how they can ensure that students would not cheat, i.e., that they will not just copy answers from the course materials or from each other, and that it is the students themselves who will actually take the exam and not their parents, siblings or someone else paid to take the exam in their place. There is also the equally important question of how to foster deep learning among students and wean them from surface learning.

There are technological solutions to the problem of cheating in online assessment. Learning managements systems allow for configuring quizzes or exams in ways that would limit the opportunity to cheat. One can set the timer and shuffle the choices in multiple-choice questions, for example. For those who prefer sit-down proctored exams, it is now possible to do remote proctoring using webcams and specially designed computer software that would lock the examinee's screen and prevent them from viewing anything other than the exam document.

In this presentation, my focus is not on technological approaches to administering online exams but on the *design* of the online assessment itself. It is possible to design assessment in ways that would minimise cheating and promote deep learning. Here we will consider open book exams, student-generated questions, and renewable assignments.



## Open Book Exams

Let's begin with open book exams. Unlike closed book exams that require proctoring to ensure students do not take a peek at their textbooks and notes, open book exams are “designed in a way that allows students to refer to... class notes and summaries..., textbooks, or other approved material while answering questions” (University of Newcastle Australia). Included in this definition are ‘take-home’ exams with which students are given the exam questions to answer as homework.

An open book exam is premised on the idea that the answers to the exam questions cannot simply be copied from the textbook and other references. Rather, the answers need to be formulated or constructed by students based on analysis and critical thinking, synthesis of ideas learnt, and application of knowledge. For this, students need to have a deep understanding of concepts and theories covered, instead of simply memorising and regurgitating discrete pieces of information.

Open book exams are challenging not only for students but also for teachers because the exam questions “need to be devised to assess the interpretation and application of knowledge, comprehension skills, and critical thinking skills rather than only knowledge recall” (National University of Singapore). The types of questions that open books exams should consist of include:

- Conceptual questions, which require the construction or formulation of answers based on understanding;
- Case-based questions “that require the application of critical reasoning skills in response to a trigger scenario”; and
- Questions that require students to *use* information and not just find the information and rewrite it.

Beyond the type of questions, the following are important in open book exams:

- Questions should be clear and unambiguous to limit student confusion and the time they will spend interpreting the questions.
- Students should have enough time to answer all questions adequately. For online open book exams, it is important to factor in not only the time needed to make sense of and answer the questions but also technical time. This refers to the time for the student to “work with the new format and technological steps involved such as reading the instructions [onscreen], opening or downloading the exam paper at the start, and then submitting [their] response” (*University of Oxford Open-Book Exams Guide for Candidates*).
- There should be flexibility with regard to when students can take the exam and even which questions to answer. An example of time flexibility is making the exam available for 24–48 hours and having students take the test anytime within that period that is most convenient for them.
- Expectations especially with regard to the required standard of work (e.g., whether students should write in complete sentences and cite their sources) should be clearly set out.



Students need to be adequately prepared for open book exams. This entails correcting any misconceptions they might have about this type of exam, such as the idea that open book exams are easier than closed book exams, that one does not have to study for an open book exam, that one can just copy from the textbook, and that the more materials one cites, the better (University of New South Wales). Preparing students also includes developing deep learning skills through practice, for example through the type of discussion questions you pose in online forums, and developing academic literacy, which is the ability to comprehend subject-specific questions, answer them accurately and based on the relevant theories and concepts, provide evidence or supporting detail, and avoid plagiarism, among others.

With regard to plagiarism, it is important not to assume that students know what plagiarism is and why it should be avoided. In particular, “patch-writing” as a form of plagiarism needs to be discussed. Patch-writing is the result of failed attempts to paraphrase where text imitates the sentence structure or vocabulary of the source (Howard *et al.*, 2010) and comes across as a kind of patchwork. Patch-writing is a common mistake, which means that it is one of those insidious behaviours that should be pointed out and discussed in a constructive way, as an opportunity to teach how to read and write.

Finally, while examinations are usually thought of as a sink-or-swim kind of endeavour for students, Ragupathi (2020) underscores the need to support students during assessment. We have already mentioned giving students flexibility. Ragupathi also advises not adding to the anxiety that students are already feeling in these difficult times by recognising the fact that they may be facing challenging personal circumstances while working and studying from home. These difficult circumstances can include not having a quiet spot where they can attend live lectures or take an exam, as well as periods of illness including during the exam period. I would say that open book exams are informed by this ethos of support for students. Ragupathi also suggests breaking up a big high-stakes exam into small tests, allowing students to decide whether to work in groups or alone because doing the former during challenging times may be stressful, recognising varying levels of connectivity and digital skills, and involving students in the assessment process. The next section of this presentation is an example of this last recommendation.

### **Student-Generated Questions**

The second assessment design that I would like to mention in this presentation is asking students to formulate the exam and discussion questions themselves. Formulating questions is a way of studying for an exam that is less common than simply rereading or reviewing lessons and answering practice tests. But a recent study by Ebersbach *et al.* (2020) comparing the effectiveness of these three ways of preparing for an exam among randomly assigned university students found that the students who answered practice questions and the students who formulated their own questions after studying the material scored significantly higher in the exam compared to those who simply reviewed the material.

There are practical benefits to having students formulate exam and discussion questions. For one, they are encouraged to read the course text thoroughly and process what they have read in order to formulate sensible questions. It is a process through which the learner actively engages with the material and draws connections between what they are learning and what they already know. In contrast, rereading and highlighting passages are passive strategies that result in “superficial” learning. According to Ebersbach (quoted in Terada, 2020), “This superficial learning is promoted by the illusion of knowledge”, i.e. the false impression the





students have of getting the message of a text after having read it. “However, if they are asked questions related to the text (or are asked to generate questions relating to the text), they fail because they lack a deeper understanding.”

Having students formulate exam and discussion questions provides teachers with insights into what and how students are learning and not learning correctly, which is essential for teachers to know and address. It also engages students and gives them a sense of accomplishment: it is possible to formulate questions quickly and well, and ultimately develop a sense of ownership over their own learning. And it scales well, i.e., one can have a big class and use this assessment strategy and not be overwhelmed as questions are relatively easy to mark. Students can be asked to formulate questions by themselves, in pairs, or groups. They can be asked to formulate both closed as well as open-ended questions. And as mentioned, they can be asked to do this activity quickly, like at the end of a class session, or over a more extended period.

Ideally, students should be asked not only to produce questions but also refine, integrate, and organise their questions, and even decide how to use their questions, for example, whether to use them in further class discussion or as the focus of a project. It is necessary to be clear about what types of questions you would like your students to formulate. Anderson (2016) differentiates between reading comprehension questions, interpretive or analytical questions, and questions that are more thematic and which require making connections with ideas beyond the text itself. These different types of questions are useful in different ways and an important aspect of student-generated questions is their use as actual exam and discussion questions to be answered by the students in the class and even in other classes.

### **Renewable Assignments**

The third assessment design that I would like to bring to your attention in this presentation is the renewable assignment. The term “renewable assignment” was coined by David Wiley (2017) in contrast to what he refers to as the “disposable assignment”. Disposable assignments are assignments that “have no lasting value beyond the experience itself, and may be thrown away at the end of the course” (Braunschweig, 2018) while renewable assignments are published or made available to a wider audience, including future students of the course, and are licensed for others to reuse, revise, and remix. Examples of renewable assignments are public artefacts such as maps, websites, tutorials, learning guides, and videos that are created by students as class projects. Specific examples include a student-created genetics worksheet, student-created learning objects on difficult topics in physics, a reader on open education compiled and annotated by students in a graduate course, and an open textbook on Spanish literature that is made available by the students and instructor for expansion by other classes.

Wiley and Hilton (2018) aver that renewable assignments differ from disposable assignments not in terms of its being more effective in supporting student learning, after all both types of assignments should support student learning, but in terms of how the assignments “result in new or improved open educational resources that provide a lasting benefit to the broader community of learners.”

*Criteria Distinguishing Different Kinds of Assignments*

	Student creates an artifact	The artifact has value beyond supporting its creator's learning	The artifact is made public	The artifact is openly licensed
Disposable assignments	X			
Authentic assignments	X	X		
Constructionist assignments	X	X	X	
Renewable assignments	X	X	X	X

**Source:** Wiley, D & Hilton, J. (2018) Defining OER-Enabled Pedagogy.

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<http://www.irrodl.org/index.php/irrodl/article/view/3601/4769>

Open educational resources or OER are educational materials that are in the public domain or licensed for anyone to legally and freely reuse, revise, remix, and redistribute. The global OER movement underscores how OER can “contribute to making education more accessible” especially where there is limited funding for learning materials, and foster a “participatory culture of learning, creating, sharing and cooperation that rapidly changing knowledge societies need” (Cape Town Open Education Declaration, 2007). Renewable assignments can build on and contribute OER that are free and publicly available for all teachers and learners to use, adapt for their own context, remix, and re-share.

## Conclusion

To conclude this presentation, allow me to mention some assessment principles that inform the types of online distributed assessment discussed. First, open book exams, student-generated questions, and renewable assignments are examples of authentic assessment in that they engage students in authentic activity, which is defined as “real-world tasks that a person can expect to encounter on the job, in the home, or in other social contexts” (Woo *et al.*, 2007). In the case of open book exams, the authentic activity has to do with the fact that in the real world, we do look up and use information to develop solutions and not rely on recall of school-derived knowledge.

Second, the principle of assessment *as* learning is vital. There is a tendency to think of assessment as something that comes after teaching and learning and most people think of assessment *of* learning, i.e., an assessment of whether and how much students have learnt. There is also the concept of assessment *for* learning which has to do with using the information from assessment tools (such as test results) to enhance teaching and learning activities for individual learners as well as groups of learners. Assessment *as* learning refers to use of assessment as part of and integral to the learning process such that learners' knowledge, skills, and perspectives are enhanced, reinforced or deepened in the assessment process itself (Earl, 2003). In the case of open book exams, I think we have an example of *tests that teach* or exams as a way of helping students understand the main points, connect the dots, and see the big picture.

Lastly, assessment should be designed to foster critical reflection and ethical practice on the part of learners as co-producers of knowledge and co-designers of the learning experience and community.



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## Establishment of the Internet-Based-Test System for Open and Distance Higher Education

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### Introduction

Covid-19 has dramatically changed lives throughout the world. Because of the global pandemic, distance education has become a major venue for delivering instruction at every level of educational institutions (Thompson *et al.*, 2020). This situation has necessitated effective strategies for distance education institutions to deliver more credible instruction supported by updated educational technologies. Particularly, open universities have exerted significant effort in enhancing their evaluation systems so as to improve the quality of distance education. Due to the pandemic, other conventional universities and colleges have incorporated distance education into their instructions, consequently institutions for open and distance higher education have had to face the challenge of reconsidering their evaluation systems in order to differentiate themselves in the higher education market.

Since its founding in 1972, Korea National Open University (KNOU) has maintained on-site optical mark recognition (OMR) tests utilising various facilities, including local campuses and other public schools, and so on. In other words, KNOU has operated the paper-based test (PBT) as the fundamental evaluation system to maintain academic integrity for the mega-university that maintains more than 100,000 undergraduate enrollees. However, because it is difficult to respond to the needs for efficiency at the institutional level and flexibility at the learners' level, KNOU has sought to improve its core capacity through the "flexibilisation" of the academic system. In particular, the spread of various competitive distance education models, including cyber universities and the academic credit bank system in South Korea, has led to a decrease of KNOU's competitiveness in the South Korean higher education market. Amid worsening financial conditions resulting from this decrease, the inefficiency of huge cost investments for the repeated OMR test operations has been raised as a serious problem. Thus, KNOU has had to appropriately respond to changes in the international IT technology environment and establish an effective evaluation system based on the university's newly updated information system.

Accordingly, in August 2018, KNOU developed a "Plan to Introduce the Question-Bank and Internet-Based-Test (IBT) System" as a core task for the university's development. A policy research project called "Development of the future evaluation system based on the IBT" was executed by a group of KNOU faculty and staff members (Bowon Kim *et al.*, 2018). Based on the outcomes from the preparation procedure, KNOU established the question bank and IBT system in 2019. The question bank and IBT system adapt various up-to-date information technologies to provide an efficient examination setting for instructors who create and manage test items as well as students who hope to promote self-directed learning. The question bank and IBT system enhance students' convenience and satisfaction during IBTs, which are performed in wireless environments with tablet PCs, and can thus overcome many limitations of existing on-site OMR tests. In addition, students are allowed to have a wider choice of test schedules,

and a systematic and efficient test management system is helpful for examination managers to seamlessly support the overall test operation, including test implementation, test status monitoring, follow-up management, and so on.

To stabilise the effective question bank and IBT system, it was necessary to apply an open-source-based framework by means of the standardisation of the academic and student affairs system considering the changes in the IT environment, and also reliable software development with a security guideline (e.g., secure coding). In addition, it required a stable transition of professors and students to the new test management system by preparing a plan to link the system with academic administration and student services within the university. KNOU’s question bank and IBT system have been introduced gradually to the entire university’s evaluation system since 2020, and IBTs for final examinations covered about half of all undergraduate subjects in the first semester of 2021. Here, we will look at KNOU’s development and application of the question bank and IBT system, and discuss the implications and challenges regarding the process and repercussions of establishing the system for which advanced technologies in open and distance higher education are applied.

### Establishment of the IBT System

KNOU’s initial project scale for the question bank and IBT system development encompassed developing an examination system using the question bank and an IBT management system. First, the purpose of developing an examination system using the question bank is to allow professors to implement functions such as question developing, reviewing, selecting, and inspecting, and implementing the management of test items and analysis of the functions. Test items of the question bank developed in this way are designed to form a simultaneous connection with the IBT system. Second, the purpose of the IBT system development is to implement a web-browser-centred online test management function so that students may visit KNOU local campuses on dates and times they have initially selected and take tests on mobile devices and PCs. At this time, the management function of IBTs for staff members is to allow them to manage tests efficiently as supervisors were also included in the project scale. IBTs are designed to be performable on both mobile devices and PCs, but they fundamentally focus on implementation in exam environments that use wireless tablets. Besides, they emphasise academic integrity by applying security measures related to question banks and online test operations.

The schematic procedure for progressing the PBT of KNOU in the past is as follows.

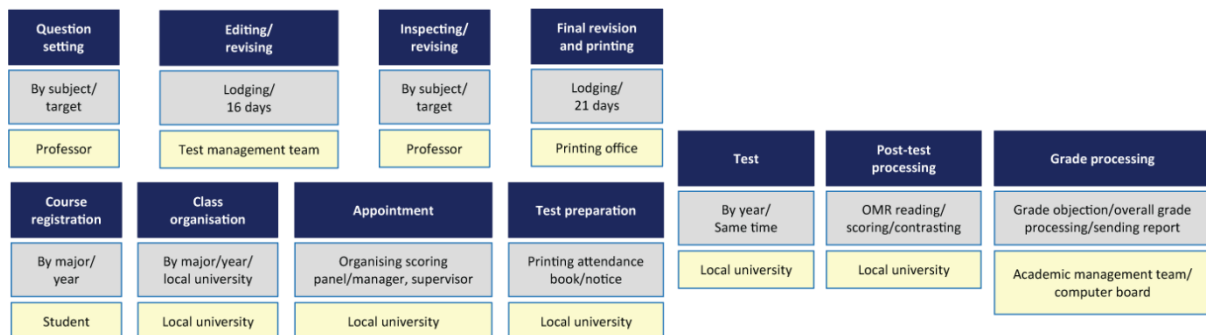


Figure 1: KNOU’s Evaluation System in the Past



Representative problems of the PBT system were the excessive budget needed for test operation and management, as well as an inflexible academic system, which cannot guarantee students' autonomous options in the learning process. In the year 2017, KNOU spent about USD4 million to operate a PBT system for over 100,000 enrolled students. To alleviate these inefficiencies and meet the demand for lifelong learning emphasising self-directed learning, KNOU decided to establish an EduTech-based evaluation system that combines education and information and communication technology, a question bank and IBT system.

Not only were IT systems such as foundational software needed for establishing KNOU's question bank and IBT system, but online test centres utilising local universities, learning centres, and learning rooms needed to be set up at the same time. In short, KNOU's reform of the evaluation system consists of three pillars: question bank system reform, test method reform involving tablet oriented IBT, and spatial reform to accommodate a different physical environment at the university.

For this, developing application software and establishing operational infrastructure were presented as main tasks. Application software means software needed for question bank and IBT operations. Preparing wireless access points (Aps), controllers, and networks was required in a local online testing centre to set operational infrastructure. In order to stably carry out this project, a gradual implementation plan was devised regarding the operation of IBTs. The first step was to develop a question bank system in 2019, which would then undergo a security review by the Ministry of Education, which is the supervising authority for the university. The second step was to establish an online test centre in 2020 and test-apply IBT for exams for the year's summer and winter semesters. Lastly, the third step was to promote service expansion from 2021 onwards, and expand the coverage of online testing.

There were mainly four main considerations involved in establishing a system for implementing IBTs. The first discussion involved deciding between tablets and Chromebooks as tools for IBT operation in the future. Ultimately, KNOU decided to use tablets. This was because tablets provide users with a more intuitive manipulating environment, with further advantages in terms of test operation because of portability, etc. Tablets can be manipulated simply by touching the screen. Therefore, considering a situation that involves students of various ages and traits, in terms of user convenience tablets were judged to be easier to use in comparison to keyboards and mice. In addition, Chromebooks are estimated to have a market share below 2% in Korea. Besides, they are known to have lower price competitiveness than Android-based tablet devices.

Second, because IBT is based on wireless networks and tablet devices, developing application software was considered necessary to minimise system use. Wireless network-based systems are more usable than wired ones. However, it is harder to manage the security of wireless network-based systems as many users share the network. Another problem wireless network-based systems have is that they show slower transmission speed as they use radio frequencies. There was an experiment in implementing wireless network-based IBT in Korea, but experimenters failed to establish a system with a high level of completeness. Therefore, when developing application software it was necessary to use next-generation wireless LAN standard WiFi 6 (802.11ax) devices to be ready for multi-user access, and apply technology suitable for wireless networks. Therefore, the introduction of HTTP 2.0 protocol, compression and transmission, as well as JavaScript SPA framework were necessary for application software development.



Third, we adopted an open-source software validated in the market to ensure the expandability and flexibility of systems, such as web servers and WebSphere Application Server (WAS), which are necessary in establishing KNOU's IBT system. Open-source software is software that makes its source code open so that anyone may view and use the code without any specific restrictions. It has been used as a key tool for system development and construction. Representative open-source software that have been utilised in Korea includes *Nginx*, which is a web server software, *Open JDK 11*, which is a Java virtual machine software, *Spring Framework*, which is a Java development framework, *Elastic Stack*, which is a search engine, as well as *CentOS* and *Ubuntu*, which are Linux operating systems. However, due to security issues, we decided to use the academic information database that KNOU had already been using for the database.

Fourth, to guarantee time efficiency, we decided to establish a testbed with the server that had been operated in the university. Subsequent server configuration and operation plans would be set up separately in the future. KNOU has been utilising hypervisor-based server virtualisation technology. Building on this, KNOU decided to quickly build a testbed based on the Linux operating system and decide on a server composition method that guarantees flexibility and expandability based on the results. If an external lease would be determined, in accordance with the Korean government's policy, cloud computing assistance would be considered first.

### **Outcomes & Reflections**

KNOU's IBT system is an evaluation system integrating EduTech, which aims to significantly reduce test-related costs and efficient budget by innovating open and distance higher education. In addition, it has been promoted to a fully online exam setting and managing processes by utilising the question bank system for developing, pre-questioning, and revising questions for exams. It may simplify and standardise handling the evaluation system, minimise editing errors, and enhance efficiency and convenience of collaboration and knowledge management. In addition, it may improve user convenience and satisfaction by diversifying services and granting exam schedule options.

As a result of the introduction of the IBT in 2021, the first year of implementation, it was deduced that various improvement work was needed. First of all, in terms of system and operation, it was necessary to revise the university regulations in line with the implementation of the IBT expansion. Education and training measures were needed to enable faculty and staff members who play a significant role in managing IBTs. They should master how to cope with the test process more thoroughly. In addition, it was necessary to approach server overloads in the system from a more conservative perspective and come up with measures for simultaneous wireless access for large-scale test takers.





## Conclusion

Here, we have looked at KNOU's IBT system construction case, which provides open and distance higher education for large-scale learners in the era of digital transformation in terms of the development stage, core elements, operational results, and reflection. KNOU's attempt may be seen as an example of enhancing the social awareness and reliability of open and distance higher education through innovating the evaluation system while improving the cost and administrative efficiency at the university level. In the future, open and distance higher educational institutions may be able to innovate through continuous development and application of EduTech along with the development of IT to evolve into a competitive education system.

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## Distributed Online Assessment

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### Introduction

OpenLearning is a scalable online learning platform that is at the forefront of modern education delivery methods for the current and future needs. It is headquartered in Sydney, Australia, with a regional head office in Kuala Lumpur. Today, there are about 2.9 million students worldwide taking courses at OpenLearning, in collaboration with 184 institutions, inclusive of universities and colleges. OpenLearning was listed on the Australian stock exchange in December 2019 with the team consisting of professionals from six countries. We enable education providers to move forward and implement new modes of delivery and assessment in online education. OpenLearning has worked with a whole range of education providers from universities, colleges, agencies, associations, and even companies, to help them in building world-class courses. Throughout this speech, some results of those shared experiences are presented.

One key aspect of online education that OpenLearning has been focused on over the years is an automated approach to online and distributed assessment. Our focus is aimed at enabling outcome-based education; and by extension, outcome-based assessment. Our approach is really thinking about how outcome-based assessment process can be designed with authenticity, simplicity and as efficient as possible from both perspectives of the student's and the educator's. One of the challenges we have is that the implementation of outcome-based education requires mappings between all activities, projects, assessments, and the assessment criteria as well as the marking criteria; and how all of these translate into standardised grading at the end of the day.

At OpenLearning, we believe that a key component of all forms of online education; whether degrees, or micro-credentials, or any other forms of courses, is the ability to deliver them efficiently. Thus, we are focused on changing the dynamics or the way in which assessments are conducted. In a traditional learning platform or environment, usually, there is only a one-to-one mapping between marking criteria. For example, the activities and assessments that someone submits are straight-forwardly checked, before assigned appropriate mark and weightage. This marking will then be used to determine how effective each question is, in capturing the intended outcome. Here, instead, what we hope to achieve is to try and implement a more holistic approach to assessments by having multiple mappings between learning outcomes and learning activities.



From this approach, instead of capturing a one-time outcome, snapshots of the student's progression; the student's development; the student's growth, through a course can be effectively captured. Therefore, the student's attainment of the targeted learning outcomes at any point of time can be ascertained. In other words, a mapping; between all activities, projects, and even discussions throughout the course, to the learning outcomes, the assessment criteria, and the marking criteria, can be captured in a single assessment report. Therefore, this approach enables a holistic assessment to determine whether or not a student meets the expected learning outcomes. This verdict really depends on the evidence of learning that were found in the assessment report.

### **Our Concept**

In our professional perspective, assessments should really be centred on developing learning opportunities for students. By saying learning opportunities, it means that the assessment may not necessarily be based on quizzes or corrective assessments. Instead, it should be more open-ended and divergent, whereby everyone who partake in the activity will individually produce a unique piece of learning evidence. These pieces evidence can then be compared against the criteria designed, which eventually can be showcased to both the students' institution and their potential employers. This is applicable to standard courses, whether micro-credentials or lifelong learning courses. As a result, each student will be able to demonstrate their learning experiences in a broad range of ways. Ultimately, all pieces of evidence can be compiled within a student's portfolio.

The construction of a course begins by identifying and stating the learning outcomes that would be meaningful. Then, you structure the curriculum: which consists of content, delivery, and assessment, by mapping and designing each learning activity to the targeted learning outcomes. The students must be able to demonstrate these achievements and they must be evidence-based. This is the exact basis that we begin with, probably about four years ago, to build the platform. The basis is derived from numerous studies that we had conducted prior to the development. And so, we started by building a form that allows the course developer to enter the targeted learning outcomes of their courses. These outcomes are then tagged. A tag is an easy way of referencing the learning outcomes. It is very useful as the course developer proceed to set up the content and the activities for the course. Tagging is also a very good way of keeping the course structure well-organised and to ensure that the development of the course accurately address the targeted learning outcomes. Once each learning outcome is identified by a specific tag, the tag is used to connect to the course content that match the learning outcome. Further development of an activity or a number of activities to match the learning outcome is also tagged.

What we promote here is the development of open-ended activities in any course. For example, in an online course for learning designers, we began by asking students to share a little about one of their past learning experiences where they felt that they did not excel. This is a multi-part activity, so it advances by asking the students how they like to improve their learning experience if they can design the course by themselves. What this particular part of the activity does is allowing the students to respond and share their experiences as well as ideas, in a gallery that their peers can see and comment. These sharing are also automatically tagged with the learning outcomes that have been set up. In the end, every single entry is tagged and aligned to a specific learning outcome. The course can also have numerous activities in various formats but each of them mapped to a particular learning outcome. This structure not only allows the course developer to map and see the flow of the course content and activities to a targeted learning outcome, but it also indicates to the students what they actually have learnt by allowing them to see their progress through the course and analyse how each progress is relevant to the achievement of their course learning outcomes.



The design of the course further enables the setting up of an assessment report for each student. The report is like a snapshot of their attainment of the targeted learning outcomes at a specific point in time. Evaluation criteria based on different weightages can also be embed into the report. This is certainly one method to implement an open-ended formative approach. Many different types of assessment can be included; basing on various types of grading method. The valuation can promote and measure competency-based learning as well as student satisfaction. The report will be automatically generated for every student throughout the course. This report enables a more holistic assessment as the report will automatically aggregate all evidence of learning with specific tags that are associated to every incorporated learning outcome. Additional tags can be added as well to measure the outcomes that can be more easily assessed holistically, such as soft skills. The design allows the setting-up of a little gallery of everything that student has done, aligned, or matched up with built-in criteria; allowing the course developer to eventually assess whether each student met the targeted criteria and learning outcomes.

In addition to the reports, students will have an automatically generated portfolio that they can curate with digital credentials; including micro-credentials, regardless of the format of the course. This portfolio system gives students a mean to demonstrate their capabilities and a sense of ownership. From a student's perspective, knowing that your work is going to be showcased, either publicly or to your university or to a potential employer, boosts your motivation to work through those activities. This proposition came from our findings that positive peer pressure can be a great motivator for students. In comparison to cases where students are required to carry out an activity or assessment that merely contribute one or two percent to their grades, some students decide that they don't really want to do that activity, or to place much effort into it. In the other hand, if the activities a student does are captured into a portfolio that is viewed by people they know, then, regardless of the percentage or the assigned weightage that the activity assessment might have, we found that students will actually put more work into it. Even when there are no grades, students carry out the task well to build their portfolio attractively through those displayed in the gallery. This adjustment changes the dynamics and moves the learning motivation of the students from an extrinsic motivation to more of an intrinsic motivator.

### **Distributed Online Assessment**

One key element of distributed online assessment lies in the learning design. So, in many cases, when courses were delivered face to face prior to COVID-19, we have observed that in many ways, the content of the course is as crucial as the delivery of the course itself. However, if there were gaps in the content during the activities, the lecturer or the teacher would be able to fill in those gaps when physically delivering the lecture, class, or tutorial. However, in an online class, the delivery approach could be a little different to achieve the same outcome. We found that in such cases, Learning Design plays a much greater role than previously in ensuring a quality learning experience for students, especially in the assessment process.

Catering to this issue, one of the things we focused on is how to ensure that the Learning Design supports the type of assessment that we want in the course. If we refer to the design of the course with closed-ended questions, corrective questions, quizzes, and such, then the students might not have an opportunity to demonstrate their capability. Thus, we focused on how to move from a more 'passive/corrective' style of learning; one that involves a lot of videos and readings and quizzes and in which there are only one correct answer to a question,



to a more 'active-learning' style: where the activities are more constructive; in addition to the each students' evidences/artifacts of learning being unique and different from one another. This style not only enables students to demonstrate their capability, but it also allows an educator to ensure that the work produced by the students are more authentic.

Thereby, what you have is a distributed work. With a single response assessment, it is difficult to assess whether the student actually has the knowledge unless a collection of their responses suggests that they display the expected learning outcomes. In contrast, the open-ended activities provide the educator with a lot more information to determine if the student truly understands the topic at hand. This approach that we've taken, is really based on substantial research into social constructivism and active learning. The idea is to create activities that are more open-ended which provide more evidence to go by in assessing the students. However, we acknowledge that this is easier said than done. Most teachers know how to do this when they're running their class face to face or even virtually; they know how to facilitate the class in this style, and how to design these activities, but when you try and build these activities online in a course where you're not interacting with the students often, in many cases, it can be quite challenging.

In overcoming this issue, a fresh look at the content that you have been using over the years is needed. Inside OpenLearning, we have really worked hard to ensure that these types of activities can be designed and built in a way that makes it easy for students to complete them by incorporating technologies like a widget-based authoring environment, where you can weave together interactions within a content community. To describe what that looks like, it is a single page having everything on it: some stimulus material, opening question for students to answer, and more. Once they have completed a work, it is displayed in a gallery that everyone in the course can read, comment, and discuss. You can even include a reflection exercise at the end; all without the student leaving the one page. This makes the flow a lot simpler, more flexible, and self-contained, allowing each work that is produced by the students to be mapped to the targeted learning outcomes.

In addition, when we are building the courses, we work together with various universities, and we focus on scaling up the quality of the Learning Design. One of the things we've implemented over the past year is really to create a focus on design patterns in the form of templates for activities and educational techniques. For example, when students first come into the course, and you may want to build good rapport with them by getting them to talk to each other, you build a sense of community by creating an icebreaker activity. Creating an icebreaker activity can be quite straightforward, but we have actually developed a range of different types of icebreaker activities that you can use as templates depending on the situation. There are much more detailed, and/or complicated templates that cater everything from crowdsourcing through the reciprocal teaching, to reflection, and to co-creation of content. These templates are designed to increase the quality of online education.

We understand the limitation of time that many educators struggle with in trying to design everything from scratch. And sometimes it can be helpful enough by just providing a little guidance on the patterns that could be used. At the same time, there may be many educators who are new to learning design and are building online courses for the first time. These patterns or templates can be really helpful. On top of that, we have integrated a quality assurance process into our platform, which enable educators who want to list their courses on the site, to first submit their proposed course and get our team to review and provide feedback prior to listing. This way, they will have the chance to improve their course and to ensure that everything is aligned to the targeted course learning outcomes.



## Experience

Now let us walk through a case study. It is an example of what has been done over the past year at OpenLearning that exemplify the approach we have discussed earlier. One of the programs that we have had the honour to work on is a collaboration between UNSW global, called the UNSW Transition Program Online. This is a four-months-long online university entry program that is designed for high performing students who have just missed out on getting into UNSW, and other universities around the world. The face-to-face version of the program ran successfully for over 15 years prior to COVID-19. During the pandemic, a decision was made to move the program online but to do so in a completely reimagined learning experience; moving from a more of on-campus approach to fit for purpose fully online, required a shift from the existing lecture-based online learning; to a learning experience that focuses on active learning; requiring students to engage in more activities and project-based learning.

This is how it works: every day, the students start with a stand-up in their group of five people. They get to know each other and work together. They are supported by a mentor or coach. They complete well designed open-ended activities which are divergent, and later produce a whole range of evidences/artifacts that are mapped into the course's learning outcomes: which are broken into weekly learning outcomes. During this period, the students are provided with personalized coaching and feedbacks. One of the core elements is the outcome-based assessment approach with portfolios and reviews on a weekly basis. All the work that the students produce in the course on weekly basis automatically goes into a portfolio of learning, and mapped into the targeted weekly course learning outcomes. These are then reviewed by a teacher and the students will receive both qualitative and quantitative feedbacks every week on how they're progressing through the course.

This process flow gives the student the ability to change their approach; if required, and develop the confidence that they have understood what they have learnt. From the professional perspectives of ours and the UNSW Global's, it provides greater insights into the student's capabilities and informs the Q&A sessions as well as the mentoring and coaching activities. At the end of the course, the courses either have examinations, and/or high stakes interviews: where the students present part of their portfolio that they believe demonstrate their capabilities aligning with the targeted learning outcomes. This is thrilling, because it means that the teachers can directly ask questions to the students and see if there is any gap in their understanding, thus helping them by providing them the opportunity to fill in those gaps.

We found that the students appreciate this approach and they like the idea that there are multiple ways through which they can demonstrate their capabilities. They also like the idea that the learning experience itself is part of the assessment and is reviewed holistically to ensure that they're given adequate opportunity to succeed. The feedback that they receive enables them to improve as they progress through the course. There are many more different types of assessment that are carried out throughout the entire program; preventing the students from feeling that there is only a single high-stake assessment that will make or break them. Moreover, we are aware of the work load and made conscious efforts to keep them at appropriate level. Another important element of the online course is the ability run a whole range of technologies across the course: from keystroke dynamics to plagiarism detection, to ensure the identifying student taking the course is valid throughout the course.

These are just a few examples of the successes, challenges and opportunities available when implementing distributed online assessment. As more and more courses move online, we believe that greater emphasis needs to be placed on learning design to enable students to demonstrate their capabilities and ensure that enough information and evidence of learning is available to conduct a robust assessment process.



## SUB-THEME: Innovative Digital Solutions

### Innovative Digital Solutions

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#### Introduction

My talk is about innovative digital solutions. Let me just briefly go over the outline of my talk. Initially, I will be talking about the factors and forces that drive our work, some practical issues that institutions might face when implementing digital solutions, the digital trends that invite innovative solutions and are the main focal areas of our work. Then I plan to end this talk with two examples of digital innovations: one an application of technology, and the other surrounding technology itself as an innovation.

So, let's get the basics straight. Innovation is usually defined as the process of "introducing something new or making changes to something established by introducing something new". Now we know that technology drives change, and the fastest moving technology happens to be digital; hence we should be talking, as we are, about innovative digital solutions. However, we don't want to introduce change for the sake of change; we must focus on achieving some education and developmental objectives and not just on popularising technological gadgets!

Right now, what are the significant issues in education? I think, worldwide, the first issue is one of access followed closely by equity. At the primary and secondary levels, we have a shortage of trained teachers and schools and learning materials, at least in the developing world. At the tertiary level, we lack infrastructural capacity and a shortage of adequately qualified faculty. There is also the issue of student success, i.e., students in most institutions and countries are not achieving the desired learning outcomes.

When we talk about equity, we know that underrepresented students face additional barriers and challenges. Digital solutions must close the equity gap and improve student learning, especially course and degree completion rates. Digital learning innovations must have features that lower the cost for students and improve chances for success, afford flexibility, and enhance student learning. When we talk about innovative digital solutions, these should be the driving forces for our innovations.

Now, let's look at some practical issues. We know that innovations can improve access and efficiency but there is an initial investment that is required by faculty and institutions. Faculty, of course, need time and funding to develop their professional skills, so they need to be



engaged in continuous professional development, especially in the skills required for these innovations. Institutions need infrastructure and infrastructure includes human resource, technical infrastructure, and of course the financial wherewithal to accomplish these changes. Something that we should be very aware of is that the quality of implementation of any innovation is directly proportional to the effectiveness of that innovation. So, if it's a poor-quality implementation, the innovation will fail. Thus, we want to carefully plan and implement the innovation to achieve the desired result. Academic leaders typically view digital learning innovations as part of their strategic plans, so vice-chancellors of universities may have plans for a future that includes all of these digital innovations, but faculty are typically reluctant to adopt such solutions.

Now let's look at some of the technologies that are of interest here. Since we're talking digital, we have to talk about the core digital technologies in the education landscape: learning management systems (LMSs) and cellular mobile devices. With interoperability, students can have seamless access from the devices anywhere and anytime. These are the prime targets for further digital innovation, so innovations can happen within this space. Whenever we consider introducing an innovation, we find that these core technologies exist and by and large, we innovate in and around these technologies. However, there are still many institutions that are newcomers to digital learning, and they will need to have careful onboarding to the core technologies. Once the implementation of the core is complete, only then can they start thinking of introducing digital innovations.

So now let's think about building on the core and determine the areas where we can innovate. First, let's talk about accessibility and access.

From an accessibility perspective, digital innovations can help to remove barriers. For example, for the visually impaired we have text-to-speech programmes, and this is a simpler problem. For the hearing challenged we need speech-to-text or transcription, which is a slightly more complex problem involving natural language processing. Right now, we do have excellent speech-to-text transcription programmes, but further improvements are needed, and this is an ongoing effort. For cognitive disabilities or other reading disorders we have special colour schemes. We also have support for touch interactions through keyboard, mouse and touchpads. We can introduce extended contrast for graphics, and of course more detailed description of page controls and elements to support personalisation of user interfaces. Right now, the Commonwealth of Learning (COL) website is undergoing a revamp. It is being redeveloped to align with the new strategic plan. Elements of accessibility are being built in right from the foundations, to ensure that the website is friendly to all visitors.

A very exciting area of digital innovation is that of personalised learning approaches. This is where we can build on the strengths and weaknesses of individual students and provide custom learning pathways that are applicable to courses as well as programmes. So, you can think that within a course a student has to study all topics, but the specific order in which the topics are introduced can depend on the student's own strengths and weaknesses. Similarly, within a programme we can think of reordering courses for certain students based on their interest. All kinds of innovations are happening in this area, and they normally employ artificial intelligence techniques to perform the analysis that rides on the core technologies. These are quite advanced systems, and innovations are happening in this space as we speak.





We've heard a lot about Virtual Reality or VR, and there is excitement associated with the term. At the simplest level, VR enables students to experience the real world from the classroom. At a more advanced level, VR is extremely valuable in the hands-on space. For example, in maintenance engineering, where with the aid of a special set of glasses, you can overlay instructions on top of whatever you are working on.

Cloud-based learning opportunities are important because coupled with mobile technology they enable anytime-and-anywhere learning and allow teachers and students to connect from virtually anywhere.

I'm sure all of you are very familiar with open educational resources or OER, which is basically course content or material or activities that are open, usually free or available at low cost, and easily accessible. OER as textbook alternatives can help reduce the cost of education and they are implemented with hopes of positively influencing student access and success. However, one major impediment in finding and utilising OER involves identifying and locating the required resource. Of course, we have repositories on the Internet, and we can perform searches on those repositories. But when we do something like a Google search, we end up with an unwieldy list of thousands of resources and we face the difficult task of filtering and identifying useful open resources. It is certainly not clear which is the best resource and curating from this ever-growing pile is a huge task, one that is begging for digital innovations and still a work in progress.

No talk about innovations would be complete without bringing in the topic of MOOCs or massive open online courses. Astonishingly, they're still around. Originally, when they came in, there was a huge amount of excitement, and they were thought to be the answer to problems of access and equity and everything. But they didn't turn out to be quite the panacea originally anticipated, but they're still around. MOOCs did raise the profile of online learning, but now they are slowly morphing into finding their own niche. One of the areas where MOOCs have found real applicability is that of upskilling or reskilling the workforce especially in high-demand areas. So, we find innovations within innovations.

As I mentioned earlier, we consider mobile devices now to be part of the core technologies that are being used in digital educational endeavours. Mobile devices are basically untethered devices with cellular communications and they are now moving from 3G and 4G to 5G and Wi-Fi 6 and they literally have become extensions of modern students. You cannot see a student walking in into a campus or classroom without a smartphone in his or her hand. Although these technologies are now considered part of the core, there are still huge opportunities for innovations. Empowering seamless interactivity will greatly influence digital learning. The COL has used simple feature phones, not even smartphones, to deliver education and training. There are huge areas in the mobile space where further innovations could occur.

Now let's move on to the examples of innovative digital solutions. The first one I'm going to talk about is the examination system of the Virtual University of Pakistan, which is an institution where I previously stayed for quite a few years. The second example will be the Aptus device from the COL, which I will hold out as an example of technology itself being the innovation.

So let's look at the first example. The Virtual University of Pakistan has a student body that ranges between 80,000 and 100,000 active students each semester. Since the university is an e-learning institution, the students are scattered all over the country in more than 100 cities. The university admits about 25,000 fresh students annually. All courses are offered every semester and they now number more than 160.



On the student front, the university has full-time students who take a normal course load as defined by the scheme of studies, but there are also working students who carry a partial course load and they have a variety of course distributions. Finally, there are stragglers who could take any course in any semester. Since the university runs on a semester system, it conducts mid- and final-term examinations every semester. And to maintain the sanctity and public perception of a good assessment process, these examinations are conducted at designated examination centres. They are conducted on computers, but they are proctored and the schedule is announced by the university.

Now the problem is that the examination centres see a huge variance in attendance. For example, the popular courses will see a full exam centre, but for the more advanced courses or elective courses, the exam centre would be almost empty. This means wasted capacity. And given this complexity of students taking a mix of courses and the number of courses, etc., making an exam schedule that satisfied the requirements of all students meant that the exams took a huge amount of time and that was beginning to disrupt the semester schedules. So that was the problem the university faced: How do you create an exam schedule or date sheet as we call it that satisfies all students? How do you ensure a secure distribution of question papers across the country and then collect them and bring them back in time to the university so that we could grade and announce the results in an acceptable time frame?

In order to reduce the overall duration of the examinations, we wanted the centres to run at full capacity. But working students preferred evening hours or weekends for examinations; full-time students wanted morning times and weekdays for their papers. So, there were conflicting demands. There were students who commute from villages to the exam centres who would prefer to sit for the exams at midday and of course have gaps between papers. Every student wants that; they don't want two exams on the same day or even on successive days. There is also the management issue for the university, in which a mismatch in exam start times can compromise the sanctity of the examinations and ensuring proper invigilation across all centres can be a nightmare.

The basic problem was determining how to conduct mid- and final-term examinations in a secure, convenient and time-limited and efficient manner.

So, what was the innovation? The idea was to allow students flexibility in choosing their own examination date or time, and do that on a first come, first served basis. Then, we would run centres at full capacity and minimise the total duration of the examinations. This basic idea led to all of the subsequent actions.

If the university were to allow students to create their own individual date sheets on a first come, first served basis, this could only work if students received distinct question papers. You cannot use one for all students. Creating distinct question papers could be done by creating a question bank and then automating the process, which is what the university did.

So basically, by looking at course registrations and the capacity of the various centres, the university could determine the required duration of the examinations with every centre running to full capacity for each session. Once that particular exam's start and end dates were defined and declared, students were allowed to create their own exam schedules. Students log onto a specified portal, select the city where they wish to appear, and choose the exam centre within the selected city. And obviously, since the system relied on the LMS with full information, all the subjects that a student is registered for will appear on the screen. For each subject they would select a date and session time, and then confirm. And once that is done and all students have actually created their date sheets, the system has all the information required to conduct the examination.



If you think about it, the system can then tell you in City X on day Y for the 9:00 am session you need three English 101 question papers, five Mathematics 201 papers, and 15 CS101 papers. Basically, the system now knows exactly how many question papers are needed for a given subject on any specific city/centre/date/time. Now, the academic staff provides question paper parameters, in terms of defining how many multiple-choice questions or how many essay-type questions should be in each paper, which parts of the syllabus should be covered, etc. And they only define parameters. The system then goes to work. It generates balanced question papers, all distinct, but all having essentially the same level of difficulty. The system then creates electronic bundles meant for each city/centre/date/time using the same parameters that were used in defining the date sheet, and then they are electronically dispatched to the centres. Everything is encrypted, all the way from questions to question papers to bundles. They are all encrypted and cannot be opened before the defined date and time without authentication. Authentication parameters or passwords or encryption keys are then shared with the invigilators on the day of the exam or during the session of the exam. So, it's a very secure system.

Now, there is an additional little quirk that happens when the student attempts to come back, electronically of course, to the university. How do you grade them? Well, obviously the multiple-choice questions can be computer-graded since the answer keys are present and allow for automatic grading. The essay-type questions may pose an issue, but you know that since the question papers were created from a question bank in the first place, there is considerable reuse with the same questions appearing in various different question papers that were distributed. So, the system collects attempts for the same question into a single pile and gives that to a single faculty member for grading. The grading rubric is provided on the screen in front of the grader, who can now have uniformity and consistency in grading while maintaining complete anonymity, since the grader does not know the identity of the student whose attempt is being graded. From a management perspective, the controller of examinations simply sits back and sees when the system tells him that all questions have been graded. The controller then simply presses a button, the result is tabulated and declared, and students get their results in their LMS accounts, so it's hugely innovative. The system has been in operation since 2008 without a flaw so far. It's a very secure system as two students attempting the same subject and sitting side by side will get different question papers on their screens. They cannot collaborate and there can be no unfair practices going on. It is very easy to proctor and monitor, the system is simple to operate and it's fully automated and has done a wealth of good for the university.

Now that was an example of a digital innovation in which we used technology to innovate and find a solution to a rather sticky problem.

Now I'm going to talk about a second example, in which technology itself is the innovation. Many regions around the globe, and especially in the Commonwealth, do not have broadband connectivity and are without access to the Internet. Many places do not even have reliable electricity. What that means is that learners are deprived of digital learning resources and the wealth of information and knowledge that resides on the Internet. This is where the Aptus device from the COL comes to the rescue.

The Aptus is a low-cost server and an enabler of mobile learning. It allows educators and learners to connect to digital learning platforms and access content without the need for electricity or Internet access. It runs on a five-volt power supply. If you have electricity, you can use an adapter. Otherwise you can use a battery bank like the one that you use with mobile phones. It is a mini personal computer or a mini server that can host 64GB of content on a simple secure digital (SD) card, or even more if you use a solid-state drive (SSD) device. It can facilitate interactive virtual learning anywhere. You can typically set up a classroom without walls in minutes and allow rich content to be accessed by any learner with a laptop, tablet or mobile device and Wi-Fi capability.



Just to give you a feel for what is included on the SD card, there are more than 3,000 videos from Khan Academy, over 100,000 articles from Wikipedia in English, the Wiktionary in English with over a million terms, OER from COL's open schools programme, the Open street map, and Phet simulations from the University of Colorado, which are a very useful, valuable resource for Science, Technology, Engineering and Mathematics (STEM) education. For other learning tools, the Aptus device has a full-fledged implementation of the Moodle LMS on it, the Dropbox-like ownCloud, and also WordPress. All this is stored on a 32GB card and it accommodate even larger card capacities. Users can add their own content to the device with room to spare. COL sometimes customises content for specific audiences. For example, when there was a need in the Caribbean after hurricane Dorian destroyed many schools, we took content from the Caribbean curriculum and put it on the Aptus. In the Maldives we have distributed a version that includes all of the OER mentioned earlier, but we have also included e-textbooks from the Maldives itself in its own language.

The Aptus is an example in which technology itself is the innovation. You can literally set it down in the middle of nowhere, power it with a battery bank, have students connect to it from smartphones, tablets and laptops, and provide access to valuable digital resources that would otherwise never be available to these learners.

### **Conclusion**

I hope these examples of innovations have triggered some new thoughts in your own minds. I'm sure that many of you are working on digital innovations. There are of course many, many other areas where one could work, but my focus has been on areas that empower the last person in the queue so we're not talking about the haves of this world. We're talking of population segments that are deprived, which have issues with access issues, accessibility, and equity, and how we could empower them through digital innovations.

Thank you for your attention.



# Quality Assurance for Online Examinations

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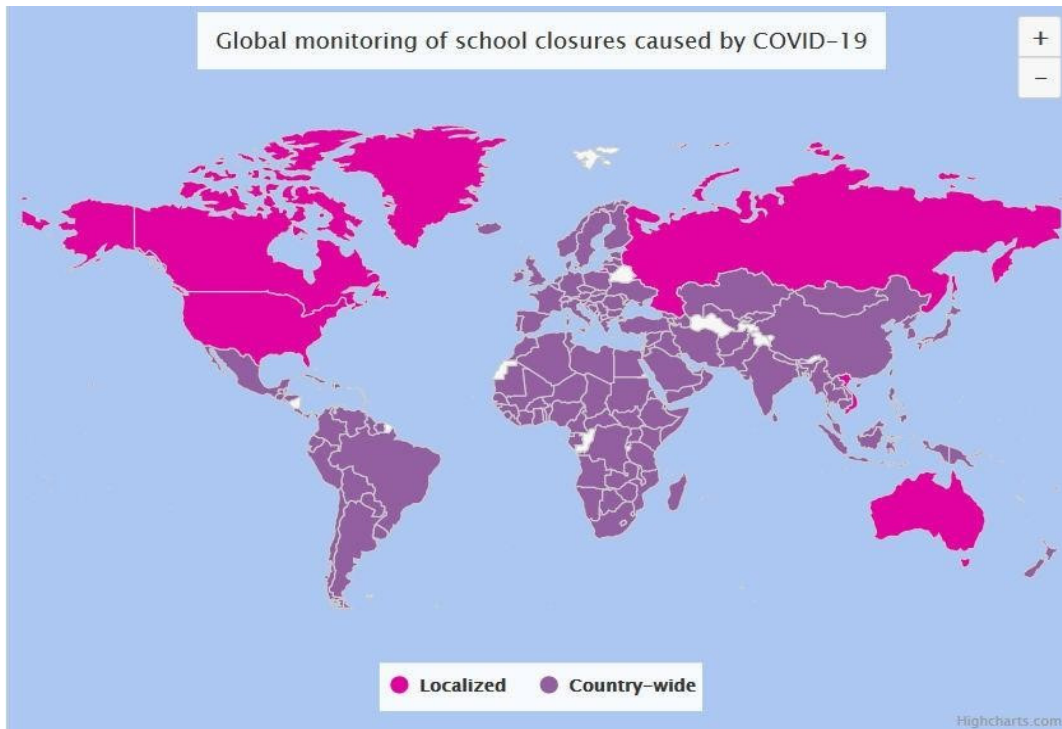
## Introduction

Information technology will fundamentally and comprehensively transform education, according to the United Nations Educational, Scientific, and Cultural Organization (UNESCO). As witnessed, the explosion and development of educational technology have created new non-traditional modes of education, which strongly stimulated a deeply transformative education for people everywhere. This transformation allows sustainability in teaching every person, which enhances the learning experience and the demand for sharing, involving knowledge concentration, capacity shift, and integration in the educational space. This process increases the need for attention towards the application of technology in implementing educational programmes.

A report on the 2016 World Economic Forum in Davos, which was attended by more than 2,500 of the world's most powerful and influential figures, had already stated that 65% of learners were still learning for jobs that would not exist in the future, whereby they projected that 47% of current professions would be moved to automation in the next 2 decades; and that by 2020, over 50% of classroom contents at all levels would no longer be useful in the following 5 years.

Aligned with these statistics, the advent of e-learning and its development to date is inevitable. E-learning makes updating learning contents to match the most recent demands easier and faster, which may lead to many schools considering it as a reliable and sustainable method that can last for the long term. Still, for a school to implement e-learning and switch to it from in-person learning, careful preparation and a lot of time are required. However, the Covid-19 pandemic in the past two years has unexpectedly accelerated this transition. This situation was due to 94% of students around the world being affected by school closure (UNESCO, 2021). Consequently, the schools shifted to online training as a solution, even if they do not fulfil the conditions for implementing e-learning properly.

Since the execution of online training was so sudden, schools lacking in experience struggled to maintain all activities, and one of the most challenging problems is conducting exams online effectively. This is a serious problem as exams are crucial in evaluating the learning process of students. Most school managements have a very general requirement – to organize online exams safely, publicly, fairly, and ensure the rights of candidates. However, the process of conducting online exams is fraught with difficulties.



Source: <https://en.unesco.org/covid19/educationresponses>

### Challenges of Organizing Online Exams

In conducting online exams, a multitude of factors must be considered, such as the condition of the training institution's infrastructure and equipment, the transmission lines of students, current regulations, and whether different subject contents require different forms of exams. Thus, this article addressed the two biggest challenges in online training:

- **How to ensure that the person taking a test online is the right one?**  
Authentication is necessary not only at the start of the test but also throughout the time that the person takes the test.
- **How to limit possible cheating during exams?**  
For example, someone might assist a candidate by helping in person or connecting remotely through tools such as a remote desktop. The candidate might sit in front of the screen for the exams while the other person answers the questions. The candidate might also browse answers on the Internet or use unauthorised documents.

The above two questions are difficult to be completely solved, especially when students sit for tests in their own homes.



## Solutions for Online Exams Authenticity and Transparency

The challenges mentioned above were also faced in organizing online training at Hanoi Open University, but were successfully solved using the technologies as follow:

- **Artificial intelligence to recognize students' faces:**  
Facial recognition technology has developed rapidly and is applied in many fields. The reliability of this technology is very high, and it can be trusted fully in the authentication of exam candidates. However, to ease the burden on the system during the identification process, it should not be required to conduct continuous full-time identification. Instead, it is enough for the system to conduct identification at critical times or for a period, for instance, a face test every 30 or 60 seconds. This ensures that the right person is still sitting in front of the computer to take the exam.
- **Online television technology:**  
This technology can be used to stay in touch with candidates throughout an exam and be combined with the placement of the test taker to ensure that the correct candidate is sitting in front of the computer throughout the test. This option can also be used to check personal identification cards and have a photo taken at some point to serve as proof and for post-inspection work later.
- **Remote monitoring management solutions:**  
These solutions ensure that candidates do not switch to another screen on their own or use remote computer control tools. There are many options of tools, such as Safe Exam Browser, an open-source browser that blocks any computer user activity available on the Internet and can be integrated with a variety of learning management systems.
- **An extra camera:**  
To monitor candidates' performance, they can be required to use one more camera; other than the computer camera, to observe the entire space where they are taking a test and their screen.

The above options are not the only ones but will help online test organizers to visualize ways to solve the two challenges mentioned earlier. With these solutions, we can fully answer questions for regulatory agencies and demonstrate the quality of training provided by the school to society. All these technological solutions are supportive of academic honesty and encourage learners to respect it.

## Conclusion

It is not easy for institutions to organize online exams effectively and safely as they must answer questions about transparency, openness, and equity to society and regulatory agencies. With the application of technology solutions, online exams can be fully organizable while meeting the current needs of schools. However, in parallel with the development of technology, new limitations may arise. Therefore, schools must undertake regular updates to be ready with solutions for upcoming problems.



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## **Innovations in Digital Education: The Way Forward**

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### **Introduction**

We are living in exponential times, in which technology has pervaded every sphere of our day-to-day activities. Disruptions due to Covid-19 have completely changed our outlook on teaching learning processes. Educational institutions across the globe came up with innovative services to reach out their learner community during these difficult times. In the present scenario wherein we talk about Industry 4.0 or Society 4.0 and more recently even Industry 5.0 or Society 5.0 where there is emphasis on AI, big data, IoT, Augmented reality, Robotics, blockchain technology and customisation or personalisation of services, educational institutions need to relook and adapt to the present day requirements and incorporate innovative technologies in the pedagogy and delivery of programmes and courses.

### **ICT Interventions in Open and Distance Learning: Need of the Hour**

The total enrolment in higher education in India, as per AISHE 2019-2020 Report (Ministry of Education, 2021) is 38.5 million registering 11.36% growth with the gross enrolment ratio (GER) in higher education at 27.1% against 26.3% last year. At present there are around 1,043 Universities, 42,343 Colleges and 11,779 standalone institutions listed by the latest AISHE Report. The government proposes to enhance the GER to 35 percent by 2030, which is comparatively far behind that of countries like China with 43.39 percent and the US with 85.8 percent. Increasing the GER to 35 percent by 2030 presents a major challenge requiring double the number of higher education institutions to be added to boost the GER as envisioned.

The open and distance learning (ODL) system to some extent has the potential in meeting the needs of learner community with the flexible education delivery system relying mainly on self and lifelong learning processes. However, the distance education enrolment constitutes merely 11.1% of the total enrolment in higher education.

We are now in the fifth generation of ODL. The first generation started with the correspondence model based on print technology. In the second generation, a multimedia model based on print, audio and video technologies dominated the scene. The third generation saw the advent of a telly learning model based on applications of telecommunications technologies for synchronous and asynchronous communication. In the fourth generation, a flexible learning model based on online delivery via the Internet was introduced. The fifth and present generation is based on intelligent flexible learning based on the interactive nature of the Internet.

With the limitations of 'brick-and-mortar' campuses to reach out to large-scale learner communities, ICT-enabled education offering low-cost, flexible, 'anytime, anywhere', individualised and just-in-time learning seems to be the most viable solution.



It has the potential to overcome barriers of physical distance and time, lower institutional or organisational costs, and increase student enrolment.

The advent of Education 4.0 technology is marked by interaction of man and machine wherein there is emphasis on personalisation based on learning analytics. The collaborative robots in the education sector are now taking up mundane jobs, such as marking written assignments and examinations. A whole gamut of cognitive computing technology is now being introduced in the education sector.

Artificial intelligence in education is directly influencing education and learning sciences. A good number of such examples include intelligent tutoring systems, personalised learning, AI tutors/teaching assistants, adaptive learning approaches, natural language processing, chatbots or conversational AI. Most of the LMS and MOOCs platforms now have these features and are being extensively used for online/virtual learning environments.

Big data is also being extensively used in the learning context, for instance using link data for curriculum design based on student profiles, real-time usage for course feedback, transcript analysis, and staff skills, etc. are just-in-time interventions using learner analytics of online engagement is a great help. Personalisation based on demographic details and previous study history, multimedia indexing to detect use of common images/videos, and data mining around social learning are also areas where learning analytics is being extensively used.

We now have possibilities of immersive or augmented learning with the use of platforms like Second Life to create virtual campuses universities, colleges and libraries. There are a number of freely available AR and VR tools available for use in education sector viz. Google Cardboard, 360CitiesFree apps, Time looper app, Nearpod, etc., which can be used by the teachers to develop engaging content.

IoT can be used for creating interactive learning and for educational apps for 3D graphics, textbooks, educational games, etc.

Blockchain technology can help in keeping records and maintaining seamless payment transactions. It can be appropriately used for badging, certification, and credit mobility. It can act as a trusted academic ledger for the Academic Bank of Credits.

There have been gradual shifting paradigms of ODL in India. Between 1982 and 1995, the focus was on building foundations of ODL in the country. From 1995 to 2006, there was increased emphasis on reach and access to unserved segments with incorporation of audio/ video course material and tele-communication technology. The period 2007 to 2019 saw emphasis on communicating, connecting, and collaborating through interactive media and platforms. This ushered in online and virtual education in the country in a big way. From 2020 onwards i.e., Post Covid 19 Pandemic there has been real disruptions in education. Learner started creating their own learning path, teachers were acting more as facilitators with everyone getting into online education mode. Covid 19 Pandemic transformed the centuries old chalk and talk teaching to technology driven model. It called for multi- pronged strategy to manage the crisis and build robust educational system in the country.

During Covid 19 pandemic online classes were started in spurt of the moment and major challenges were faced. There was sudden surge in demand for online courses and classes without any preparations. Teachers and students were struggling with the basics like Internet connectivity and unpredictable power cuts. Teachers were under tremendous stress in solving structural issues such as pedagogy and deliverables.



Possible interventions in the new normal post covid seen are, emphasis on web and mobile based OER repositories, development and use of MOOCs on the SWAYAM (India MOOCs platform) (Ministry of Education, 2016), use of SWAYAM Prabha DTH educational channels (34 educational channels supported by Ministry of Education) (Ministry of Education, 2017) for last mile connectivity and online education.

The ODL institutions in India are now gradually shifting to online education mode with the state-of-the-art ICT interventions.

IGNOU for instance started many low-cost technology interventions to reach out the learners during the Covid 19 lockdown such as using Facebook platform for live classes, podcast series 'Freedom 2 Learn' and Web Enabled Academic Support (WEAS) to learners using Google Suit of applications.

The University now is offering 18 online programmes and are in the process of converting most of the programmes offered in ODL mode to online mode.

### **Government Interventions**

With the launch of the National Mission on Education through ICT (NMEICT) by the Ministry of Education, Government of India in 2009 (Ministry of Human Resource Development, 2009), major developments happened in the adoption of education technology. Over the years huge repository of e-content got generated across disciplines and at all levels. Broadband connectivity was provided to all the higher educational institutions across the country. Virtual labs have been developed across disciplines to provide support for practical courses. Work in robotics in education has also been initiated. In 2016 the SWAYAM and in 2017 SWAYAM Prabha, two major projects were initiated by the government.

As it stands today there are more than 20 million students enrolled for SWAYAM MOOCs with around 2286 unique courses on offer. The e-contents developed for SWAYAM are following innovative four quadrant approach which includes: multimedia component such as videos, animations, simulations etc.; e-texts in the form of e-books, SLM, OERs etc.; self-assessment with weekly quizzes, activities, problems and solutions etc.; and interactions through discussion forum. The term end examination is conducted through the Government's National Testing Agency (NTA). The certificates issued after completion are eligible for 40% credit transfer towards degree and diploma as per the gazette notification issued by the Government (UGC, 2021).

The SWAYAM Prabha 34 DTH channels are being used for last mile connectivity. The channels run only curriculum-based programmes 24/7 across disciplines covering both school and higher education sectors. The channels are also conducting live classes with two-way interaction in place. The popularity of these channels is growing at a fast pace.

Around 47 institutions already have started offering online programmes in different discipline areas.

The major thrust for technology intervention in education has come with the launch of the National Education Policy (NEP) in August 2020 (Ministry of Human Resource Development, 2020). It is being seen as a game changer for the entire education sector in the country. It has laid special focus on use of technology in teaching learning process for which nation-wide implementation plans are on. Major efforts are on by the Ministry of Education for its implementation across the country.



The policy emphasises on online/digital learning with proper support of digital infrastructure and bridging the present digital gap, getting popularized in the educational context.

The NEP 2020 encourages use of new technologies such as artificial intelligence (AI), machine learning, blockchain, smartboards, handheld devices etc. for effective learning practices. Some of the technologies are already in use by many higher educational institutions initiated under the NMEICT, the latest technologies like AI, machine learning, blockchain etc. however are yet to be tested for large scale implementation. This requires extensive research both from technology and educational context.

Section 24 of NEP 2020 has given emphasis on “Equitable Use of Technology” in the context of online and digital education. The Policy recommends the following key initiatives:

- (a) Series of Pilot studies to be conducted for online education.
- (b) Invest in creation of open, interoperable, evolvable, public digital infrastructure for building robust digital infrastructure
- (c) Appropriate existing e-learning platforms such as SWAYAM, DIKSHA to be extended to provide teachers with an online teaching platform and tools
- (d) Developing engaging e-content including games, simulations, Augmented Reality, Virtual Reality etc.
- (e) Extending virtual labs by leveraging Existing e-learning platforms such as DIKSHA, SWAYAM and SWAYAMPRAKHA
- (f) Addressing the digital divide issues through appropriate technology infrastructure and extensive use of mass media, such as television, radio, and community radio to make content available 24/7 in different languages to cater to heterogenous learner community.
- (g) Capacity building of the teachers on learner-centric pedagogy and high-quality online content creation using online teaching platforms and tools.
- (h) Proper Online assessment mechanisms to be developed by appropriate bodies, like National Assessment Centre or PARAKH, School Boards, NTA, etc. which will entail design and implementation of assessment frameworks encompassing design of competencies, portfolio, rubrics, standardized assessments, and assessment analytics.
- (i) Setting up a National Education Technology Forum (NETF) for exchange of ideas on the use of technology to enhance learning and laying down standards.

Section 23.3 of the NEP 2020 mentions creation of an autonomous body National Educational Technology Forum (NETF) as a platform for free exchange of ideas on the use of technology to enhance learning, assessment, planning, administration etc.



The major areas of interventions expected from NETF are:

- Support for ICT infrastructure- subsidised connectivity, shared data centre services, cloud computing (SaaS, PaaS, IaaS), low-cost access devices, smart classrooms etc. will need to be provided.
- E-Content development and use- digitisation and preservation of available content (A/V and print based), pedagogy-based e-content development, accessibility (differently challenged, language), promoting use of OER based online courses, standards and interoperability issues etc. will need to be addressed.
- E-resources to support education, training, and research- promote open access with support for developing institutional repositories, open access journals and ETDs, negotiating for national licensing for popular journals, reaching wider community through subject specific consortia and library networks, working on standards for indexing and harvesting of metadata and supporting development of search tools for knowledge discovery.
- ICT integration in the educational system- supporting e-learning, blended learning, MOOCs, lifelong learning, face to face learning and skills training; operational issues related to virtual university framework.
- E-governance- support development and implementation of ERP/UMS for educational institutions and improving administrative processes through automation.
- ICT competencies and capacity building for different stakeholders- support digital literacy and information literacy programmes, training in e-content development and online delivery for teachers.

NETF is expected to go a long way in supporting digital initiatives of the higher education institutions in the country.

### **Challenges of Higher Education and Way Forward**

Though we have progressed quite a lot, there are still Challenges of Higher Education in India.

There is lack of adequate quality educational institutions in the country with disparities between rural – urban areas. Access to higher education is quite low with the Gross Enrolment Ratio at 27.1 % at present which is much lower compared to other countries. The dropout rate is also very high. Absence of enforcement of quality norms for maintaining quality and in adequate infrastructure are further aggravating the situation.

High cost of education is another impediment, especially in the case of skill-based/professional education. There is also concern for lack of quality teachers across the country.

As The unreached remain unreached due to challenges that include geographical context, remoteness and other socio-economic factors, deployment of ODL in India remains a challenge as well.



Importance of online education in India is now being realised which can help in inclusive growth in terms of equity, access, and quality education. It can support in literacy drive both general as well as digital literacy, in skill training – developing trained human capital for enhancing the productivity level of a nation and developing the life skills of the people – enabling life-long learning.

Technology can play a major role in addressing these issues and challenges. The NEP 2020 has been formulated at a time when an unquestionably disruptive technology like Artificial Intelligence (AI), 3D/7D Virtual Reality, IoT, Blockchain, Robotics etc. have emerged in a big way and expected to change the education landscape in the country.

All the stakeholders need to gear up for adoption and implementation of the NEP 2020 recommendations.

### **Conclusion**

With shortage of infrastructure and teaching faculty, it is most appropriate to harness the potential of technology to democratize education and reaching out to the masses through a collaborative platform.

The SWAYAM initiative of the MoE has already made an impact and this needs to be further strengthened with advanced tools like Artificial Intelligence (AI), Augmented/Virtual reality (AR/VR), Internet of Things (IoT), Blockchain technology etc.

For last mile connectivity and maximizing reach SWAYAM Prabha channels can play a major role in enhancing learning and the channels need to be strengthened with latest technology to provide world class engaging interactive content.

Technology, policies and government support is already in place for embracing educational technology in a big way. Concerted effort from all stakeholders is needed to overcome the present challenges of higher education sector.

### **Acknowledgement**

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## SUB-THEME: New Norms and Emotional Well-Being

### **Fitter, Happier, More Productive: Post-pandemic Norms and Wellbeing in Higher Education**

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#### **Introduction**

On 12 March 2020, the Irish Taoiseach (Prime Minister) announced that all on-campus activities were to cease for two weeks. At the end of the day I packed up books, journal articles, recording equipment, put a spare monitor under my arm and headed home. Since then I have been briefly back to the office two or three times. For me, as for most teachers and students in the world (UNESCO, 2020), the last year and a half has been an unprecedented period marked by a complex set of challenges as we have grappled with, on the one hand, questions of access, digital divide, wellbeing, and equity, and, on the other hand, questions relating to policy, academic practice, and pedagogy (Teräs *et al.*, 2020).

This paper will examine key issues relating to the impact of the Covid-19 pandemic on staff and student wellbeing in higher education in the context of old and new norms, as well as point to some possible futures wherein the wellbeing of all in higher education can be appropriately safeguarded.





## Pre-pandemic Challenges: The Old Norms and Wellbeing

Before looking at the way in which the pandemic has impacted on higher education at the individual and institutional level, and related 'new norms', it is important to first look back at the pre-pandemic 'old norms'.

### For Staff

Globally, higher education has been undergoing wide-ranging change for at least twenty years, and with this has come evidence that academic staff experience significant levels of stress, burnout, poor work-life balance with working during evenings and weekends being commonplace, and that this has been getting worse over time (Kinman & Jones, 2008; Lee *et al.*, 2021; Wray & Kinman, 2020). Despite this, academic staff tend to report at least moderate satisfaction with their work, particularly with the intellectual stimulation they get from their work, opportunities to use their initiative, and with their teaching and supervision of students (Kinman & Jones, 2008).

*"I do want to have transparent career tracks for our academic with also the balance in the different tasks and focusing on your strengths and not on being what we call the five-legged sheep that has to be excellent in all the different domains, that is just not the way it works."* (Letschert, 2019).

This quote from a speech by Prof Rianne Letschert (Rector, Maastricht University) speaks to an aspect of academia common in many jurisdictions whereby academic staff are expected to demonstrate sustained excellence in teaching and learning, research (and research impact), and service categories. A 2019 article in *The Guardian* (Fazackerley, 2019) explores the impact on these workload expectations, quoting Prof Matthew Flinders (Sheffield University): "Academics are working longer and longer, and harder and harder, and they can't reach that top bar because it keeps moving... You must show excellence in teaching, in research, in research impact. We can't all be excellent all the time. These pressures are causing some people to struggle or sink".

Performance across many or all of these categories and subcategories of academic work is typically equated with the overall concept of academic excellence. In many institutions and jurisdictions, an objective, gender neutral, merit-based concept of academic excellence is put forward as a norm, or macro-cultural ideal, linked to institutional and/or national evaluation metrics and promotion. In reality, academic excellence, and one's ability to achieve it in terms of evaluation metrics, promotion, etc., is experienced as an evasive social construct that is subjective, gendered, and influenced by intra-organisational politics and power dynamics (Brink & Benschop, 2012; O'Connor & O'Hagan, 2016; Teelken, Tamimiau, & Rosenmüller, 2021).

### For Students

National policy for equal access to education (for example in Ireland [HEA, 2021] and Malaysia [Ministry of Education, 2013]), as well as international policy, for example UN Sustainability Goal 4, emphasise both the power of education to improve people's wellbeing and the fact that many sections of society are under-represented in higher education. Institutions must have cohesive, strategic approaches to student success and transitioning individuals, especially those from non-traditional backgrounds, into higher education (Brunton *et al.*, 2019). Providing transition supports can help students create a functional student identity, feel a sense of belonging, and minimise or eliminate psychological conflict as they enter a new and possibly alien context (Brunton & Buckley, 2020).

Recent decades have also seen an increase in the use of digital technologies in daily life and higher education; whether the idea that their use will be beneficial for learners is rarely questioned. For learners, there is a tension between the way in which digital technology can be both a facilitator of and a barrier to learner success. “Digital technologies can be both a barrier to and a facilitator of learner success depending on factors such as access to digital technologies, the degree to which learners have associated digital literacies, the quality of provided technologies, the digital literacies and practices of academic staff, and the related supports offered by the institution” (Brunton & Brown, 2020, p.3).

### **The Impact of the Covid-19 Pandemic**

The Covid-19 pandemic is having and will have a wide-sweeping impact on processes relating to the way people work and how organisations function (Kniffin *et al.*, 2021; Rudolph *et al.*, 2021). The impact on wellbeing has been explicitly recognised with numerous recommendations for managing the risk to wellbeing, for example from psychological societies (e.g. BPS, 2020) and other professional bodies (e.g. CIPD, 2021).

In higher education, the necessary, major changes in teaching and learning provision, and how it is managed, occurred in the context of already increasing work-related stress and associated mental health issues. Great flexibility was required from staff in rapidly adapting to online/emergency remote education and/or blended provision (Wray & Kinman, 2021). This was done while covering colleagues who were sick or isolating, pivoting to remote work themselves, dividing time between work and parenting/homeschooling responsibilities, etc. (Wray & Kinman, 2021; Bozkurt *et al.*, 2020). More broadly, it can be stated that educators and students have gone and are going through a great deal of anxiety during the pandemic (Bozkurt *et al.*, 2020).

Irish academics reported a negative impact on their work-life balance, digital fatigue, and work-related stress, along with anxiety about the possibility of the (re)introduction of austerity measures that would impact on workload, research productivity, etc. (Shankar *et al.*, 2021). In many ways, the pandemic can be seen as a continuation of a ‘crisis trajectory’ in higher education that already existed before the pandemic (Shankar *et al.*, 2021). A chief concern for many academic staff during the pandemic was the impact on their research activity and the potential knock-on damage this may have on future funding opportunities and career progression or promotion (Shankar *et al.*, 2021). This concern was more acute among those with young children, especially female academics for whom there has been a drop in first-author papers during the pandemic (Shankar *et al.*, 2021)

*“Distance education, remote teaching, and online instruction are not new approaches to pedagogy or curriculum design, but they have taken on renewed salience.”*  
(Williamson *et al.*, 2020, p. 108)



Academic staff can also see that the lessons learnt during the pandemic may result in a “fuller and sustained utilisation of digital pedagogies, opportunities for pedagogical experimentation, innovative assessment, and reflexive practice”, possibly addressing inequalities in access to learning materials and also access to educational institutions more generally (Shanker *et al.*, 2021, p. 5). There has been much constructive community support, both formal from international organisations (e.g. webinars from [EDEN](#) and [UNESCO](#), and the Commonwealth of Learning’s Guidelines on Distance Education during Covid-19 [COL, 2020]), institutions (e.g. [DCU’s Teaching Online Resource Bank](#) and [SUNY’s Emergency Remote Online Teaching Resources](#)) and projects (e.g. the #OpenTeach project, which provided open professional development in online teaching [Farrell *et al.* 2021a; Farrell *et al.* 2021b; Ní Shé *et al.* 2019; Ní Shé *et al.*, in-press]) and informal between individuals in terms of the sharing of online teaching tips and advice, resources, curricula, guides, etc. (Bozkurt *et al.*, 2020).

Reflecting existing digital divides, individuals, or indeed geographical regions, with good internet infrastructure and connectivity were in a privileged position during the pandemic. Likewise, for individuals, institutions, or countries where experience with online learning was established pre-pandemic, the pivot to online was effortful but not severely so. For those with less experience, an attempt to simply replicate classroom teaching using ‘live lecture’ technology was more common (Bozkurt *et al.*, 2020; Teräs *et al.*, 2020). The need to switch to online learning overnight placed a lot of psychological pressure on staff and students (Bozkurt *et al.*, 2020).

Due to the unequal expertise in delivering off-campus teaching and learning, education companies have stepped in as potential saviours with their edtech products in areas such as videoconferencing, educational content, remote proctoring solutions, etc. The adoption of such technologies during a period of crisis, as part of a ‘pandemic pedagogy’, has potentially long-term consequences for higher education (Teräs *et al.*, 2020; Williamson *et al.*, 2020). It has been difficult for existing concerns around issues of surveillance of students, the ethics of mandating particular forms of student engagement with technology, and data privacy that result from a dependency on edtech solutions to be heard, but those voices have been there during the pandemic (Bozkurt *et al.*, 2020). There have also been efforts during the pandemic to make education more open and flexible, for example UNESCO’s work in helping countries leverage resources in order to provide remote/off-campus education through hi-tech, low-tech, and no tech approaches in a way that addresses pandemic crisis teaching and that is compatible with long-term sustainable off-campus teaching and learning (Williamson *et al.*, 2020).

### Where to From Here?

It seems clear that the changes in higher education during the pandemic will result in short-, medium-, and long-term changes in the sector, such as an increased focus in off-campus provision. However, practices established for emergency remote education are different from planned off-campus/distance/online learning (Bozkurt *et al.*, 2020). Whether and how individuals and institutions now move to a more planned type of blended and/or online learning, creating ‘new norms’ will determine whether the post-pandemic landscape will be one that enhances staff and student wellbeing or detracts from it.

Institutions need to ensure that teaching and learning in different modes is supported by appropriate infrastructure and support ecosystems, building on the lessons learned and experience gained during the pandemic with strategic planning, resources, training, and recognition of expertise in this area in hiring and promotion processes (Shanker *et al.*, 2021). As institutions seek to move more modules or programmes online, they need to avoid ‘magic buttonism’ and acknowledge that: “It is not cheap; It is not quick; You need to invest

in building up your own staff expertise; It will bring additional problems that you didn't have before; Students will need different types of support" (Weller, 2020). Educational technology solutions employed should prioritise use of "free software and open formats, as well as the privacy and management of users' data", in order to avoid negative impact on student wellbeing, especially those from minority groups (Bozkurt *et al.*, 2020, p. 111).

*"I can be an effective scholar and leader only if I am healthy both physically and mentally."* (Whitney, 2019).

If new norms are established that simply pile new practices on top of existing work models, then the deterioration in staff wellbeing shown in the literature is likely. In order to improve and safeguard staff wellbeing, institutions and individual staff need to acknowledge and act on the evidence about the negative impact of practices such as excess work demand, working out of hours, sickness presenteeism, burnout, etc., on wellbeing, productivity, and costs to the organisation (Kinman & Grant; 2020; Wray & Kinman, 2021). More holistic, 'human-centric' models of productivity and academic labour, along with an overall more overt focus on staff and student wellbeing need to be prioritised in order to meet the needs of the post-pandemic context in a sustainable way (O'Brien & Guiney, 2018; Shanker *et al.*, 2021). The recommendations on wellbeing and productivity in the occupational health and work/organisational literature, reports on staff wellbeing, as well as the literature on effective, strategic development of online learning capacity need to be leveraged in this endeavour.

During the pandemic the theme of a pedagogy of care, affection, and empathy has surfaced (Bozkurt *et al.*, 2020), with more flexibility and understanding being offered to students. Students have appreciated staff who are empathetic, flexible, and have reasonable expectations (Veletsianos & Kimmons, 2020). This approach can safeguard students' emotional wellbeing, and there should be a focus on care and emotional/psychological support post-pandemic (Bali, 2020). Adopting a pedagogy of care, for example through engaging in open dialogue with students, has the potential of improving student wellbeing, especially amongst marginalised and disadvantaged students (Bozkurt *et al.*, 2020). Increased flexible, online learning options, especially if designed using open education principles, also have the potential to make access to education more equal to those who cannot attend full-time on-campus.

## Conclusion

This paper has examined key issues relating to the impact of the Covid-19 pandemic on staff and student wellbeing in higher education in the context of old and new norms, as well as pointing to some possible futures wherein the wellbeing of all in higher education can be appropriately safeguarded. The last year and a half has been an unprecedented period marked by a complex set of challenges that seem likely to change higher education in significant ways. However, solutions to many of these challenges already exist, whether it is the safeguarding of academic staff wellbeing in the context of a long deterioration in work-stress, burnout, and mental health, opening up education to disadvantaged members of society through open, flexible, online learning opportunities, or the ways in which institutions and individuals can strategically increase capacity in online and/or blended learning pedagogy.



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## Home Isolation: New Norms for Coping the 4<sup>th</sup> Wave of Covid-19 Pandemic in Thailand

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## **Introduction**

During the fourth (4<sup>th</sup>) wave of the COVID-19 pandemic in Thailand, starting from April 2020 up to the writing of this paper (August 2021), there was an obvious growth in COVID-19 infected cases; from the daily average of between 500 and 2,000 cases throughout the first (1<sup>st</sup>), second (2<sup>nd</sup>), and the third (3<sup>rd</sup>) wave, to averagely 20,000 cases. This spike upscaled Thailand from level 130 to 33 in the world ranking for the number of infected people. Day by day, the pandemic has a greater impact on individuals, families, social norms, and the economy all over the country. Some evidence significantly supported that the terrible event has led to emotional distress among Thais and healthcare workers in the new norm.

Supporting the proposition, most Thai hospitals are found overcrowded with COVID-19 infected cases, both in intensive care units and cohort wards. Overworked healthcare workers and space insufficiency for COVID-19 patients prompted an emerging alternative health policy in Thailand: Home Isolation. This new policy was mostly and specifically initiated for the green colour group, who are COVID-19 patients with no or mild symptoms. The purpose of home isolation is to transfer infected patients from hospitals and *hospitals* (hotels providing quarantine service to COVID-19) to the comfort of their residences. The standards of Home Isolation are designed to be in line with the National Health Security Office's reimbursement regulations following the guideline on COVID-19 treatment and care released by the Department of Medical Services.

Ultimately, home isolation seems to be the best alternative approach not only to prevent the spread of infection but also to keep the patients safe and comfortable in the living environment they are familiar with. This new policy may help to lessen their emotional distress from being infected with Covid-19 while reducing the overwhelming number of infected people in the hospitals, which is consequently expected to reduce the healthcare workers' emotional burden.





## Overview of Thailand Health Policy on COVID-19 Pandemic

Before further elaborating on the current 4<sup>th</sup> wave outbreak, please permit me to summarize the situation of the 1<sup>st</sup> until the 3<sup>rd</sup> wave of COVID-19 pandemic in Thailand. The COVID-19 pandemic initially sparked in the People's Republic (PR) of China by the end of December 2019. Before the infection spread outside of China, Thailand's Ministry of Public Health had already prepared relevant training for various teams; especially healthcare workers and essential health resources. According to the country report, the first case of novel coronavirus infection was a Chinese tourist on 13 January 2020 (Ministry of Public Health, 2021). COVID-19 peak cases climbed gradually from the 1<sup>st</sup> wave to the 2<sup>nd</sup> wave, then suddenly to the 3<sup>rd</sup> wave before it sharply raised to the 4<sup>th</sup> wave with serious impact.

In the 1<sup>st</sup> wave of the outbreak, the government commenced the Centre for COVID-19 Situation Administration (CCSA) led by the Prime Minister that continued to operate up to the moment. As a single command centre, CCSA started with employing a whole-of-government approach by managing responses to COVID-19 in a comprehensive manner and a perspiratory-voluntary approach. Fortunately, Thailand has managed to pass through the 1<sup>st</sup> wave of COVID-19. However, soon after, the number of cases increased again towards the 2<sup>nd</sup> wave in mid-January until mid-March 2020 with most of them being imported cases. At that time, the average number of new cases was 30 per day. Subsequently, from mid-March until mid-May 2020, the number of cases escalated to the 3<sup>rd</sup> wave with around 3,810 accumulative cases, mainly from local transmission (Ministry of Public Health, 2021). Nevertheless, the 3<sup>rd</sup> wave did not last long after as Thailand successfully hammered it down to the point of zero local cases since May 2020 (Sirilak, 2020). Thailand was also successful in controlling the pandemic throughout most of 2020.

With the above accomplishment, Thailand was then recognized as the top country by the Global COVID-19 Index (GCI) in making the most progress toward curbing the spread of the pandemic (Thai Health Promotion Foundation, 2020). The success was reviewed by the Ministry of Public Health and World Health Organization (WHO), who remarked:

*...strong leadership informed by the best available scientific evidence, administrative systems adapted to changing demands, a strong, well-resourced and inclusive medical and public health system. This includes early and effective management of patients in hospitals and a strong capacity to trace and quarantine contacts using Rapid Response Teams and Village Health Volunteers (WHO, 14 October 2020 News release).*

Now let's proceed to go deeper into each wave. Towards the 2<sup>nd</sup> wave in June 2020 and in the duration of 18–19 December 2020, up to 548 infected people in a single day were reported in a province of Thailand. The number of cumulative COVID-19 infected people had risen to between 10,000 and 30,000 cases (Rajatanavin, et al., 2021); affecting the mental health of Thais. Accordingly, research was conducted by Wongtim and Siritarungsri (2020) on the Impact of COVID-19 Pandemic on Professional Quality of Life and Coping Strategy among Nurses in Thailand. It was found that the overall professional quality of life of nurses was at a good level, especially with regards to their positive perspective. Thus, it can be deduced that nurses and healthcare providers worked hand-in-hand with a sense of pride to provide optimal care for patients; obtaining satisfaction from their duties in caring for patients while also considering themselves as a 'success' as nurses. However, the overall coping strategy was only at a moderate level.



In the meantime, the COVID-19 pandemic has also virtually impacted all aspects of society, including health, economy, and social norm. The pressures of fighting an invisible foe caused stress, anxiety, fear, burn-out, and other manifestations of mental strain. For that reason, the Ministry of Public Health established a Mental Health Crisis Assessment and Treatment (MHCAT) team that included physicians, nurses, pharmacists, clinical psychologists, psychiatrists, social workers, public health specialists, mental health officers, and other relevant personnel; to support the mental health of Thais and everyone else who lives in Thailand, (MOPH, 2021).

To care for the infected patients appropriately, Thailand's Ministry of Public Health with the support from WHO and the government of Japan has developed a 'new normal' model for health service delivery. This model aimed to strengthen the healthcare system and support healthcare workers for the period of the COVID-19 pandemic and beyond. Piloting the 'new normal' system was therefore started in the south of Thailand at Pattani province, on the border with Malaysia. The new normal medical services model – the 'Pattani model' is an innovation developed in the wake of COVID-19 (WHO, 11 August 2020). This model has been currently modified and applied appropriately to the context of other provinces across the country of Thailand.

As part of the model, COVID-19 infection is classified into three 'traffic light' groups – green, yellow, and red – based on the need for direct medical care and risk of COVID-19 infection: lowest, middle, and highest respectively. Patients who do not need to be visited with a healthcare facility will be provided with remote consultation via telemedicine, such as the Line application or face time, before having appropriate medicines to be delivered to them through the arrangement of hospitals or village health volunteers. Instead, for patients who need to visit healthcare facilities, arrangements were modified for face-to-face visits; considering their pathway circumstance and ability to maintain physical distancing. When more intensive care was required, services thus have been made safer for those patients. In rural communities, the work of village health volunteers has been central in combating and preventing COVID-19 in Thailand. They have continued to play a vital role and make important contributions in facilitating the provision of health services in the new normal.

Moreover, with the increasing number of COVID-19 infections, field hospitals and *hospitels* were established as alternatives to reduce the burden of regular hospitals. For those who do not need to be hospitalized, field hospitals and *hospitels* will be the answer for infected cases. Legally, they are viewed to serve as temporary healthcare centres. Also being a state quarantine facility, the contribution of those field hospitals and *hospitels* facilitated in reducing the risk of infection from health professionals, healthcare workers, and people in communities, as well as decreasing the number of hospital beds occupancy (Guidelines for Space Preparation in Case of Coronavirus 2019 Wide Spread Breakout: Field Hospital, 13 March 2020).

The 3<sup>rd</sup> wave of outbreaks in April 2021 started at entertainment venues before spreading widely. Daily infection cases in May and early June 2021, was around 2,000 to 3,000. It may seem alarming, but the situation was properly under control. However, the succeeding COVID-19 delta variant in the 4<sup>th</sup> wave outbreak was a shock. It appeared to be so contagious that it went all over Thailand in just a short period. From early July 2021 until the end of August 2021, the peak in average infection was 20,000 per day. There was also a day reporting 1.15 million infection cases (CCSA, 29 August 2021).



Needless to say, the 4<sup>th</sup> wave is much stronger and faster in its impact on individuals, families, and social well-being, which severely led to an economic crisis nationwide. No doubt, this stressful occurrence can affect people, including healthcare workers physically and mentally due to the growing number of COVID-19 patients in intensive care units and cohort wards; up to the point of having no space available for infected people in the hospitals and *hospitals*. Adding the burden, the limited number of healthcare providers forced them to do their work with a double load. Such condition of a crisis caused healthcare workers experiencing extreme fatigue, frustration, stress, burnout, and sadness; especially when they have to let some patients die due to the limitation of hospital beds (Thairath Newspaper online, 21 July 2021). Moreover, the Department of Disease Control, Ministry of Public Health reported on 11 July 2021 that many healthcare workers become infected every day; accumulating to 880 cases and 7 deaths (Department of Disease Control, 11 July 2021).

Under the situation of concern, the Thailand government decided to set up a new policy on home isolation and community isolation across the country since field hospitals and *hospitals* were already packed by the rapid rise in the new spread. In the meantime, it was necessary to prevent the existing patients from developing severe symptoms of the disease or worse; dying. Therefore, it is deemed essential to divert the patients from the green group to their own homes to save hospital beds for patients with symptoms, especially those of serious cases (Phanuphak, 30 July 2021).

### **Trends and Issues of the Home Isolation Policy**

Currently, home isolation has already been common in many countries, including Thailand. However, the negative impacts on COVID-19 patients must be made aware, such as tension and anxiety (Zhu et al., 2020). In European countries and the USA, it is already a policy for patients with mild symptoms to self-isolate at home (Dickens, et al., 2020). However, it is still argued that home-based isolation – which is reliant on personal compliance, will inevitably lead to increased transmission and personal emotional deviation. Nevertheless, research by Güzel et al. (2020) found that the act of staying at home for a household with no infected cases during the coronavirus outbreak had positive effects on the family well-being such as being able to explore new things together, be happy, and spend time effectively. Thus, it is presumed that a similar positive impact will occur during home isolation.

To reiterate, the definition of ‘home isolation’ in this paper is the isolation of infected people in their own homes. Therefore, orientation with additional physical and mental preparation must be introduced to infected patients who shall be isolated at home, as well as to the family members who live in the same house concurrently. Additionally, a study by Sacco et al. (2020) further suggested that it is necessary to set up an online social assistance service to verify the security of the family environment. This suggestion is appropriate to the new norms approach.

Taking into these considerations, home isolation is finally implemented as COVID-19 Pandemic’s health policy in Thailand. It is believed that home is an appropriate choice to keep infected people under that same environment they are familiar with while keeping hospital beds for infected people who required hospital treatments and care with financial support from the government.



Regarding the fees, the National Health Security Office (NHSO), one of the public organisations responsible to create health security for everyone, therefore stated 'Everyone who lives in Thailand is covered by Universal Health Coverage (UHC) and access to healthcare with confidence when needed' (National Health Security Office, 2020). NHSO will pay 1,000 Thai baht a day per head to cover three meals to be delivered by the patient's supervising hospital every day, and another 1,100 baht a day per head for medical equipment throughout 14 days at home. Healthcare Providers (HCPs) responsible for homicidal ideation (HI) did not only support physically but also mentally to ensure that the patients are safe both from the COVID-19 virus and mental breakdown.

### **How to Keep COVID-19 Patients at Home Isolation Safe**

Home isolation would only target people in the green group – those showing no or mild COVID-19 symptoms. However, The Department of Medical Services (DoMS) has also proposed other criteria for home isolation patients, such as ageing below 60, having relatively strong health, not being diagnosed as obese, or not suffering from underlying conditions. Throughout the isolation period, the infected people must not receive visitors or come into close contact with any elderly or children. If they inevitably share a house with someone else, they must stay in a separate bedroom and stay away from shared spaces.

Doctors and nurses have assured that the patients and their families would receive good and standard holistic care at home, even though they may not be able to be admitted to the hospital for treatment. The standard of home isolation is made to be in line with the National Health Security Office's reimbursement regulations and guidelines by the Department of Medical Services on COVID-19 treatment and care.

However, when people know that they caught a COVID-19 infection, they are prone to be fearful, anxious, mind-withered and disheartened. So, how can we help them in this situation? Let us examine the experiences from Sukhothai Thammathirat Open University (STOU), Thailand, that recently held an online seminar on 'Taking Care of Your Health During COVID-19 Pandemic: Sharing Experiences at Home Isolation and in The Hospital'. Four presenters shared their experiences, including two former COVID-19 patients, a nurse, and a physician, interviewed by Dr Saowalak Chawpontong, MD, Assistant Director of Phra Nakhon Si Ayutthaya Hospital. She concluded some interesting issues related to new normal and emotional well-being as the following.

The first presenter expressed that:

*I might catch up the infection from my boyfriend during having lunch, and what will happen with me next? I am so worried about my family, my mom and youngest nephew. If I got infected, perhaps, they could be infected by me. I was also worried about how to stay at home and who would take care of myself. This made me emotional stress... I, finally, really like to isolate at home because of HCPs took care myself very well via Line application and face times. I did not stay alone, HCPs, always beside me to make me sure if something wrong with me, I can contact them.*



Meanwhile, the second presenter disclosed that:

*I might catch up from my customer. I did not receive Covid 19 vaccination. I was worried about myself. I thought that I might be the worst case. While waiting for bed in the hospital, I could imagine myself what will happen with me. I was also worried about my wife and daughter. They might get the infection from me. Every bad thing came to my head. A few days later, I was admitted in a hospital for a few months and went back home for rehabilitation... I was feeling better when came back at home...Although I had no experience (in) home isolation but I understood when I was sick, I need my family support and live in the same environment. If I could choose one, I wished to isolate at my home, although HCPs would take good care of myself.*

Both examples above have proved why infected people prefer to isolate themselves at home. Another interview was with a nurse responsible for taking care of COVID-19 patients in home isolation. She explained that:

*My first contact with the infected patients via line application, the patients' voice was excited, worry about themselves and unsure if they can take good care of themselves. I have to communicate softly in order to give them calm down and understood how to stay at home alone but safe, as well as raise them more confidence on themselves and our HCPs' team to look after them... I regularly monitor them 2 times a day, calling them and check her temperature and blood oxygen. I always supported them and give them more confidence to stay alone but safe. If the patients had something wrong or got worst, they could contact us a round the clock. We found that 80 percent getting better and without COVID-19 infection by 14 days at home.*

However, in the current situation, the nurse further informed that:

*We found that there was a number of family members infected and stayed the same house. I had to look after all of the family members and further suggested them to separate bed in order to keep social distancing, always wear masks, and often clean their hand properly. Finally, the family members were mostly safe with COVID-19 test negative. I could believe it. Therefore, I am very proud of my new duty.*

Likewise, Dr Chawpontong interviewed a physician leader in charge of the home isolation model at Phra Nakhon Si Ayutthaya Hospital, a regional hospital operating under Thailand's Public Health Ministry. The model was initiated and led by a local administrative organization in collaboration with community hospitals, primary care units, as well as community and family around Phra Nakhon Si Ayutthaya Hospital's responsibility. The whole process involves setting up and managing the community's isolation facilities.

Adhering to the hospital guidelines, the hospital staffs provide home-isolated patients with medicines, meals, aid packages, thermometers, and finger oximeter (a device that read the patient's oxygen level). The patients are also offered virtual consultation directly with doctors due to the limitation of nurses. To monitor people's symptoms remotely, patients are advised to measure their temperature and oxygen level, before sending the results to assigned hospital staff via Line chat twice a day routinely. Every patient also fills up a symptom reporting form, whereby their information is linked to the hospital database that classifies patients based on the severity level of their symptoms. This system helps hospital staff to notice the patients with worsening conditions and find hospital beds for them accordingly.



However, there are issues raised by doctors to the authors:

*Home isolation model is a new approach in Thailand community, some people are afraid and uncomfortable to keep and treat infected patients at home. A challenging issue for health care and community care teams is how to communicate with people surrounding infected patients to promote understanding in the process of treatment and the need for caring and supporting mental and emotion from their families and communities as well.*

These remarks indicated that the success of the model heavily relied on cooperation from every administrative level including village health volunteers and healthcare workers at the primary care level who are the heart of home isolation.

### **Declaration**

We declared that we have written entirely the original works. Some tasks or words or quotations of others have been cited and included in references.

### **Conclusion**

In conclusion, we truly believed that the home isolation model is designed the best way for people either suspected or confirmed cases in Thailand – a practical alternative to treat and care for infected people via telemedicine. This model is also appropriate with the current 4<sup>th</sup> wave of COVID-19 breakdown during the digital surge era. This proposition was supported by Phanuphak (2020, July 30) who argued that the current method will gradually improve the hospital bed shortage situation, and Thailand will soon see a drop in the number of COVID-19 deaths and new infections. On the other hand, preparing mentally only for the infected people may be insufficient. Healthcare workers need to prepare the patients' family members and neighbours as well to keep their spirits up and encourage them to keep supporting the patient throughout the home isolation period. Furthermore, without involving the patients' close social circle, the infected may be emotionally affected by the stigma of people who do not understand the period of being infected by COVID-19. Other than that, home isolation will help Thailand economically due to it being low cost, with only 14,000 baht needing to be paid by the Thailand government. Finally, home isolation also eases social distancing between healthcare workers and infected patients, reducing infection risk and emotional stress from maintaining the standard operating procedure (SOP). Inclusively, this model was proposed as a better approach to raise healthcare workers and people towards emotional well-being throughout new norms.

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## The Emerging Challenges of New Academia in the Covid-19 Pandemic

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### Introduction

The Covid-19 pandemic crisis around the world is currently in its second year since the first outbreak was discovered in Wuhan, China, in December 2019. According to UNESCO, higher education institutions (HEIs) were closed completely in 185 countries in April 2020, affecting more than 1,000 million learners around the globe (Marinoni *et al.*, 2020). The virus spread so quickly that the World Health Organization (WHO) declared the Covid-19 a global pandemic on 30 January 2020. To mitigate the spread of the virus, governments around the world have imposed social distancing measures, lockdowns, and cessation of personal contact outside immediate households due to health and safety reasons (Mishra, Gupta & Shree, 2020).

The disruption caused by the current Covid-19 pandemic is unprecedented, and since then it has brought massive change and affected all aspects of human life around the globe, including education (Krishnamurthy, 2020). Schools, colleges and universities throughout the world have had to halt face-to-face academic activities temporarily in order to break the chain of Covid-19 infection. Nobody expected the pandemic would hit the world so seriously and culminate in various new norms in society. Wearing a mask and maintaining social distance in public have become mandatory and there is now a 'new normal' in other aspects of human life as well.

The Covid-19 pandemic has had a great impact on university teaching and learning, which was not exempted from the implications of the new normal (Bao, 2020). More than 25,000 universities had to drastically change their traditional teaching and learning approaches from face-to-face to online learning due to the viral outbreak. Mandatory classroom attendance had to be replaced by fully online lectures to mitigate the spread of the virus. Malaysian universities too were left with no option but to switch from the traditional mode of teaching and learning to a new mode of online teaching and learning. In fact, this is the first time in the history of Malaysian academia that students who obtained places in public and private universities were barred from registering physically on campus.



## **The Fourth Industrial Revolution and the Mosaic of Covid-19**

Back in early 2019, almost everyone was excited about the approaching Fourth Industrial Revolution (4IR), which was then the talk of the town. This new technological era became one of the most debated topics amongst leaders, industry players, policymakers, politicians, and academic leaders around the world. Everyone was ready to move into an era of integrated technology that combines different types of scientific knowledge, virtual technologies, augmented and virtual reality, and the Internet of Things (Jensen, 2019). However, the whole world was taken by surprise when the Covid-19 virus was first detected in December 2019 in Wuhan, China. Nobody expected the virus would have such serious repercussions that it would entirely transform the whole spectrum of human life. This prompted the WHO to finally declare Covid-19 a global pandemic on 30 January 2020.

Malaysia has not been exempted from the Covid-19 outbreak, and was badly hit by the spread of the virus that resulted in a nationwide lockdown that started in March 2020. Since then, Malaysians have been mandated to work or study from home during the lockdown period. Inadvertently, the more than 500 days of total lockdown since March 2000 has caused major disruptions to the whole spectrum of society. Business industries were forced to shut operations, leaving more than 700,000 people unemployed. Offices, schools and universities were also closed, leading to employees and students working and learning from their respective homes.

Studies reported that the Covid-19 pandemic has disrupted family relationships, lifestyles and structures, social interactions, and communication, which in turn led to rising cases of mental health and psychological issues in the community. Low-income families have been the most badly hit as they struggle to cope financially and adjust to the new lifestyle. The mosaic of Covid-19 pandemic is real and has caused numerous problems to the country's health system as well.

## **The Covid-19 Pandemic and the University**

The Covid-19 pandemic has affected over 25,000 universities around the world. Without a doubt, it has had massive and complex repercussions to teaching and learning, involving more than 250 million higher education students around the world. This number is expected to rise to 524 million students by 2040 (Krishnamurthy, 2020). Malaysian public and private universities have also suffered; the pandemic has drastically affected a new normal for teaching and learning activities. Consequently, many universities around the world, including in Malaysia, have had to shift from face-to-face teaching and learning to online teaching platforms.

Since the start of the pandemic, online learning has gained instant popularity, as it offers a flexible way of learning, especially for adult students. Students are beginning to become more in tune with the use of technology, and online learning has become another flexible approach to university teaching. However, the new normal of online teaching and learning has posed many challenges to the new academia.



## Six Challenges of Online Teaching and Learning

It is likely that the online teaching and learning approach introduced during the Covid-19 pandemic would pose new academic challenges for institutions around the world for years to come, especially as it is uncertain when the Covid-19 pandemic will end. Therefore, this paper discusses six challenges of online teaching and learning faced by new academia by universities during the Covid-19 pandemic.

Firstly, the lack of internet access is one of the major challenges in online teaching and learning. Despite the excitement in shifting to online learning in major universities, this poses major challenges to small- and medium-sized universities from underdeveloped and developing countries. Lacking financial insulation, the majority of these universities face difficulties in the shift to fully online teaching and learning, especially due to lack of Internet access and Internet-related infrastructures. In addition, a low standard of living among the majority of their students means many are unable to own personal computers, laptops or access the Internet. Repercussions arising from the pandemic will bring an era of radical technological transformation with accelerated digitalisation to the worldwide higher education systems (Krishnamurthy, 2020). Therefore, governments of developing countries must seriously think about providing adequate Internet access and technological infrastructures to needy students due to Covid-19's disruptive effects on higher education.

Secondly, online teaching and learning has also caused psychological stress to students. Many studies have shown that due to the stress of lockdown in the home environment, students have reported lack of privacy, poor tutor-student relationships, and feelings of alienation while going through online learning activities (Liang *et al.*, 2020). A recent study by Mohd Tajudin Ninggal *et al.* (2020) reported that new students felt emotionally stressed while studying from home. Because these students did not have the opportunity to be physically present on university campus, they reported feeling alienated and lonely as they had to study alone from their own homes. They were not able to physically meet and communicate with their new course mates and professors.

The third challenge involves the learning pedagogy, especially if it involves technical and practical subjects, such as those in engineering and medicine. The fully online mode may not be able to address the requirements needed for subjects that require more hand-on activities. Studies have shown that problems arise when students need to undertake online scientific experiments, which are usually performed in a laboratory (Kennepol & Shaw, 2010). Therefore, the university needs to look into introducing an online learning approach that could address the need for laboratory or hands-on experience in engineering, medicine or other similar disciplines.

The fourth challenge involves the students' ability to acquire and master online study skills. Previous studies have shown that students reported facing major challenges in adapting to online learning because they lacked online study skills. Students who are used to the traditional face-to-face approach reported experiencing difficulties in acquiring proper online study skills (Aguilera-Hermida, 2020). A social media-savvy student might find it difficult to study online if she does not have the required study skills, because studying is totally different to surfing social media. Lacking online study skills will affect student learning and may lead to feelings of low self-esteem and self-efficacy. Additionally, these students would not be able to communicate effectively with their classmates and e-tutors during online classes. Importantly, these students will need proper coaching and guidance from their e-tutors in order to effectively experience their online studies.

Fifthly, a university's online system poses challenges to the students too. Therefore, the university's online system must provide quality education in a scenario of digital transformation, disruptive technological innovation, and accelerated change in the educational framework, especially during the pandemic. The emergence of disruptive innovation brings risk and uncertainty, but it also carries opportunities, as well as talent and innovation to the education system (Dwivedi *et al.*, 2020). However, there are still many universities lacking the relevant e-learning capacity and struggling to build their e-learning systems (Govindarajan & Srivastava, 2020). It has always been a challenge to engage the students' technological resources, as some of them may only have scarce resources, learning contents, and structures. The switch from a conventional mode to the online system has been a drastic one. It would thus be a challenge for universities that are still not ready to move forward in introducing online systems that could ultimately benefit their online learners.

Finally, there are issues of academic integrity during online learning. Academic dishonesty is deeply entrenched in the higher education culture and it is an even greater challenge in the shift to online approaches. It is not surprising that questions of academic dishonesty in online learning may arise when students are often separated in terms of space and time. Studies have showed that between 30 to 60 percent of undergraduate students engage in some form of plagiarism at some point during their time in college (McCabe, 2016). Thus, the university has to find ways to minimise the prevalence of dishonest practices during the pandemic. Studies have showed that plagiarism and online cheating can happen through academic file-sharing and online searches. Commercial, third-party exam proctoring is another factor that may lead to cheating. Therefore, it is important for the university to find ways to address these issues during online study and assessment. It is crucial for the university to ensure that the standard and quality of higher education are not jeopardised in the online learning environment.

## Conclusion

One of the sectors undergoing dramatic digital transformation during the Covid-19 pandemic is higher education. Whether achieved synchronously or asynchronously, student engagement remains a real challenge. The university has to introduce policies to address online learning challenges during the pandemic, and also post-pandemic times. The pandemic has given us not only challenges but also opportunities. The disruptive impact of Covid-19 and the availability of digital technologies that can support online learning present an unprecedented opportunity for the transformation of higher education at a global level. The digital world is real and alive, and the phenomenon of online learning is here to stay. A paradigm shift has occurred in university education after close to two years of online teaching and learning. Online teaching has gained relevance and probably ensured its continuance even after the Covid-19 pandemic. As this transition to online learning was hasty and forced by extenuating circumstances, the various parties involved in the learning processes (i.e., students, professors, universities) have encountered barriers in adapting to this new setting. Universities must be aware of these barriers and mobilise the right resources to overcome them in the short-term by paying special attention to the digitalisation of learning processes and offering specific technical training to professors, administrative staff, and students. The shift to virtual higher learning at the global level in the future is still unknown. However, it is clear in the current scenario that universities should develop a comprehensive and integrated combination of face-to-face and online learning to harness the potential of the technological tools available to meet students' expectations and enhance their learning experience in the current digital environment. Interestingly, big data in higher education might be the way forward in finding solutions to address emerging challenges and opportunities of new academia in the Covid-19 pandemic.



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**SUB-THEME:**  
Effective Online Learning







# **An Online Training Module for Micro Suturing Incorporating Motor Imagery and Mental Practice – A Design and Development Research Study**

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## **Abstract**

*There have been reduced opportunities for surgical skill acquisition due to the COVID-19 pandemic and regulated training hours. Despite these challenges, self-regulated learning allows trainees to learn continuously, and one form of this is through mental practice and motor imagery. The aim of this study was to design and develop an online basic micro suturing training module for skill acquisition for self-regulated learning using a low-fidelity rubber glove model. This study utilised a design and developmental research framework and Mayer's multimedia theory guidelines. The primary author created an online instructional module on micro suturing based on an instructional design model. This module was then evaluated in a pilot study comparing the new training model to traditional methods of learning using an experimental design. This study describes the use of Design and Development Research to create a new model for surgical skill training and a tool for the production of instructional materials and learning product for online learning. The product was evaluated using an experimental design and showed a significant effect on the quality of motor skill outcome and the richness of motor imagery using the resource developed in the research. In summary, this study describes the methodological approach of a design and developmental framework to create an online training module for micro suturing, which has significant utility in hand surgery.*

**Keywords:** *Micro Suturing, Mental Script, Mental Practice, Motor Imagery, Deliberate Practice*



## Introduction

A competent surgeon requires an estimated 15,000 to 20,000 hours of training and practice (Purcell Jackson & Tarpley, 2009). Even this estimate is still assessed to be insufficient (Sheikh, 2017). In many countries, training hours for surgical residents have been regulated to prevent surgical practice errors caused by fatigue or sleep deprivation. While there are comparatively long training hours in the United States (80 hours per week), in contrast, Europe (48 hours per week), Australia, and New Zealand (60 hours per week) utilise fewer training hours (Marriott *et al.*, 2011; O'Grady *et al.*, 2010). This has resulted in the reduction of training hours available for surgical trainees.

The recent global pandemic has exacerbated the problem with reduced surgical training hours. COVID-19 has affected surgical training in most domains. Numerous guidelines released during the pandemic required postponement or cancellation of elective surgical procedures and reduced the opportunities for surgical skill acquisition and practice. The cessation of all in-person teaching and clinical teaching with live patients has also affected the clinical teaching of surgical knowledge and skills.

With these challenges, education in health professions, including surgical training, has adopted online learning as it provides convenience, easy access, low cost, and the potential for enhanced interaction between teachers and learners. However the vulnerability of learners with barriers related to Internet access should be noted (El Boghdady *et al.*, 2019). The success of an online programme depends on the quality of the online educational resource, either in the form of an open-access learning management system or a universally accessible video streaming platform for instructional videos, allowing for easy on demand and self-paced access (Omar *et al.*, 2020).

This alternate means of learning, augmented with teleconferencing and webinars has been demonstrated to be useful (Blanco-Colino *et al.*, 2020). In another review, easy access to intraoperative videos, virtual reality, operating room simulations, and interactive surgical platforms facilitated occurrence of online learning in the absence of surgical and operating room opportunities (McKechnie *et al.*, 2020). This has been made possible with advancements in technology and mobile broadband coverage. Integrating innovative technology and recommendations into the current surgical programme allow the future-proofing of surgical training in the event of a reduced opportunity for surgical practice and skill acquisition in the clinical environment (McKechnie *et al.*, 2020).

One crucial skill required by most surgical specialties is micro suturing. This facilitates the manipulation and approximation of small structures using an operating microscope and micro instruments, and requires the skill to manipulate and handle micro instruments under a magnified operating field and perform micro suturing. With the current challenges in time and opportunity for surgical training, there is a need for some form of self-regulated learning for surgical education. Online resources, such as surgical videos, allow self-regulated learning to occur asynchronously and remotely. While there has been recent interest in the standardisation of training and education and development of a modular learning system (Myers *et al.*, 2013), there has been no research on the effectiveness of mental practice and motor imagery in surgical skill acquisition based on a self-regulatory learning framework. Motor imagery is a multisensory cognitive process, involving any one or a combination of sense modality (such as visual, auditory, motor, and olfactory) for multiple purposes, in which perceptual information is simulated and experienced in the mind without external sensory input – the imagination of a phenomenon with all its sensory details (Pearson *et al.*, 2015). Mental practice as a systematic rehearsal of a motor action in the mind (covert) without an overt physical movement can be used for skills training (Slimani *et al.*, 2016; Smith & Wakefield, 2013). It is a cognitive process that can activate stored information to



such an extent that physiological and behavioural responses are triggered (Ji *et al.*, 2016). Expert performance of a motor task requires deliberate practice (defined as repeated practice in motivated individuals receiving regular reinforcement and feedback) and it is necessary to continue doing it to maintain a level of mastery (Ericsson, 2004).

## Research Objectives

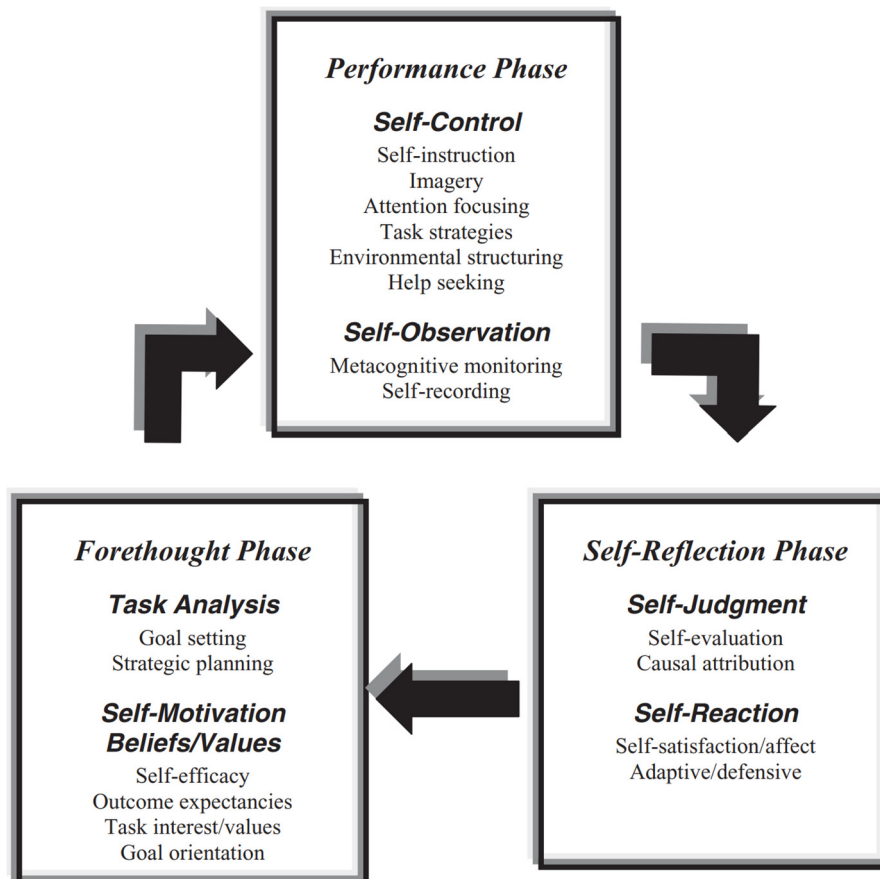
The aim of this study was to design and develop an online micro suturing training module to promote self-regulated learning using a low-fidelity rubber glove model guided by the instructional design principles. For this purpose, institutional ethics approval was obtained (NHG DSRB Ref: 2018/00077).

## Literature Review

The theoretical framework for continuous learning is self-regulated learning (SRL) (Figure 1). SRL perceives learning as “an activity that students do for themselves in a proactive way”. It is a process by which the learner plans, monitors, and evaluates his learning to achieve his learning objectives based on the strategies he developed himself (Safsouf *et al.*, 2019).

**Figure 1**

*Phases and Sub-processes of Self-regulated Learning*

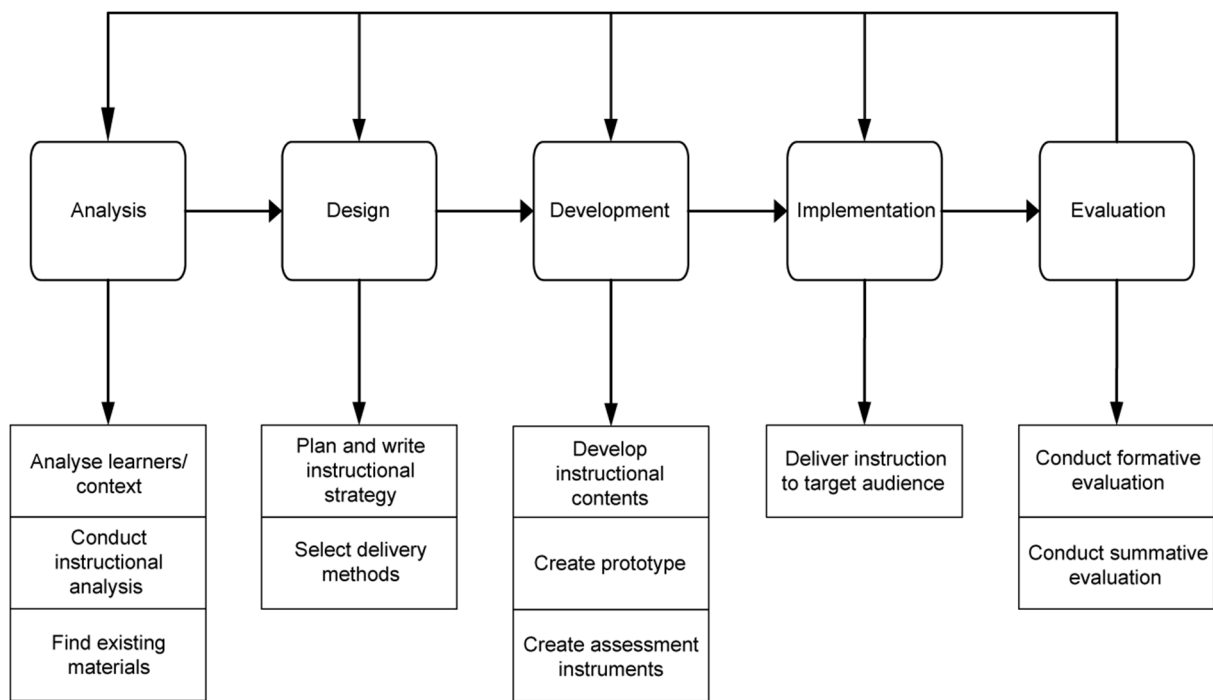


Mayer’s multimedia learning theory defines principles in using text, image, and audio to improve knowledge and skills acquisition. The theory explains how people learn through multiple sensory stimuli rather than a single channel such as text, and empirical evidence has shown that adding images and videos to words improves learning outcomes (Mayer, 2019). Multimedia learning theories indicate best practices in designing multimedia teaching materials (Mayer, 2010).

Instructional design and technology (IDT) is the science of instruction, providing a systematic and evidence-based methodology for creating instructional materials for effective teaching (Khalil & Elkhider, 2016b). A commonly used IDT model for developing learning programmes is the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model (Khalil & Elkhider, 2016a). The ADDIE model (Figure 2) includes assessing learners’ needs, defining the ultimate instruction goals, analysing task and content, planning assessment and programme evaluation to ensure teaching quality.

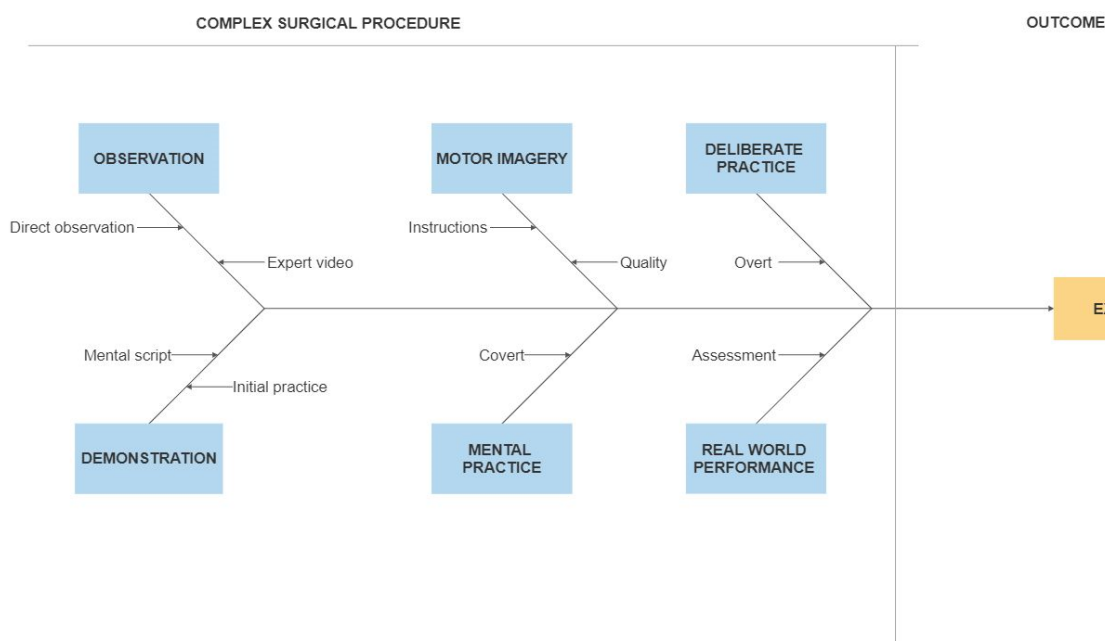
**Figure 2**

*The ADDIE model – phases involved in each step*



The current body of knowledge on instructional programmes for psychomotor skill acquisition to an expert level can be (Frank *et al.*, 2014; Schuster *et al.*, 2011) summarised in the four components included in Figure 3:

- Observation of the skill demonstrated by an expert.
- Internalisation with motor imagery.
- Mental practice and repetition.
- Physical deliberate practice.

**Figure 3***Model for surgical skill training*

## Research Method

This study used the design and development research framework dedicated to creating new knowledge and validating existing practice in instructional design. This study aimed to design, develop, and evaluate an online instructional module on micro suturing guided by Mayer's multimedia learning theory and incorporated a mental script for mental practice of micro suturing.

### Design and Development of the Online Module to Teach Micro Suturing Skills

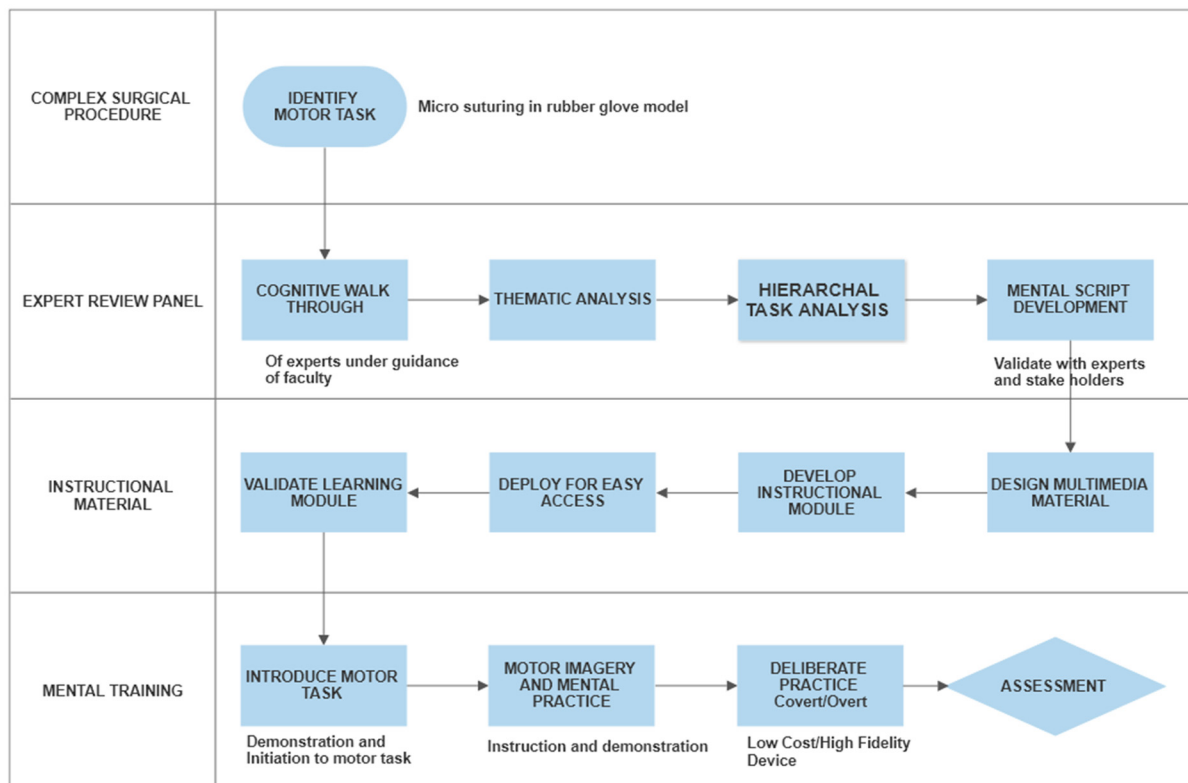
Using the model for surgical skill training as a guide (Figure 3), the key tasks for micro suturing were identified by the primary author (VR), and were listed as the expected learning outcomes with clearly stated essential tasks and competency levels. An expert review panel was identified and invited to perform a think-aloud cognitive walkthrough of these key skills. With the results, VR and HN conducted the content and task analysis, and developed a detailed mental script for micro suturing. The mental script was incorporated into the instructional materials of the online module. The development of the online module was based on the framework of multimedia learning of the surgical procedure (Mayer, 2010). This online module consisted of instructional videos of the expert surgeons' live demonstration of micro suturing, with the concurrent narration of the mental script.

The participants in the experimental phase used this online module to practice. The combination of the video and mental script allowed the participants to learn from expert surgeons anytime and anywhere. This online module was augmented with deliberate practice using the low-cost rubber glove practice model.

The online module allowed trainees to observe expert performance, followed by mental practice with motor imagery, and then deliberate practice to reach the mastery level, as summarised in the tool for developing instructional materials in Figure 4. The training module created was then evaluated in a pilot study using an experimental design (Figure 4).

**Figure 4**

*Conceptual framework for this study*



**Evaluation of the Online Module**

To evaluate the online module, this study was designed using the process in Table 1. It includes the evaluation on 1) the effectiveness of the module against existing training programmes, 2) ease of use for this module, 3) usability.

This pilot study evaluated the new training module by comparing it with the current method of reading a manual and observing experts performing the surgery. Participants were selected via opportunistic sampling among volunteer medical students from two medical schools in Singapore. All participants had completed a basic suturing course and had not performed micro suturing procedures prior to the study. None had prior exposure to mental practice strategies in any domain. The exclusion criteria included non-consent, failure to understand and comply with new training techniques, and failure to meet the inclusion criteria. A sample size of 11 was chosen based on previous studies and available resources for this study.

**Table 1***Research Design Matrix*

	Objectives	Questions	Methods	Variables	Analysis	Conclusions
1	To evaluate the effectiveness of this module against existing training programmes	Does the online module provide the opportunity for authentic practice of surgical skills?	Experimental study Randomised after participant selection	Performance, effectiveness, and efficiency. SMaRT, MIQ, time taken to complete the task	Performance	Endorse module with MIMP
2	To evaluate the ease of learning of this module	Does the module allow for ease of learning basic micro suturing?	Survey	Cognitive load (NASA-TLX)	Cognitive load (NASA-TLX)	Recommend MIMP incorporation in the programme
3	To evaluate the usability of learning of the new module	Is the module usable in the real world?	Survey	Usability attributes (SUS)	Usability analysis with SUS	Recommend use of MIMP in module

Legend: MIMP (Motor Imagery and Mental Practice); SUS (System Usability Scale); NASA-TLX (NASA Task Load Index); MIQ (Mental Imagery Questionnaire); SMaRT (Stanford Microsurgery and Resident Training Scale Instrument)

The dependent variables were:

- The surgical performance (novice to expert) of the standardised procedure by the participants was measured by the validated assessment tools the Stanford Microsurgery and Resident Training (SMaRT) Scale Instrument (Satterwhite *et al.*, 2014). The participants were required to perform five micro suturing on a rubber glove model, which was recorded to evaluate the technical skills and efficiency of the micro suturing. Three blind, independent reviewers (expert microsurgeons with more than five years' experience) who have been trained to use the SMaRT scale instrument evaluated these videos and gave grades on a five-point scale based on the instrument handling, respect for tissue, efficiency, suture handling, suture technique, quality of knot, final product, the flow of the operation, and overall performance (Satterwhite *et al.*, 2014). The average score was tallied from all domains assessed in the SMaRT scale instrument.
- Cognitive load measurement with the NASA-Task Load Index (NASA-TLX) instrument (Hart & Staveland, 1988): NASA-TLX is a validated tool for measuring and conducting a subjective mental workload assessment and is the most widely implemented self-report tool for measuring cognitive load in surgery (Dias *et al.*, 2018). It consists of six questions that evaluate mental demand, physical demand, temporal demand, performance, effort, and frustration. The average rating for the six items (Grier, 2015) was calculated. Lower scores indicate a lower workload.



- Time taken to perform the required motor task of completing five sutures in a rubber glove model was measured from the beginning of suture-grasping by the participants until the last suture was cut.
- Ease of use of the module was measured using the System Usability Scale (SUS) (Brooke, n.d.): SUS is a widely used validated 10-item tool for measuring the usability of a system (Brooke, n.d.). The items were rated on a Likert scale of one to five, in which “1” indicated complete disagreement and “5” indicated complete agreement. The total score was converted to values ranging from 0 to 100, in which a higher score indicates better usability with a threshold of 68% (Lewis & Sauro, 2009). The SUS responses were analysed for reliability using the Cronbach’s alpha coefficient (Cronbach, 1951).
- Quality of motor imagery was measured using the Mental Imagery Questionnaire (MIQ) (Hart & Staveland, 1988): The MIQ is a validated self-report questionnaire designed to capture the participants’ experience of their mental imagery (Arora *et al.*, 2010). It contains eight items that measure visual and kinaesthetic imagery and confidence. The MIQ utilised for this study is shown in Appendix 1.

The independent variable was the novel micro suturing training module intervention incorporated into an open educational resource (a digital video of the standardised procedure performed by an expert with a narration of the mental script), with instruction and training on motor imagery and mental practice. The module was compared to the current standard of reading a manual and observing experts performing the surgery. This served as a role modelling for surgical trainees through observing model behaviour and noting the consequences of that behaviour (Bandura, 1963).

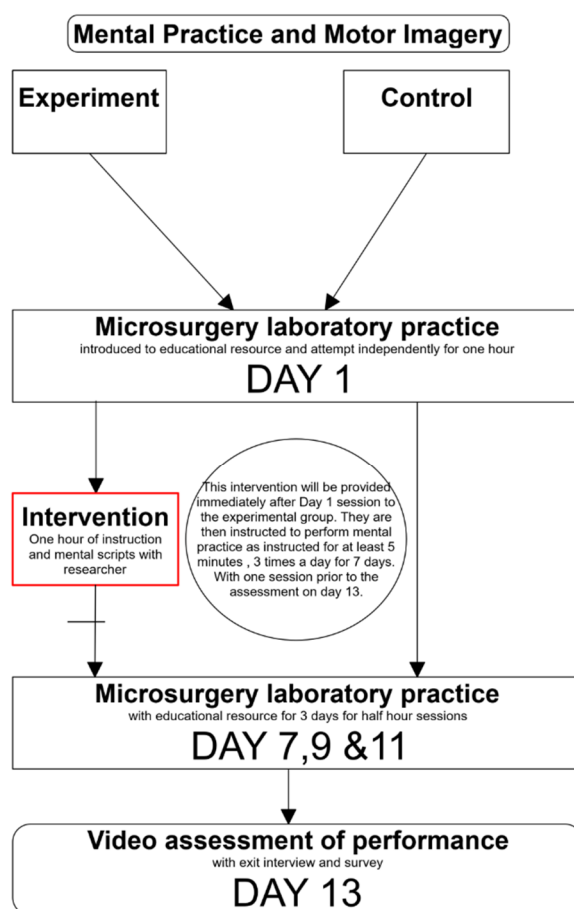
Randomisation was performed using a simple card selection from a covered box after the participants were selected and had consented to participate.

All subjects participated in a didactic lecture on Day 1 of the experiment on the use of the microscope, micro instruments, and placing and tying five micro sutures in a vertical incision on a rubber glove using an 8/0 micro suture with magnification (Chan *et al.*, 2007). The lecture was in the form of a video outlining the technical steps for using the microscope and micro instruments, with accompanying videos demonstrating the correct operative technique for each step of placing the sutures and knot-tying using the micro instruments and an 8/0 nylon suture. The participants spent one hour in the laboratory during this phase (Figure 5).



**Figure 5**

Diagram of the pilot experiment using the learning module for micro suturing



The control group had 30 minutes of researcher contact time. They were instructed to watch a video explaining the technical steps of using the microscope and micro instruments. The accompanying generic video demonstrated the correct operative technique for each step of placing the sutures and knot-tying using the micro instruments.

The experimental group received instructions on using the mental script immediately after Day 1. They were instructed to practice this technique for five minutes, three times a day for seven days before the day-seven session. The primary author (VR) used the validated MIQ for manipulation check to ensure the participants have achieved motor imagery proficiency. Participants in the experimental group completed the MIQ before performing each micro suturing session (immediately after receiving the mental practice). This measure allowed the researchers to capture the quality and richness of their mental imagery experiences.

Participants from both groups were then asked to return to the laboratory to deliberately practice micro suturing skills on days 7, 9, and 11.

Finally, two weeks after the baseline testing (Day 1), both groups performed the micro suturing task in the laboratory. Videos of their suturing were recorded while performing the skill using the operating microscopes that typically had a field of view of 6cm X 10cm with magnification capabilities from 2X to 10X. At the end of their tasks, the groups immediately completed the NASA-TLX and SUS surveys.

### Statistical Analysis

Statistical analysis was performed on STATA Version 16.0 (StataCorp, College Station, TX, USA). Continuous data were presented as means and standard deviations (SD). As the performance measures were not normally distributed, the Mann-Whitney U test was used. The significance level was taken as 0.05 for all tests.

## Findings

### Design and Development of a Module for Basic Micro Suturing

As indicated in the table below, five experienced hand surgeons (more than five years in practice as consultants/specialists) were recruited via purposeful sampling as experts for the review process. The panel was also involved in the creation of the mental script and the development of the training module.

**Table 2**

*Expert Review Panel Demographics*

Surgeon	Age	Sex	Years of Practice
1	62	M	35
2	46	M	13
3	40	M	7
4	47	M	17
5	68	M	41
Mean	52.6		22.6
Range	40-68		7-41

### Analysis of Key Tasks

A quantitative analysis of the commonly performed procedures was conducted from a previous study (Sim *et al.*, 2019). The expert panel used this to determine the index procedure (micro suturing) for this research and the motor skills with various tasks and subtasks required to perform micro suturing (Sim *et al.*, 2019). For the purpose of this study, the procedure of nerve grafts and repair was chosen by the expert panel as the index procedure. The basic operative motor skill required to perform this nerve repair surgery is performing micro suturing using the microscope with an 8/0 needle with a diameter of 150 microns (0.15 mm). Mental script development was completed as per Figure 3 of the conceptual framework.



### Designing and Developing the Module

A storyboard was used to create the expert video modelling artefact from the previous step. A video recording of an expert performing micro suturing in the rubber glove model was incorporated into the whole learning module. The various steps and sequencing were the result of the analysis of the mental script, which was developed earlier, and the mental script was also used as narration for the video (Jarvill *et al.*, 2018).

### Implement

The primary author (VR) used the authoring tool Rise 360 to create the e-learning module. Rise 360 is part of the Articulate suite of eLearning authoring software. The module was then exported as an e-learning object and deployed onto a Learning Management System for universal access and distribution (Orsborn, 2017). Participants involved in the evaluation phase were provided the link to the online module, i.e.

(<https://handsurgery.activemoodle.com/mod/imscp/view.php?id=1290>).

Alternate Site: [https://rise.articulate.com/share/BaQRxSpull1VzcY\\_hv0qbwq4pkugV5MF](https://rise.articulate.com/share/BaQRxSpull1VzcY_hv0qbwq4pkugV5MF))

### Evaluation of the Pilot Experiment

There were 11 participants in both the experimental and control group with one participant dropping out in each group, leaving 10 participants per group. Participants in the control group had an average age of 23.9 years (range: 22–26), equally distributed among males and females. Participants in the experimental group had an average age of 23.1 years (range: 21–30), with 70% males and 30% females.

**Table 3**

*Results of the pilot study*

		Control (n = 10)	Experiment (n = 10)	p-value
1	Average time to complete $\pm$ SD (minutes)	12.97 $\pm$ 7.11	11.85 $\pm$ 2.06	0.77
2	Median time to complete (minutes, range)	10.38 (range: 6.50 to 29.17)	11.83 (range: 9.40 to 13.92)	
3	SMaRT scale scores (mean $\pm$ SD)	3.9 $\pm$ 0.47	4.54 $\pm$ 0.37	0.004
4	NASA-TLX (mean $\pm$ SD)	61.14 $\pm$ 24.99	59.14 $\pm$ 25.63	0.60
5	MIQ scores (mean $\pm$ SD)	4.88 $\pm$ 1.19	5.46 $\pm$ 1.03	0.021
6	SUS scores (mean $\pm$ SD)	74.25 $\pm$ 13.8	71.5 $\pm$ 18.0	0.68

The time taken to complete five micro sutures in the control and experimental groups was not statistically significant ( $p = 0.77$ ). The NASA-TLX scores between the control and experimental group were also not statistically significant ( $p = 0.60$ ).



However, the overall performance in the experimental group was significantly higher as compared to the control group ( $p = 0.004$ ).

Both groups had an average “good” grading for the SUS scores (Table 3), indicating that the online module for micro suturing has good usability. The Cronbach’s alpha for the SUS scale for the ten questions was computed to be 0.78, indicating acceptable reliability.

Based on the MIQ scores, the experimental group scored significantly higher than the control group in the aspects of mental imagery ( $p = 0.021$ ).

## Discussion

This study has shown that by using a Design and Development Research approach along with the use of the ADDIE model, it is possible for subject matter experts to design and develop authentic and validated learning materials for surgical skills training. This study documents the methodology involved in producing evidence-based instructional videos for surgery. It further shows the processes involved in the creation of these learning resources, the use of specific protocols to understand the key components of a psychomotor skill from the experts, the use of the verbal protocol, and the hierarchical task analysis and its use to create a mental script to aid the acquisition of surgical skills by trainees. The findings of this study demonstrate the need for a new medium of instructional materials to be developed in key and index surgical procedures in all surgical specialities. The incorporation of a detailed mental script for the surgical procedures and the methodologies required to produce them need to be developed among trainers. Most surgical trainers should be able to produce short, high-quality educational videos using the process described in this study. This will allow for motor imagery and mental practice to be practised by all surgical trainees to facilitate achievement of mastery in the current environment of reduced practice and motor skill learning opportunities. Deliberate practice is now universally accepted as one of the strategies for expert performance of a motor skill and has been proven effective in surgical training.

Surgical trainers need to be familiar with the methodology of the creation of mental scripts and the use of instructional design models to create multimedia instructional materials to complement instructional videos by experts. The implication is for surgical educators to apply instructional design and technology modules to guide educational curricular development. As the model described in this research and the process of creating the instructional materials and activities are translatable to other healthcare professional education that requires the acquisition of motor skills, the findings of this research can therefore be adapted for use in other disciplines. The recommended strategy should incorporate mental skills training, i.e. motor imagery and mental practice for the learners, and into the trainer development programme for all healthcare professional trainers. Trainers must be trained in the design and development of instructional videos and mental scripts. Every index procedure in surgical skill training should have the following:

- i. Expert instructional video of the procedure.
- ii. A mental script incorporating kinaesthetic cues.
- iii. Narration of the mental script incorporated into the video.
- iv. Inexpensive and easily accessible practice models for deliberate practice.



Though the model needs further external validation, this model and its methodology and approach in developing individual scripts for motor imagery and mental practice will redefine surgical training. Considering the constraints in obtaining the opportunity to observe, practise, and perform in a work environment, and the universal lack of accessibility to alternative high-technology medical simulators, the trainee needs a model that will allow for deliberate practice anywhere and at any time.

### **Limitations of the Study**

The ability to imagine a motor task and generate that mental image and maintain it while doing deliberate practice, was difficult to assess. The use of the motor imagery questionnaire (MIQ) to measure this ability was simplistic. A qualitative approach, such as interview or focus group discussions with participants, would have produced much richer and more authentic data on the quality of motor imagery and the use of a focus group of experts and novices for script validation. Also, the compliance of self-directed use of the mental script for motor imagery was difficult to control and measure.

In the experimental part of the study, the main challenge was to prevent the control group from indirectly practising motor imagery and mental practice. This was built into the study by excluding sports and musical performers in the control group (Sevdalis *et al.*, 2013). The adherence of the experimental group to the instructions on mental practice prior to the deliberate practice sessions could not be verified. The small sample size of the participants is an obvious limiting factor, as generalisability is not possible with such a small size.

The role of confounding factors such as periods of rest prior to task performance, different level of innate fine motor skills, subconscious use of motor imagery, and practice in the control group, were not considered in this research. This research was confined to a laboratory and a very structured and small motor task. The generalisability of these results to more complex motor tasks has yet to be determined. This study also did not look at the other competencies required of a master surgeon, including but not confined to, diagnostics and decision-making, team development, and communication skills.

We recommend that mental script development should be incorporated into the curriculum for faculty development. Learners should be instructed on the techniques of motor imagery and mental practice as part of the core surgical training, like suturing and dissection. Furthermore, instructional design and technological competency should be incorporated as part of the curriculum for faculty development, so that instructionally sound materials can be developed by the faculty.

Lastly, design and development research methodology should be incorporated into the faculty development programme to encourage design and developmental research in surgical education research.

## Conclusion

The aim of this study was describing the methodological approach to design and develop a training module for skill acquisition for surgical training programmes, utilising a design and developmental research framework. This study has addressed some of the challenges of surgical education and has described a model based on sound educational theories to design and develop training programmes. This will help surgical educators to design effective and relevant modules to facilitate surgical training moving forward. In sum, this study shows that standardised surgical procedures should be guided by the design and development of a mental script, for which this research has provided the methodology needed for the development and description of the relevant tool.

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## Student-Teachers' Perception of the Preparedness to Engage in Online Teaching, and Challenges They Face When Teaching Online: A Corpus Analysis of Their Reflexive Journal Entries

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### Abstract

*The Covid19 pandemic changed the way almost everything is done, including teaching. Online teaching rose to become the quintessential way mode of teaching in weeks after being in relative obscurity the two decades of its existence. Online teaching is now prominent, but research shows that we are still lacking knowledge in almost every human aspect involved in online teaching. This study focusses on student-teachers' perceptions of their own preparedness to teach online and the challenges they face when teaching online. This is done by looking into the primary keywords or concepts the student-teachers use in their own writing. Language is our ubiquitous tool by which we look into the minds of fellow human beings. Accordingly, this study looks at a body of language (corpus) compiled from the reflective journals produced by 23 student-teachers as part of their final assessment portfolio (+700 pages, +800,000 words). These journals embody their thoughts during their practical teaching experience. The analysis is carried out using a concordancer program. By analysing this corpus, we will, (1) identify the most prominently occurring content words, and (2) the most prominently occurring words relative to the prominent keywords. The resulting semantic web will display the concepts the preoccupy the concerns of these respondents thus giving us an insight into possible areas that we need to focus on in our efforts to remedy and enhance our online teaching capabilities. Initial findings show that the most prominent word in their writing 'students' with technical and technology concerns falling far behind.*

**Keywords:** Teaching, Writing, Online, Corpus Analysis, Discourse

## Introduction

TESL teachers stand in the middle ground between the need for English which is the de facto international language today, a linguistic legacy left behind by the colonial age, and a myriad of language struggles that characterise the ethno-cultural multiplicity that is Malaysia today. It is understandable that the readiness of newly minted TESL teachers to enter this field is an important concern among practitioner, especially the educators who teach these new TESL teachers.

Perspective teachers in Malaysia are given examinations that gauge their suitability and aptitude towards teaching, and during their time as TESL students, they are introduced and familiarised with all aspects of TESL. What remains a problem, however, is the question of their readiness to enter the teaching of English and a Second Language in the Malaysian context. How do we know that they are ready to become full-fledged TESL teachers?

The problem, however, is that examinations into the question of new teacher and teacher readiness, more specifically readiness to face the extensive use of technology mediated teaching brought about by the circumstances following the Covid-19 pandemic, have been using methods that are variations of the questionnaire. While the questionnaire, in its many forms, is an excellent tool for gauging opinions and perceptions, it works on the premise that the respondents' attention is directed to a particular topic or issue by the questionnaire itself. This means that the respondents may not have been thinking of the topic or issue without being told to by the questionnaire.

This paper is an experiment in using a linguistic tool to elucidate information pertaining to an education or pedagogical issue. Following the Whorfian hypothesis, which is a prominent idea in linguistics, it alludes that the more prominently something is in a person or people's mind, the more prominently it will appear in his, her, or their language. A famous example of this is the many terms that Eskimos have for various forms of snow. Thus, what words do the student-teachers use most in their reflective reports?

## Defining Corpora

In linguistics, corpus which Latin for body refers to a body of text. A corpus (plural, corpora), is, "... collection of written or spoken material, occurring naturally, stored on computer, and typically used to carry out some kind of linguistic analysis" (Esimaje & Hunston, 2019, p. 8). Corpora has three characteristics,

- i. They use naturally occurring text: texts not written to go into corpus. The corpus used in this paper is extracted from texts written for practicum reports and not related to the corpus study in any way.
- ii. Corpus texts are selected to represent a language or a variety of language. Our texts come from the student-teachers' assessment portfolio: the respondents are final year students of the TESL program, and they are undergoing the practicum as part of the requirements to graduate from the said degree program.
- iii. Corpora are relatively large, thus making it extremely difficult to be examined without computers. This corpus comprises more than 800,000 words<sup>1</sup> which is slightly less than the first corpus, arguably, was the Brown corpus (1961) which comprises texts from multiple sources and has 1 million words while this corpus is only from one source. Today's corpora, however, has billions of words for the large ones. Corpus analysis that pertains to specific populations or contexts, like this one, can be much smaller from smaller populations of language users.



Analytically speaking, corpora can be analysed in many ways, but this paper limits its analysis to prominence of words and their collocations within specific occurrences: “Collocations in a window” (Lindquist & Levin, 2018, p. 72).

## Research Objectives

This paper seeks to examine the prominent ideas (embodied in words and concepts) that appear in the corpus that comprises the writing of the respondents in the reflective report section of their practicum portfolio which forms a major part of their assessment for the practicum or practical teaching experience (henceforth, practicum). In short, what do they talk about most in their reflective reports. Speculatively speaking, if online teaching technology is a major hurdle for the respondents, surely it occupies much of their thoughts and is thus reflected in their reflective report.

This paper is one of a series of papers prepared by members of the Centre of Education and Social Sciences, Open University Malaysia. It forms one of the endeavours put forward to gain a perspective on the readiness of teachers graduating from this institution to face the real world of teaching, particularly in light of the significant and pervasive changes brought about by the Covid-19 pandemic.

In analytical terms, this paper is open to an array of possibilities of using linguistic tools to analyse the texts produced by these students (henceforth respondents), however, this paper seeks to cast the net a little wider by employing computers to analyse a larger body of text: specifically, a corpus that comprises only the reflective journal section from the assessment portfolios produced by student teachers as part of their assessment after finishing their practicum.

## Literature Review

### Examining Teacher Readiness

Mansor, et al., (2021) examined teacher readiness for Home Based Learning<sup>2</sup> because of a pressing need to develop an instrument to measure teachers’ readiness for online teaching to provide feedback to guide policymakers and school leaders in planning strategic interventions and support for implementing HBL” (Mansor, et al., 2021, p. 1), with the aim of refining and validating, “...the HBL Teacher Readiness Scale and to ascertain the view of secondary school teachers on aspects of their readiness to implement HBL” (Mansor, et al., 2021, p. 1).

They employ a four-dimensional model based on TPB (Theory of Planned Behaviour by Icek Ajzen)<sup>3</sup> and Social cognitive theory that is built on the concept of self-efficacy<sup>4</sup>. They present four guiding dimensions,

- i. Attitude. How much a person likes or dislikes doing something.
- ii. Perceived Behavioural Control. How teachers see their ability to perform a behaviour.

- iii. Subjective Norms. How normal is performing the task in the eyes of people around them: how does it affect their expectations.
- iv. ICT Self-Efficacy. Based on social cognitive theory, self-efficacy refers to how much a person's belief about their ability to do something and how much they want to do it (motivation).

Their methodology has two stages: instrument development and data collection and utilise an internet survey design with a population of 931 in-service teachers<sup>5</sup> who are affected by the Movement Control Order<sup>6</sup>.

They find that "the overall level of teacher readiness towards the implementation of HBL was high" (Mansor, et al., 2021, p. 10). Moreover, "...teachers' attitude contributes to their readiness" (Mansor, et al., 2021, p. 10). One factor differentiates it from past studies is seemingly overlooked, Mansor et al., (2021) is undertaken during the Pandemic and under MCO when online learning becomes a priority. Respondents are forced to engage HBL and built up their familiarity with the technology. This changed their outlook on the matter which proves the attitudes of Malaysian teachers towards HBL is fluid and affected by the context and circumstances.

Scherer et al., (2021) explores teachers' perception of their readiness for OTL (Online Teaching and Learning) based on three dimensions; their confidence to teach online (personal readiness), and their perception of the institutional support they receive (contextual readiness). Their main instrument is an anonymized online survey focussing on the teachers' readiness for online teaching caused by Covid-19, their subjects are 1144 educators from 64 countries.

Scherer et al., suggests that higher education teachers are not a homogenous group nor in their readiness for OTL. Thus, they argue that "... the readiness construct is ... multifaceted and requires taking an individual and contextual perspective" (Scherer et al., 2021, p. 14).

Baharuldin et al., (2019) examined the relation between the teachers' role, and ICT competency but this was in 2019 before Covid-19 when the online teaching was not a priority. They also use a survey design (questionnaires) from multiple sources to explain, "... the role of teacher readiness as a mediator in ... examining ... effects of infrastructure of primary school ICT competencies" (Baharuldin et al., 2019, p. 3). Their hypotheses are as follows,

- i. Null hypothesis (Ho): Infrastructure has no direct and indirect effect on ICT competency of primary school teachers with the teacher readiness as a mediator.
- ii. Alternate hypothesis (Ha): Infrastructure has a direct and indirect effect on ICT competency of primary school teachers with the teacher readiness as a mediator.

They conclude that infrastructure plays "... a major role in integrating ICT in the classroom", these teachers, "... believe that they can see computer labs in their schools for teaching and learning purposes" (Baharuldin et al., 2019, p. 11). What is important is that these teachers see that they get the support they need.

Elsewhere, the Alwidi study (Al-Awidi & Aldhafeeri, 2017) looks at Kuwaiti schoolteachers' readiness to implement digital curriculum shifting from traditional classes using a mixed method research randomly sampled 532 teachers via an online survey that questioned in two domains: technical and pedagogical.



They show that their respondents are not ready to implement a digital curriculum. The respondents cite time constraints, inadequate skills, and knowledge, and less than desired infrastructural and technical support as hindrances.

This study is cited in the studies above, the studies above fail to make one distinction between their context and the Alwidi study: at the time of the Alwidi study, the Covid-19 pandemic had not yet arrived, thus, going online was a choice and not an unavoidable strategy for persistence.

The essential point of all the studies above is that they all examine readiness, and that they are measured by directly asking the respondents through, primarily, questionnaires: a device that presents the respondents with options from which they choose, then provide space from direct input from the respondents in limited open-ended questions.

This paper attempts to take a more intimate look: looking at the actual words used by the respondents: a corpus.

### **Corpus Linguistics and Education**

Coming from a disparate area, the corpus analysis employs computers to analyse larger bodies of text compiled from specific sources. The technique is popular in linguistics, and it has been employed in many areas of linguistics.

Corpus-driven analysis has been used to examine many aspects of language use including the presence of foreign media overseas: American media in Saudi (Hameed, Jabeen, & Afzai, 2020). This is to aid local monitoring of said foreign media. They employ a 150,000 words corpus using multiple corpus tools (Antconc, Voyant, Cirrs). They found gaps in the foreign media knowledge of the Saudi context which led to calls for Saudi Kingdom to, “brief the Western world for an enriched campaign of its contemporary image” (Hameed, Jabeen, & Afzai, 2020, p. 1). Keywords and collocations.

Corpus-driven analysis on web-based corpus is also used to compare global languages. Dunn (2020) compares national languages using web-based corpora to generate language maps. Their data is language on the web gathered from diverse datasets which is geo-located to identify the language. The author uses Corpus of Global Language Use (CGLU version 4.2) to sift through 147 billion webpages in 148 languages from 158 countries with about 1 million words for each country. The corpus also includes sub-corpora (1916 with 1 million words and 68 sub-corpora with 1 billion words). Part of the corpora comes from Twitter.

While this paper is not directly relevant to the present paper, it does present the possibility of comparison between specific corpus data (for example, the corpus we use of this paper), and the larger corpora to identify the uniqueness of the language use in the relevant context.

Corpora has also been employed to study the meaning of word meanings. Khojasteh and Kafipour (2012) got 136 adult advanced learners to write 150–200-word composition entitled, “The Happiest Day of My Life”. Uses Wordsmith Tools, Version 4: Concord, Wordlist, and Keywords. Examining the function of modals. Finds conditions of modalities in English as used by the students examined (Khojasteh & Kafipour, 2012, pp. 51–60). This paper employs the Wordsmith Tools, version 8.

In Malaysia, the 1983 DBP focuses on the Malay language, uses complete texts only. The DBP corpus has since grown. In 2009, it has more than 128 million words in 10 sub-corpora classified by genre, and it is still growing.



Other Malaysian corpora are generally learner corpora, EMAS (English of Malaysian School Students) corpus (Arshad et al., 2002), MACLE (Malaysian Corpus of Learner English) (Knowles and Zuraidah, 2005), CALES (Corpus Archive of Learner English Sabah-Sarawak) (Botley et al., 2005), as well as genre-specific learner corpora (e.g., the Engineering Lecture Corpus (ELC) (Abdul Rahim, 2014, p. 5), to name a few. These corpora are mainly used to aid teaching.

Siti Aeisha Joharry and Hajar Abdul Rahim bibliographic analysis shows a range of corpora-based studies. “English in Malaysia, emerging issues surrounding its use as a second language and as a new variety of English will certainly continue to encourage the development of more Malaysian English corpora, learner corpora as well as genre-specific corpora” (Joharry & Abdul Rahim, 2014, p. 29).

Study textbooks (Khojasteh & Kafipour, 2012). The language use in Malaysian textbooks. Another example is the study of modalities in Malaysian English textbooks (Mukundan & Khojasteh, 2011).

## **Method and Design**

### **Context and Population**

This study is limited to examining a text corpus that is compiled from the ‘Reflective Journal’ section of the portfolio submitted by final year students of this institution as part of the requirements to complete their practicum and, in turn, their degrees. The practicum is the final stage of their program. These are mature students who are, generally, employed in various fields, not exclusively in education. Some of them are pursuing their degree before entering the education field. The reflective journal section is one of the three main sections of the portfolio: the other sections being a report on the school or teaching context, and lesson plans and teaching material for each lesson. Those who are teaching online will also be submitting video recording for a number of their classes.

### **Sampling Strategy**

The portfolio used for this study have not been selected, the reflective report text has been taken from all of the portfolio submitted for the final semester of 2020 and the first semester of 2021 by students of the TESL program of this institution. From these portfolios, only the reflective journal section is extracted.

On the reflective journal section is used because the other sections report the day-to-day running and planning of their teaching. The reflective journal is the section where they note their observations, propose their strategies in handling issues, and report results they obtained from their plans. Thus, if they experience hindrances and challenges, this is the part of the portfolio where they report their experience with the hindrances and challenges.

### **Data Collection Instruments and Procedures**

The data is collected from the portfolios which are in Doc, Docx, or PDF format and place in one word document. All of its formatting is removed, and the file is saved in Txt format to be used by the Concordancer program. This study used the Wordsmith Tools version 8 program from Lexically.



The concordancer will be used to generate concordance lists and word list for selected words. The words are selected from a wordlist generated by the concordancer. For analysis, the most prominent words that pertain to teaching or pedagogy, and technology are chosen (see below).

## Findings

The concordance word list from the corpus reveals that the list of highest occurring content words, only one specifically pertains to the technology used on their online teaching: “online” at 25th position with 190 occurrences. The other 32 words in the list pertain to pedagogy and pedagogical activities with “students” having the highest occurrence with 1966 occurrences at 2.25% of the total words occurring.

**Table 1**

### Word List

N	Word	Frequency	%
1	STUDENTS	1,966	2.25
2	LESSON	1,016	1.16
3	PUPILS	694	0.79
4	CLASS	678	0.78
5	TEACHER	610	0.70
6	TERM	599	0.68
7	TEACHING	369	0.42
8	ACTIVITY	327	0.37
9	EVALUATION	306	0.35
10	OBSERVATION	274	0.31
11	ACTIVITIES	267	0.31
12	JOURNAL	248	0.28
13	CLASSROOM	229	0.26
14	QUESTIONS	220	0.25
15	WRITING	219	0.25
16	ANSWER	217	0.25
17	READING	215	0.25
18	GROUP	212	0.24
19	ENGLISH	211	0.24
20	TEXT	205	0.23
21	SCHOOL	202	0.23
22	LEARNING	199	0.23
23	TEACHERS	196	0.22
24	READ	191	0.22
25	<b>ONLINE</b>	<b>190</b>	<b>0.22</b>
26	CO	153	0.17
27	STUDENT	153	0.17
28	COMPLETE	145	0.17
29	ENCOURAGE	138	0.16
30	DAILY	136	0.16
31	LEARN	135	0.15
32	TOPIC	131	0.15
33	UNDERSTAND	130	0.15



The word “computer” only occurs 5 times out of 86408 words. A closer look at the word “computer” shows that it is not mentioned as the device, rather in reference to computer labs that are used at part or venue of their teaching.

**Table 2**

*Computer*

N	File	Words	Hits	Per 1000 Words
1	computer	86,408	5	0.06

**Table 3**

*Concordance List – Computer*

N	File
1	erences? Today’s learning sessions were held in a <b>computer</b> lab. I started the class by playing a video on to
2	in the class. Pupils late because they are at the <b>computer</b> lab, for their PJ subject. All of them seems tired
3	Is in class, 2 pupils absent and another 4 at the <b>Computer</b> Lab. Pupils try hard to interpret. Almost half of
4	Is in class, 2 pupils absent and another 5 at the <b>Computer</b> Lab. Almost half of the class didn’t bring their

In a similar vein, the word “system” occurs 9 times with 5 times as “reward system” not computer nor delivery system (100 characters saved per entry).

**Table 4**

*Collocate List – System*

N	Word	Total	Total Left	Total Right	L1	Centre
1	SYSTEM	9	0	0		9
2	REWARD	5	5	0	5	



**Table 5***Concordance List – System*

N	File
1	dents knowledge on the uses of Global Positioning <b>System</b> (GPS), were quite limited. Students were able to
2	is fast learner and slow learner. Introduce reward <b>system</b> for those who like to volunteer. Give sticker imm
3	is fast learner and slow learner. Implement reward <b>system</b> to encourage shy students to participate as well.
4	nts read the text aloud poorly not fluent. Reward <b>system</b> for those who improve in reading. Date: 8th October
5	to the student's capability. Conduct more reward <b>system</b> to appreciate their capabilities.
6	ass started late since we had assembly through PA <b>system</b> . The students prefer group activity for the task g
7	experience imaginable. I had a wonderful support <b>system</b> of the faculty and principal at SK Tatau, along w
8	with a specific student. This internal support <b>system</b> is just one reason that I love the primary school

Apart from the highest occurring word, "students", "assignment" has 45 occurrences at 45 occurrences with "the assignment" having the highest occurrences and 8 of that appearing as "of the assignment".

**Table 6***Collocate List – Assignment*

N	Word	Total	Total Left	Total Right	L5	L4	L3	L2	L1	Centre	R1	R2	R3	R4	R5
1	ASSIGNMENT	45	0	0						45					
2	THE	23	23	0	6	2			15						
3	FOR	8	6	2	2	4						2			
4	AND	8	4	4	1	2	1					2		2	
5	STUDENTS	6	2	4			2					2	2		
6	WORK	5	1	4		1						4			

**Table 7**

*The Most Common Phrase*

N	Cluster	Frequency
1	OF THE ASSIGNMENT	8

The co-teacher plays a prominent role in these student-teachers' practicum experience. The term "co-teacher" occurs 52 times and, apart from grammar words, in relation to "evaluation" and "observation".

**Table 8**

*The Co-teacher*

N	File	Words	Hits	Per 1000 Words
1	co-teacher ICE PAPER JOURNAL DATA	86,408	52	0.60

**Table 9**

*Collocate List – The Co-teacher*

N	Word	Texts	Total	Total Left	Total Right	L5	L4	L3	L2	L1	Centre	R1	R2	R3	R4	R5
1	CO-TEACHER	1	52	0	0						52					
2	THE	1	31	25	6	6	7	1		11			4		1	1
3	AND	1	13	4	9			2	2			6			2	1
4	WITH	1	9	8	1				7	1						1
5	EVALUATION	1	8	7	1	2		3	2					1		
6	OBSERVATION	1	7	6	1		1	4	1			1				
7	WILL	1	7	2	5		1	1				3	2			
8	FROM	1	6	6	0	1			4	1						
9	FIRST	1	5	4	1		3	1								1
10	WEEK	1	5	4	1		1		3						1	

The most common form of "co-teacher" appears in the combinations below, "with my co-teacher" and "by the co-teacher". It should be noted that there are several instances where the term is not spelt with a dash and thus, they are excluded.

**Table 10***The Most Common Phrase*

N	Cluster	Frequency
1	WITH MY CO-TEACHER	6
2	BY THE CO-TEACHER	5

“Student” has the highest occurrences, and none of its higher occurring collocates are related to the technology being used.

**Table 11***Collocate List – Student*

N	Word	Total	Total Left	Total Right	L5	L4	L3	L2	L1	Centre	R1	R2	R3	R4	R5
1	THE	86	66	20	5	4	2	5	50		1	4	9	3	3
2	STUDENT	83	0	0						83					
3	WILL	31	29	2			29				1			1	
4	THIS	31	31	0	1	29	1								
5	AND	30	13	17	3	1	4	3	2		1	5	7	4	
6	MOTIVATION	29	0	29											29
7	CONFIDENCE	29	0	29								29			
8	BOOST	29	29	0				29							
9	TEACHING	19	2	17	1		1				16			1	
10	TEACHER	14	4	10	1	1	1	1			10				
11	THAT	11	7	4		1		5	1			2			2
12	ABOUT	11	7	4		1		5	1				2		2
13	EACH	10	10	0			1	1	8						
14	HAVE	9	2	7		1	1					1		3	3
15	NOT	8	2	6	1	1						1	3		2
16	CAN	8	1	7		1					6			1	
17	EXPERIENCE	8	1	7		1						7			
18	WAS	8	1	7	1						3	3		1	
19	FOR	8	6	2	1	1		4			2				
20	WITH	6	5	1	1		2	1	1					1	
21	TEACHERS	6	2	4	2						3		1		
22	STUDENT'S	6	0	0						6					
23	NOOR	6	0	6										6	
24	ARE	5	2	3		2							1	1	1
25	GIVE	5	4	1			2		2			1			
26	LEVEL	5	2	3	1	1					1	1		1	
27	LEARNING	5	1	4					1		1	2	1		

**Table 12**

*The Most Common Phrase*

N	Cluster	Frequency
1	THE STUDENT S	35
2	STUDENT S CONFIDENCE	29
3	S CONFIDENCE OR	29
4	THIS WILL BOOST	29
5	WILL BOOST THE	29
6	CONFIDENCE OR MOTIVATION	29
7	BOOST THE STUDENT	29
8	MY STUDENT TEACHING	11
9	AS A STUDENT	10
10	STUDENT TEACHING EXPERIENCE	7

Teacher also has a high occurrence as shown in the collocates list below.

**Table 13**

*Collocate List – Teacher*

N	Word	Total	Total Left	Total Right	L5	L4	L3	L2	L1	Centre	R1	R2	R3	R4	R5
1	TEACHER	321	1	1	1					319				1	
2	THE	317	220	97	24	12	12	69	103		2	30	20	22	23
3	AND	102	47	55	4	13	16	5	9		26	11	2	7	9
4	<b>TEACHING</b>	<b>73</b>	<b>23</b>	<b>50</b>	<b>18</b>	<b>3</b>		<b>2</b>				<b>42</b>	<b>1</b>	<b>1</b>	<b>6</b>
5	WITH	56	42	14	2	4	17	12	7			1	3	6	4
6	STUDENTS	55	16	39	10	4		2				5	17	10	7
7	FOR	55	21	34	2	4	8	4	3		19	4	4	1	6
8	MAKE	46	22	24		22					2		19		3
9	MORE	45	32	13	1	29		2			1		5	5	2
10	WHILE	41	24	17	1		1	22							17
11	OBSERVATIONS	40	22	18			22								18

**Table 14***The Most Common Phrase*

N	Cluster	Frequency
1	THE CO TEACHER	51
2	MY CO TEACHER	41
3	TEACHING MAKE OBSERVATIONS	36
4	FOLLOW THE CO	28
5	MORE CHALLENGING THAN	27
6	CHALLENGING THAN WHAT	27
7	THAN WHAT TEACHER	26
8	WHAT TEACHER EXPECTED	26
9	WAS MORE CHALLENGING	26
10	WHILE THE TEACHER	23
11	THE TEXT NEEDS	23
12	OBSERVATIONS WHILE THE	22
13	MAKE OBSERVATIONS WHILE	22
14	TEACHER IS TEACHING	22
15	THE TEACHER IS	22
16	CO TEACHER FOR	20
17	FOR TEACHING MAKE	18
18	TEACHER FOR TEACHING	18
19	CO TEACHER TO	17
20	AS A TEACHER	17

The highest occurring word related to technology, is “technology” which has a score of 8.

**Table 15***Technology*

N	File	Words	Hits	Per 1000 Words
1	technology	86,408	8	0.09

## Discussion and Conclusion

Going by the premise from Whorfian hypothesis, the more prominent a concept is to the community of language users, the more prominently it will appear in their vocabulary and used in their daily lives. In the case of these student-teacher, their reflective journal entries are shown to mainly include the terms that are related to pedagogy, for example, “student” and “teacher”.

With the reflective journal being the part of their final report or portfolio where they record the problems they face, and how they handle them, it seems that the technology used as the medium for their online teaching does not appear significantly in their report at all. This contradicts earlier studies (pre-Covid) that cite technology as a significant factor in the student-teachers’ readiness to fill their role as teachers.

This can be contributed to their familiarity with the technology. This institution relies heavily on communication technology and as students, the respondents of this study have had four years of exposure to the use of the internet as a teaching and learning tool. Teaching online, is therefore not alien to them. The only difference being that in the practicum the respondents find themselves on the other end of the screen: the tutor instead of the student.

We can also attribute this finding to the study being done during the Covid-19 pandemic where the respondents have already spent a year having to engage in online learning. This however needs to be verified in future research.

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<sup>1</sup> Note that this corpus is in the process of being built and in future works, it will be larger.

<sup>2</sup> They define Home Based Learning as, “one of the remote teaching strategies developed in response to the sudden interruption caused by unexpected school closures” (Mansor, et al., 2021, p. 2)

<sup>3</sup> Individual behaviour is based on behavioural intention: things people do are based on what they intent to do, and their intentions are determined by,

- a) The individual's attitude towards the behaviour: people are more likely to do the things they like doing.
- b) The subjective norms: people are more inclined to do things that they are used to doing.
- c) Perceived behavioural control: people are more likely to go above and beyond if they do not think that they are forced to do it.

<sup>4</sup> Here it is used to explain teachers' motivation and desire to perform a task: people are self-efficient. They can do what they want to do because they have learnt to do it from the society, they live in. (Mansor, et al., 2021, p. 4)

<sup>5</sup> 153 (16.4%) Males and 778 (83.6%) females, aged between 24 and 59. 336 (36.1%) - >21 years teaching experience, 240 (25.8%) 11 to 15 years, 145 (15.6%) 6 to 10 years, and 93 (10%) 1 to 5 years teaching experience.

<sup>6</sup> Malaysian term for the lockdown.



## **“Make Sense of It!”: The Role of Mediation and Perceived-Benefit in an Online Learning Environment**

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### **Abstract**

*The use of online learning platforms has significantly influenced critical understanding on the role of mediation and perceived-benefit. Those who are involved in an online learning environment have to expend effort to make sense of their virtual interaction. The goal in any online learning environment is to achieve authentic interaction. This conceptual research proposes two pillars in the rationalisation of virtual interaction. First, the existence of mediation should be based on its function as a medium to trigger active participation. Within this perspective the concept of involvement is explored. Second, there should be a mechanism to develop perceived-benefit orientation through which all parties involved in the interaction can achieve collective agreement, i.e. they can satisfy their own interests. Some practical implications are also discussed.*

**Keywords:** Mediation, Perceived-Benefit, Involvement

### **Introduction**

The advent of the Covid-19 pandemic has urged educational institutions to revolutionise interactive processes in the learning environment, in which technology is used in the provision of online learning platforms. This context has made relevant the presence of virtual interaction.

While it does make sense that the use of media is significant and beneficial (Song & Hill, 2007) in the discourse of interactive virtual interaction, the displacement of normal and natural ways of human social interaction might cause social disconnectedness.

In the meantime, an innovative mind-set must creatively seek the best use of media to deal with the social aspect of virtual interaction i.e. in what way that the virtuality could contribute more on the learning values related to the adoption of the newness. However, this might not be sufficient when compared against displacement issues that emerge in virtual interactions.

This research also represents an effort to minimise the gap between the reality of virtual interaction and the implication of disconnectedness (Hall, 2007; Al-Kumaim *et al.*, 2021) by introducing the role of mediation and perceived-benefit. Mediation is the intervention of technological entity in the interactive process conditioned by a learning environment. It performs the role of facilitation so that the interactive process can be directed to achieve what is called ‘authenticity’. Relevant to the mediating role of technological entity is human intervention, i.e. the involvement of certain levels of capacity. It represents active participation in an effort to achieve authenticity in interaction.





The technical participation (Al-Kumaim *et al.*, 2021) is the involvement of “hard” skills especially in dealing with the operationalisation of the technological tool. On the other hand, it is necessary to build certain capacity, i.e. the ability to develop perceived benefit.

The author proposes economic rationality in reshaping authenticity in the reality of virtual interaction. All human activities are manifestations of economic motives. This will view perceived-benefit as fundamental in virtual interaction, where all parties can basically connect by the distribution of benefit.

## Research Objectives

Putting on the significant role of mediation and perceived-benefit within the context of an online learning environment, the author proposes this exploratory research to provide pre-discussion to guide general understanding on the discourse of authenticity in a virtual learning environment.

## Literature Review

### Virtuality in an Online Learning Environment

The reality of virtual interaction may attract the debate over its limitation to replace the role of human by focusing more on the technology (Salmon *et al.*, 2015). As a product of modernization, virtuality in the context of human-to-human interaction may cause disadvantages. This is the reason that a critical evaluation might be necessary.

Online learning is an option in distance education (Wang *et al.*, 2013) in which physical presence and face-to-face interaction are lacking. Online learning could also be deliberately designed for specific learning objectives. While it has its own limitations, this learning approach creates value of responsibility, i.e. the formation of learning styles in which all cognitive and metacognitive strategies are used to monitor, control, regulate, and adjust the learning style (Wang *et al.*, 2013).

Wang *et al.*, (2013) states that there are challenges in an online learning environment that may reduce certain capabilities. Those who are resistant to computer technology or lack computer skills may experience disorientation. In contrast, those who favour or are comfortable with computer technology may become more optimistic and motivated. This perspective represents what Wang *et al.* (2013) calls self-regulatory control processes:

*From this point of view, students with positive self-efficacy toward learning in online courses are usually more motivated and perform better in these courses. In addition to self-efficacy in the specific online course, the skills of using online learning technologies are also important. These skills include, for example, the use of emails, discussion boards, and Internet searches. Students who fear computer technologies may experience confusion, anxiety, a loss of personal control, frustration, and withdrawal*

(Wang *et al.*, 2013)



Online learning can be traced back to the invention of computer-mediated communication (CMC). Later on, this was followed by a more sophisticated and wider use of the computer as the main tool in the era of virtuality. According to Kehrwald (2008), there is a theoretical construct of social presence in an inclusive CMC construct that has evolved and changed. In addition, this indicates the primary role of social presence i.e. the importance of human dimension. Meanwhile, Tu (2002) identified some negative aspects in CMC such as frustration, critical attitude and lack of social presence.

An online learning environment contains social elements such as learners, subject matter, experts, and support staff. In coming together, their collective interactive learning qualities are considered as interactivist, transactional and relational learning. There is exchange between individual actors in online learning. The term 'connectivity' is afforded by a networked communication technology. This online environment phenomenon produces interpersonal interaction, involving the process of cognitive interaction and learning (Kehrwald, 2008). A description of the social element in virtuality can be best illustrated by the following:

*As experienced users of online environments, they indicated that they made assumptions about, and generally attributed human qualities to, other online participants. This was seen as a consequence of an empathetic relation in which they recognized similarity with other participants and attributed characteristics of 'sameness' to them. A portion of this sameness was the notion of being real: if I am real and you are like me, then you must also be real. Respondents viewed social presence as a quality of individuals and associated it with relations between themselves and other inhabitants of the online environment as both real people and salient social actors.*

(Kehrwald, 2008)

## **Mediation**

Mediation has played a significant role in influencing learners' experiences in online learning. It is the participants' responsibility to get involved in communicative exchange (Kehrwald, 2008). The involvement covers their expertise in media usage. A high-level involvement indicates active participation in the interactivity, while a low-level involvement indicates only a minimal level of contribution in the interactivity. Kehrwald (2008) states the potential technological entity taking part in the mediation process (Herrington *et al.*, 2003) is responsible for causing social and psychological distance. This is where there are differences in participants' experiences. In the conventional way of social interaction, i.e. face-to-face interaction, social interactivity is relatively easy to recognise. Within the mindset of social virtuality, mediation should be developed to provide tools for self-actualization so that participants could see themselves through other people.

## **Authenticity**

In comparison to non-virtual interaction, virtual interaction provides different experiences. What might be a real experience in virtuality is the displacement of one's physical presence. Where physical presence can be socially experienced in an authentic way in face-to-face interactions, virtual interaction requires certain capabilities (Barab *et al.*, 2000) to make sense of virtual presence. Herrington *et al.*, (2003) describes an experience in virtuality as a process of immersion within realistic situations.



The virtual existence is governed by certain conditions. Within the learners' mind-set there should be a well-established perception of benefit (internality) (Chen & Jang, 2010) and acceptance of other factors that affect virtuality (externality). Both internality and externality co-exist to allow a dynamic interaction in online learning environment (Herrington *et al.*, 2003). Referring to Al-Kumaim *et al.*, (2021), externality can represent acceptance and adjustment to certain contexts that are not directly perceived as beneficial. Rather, it represents the adoption of new values that have a direct impact on the quality of interactivity in an online learning environment. Herrington *et al.*, (2003) uses the term 'agreement' to determine externality in online learning, as follows:

*It is a simulation of a client engagement in which the participants tacitly agree to go along with an interpretation of job reality which we have crafted.*

(Herrington *et al.*, 2003)

## Research Method

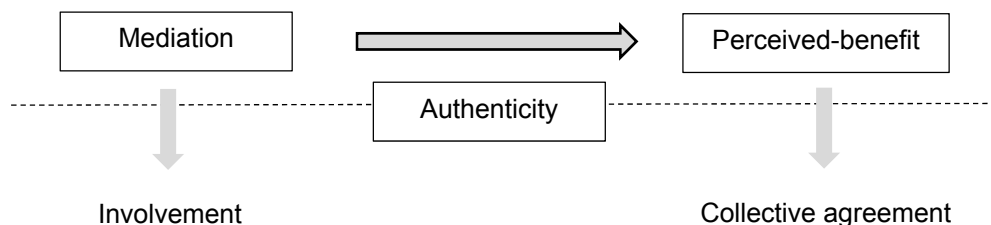
This research adopts an interpretative framework (Al-Kumaim *et al.*, 2021; Xiao, 2018) to explore the role of mediation and perceived-benefit in making sense of authenticity in virtual interaction. Participants in this research comprise students enrolled in a Marketing Management course at a private-owned institution (i.e. University "X") in Palembang, Indonesia. Ten participants' narratives were analysed using content analysis. Emergent coding techniques (Blair, 2015) were employed to determine key concepts that support the exploration. The procedures for data analysis were applied as follows: (1) Data classification and organisation; (2) The development of framework for data rationalisation; and (3) Identification of significant concepts.

## Findings and Discussion

Through the employment of content analysis, participants' narratives were analysed using emergent coding technique (Blair, 2015). Words or phrases (i.e. key concepts) related to involvement and perceived-benefit were categorised to guide an in-depth perspective on authenticity. The following Diagram 1 was developed to support the discussion:

**Diagram 1**

*Conceptual Framework: The Role of Mediation and Perceived-benefit in an Online Learning Environment*

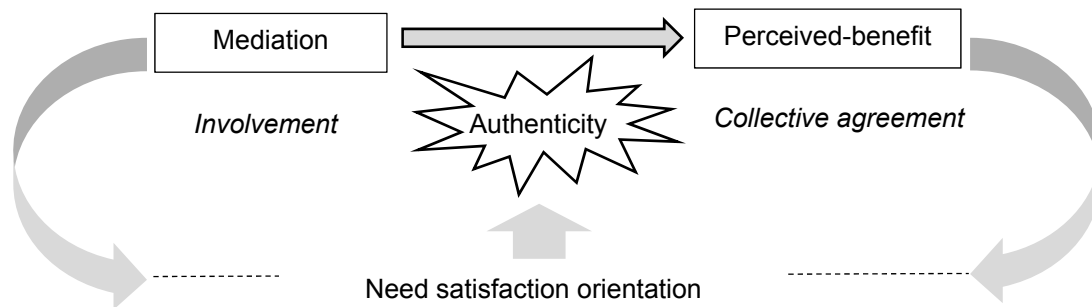


Mediation and perceived-benefit play important roles in the process of achieving authenticity. In the context of mediation, the participants' involvement is an act of their participation to contribute authenticity by making sense of benefit, i.e. the development of perceived-benefit. This involvement takes the form of their initiative in collaboration with technological tools. From this viewpoint, technological intervention is significant in providing an interactive virtual space. Next, mediation takes part in the development of perceived-benefit. At this stage, perceived-benefit is developed through mediation, i.e. the participants' involvement in their own capacity to construct perceived-benefit. This is where all components in the learning environment reach the same perception of collectivism, i.e. the importance of all factors that need to be directed towards satisfying interest.

Having categorised the emergent coding of ten participants' narratives, three conceptual models of mediation and perceived-benefit connectedness are proposed (see Diagram 2, Diagram 3, and Diagram 4).

**Diagram 2**

*Involvement and Perceived-benefit: Need Satisfaction Orientation*



In this conceptual model (Diagram 2), the manifestation of involvement leading to the development of perceived-benefit can be inferred as participants' contribution to authenticity through the deployment of all his/her resources. Within this model, the involvement motive was oriented to participants' efforts to satisfy their needs. This also indicates participants' involvement in the process of interpreting new values. Participants in this model can clearly list the practical benefits (Chen & Jang, 2010) obtained in the involvement process such as time management, self-discipline, and value of responsibility. Involvement is the active participation to 'make sense' of virtuality as beneficial.

Five participants are found to subscribe to this conceptual model. All five could specifically describe the benefits of the virtuality. *"At the beginning I was anxious because of the assignment but slowly I could find many positive things."* (Participant-AP). *"I am able to find solutions, and I don't need to go to the campus."* (Participant-EV). *"I learnt to be more disciplined."* (Participant-FC). The experience of benefit can also be emotional: *"In my personal view, online learning is more flexible and gives more time for completing the assignment. I feel happy and relaxed."* (Participant-HH), and *"Online learning was able to transform my life from nothing to something."* (Participant-NN). All five participants were able to identify their needs and could develop needs satisfaction orientation as part of their involvement and collective agreement in the interpretation of authenticity (Herrington *et al.*, 2003).



### Diagram 3

#### *Involvement and Perceived-benefit: Potential Investment Orientation*

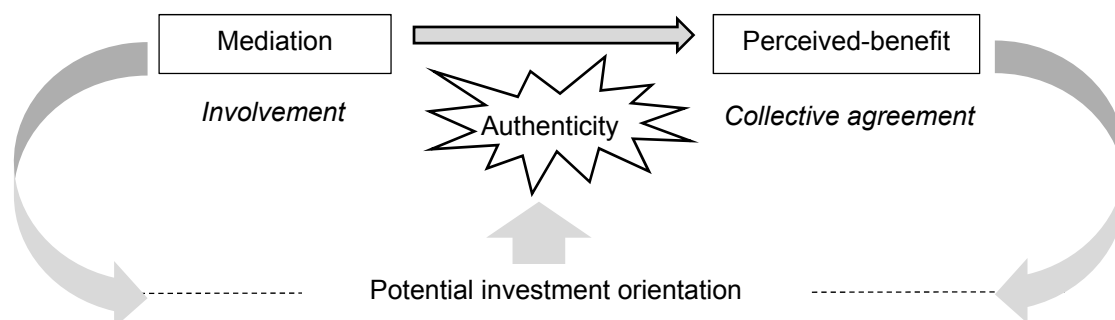


Diagram 3 describes a model in which participants critically look at their efforts and consider those efforts as investment. Narratives from participants who can be classified in this model indicate the production of sacrificial values. Participants specifically mention the valuable learning experience in which they have gone through difficulties. At the same time, they rationalise their decision to submit themselves to the online learning environment. This reflects participants' expression of pessimism (Salmon *et al.*, 2015) towards the system of virtuality, which fails to provide them with a direct benefit. What they are able to reveal is their continuous struggle to adapt to the new situation. Within this conceptual framework, the perceived-benefit is developed through the same perception of economic values, i.e. investment as the greater benefit.

The narratives of four participants correspond to this conceptual model (Diagram 3). The content of their narratives flows naturally in a certain pattern and has a strong message of unfavourability. *"Online learning has many limitations. Many students are not satisfied with this method of learning as it requires stable Internet connection. I myself need to spend a lot of money to top-up my balance so that I can access the Internet."* (Participant-OK). *"Despite the flexibility, I think online learning has caused a lot of problems, mostly technical ones such as running out electricity. When I need to submit my assignment, it takes me time to upload because of poor Internet connection."* (Participant-AH). *"Online learning has so far challenged me. And, if there are no other solutions, I will be completely fed up."* (Participant-VA). *"The teachers seem to pour out all assignments and ask the students to complete. No explanation was given, and we were just left confused."* (Participant-OC). Within this conceptual model of involvement and perceived-benefit, the participants encountered technical problems with assignments that were given by the teacher. Their involvement in the virtual learning interaction is an investment' to develop a pattern of learning experience, i.e. what Herrington *et al.* (2003) described as 'immersion', which should lead them to discover the meaning of authenticity. Participants' ability to describe difficulties in detail reveals their participation in defining authenticity (Barab *et al.*, 2000).

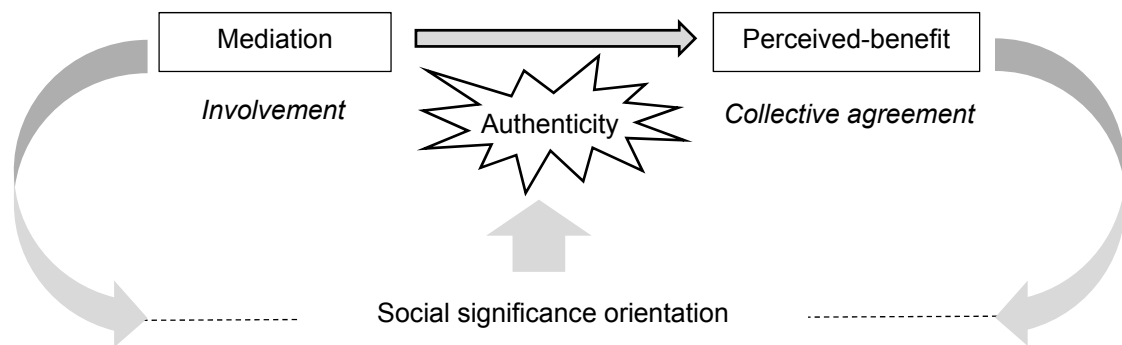
**Diagram 4***Involvement and Perceived-benefit: Social Significance Orientation*

Diagram 4 shows a conceptual framework to describe participants' involvement in response to the social reference. It is an effort to make a possible comparison with external factors as a way that leads to authentic virtual interaction. In other words, at the individual level, mediation is manifested through participation in relation to social orientation, i.e. participants seeking social approval. On the other hand, perceived-benefit is developed through understanding of externality, i.e. how external factors need to be considered in making sense of an authentic virtual interaction. One participant was identified to describe this conceptual model of involvement and perceived-benefit. *"I have friends from another school who has the same experience and I would always ask my senior whenever I have problems."* (Participant-FB). Mediation that leads to the development of perceived-benefit can be described as participants' involvement (Barab *et al.*, 2000) to seek social approval. Authenticity could become well-defined when social approval is granted.

## Conclusion

Making sense in an online learning environment requires a constant effort by all parties involved in virtual interaction to achieve one main objective, i.e. authenticity. This context of authenticity is the rationalisation of essential values and their connection with expected ones in which complete acceptance would be manifested.

The notion of mediation in the interactivity of a virtual learning environment is active participation, i.e. the involvement of all parties contributing to the effectiveness of interactivity. Upon reaching a certain level of interactivity, involvement should lead to the development of perceived-benefit, which may be differently interpreted by those involved in the process. This research reveals three kinds of orientation that have different understanding of the meaning of authenticity, namely: (1) Need's satisfaction orientation, (2) Potential investment orientation, and (3) Social significance orientation.

Further research might be needed, especially in the area of learning orientation. This would be relevant to obtain a better understanding of the dynamic nature of consumers in the role of mediation and perceived-benefit.



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## Do Motivation and Goal Commitment Influence Students' Retention in Open Distance Learning during Pandemic Covid-19 Crisis?

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### Abstract

*This study aims to explore the determinants of undergraduate student retention in Open Distance Learning (ODL). This study focused on the motivation and goal commitment of students in ODL university. The high attrition rate at higher education institutions has now become a serious issue. Undergraduate retention refers to an institution's ability to retain students from admission until graduation. In order to achieve the goal, education service providers need to know what motivates students to remain in the institution, especially during the economic crisis caused by the pandemic, Covid-19. This paper will provide a brief overview of undergraduate retention followed by factors commonly related to undergraduate retention. In this study, the focus will be on motivation and goal commitment that facilitate the students' decision-making to continue their studies in ODL. Data has been collected from active undergraduate students in 2021. Six learning centres were chosen mainly from Open University Malaysia. The results indicated that both factors, motivations and commitment, are positively significant towards student retention. The management can use the result in managing and understanding the retention issues.*

**Keywords:** *Open and Distance Learning, Retention, Motivational, Goal Commitment*

### Introduction

Since the advent of formal education systems, student retention in higher education has been a popular topic (Aljohani, 2016). Student achievement has emerged a key issue in the debate over higher education quality, particularly in open distance learning. Many of the theories used in student retention research have been based on a theoretical model of persistence (Tinto V. , 1975). For the past 100 years, the percentage of students who drop out of higher education has been consistent at 40–45 per cent. (Joana R. Casanova, Cristiano Mauro Assis Gomes, Ana Bernardo , 2021) and the dropout rates for online courses appeared to be greater than the traditional courses (Tinto, 1982). It was highlighted that first-year university students have the greatest dropout rate (Tinto, 2004). These initiatives are critical since many students have worked hard to obtain their degree but have been unsuccessful in doing so (Roberts & Styron, 2009). Worldwide studies have found that dropouts from university pose a significant issue that must be addressed and prevented (Bozkurt & Akbulut, 2019). Hence, student retention continues to pique the interest of governments around the world. At the same time, Institutions and governments seek to incorporate into policy directions, strategic considerations, and overall student care





operations (Beer & Lawson, 2016; Crosling, 2017; Crosling et al., 2009; Lang, 2001; Levitz & Noel, 2008). As a result, higher education started to explore the factors contributing to student retention, besides examining the institution's quality assessment and improvement efforts (Shukor, 2020).

### **Covid-19 Crisis**

More than a year after it originally appeared, the Covid-19 outbreak is still prevalent and spreading. In different places of the world, the repercussions of a pandemic have been handled differently. The globe has changed dramatically in numerous ways as a result of the pandemics' effects. Many universities have been pushed to move learning and teaching entirely online. The epidemic has impacted education in several countries and organisations. However, as the United Nations Educational, Scientific and Cultural Organisation has stated, it is critical to keep education systems operational during the epidemic (UNESCO). According to the report, the pandemic affected about 1.2 billion kids and youth, primarily in vulnerable and underprivileged communities/countries' educational institutions. Even though teachers, administrators, and parents have played an important role in keeping the general learning process alive in various nations, educational systems have not been prepared to deal with extended shutdown periods (Dorn, 2020). Shutdowns have a greater impact on already struggling students during the pandemic, despite the fact that learning loss manifests differently at different ages (Allensworth; Elaine; Schwartz, 2020). Most countries have advanced to create educational initiatives that entrench good habits and target the more vulnerable students to mitigate extended learning during the pandemic (Nughoro, 2020). As can be seen, the crisis has had a negative influence on the learning process. Open University Malaysia (OUM) has been able to manage online learning due to the fact that OUM has been adopting online learning since 2002. OUM has been more than twenty years in the online learning education mode.

### **Motivation and Goal Commitment**

Research on retention has discovered that student attitudes and satisfaction are interrelated (Nes L.S; Evans D.r; Segerstrom S.C, 2009). According to the researchers, students can flourish in the academic environment with enhanced self-efficacy and a conviction in a positive outcome. Academic engagement activities such as undergraduate research have been discovered to have a favourable impact on retention (Townsend, B & K.Wilson, 2009). Students with higher levels of self-efficacy, personal resilience, and coping skills will be better equipped to deal with the obstacles and problems that come with the academic shift (Bandura, 1997; Girelli et al., 2018; Wilson, Babcock, & Saklofske, 2001). Successful students take charge of their education by implementing cognitive and motivational methods to self-regulate and constructively improve their knowledge. Students who are unable to overcome the initial hurdles of adaption will show poor levels of academic accomplishment and satisfaction (Jansen & Van De Grift, 2018). For open and distance learning students, engagement and motivation in learning are critical factors in guaranteeing student success. Such thing can be achieved through a number of teaching and learning methodologies. Students are forced to stop studying for various reasons that are varied and complex. It can be influenced by individual situations and the nature of specific institutions (Beer & Lawson, 2016). Retention is also driven by long term goals and issues with high expectations (Cooke, 2007). The students' family history, individual characteristics/abilities, unsatisfactory prior educational experiences, inadequate preparation for higher education, personal circumstances, and goal commitment are all factors to consider (Tinto, 1975; Jensen, 2011).

## **Objectives**

This paper looks at student retention in OUM. It reviews the efforts of the university to consider factors that retain students at OUM. It focuses on undergraduate students who have spent their time studying at OUM for more than two years. Even during the Pandemic, OUM is still able to maintain its active student numbers to more than 27,000 as of 2020. The research attempts to find whether motivation and goal commitment significantly influence students' retention in OUM. In that case, this research investigates whether there is any positive relationship between motivation and goal commitment towards retention efforts for students in the university.

## **Retention Rates**

It has always been the concern of institutions to retain the greatest possible number of students in distance learning. Student retention and attrition rates have all been a concern of institutions worldwide (Rwegasira K, 1988). 83% of OUM students are from undergraduate programmes. The undergraduate programmes consist of Diploma and Bachelor's Degree. In other words, this has shown that major revenue for OUM comes from this group of students. Thus, the focus must be emphasised to ensure undergraduate students could retain and sustain with OUM. Therefore, the institution needs to understand the contributing factors influencing students' retention in OUM to ensure the institution's revenue growth and sustainability.

## **Method and Measures**

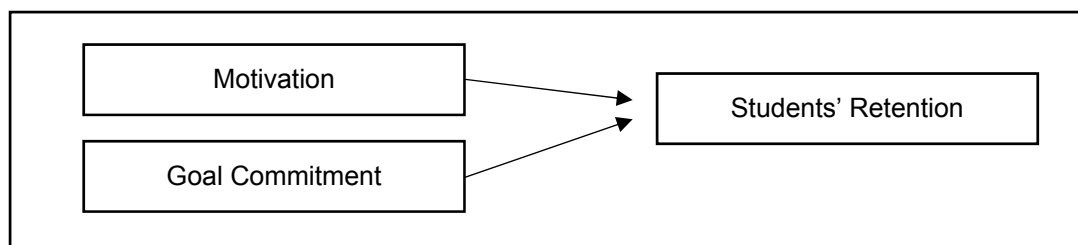
A survey has been conducted among OUM undergraduate students'. Respondents were students from various programmes, and focus was given to the diploma and bachelor degree students. Stratified sampling was used in this study to distribute to six learning centres. The analysis was conducted for each of the ideas in ensuring the reliability of the instrument using SmartPLS. The online method monitoring survey questionnaire was distributed to 130 undergraduate students, and 79 of them have responded. The questionnaire was distributed to 6 learning centres: Ipoh, Seberang Jaya, Kuching, Johor Bahru, Seremban, and Kuantan. There are 4 sections in the questionnaire. The first section consisted of 6 questions related to socio-demographic and academic characteristics of the students. The second section asked students about their motivation with 12 questions. The third section was on goal commitment with 9 questions, and the fourth section was on student retention with 8 questions. Individual aspects/elements of students (i.e. motivation, goal commitment and students' retention) were measured on a 5-point Likert scale ranging from 1 (lowest skill) to 5 (highest value). According to (Hair et al, 2010) the sample size achieved the minimum requirement of 1 dependent variable to 10 samples (1:10). The response rate was 60.8% which is acceptable for this study.



## Conceptual Model

**Figure 1**

*The Conceptual Model of This Study*



## Research Findings

**Table 1**

*Socio-demographic and Academic Characteristics of the Survey Respondents*

Socio-demographic and Academic Characteristics	Number	%
Age		
21 - 30	24	31%
31 - 40	32	41%
41 - 50	22	27%
Above 50	1	1%
Gender		
Male	37	47%
Female	42	53%
Race		
Malay	33	42%
Chinese	17	21%
Indian	23	29%
Others	6	8%
Level of Study		
Diploma	5	6%
Degree	74	94%
Year of study		
2 years	1	1%
3 years	17	22%
4 years	39	49%
5 years	17	22%
Above 5 years	5	6%
Cluster of study		
Cluster Business Management	12	15%
Cluster Education and Social Science	39	50%
Cluster Applied Science	28	35%

The socio-demographic and other characteristics of the study population are shown in Table 1. More female students have responded to the survey, which comprised 53%, and the highest age population fall in the age range of 31 - 40 years, followed by the age range 21 - 30 years. Most of the respondents were Malays (42%), followed by Indians (29%) and Chinese (21%). Almost all of the respondents are pursuing Degree programmes (94%). Half of the respondents were in the Cluster of Education and Social Sciences (50%), Cluster of Applied Sciences (35%) and Cluster of Business and Management (15%). The majority of respondents were in the 4-year duration of the study (49%), 3 years and 5 years comprising 22% respectively and those above 5-year duration of study comprise 6%.

The analysis in this study is conducted using the SmartPLS Program. There are two basic evaluations. First, evaluating the measurement model (outer model) to find out the validity and reliability of indicators that measure latent variables; the instrument validity and reliability test criteria in this study refer to discriminant validity, convergent validity, and composite reliability. Second, assess the inner model or structural model to see the relationship between constructs, the significance value, and the research model's R-square. Testing Inner model in PLS analysis is done through bootstrap resampling.

According to (Hair et al, 2014) Cronbach alpha with less than 0.60 is considered poor, while 0.70 is acceptable. In contrast, Cronbach alpha over 0.80 is more reliable. In agreement with (Nunnally, 1978), the value of Cronbach's alpha should be 0.700 or above. According to (Gerrard; Cunningham & Devlin, 2006) some of the studies also considered 0.600 as an acceptable value. In this study, Cronbach's alpha is more than 0.9, which is highly reliable as the value is more than 0.70.

**Table 2**

*Cronbach's Alpha*

No	Construct	Cronbach's Alpha
1	Goal commitment	0.941
2	Motivation	0.910
3	Student retention	0.888

A measurement model is an assessment of the validity and reliability of research variables. There are three criteria for assessing the outer models: discriminant validity, composite reliability, and convergent validity. Based on the three criteria for measuring the measurement model from the results bootstrapping in the PLS method, testing the measurement model for each indicator that reflects the construct or latent variable can be explained as follows.

Discriminant validity in this research used the score square root of average (AVE) to test whether the research instrument is valid in explaining or reflecting latent variables. Discriminant validity used is square root of average variance extracted ( $\sqrt{AVE}$ ). Suppose the square root of the average variance extracted ( $\sqrt{AVE}$ ) value of each variable is greater than the correlation value between the latent variable and other latent variables. In that case, the instrument variable is said to be a valid discriminant. This study finds it essential to assess further its discriminant validity that is complementary to the prior assessments.

**Table 3***Average Variance Extracted (AVE)*

No	Construct	Average Variance Extracted (AVE)
1	Goal commitment	0.738
2	Motivation	0.689
3	Student retention	0.749

According to (Hair, Sarstedt & Ringle, 2017) the average variance extracted (AVE) of each latent construct should 0.5 or higher. Test results in Table 3 show that the value of average variance extracted (AVE) are more than 0.5. All constructs showed a satisfactory explanation of more than 50% of variances of its items ranging from 0.689 to 0.738.

The result from the square root of average variance extracted ( $\sqrt{AVE}$ ) values of all variables is greater than the correlation between latent variables and other latent variables so that the instruments of each variable are valid discriminant. In compliance with Fornell-Larker's criterion, this study is keen to report that the constructs and items used in this study had confirmed their discriminant validity.

Convergent validity measures the validity of an indicator as a measure of construct, which can be seen from outer loading. The value outer loading can also be interpreted as the contribution of each indicator to the latent variable. Outer loading of an indicator with the highest value means that the indicator is the strongest measure of the latent variable in question. More clearly follows the results of the analysis and evaluation of measurement models for each research variable.

**Table 4***Outer Loading Each Indicator*

	Goal Commitments	Student Motivation	Student Retention
GC1	0.867		
GC3	0.829		
GC4	0.899		
GC5	0.896		
GC6	0.884		
GC7	0.777		
GC8	0.856		
M11		0.860	
M12		0.862	
M2		0.820	
M3		0.836	
M6		0.799	
M7		0.802	
SR3			0.846
SR4			0.886
SR5			0.877
SR6			0.853

All indicators in each variable have value outer loading above 0.70, which means that the indicators are valid and able to measure latent variables.

Composite reliability tests the value reliability between the indicators of the construct that constitutes it. Results are composite reliability said to be good if the value is above 0.70. Test results of composite reliability the measurement model are presented in Table 4.

**Table 5**

*Composite Reliability of Constructs*

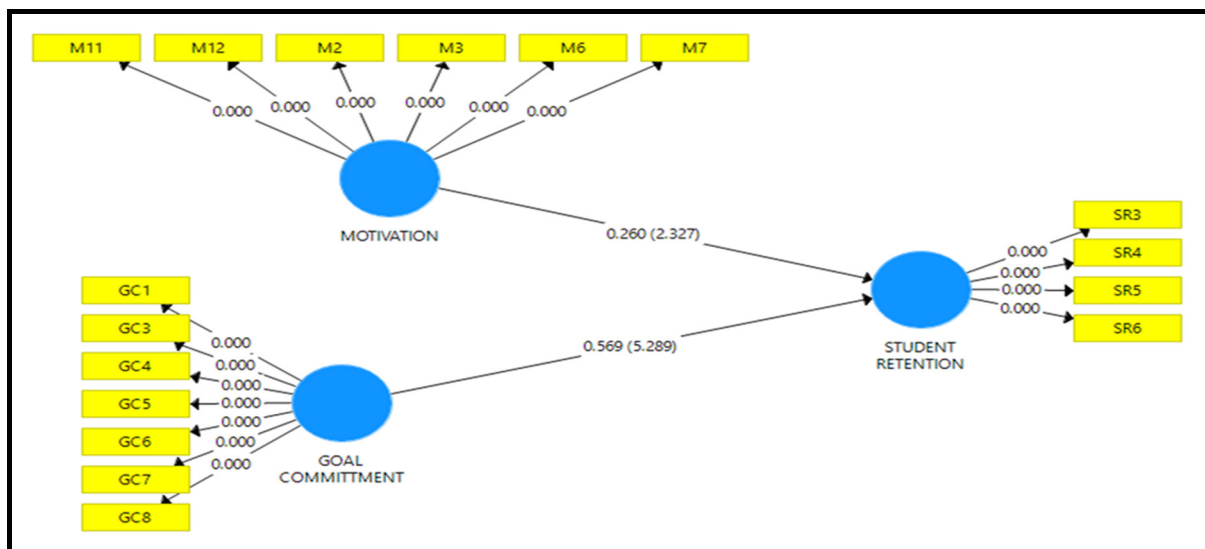
No.	Construct	Composite Reliability
1	Goal commitment	0.952
2	Motivation	0.930
3	Student retention	0.923

Table 5 shows that the value of composite reliability of all variables are above 0.70. These results mean that the 3 latent variables analysed have good composite reliability, and it is concluded that all instruments used in this study have met the criteria or are suitable for use in the measurement of: goal commitment, motivation, and student retention.

The following table showed the result of direct hypotheses. The result supported 2 hypotheses. Student motivation and goal commitment towards student retention.

**Figure 2**

*Coefficient on Relationships Diagram*



**Table 6***Path Coefficient on Relationships*

Relationship	Original Sample ( $\beta$ )	T Statistics	P-Values	Decision
Goal commitments -> Student retention	0.569	5.289	0.030	<b>Supported</b>
Student motivation-> Student retention	0.260	2.327	0.020	<b>Supported</b>

Table 6 explains the assessment of the relationship between goal commitment, motivation, and student retention. The value of the path coefficient for the goal commitments to student retention was  $\beta$  0.569, while the result of t-value and p-value shows that the relationship between student commitments and student retention is significant (t-value = 5.289; p-value 0.030).

The value of the path coefficient for student motivation was  $\beta$  = 0.260. The t-value and p-value indicated that the relationship between student motivation and student retention is significant (t-value 2.327; p-value 0.020).

### Conclusion

This paper emphasises the importance of motivation and goal commitment towards retaining students in the institution. Higher education worldwide is affected by Covid-19 pandemic and billions of students has to stay at home to continue their study. The institution and academics must maintain their morale support to encourage and guide the students to success. This article can potentially be used as a starting point for future research on the impact of Covid-19 on educational performance. This is also important to the sustainability of the institution. Future research should evaluate the effects of the Covid-19 pandemic on other factors that impacted the educational system and the general population.

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## Does the Number of Hours Spent on Learning Affect Academic Achievement?

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### Abstract

*Examinations are measurement tools designed to assess learners' achievement of course learning outcomes. Past studies have shown that factors such as motivation and study time play a part in enhancing learner achievement in assessment. The objective of this exploratory study is to develop a Regression Model that will be used to identify the possible relationship between the learners' study time with their academic achievement. An online questionnaire survey was administered to 98 respondents of year 1 distance learners of the Principle of Management course in the January 2021 semester at Open University Malaysia. The data on the self-report of study time by the learners for the two variables were analysed. A regression analysis via Statistical Package for Social Sciences (SPSS) analysis tool was performed to study the relationship between the study time (for completing the assignment and preparing for the final examination) and academic achievement. The findings of this study suggest that a regression model can significantly predict academic achievement. However, based on this model, only the study time allocated for completing the assignment appears to be significantly correlated to the course assessment achievement. It is hoped that the findings gathered will lay the foundation for future research that take into consideration other relevant factors associated with study time and academic achievement.*

**Keywords:** *Open and Distance Learning, Academic Achievement, Study Hours, Regression Model*



## Introduction

Students start each new semester with high expectations. Besides, they foresee themselves being productive and successful in their studies by achieving good grades and CGPA. But there are only so many hours in a day, days in a week, and weeks in a semester for students to achieve this. As such, given these constraints, students must put together a realistic plan or establish a routine that will enable them to achieve academic success. A student's academic achievement will be at risk if they don't pay serious attention to managing their study time. Thus, students must wisely manage their study time on a daily, weekly, and semesterly basis to achieve academic success. This is not unachievable as the structure of conventional learning and open & distance learning (ODL) provides learners with the greatest possible control over their time in addition to place and pace of education (Dzakiria et al., 2005). As stressed earlier, time plays an important role in a student's learning. A study of this is an important reporting criterion in the courses and program accreditation. Study time is the amount of time a student dedicates solely to himself or herself to acquire or comprehend the knowledge and it may be flexible. For example, students may have to study at different times with different total hours of learning for the days in a week. It is intriguing to note that study time also includes some external activities that affect the internal process of learning such as hunger, lack of affection, care, etc. (Rothkopf, 1982).

Barbarick & Ippolito (2003) researched to determine if study time can be a factor to predict academic achievement. Prediction of a learner's academic achievement has been studied in education to identify learners' performance, so the instructors can take necessary proactive measures for learners that are at risk in their studies. According to Hand (1998), classical statistical methods such as regression analysis, discriminate analysis, and cluster analysis have been employed to develop various models to predict relationships. Among these, the multivariate linear regression model is commonly employed as the predicted results can be interpreted in a reasonable and meaningful way (Cohen, 2000).

## Research Problem

A learner's academic achievement is deemed important for successfully achieving the intended learning outcomes of any academic programme. There appears to be unanimous agreement that learners' study time affects their academic performance (Barbarick & Ippolito, 2003; Logunmakin, 2001; Kumar, 2002; Gbore, 2006; Ukpung & George, 2013). However, other researchers have concluded that study time is not the sole factor that affects academic achievement; it becomes significant when other factors are also considered together with it in determining a student's academic achievement (Plant et al., 2005). Conversely, in a study conducted by Oreopoulos et al. (2018), it was found that even when the study time among the treatment group was significantly increased it did not have an impact on the course grade. The diverse results of these studies designate varying degrees of relationship between study time and academic achievement, which indicates that the nature of the relationship between study time and academic achievement is still not clearly understood.

In addition, research on the impact of study time and academic achievement in distance learning appears to be scarce. Furthermore, an online search on three databases, namely ERIC, ProQuest Education Journals, ProQuest Dissertation & Theses Global, and Taylor & Francis Online, using the title search terms of "study time distance learning academic achievement" and "time management distance learning academic achievement" seems to bear this assertion out as it yielded only two results! The two results dealt on the effect of time management on academic achievement in distance learning by Ahmad et al.

(2019) and Puspitasari, K. (2012). However, none of the databases yielded any results on study time for distance learning. This indicates a clear gap in the literature. Often, the learning time in the distance learning environment, which involves scheduled interaction with the instructor, can be accounted for and it is limited. Distance learners are also required to allocate time to study for completing the assignment and preparing for the examination. However, how the number of study hours impacts academic achievement in distance learning remains unclear. This study attempts to address the gap in the literature by focusing on the effect of study time on academic achievement in a distance learning setting.

### **Research Objectives**

In this exploratory study, we aim to develop a Regression Model that will be used to identify the possible relationship between a learner's study time with their academic achievement.

The specific objectives of the study are:

- 1) To determine the relationship that exists between learners' study hours and academic achievement by using a regression model.
- 2) To determine which independent variables in the regression model significantly impact academic achievement.
- 3) To validate the regression model for predicting student academic performance.

Hence, this study seeks to answer the following research questions:

- 1) What is the relationship between study hours for completing assignment and study hours for preparing for the examination with the academic achievement?
- 2) Which of the independent variables (study hours for completing assignment and study hours for preparing for the examination) have significant relationship with academic achievement?
- 3) How well does the regression model predict the predictions of the academic achievement?

The following hypothesis was formulated to guide the study:

- 1) There is significant relationship ( $p < 0.05$ ) between at least one of the independent variables (study hours for assignment and study hours for examination) with the dependent variable (academic achievement) as determined by the regression model.
- 2) The hours studied for completing the assignment should significantly ( $p < 0.05$ ) affect the academic achievement as determined by the regression model.
- 3) The hours studied for preparing for the final examination should significantly ( $p < 0.05$ ) affect the academic achievement as determined by the regression model.



## Research Method

Respondents in this study consisted of 98 undergraduate students in their first semester of study in the January 2021 semester. 62% of them were female. The data was collected from the respondents who were registered for the Principle of Management course at Open University Malaysia. Close to 70% of the respondents were less than 30 years old and the remaining were within the age group of 30 to 49 years except for one respondent whose age was more than 50 years. All respondents in this study had voluntarily given their consent to participate in the study.

The online questionnaire was uploaded on the OUM's learning management system, myINSPIRE. There were 5 items on demographics and 7 items enquired on matters related to study hours. The focus of this paper addressed the following 2 items in the survey:

- i. How many hours per week did you spend on your assignment / coursework?
- ii. How many hours per week did you spend on preparing for the final examination?

The respondents self-reported their study hours spent for completing assignment on a weekly basis for 8 weeks, because the assignment due date was on the 8<sup>th</sup> week of the semester. However, the self-report of weekly hours data for preparing for the examination was collected for 12 weeks from the respondents, because the semester's examinations commence during the 13<sup>th</sup> to 14<sup>th</sup> week of the semester.

## Findings and Discussion

This study attempted to find out whether a relationship existed between academic achievement in the Principle of Management course and the learners' study hours and whether it can be used to predict the academic performance of learners. For this study, learners' study hours were made up of two parts: (i) the average hours per week learners spent completing the assignment component and (ii) the average hours the learners spent a week in preparing for the final examination component of the course. We also define academic achievement as the overall final marks obtained by the learners for the course which is determined by combining the marks from the assignment and final examination components.

Towards this end, multiple linear regression was used to develop a regression model to obtain the relationship that is given by the following equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

where, the dependent variable,  $Y$  is the academic achievement. The two independent variables,  $X_1$  and  $X_2$  represent the average hours a week spent by the learners in completing the assignment component and the average hours spent per week preparing for the final exam component of the course, respectively.  $\beta_0$  is the  $y$  axis intercept while  $\beta_1$  and  $\beta_2$  denote the regression coefficients for  $X_1$  and  $X_2$ , respectively.

The SPSS software was used to analyse the descriptive statistics, determine the regression coefficients and check the model assumptions. The findings from the analysis are discussed below:

Table 1 displays that the overall average course assessment mark (average academic achievement) for the Principle of Management course is 78 marks (SD = 7.4), whereas the average hourly study time per week for completing the assignment and preparing the examination is 2.2 hours (SD = 0.9) and 1.2 hour (SD = 0.6) respectively. The findings seem to imply that learners spend more time completing their assignment rather than studying for the final examination. This could be due to the fact that in the overall assessment of this course, a higher weightage of 60% is allocated for the assignment component compared with 40% for the final examination component in the assessment of this course.

**Table 1**

*Average of the Overall Assessment Marks, Study Hours for Completing Assignment and Study Hours for Preparing for Examination*

	Mean	Std. Deviation	N
Assessment Marks	77.9	7.4	98
Hours for Assignment	2.2	0.9	98
Hours for Examination	1.2	0.6	98

**a) Determining the Relationship between the Independent Variables and Academic Achievement**

In order to determine whether there is any relationship that exists between learners' study hours and academic achievement in the Principle of Management course, a regression model was used. Table 2 depicts that  $R^2 = 0.08$ , which suggests that 8% of the variability in the academic achievement can be explained by the regression model.

**Table 2**

*Predictive Linear Regression Model Developed based on Study Hours and Academic Achievement*

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std Error of the Estimate
1	0.282 <sup>a</sup>	0.080	0.060	7.193

- a. Dependent Variable: Y
- b. Predictors: (Constant), X<sub>1</sub>, X<sub>2</sub>

Then, to determine the significance of the relationship between the independent variables (X<sub>1</sub> and X<sub>2</sub>) and the dependent variable, Y, an ANOVA statistical analysis was conducted. Table 3 depicts the results of the analysis. There was a significant interaction of the independent variables and the dependent variable,  $F(2, 95) = 4.10, p = 0.02$ . Therefore, the regression model is able to significantly predict academic achievement.

**Table 3***ANOVA Statistics for Linear Regression Model*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	424.607	2	212.304	4.104	0.020*
	Residual	4914.803	95	51.735		
	Total	5339.410	97			

a. Dependent Variable: Y (*Academic Achievement*)b. Predictors: (Constant),  $X_1$ ,  $X_2$ \*  $p < 0.05$ **b) Determining the Variable that affect Academic Achievement**

Next, it was important to determine which of the independent variables in the regression model significantly impact academic achievement in the Principle of Management course.

**Table 4***Coefficients of Determination to Measure Goodness of Fit of the Regression Model*

Model		Unstandardised Coefficients		Standardised Coefficients		95% Confidence Interval for B		
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	74.418	1.853		40.172	0.000*	70.740	78.096
	$X_1$	3.194	1.123	0.407	2.845	0.005*	0.965	5.422
	$X_2$	-3.079	1.681	-0.262	-1.832	0.070	-6.416	0.258

a. Dependent Variable: Y (*Academic Achievement*)b. Predictors: (Constant),  $X_1$ ,  $X_2$ \*  $p < 0.05$ 

From the values in Table 4, the linear regression equation for the model can be fitted to the data by the following formula:

$$\hat{Y} = 74.42 + 3.19X_1 - 3.08X_2$$

It provides the relationship between the study hours (for assignment and examination) and academic achievement for the course; here  $\hat{Y}$  = prediction of the academic achievement based on the model,  $X_1$  = study hours for completing the assignment and  $X_2$  = study hours for preparing for the examination. The  $\beta_1$  expresses a positive relationship between the study hours for assignment and academic achievement, which means that the more study hours spent on completing the assignment, the higher the results are for the final academic achievement. However,  $\beta_2$  expresses a negative relationship between study hours for preparing examination and academic achievement, which means the lesser study hours spent for preparing for the examination, the higher are the results for the final academic achievement.

The statistical analysis in Table 4 confirms that study hours for completing assignment significantly predicted academic achievement,  $\beta_1 = 0.407$ ,  $t(95) = 2.85$ ,  $p < 0.05$ . On the contrary, the study hours for preparing for examination variable did not have a significant impact on academic achievement. It may also explain the negative relationship between the study hours for preparing examination and academic achievement.

The findings show that the amount of time spent on examination preparation does not significantly impact the overall final academic achievement for the course. The possible reasons for these results are as follows:

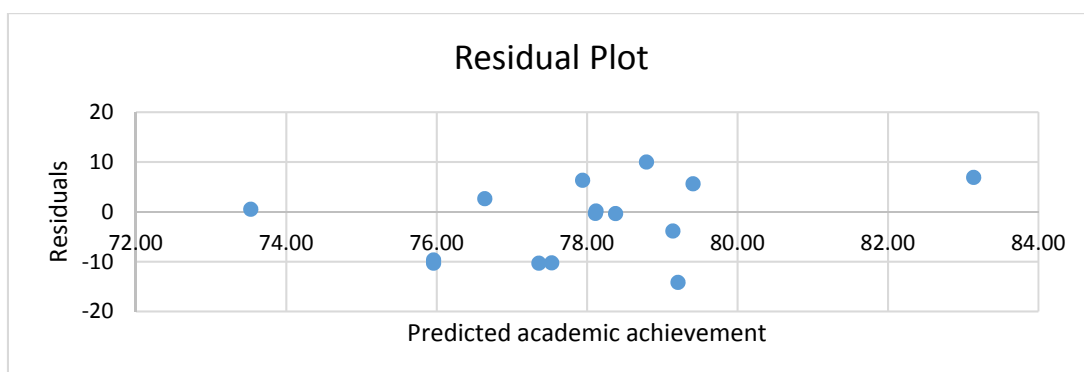
- i. The assignment assessment component comprises 60% of the course assessment. As such, learners tend to spend more study hours completing the assignment to pass the course.
- ii. The learners who have done well for their assignment assessment would have prepared themselves in learning the course and will not require much effort to study. Any further study time will not predict better results in the final examination and subsequently in the whole course assessment marks.
- iii. Some of the learners who were satisfied with their assignment marks may put in little or no effort for their final examination.
- iv. Due to the Covid-19 pandemic, the current final examination is a take-home examination in multiple-choice questions (MCQ) format for this course. Hence, learners may not put in much time to study because they can access their course materials to answer the questions. Learners may also feel they have a better chance of doing well and have reduced anxiety on MCQs as options are made available, as opposed to sitting for an essay-type exam.

### c) Validating the Regression Model

The residual analysis was conducted to determine how well the model fit to the data. Table 5 shows the actual academic achievement of 15 learners in the sample data with the predicted academic achievement using the regression model equation. Figure 1 illustrates that the residuals appear to behave randomly, which suggests that the model fits the data well.

**Figure 1**

*Residual Plot for the Data in Table 5*







However, the validation of the model is limited as it had only considered the effect of study hours. The potential influential variables such as attitude, motivation, and GPA that were not studied during the model development stage may affect the academic achievement. Hence, possibly rendering the predictions unreliable.

**Table 5**

*Comparison between the Observed and Predicted Academic Achievement*

Student	Observed Academic Achievement	Predicted Academic Achievement	Residual
1	66.25	75.96	-9.71
2	78.25	78.12	0.13
3	79.25	76.64	2.61
4	67.25	77.53	-10.28
5	67.00	77.36	-10.36
6	88.75	78.79	9.96
7	65.62	75.96	-10.34
8	78.00	78.38	-0.38
9	85.000	79.41	5.59
10	65.00	79.21	-14.21
11	90.00	83.14	6.86
12	75.25	79.14	-3.89
13	84.25	77.94	6.31
14	74.00	73.53	0.47
15	77.75	78.11	-0.36

Verifying that the regression model satisfies the following basic assumptions in multiple linear regression:

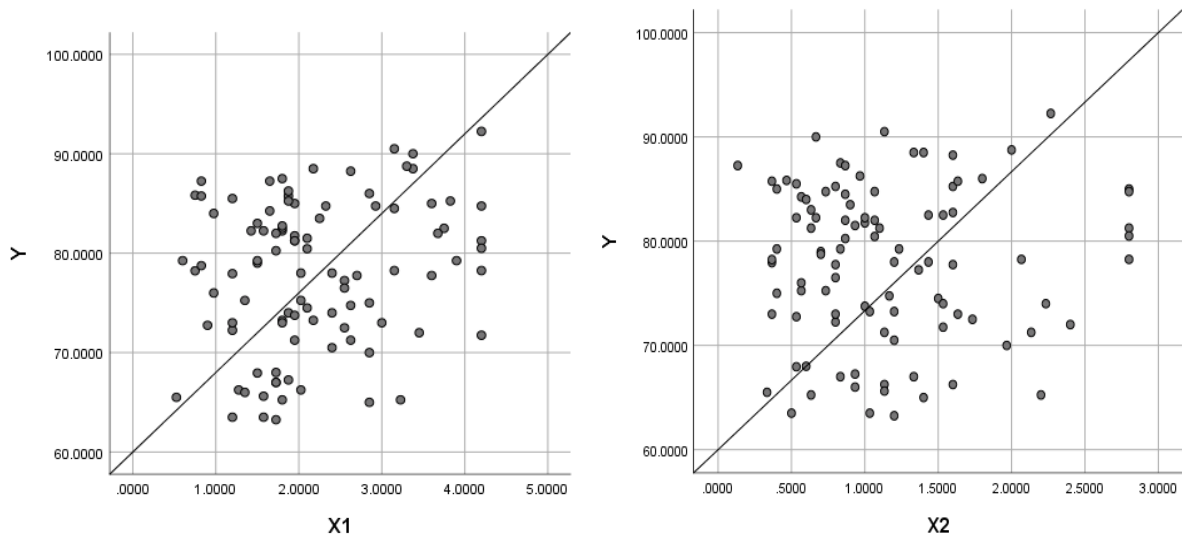
- i. Linearity
- ii. Normality, and
- iii. Homoscedasticity

i. Linearity

Scatter plots were used to check for linearity between the variables used in the model. The two scatter plots in Figure 2 shows that there exists a linear relationship between each independent variable and the dependent variable:

**Figure 2**

*The Assumption of Linearity*

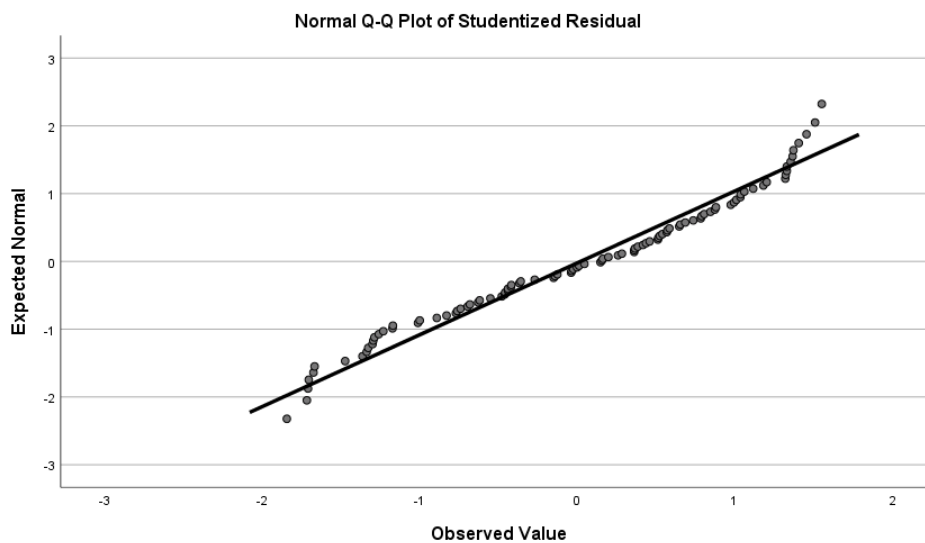


ii. Normality

The Kolmogorov-Smirnov (KS) test was used in conjunction with the P-P plot to check for normality of the studentised residuals. The KS test was  $0.053 > 0.05$ , indicating that the variables have an approximately normal distribution. A Q-Q plot in Figure 3 confirmed this result.

**Figure 3**

*The Assumption of Normality*



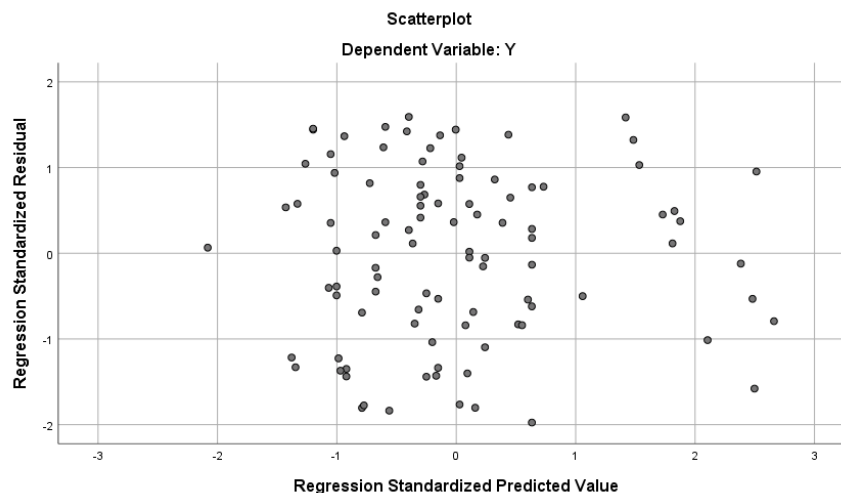


### iii. Homoscedasticity

Homoscedasticity describes a situation in which the error term (that is, the “noise” or random disturbance in the relationship between the independent variables and the dependent variable) is the same across all values of the independent variables. This means the variance must be consistent across all the independent variables. From our graph in Figure 4 below, we can see that this assumption has been met since all of the data lie between -2 and 2.

**Figure 4**

*The Assumption of Homoscedasticity*



Thus, all the variables that were used in developing the multiple linear regression model have met all the 3 basic assumptions for a multiple regression model.

## Conclusion

In this exploratory study, a simple regression model was successfully developed that correlates the study hours spent with academic achievement for the Principle of Management course. This model was found to be statistically significant in predicting academic achievement. However, of the two independent variables used in the model, only the one representing the average hours spent per week completing the assignment component was found to be significant in influencing academic achievement for the course. That may be the case since 60% of the overall final exam mark for the entire course comes from the assignment component. One major limitation of this exploratory study is that the model had only considered the effect of learners' study hours on their academic achievement. Notwithstanding this limitation, the model was still able to predict 8% of the variation in the academic achievement in this course. Other factors that can affect academic achievement, such as self-motivation, self-discipline, interest in the course, GPA, etc., were not included in the model. Future work will attempt to include these and other relevant confounding variables in the hierarchical regression analysis to further improve the model.



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## Determinants of Intention to Further Study among Open Distance Learning Higher Institutions' Alumni in Malaysia

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### Abstract

*The objective of this study is to investigate the factors that influence the intention to further study among alumni of open distance learning (ODL) institutions in Malaysia. There are three exogenous variables involved, namely, peer influence, financial support, and promotion. Self-efficacy is a mediating variable and intention to further study is the endogenous variable. The target population of the study is active alumni students of Malaysia ODL institutions. This study will adopt a quantitative research approach and use primary data for data analysis. The primary data will be collected by using the online platform from the selected respondents. To analyse the causal relationships among peer influence, financial support, promotion, self-efficacy, and intention to further study, the Structural Equation Model (SEM) technique will be adopted. The model will be designed and later analysed by using the Partial Least Square (PLS) procedure on data collected from a survey. The data analysis software to be used in this study are SPSS and SmartPLS3. The result of this study can be used particularly by ODL higher institutions and all tertiary higher education institutions to formulate strategies to attract their alumni to further study at a higher level of academic programme.*

**Keywords:** ODL, Self-Efficacy – Peer Influence, Financial Support, Intention, Promotion

### Introduction

Nowadays, education serves as a tool for raising living conditions and reforming a country's economy. Thus, pursuing higher education has become more important now compared to the past. It is vital to examine the underlying factors that influence students' intention to continue their study. Generally, there are four crucial factors that have close linkage with students' intention to pursue higher education, which are peer influence, financial support, promotion, and self-efficacy. This study includes three of these determinants to examine whether they are significantly affecting students' intention. This is because not all students have the intention to continue their study. There are some students who are facing problems which deter them from continuing their study. Therefore, the overall



objective of this research is to find out more useful information about factors influencing students' intention to pursue higher education. Colleges and universities need to view students' learning as lifelong commitments that do not end at graduation. Alumni are assets that can provide meaningful and mutually beneficial relationships over time and in this study, alumni are a prime target audience for continuing education opportunities.

This study will address this intention by exploring new possible factors that could predict whether students will continue to pursue their studies after graduation, that is, drivers of alumni self-efficacy. We assume that alumni will report higher (retrospective) engagement when they perceive their past educational experiences positively in terms of the relationship they had with pursuing study after graduation. Consequently, after their graduation, these former students might have positive intentions. In higher education, former students are among the key stakeholders. The educational literature also stresses the importance of building positive student knowledge. Higher education institutions may benefit from positive student-faculty relationships, as they might result in (higher) student involvement during their studies, for example, positive recommendations by students, and students being engaged in studying within and outside the classroom. Benefits could also include former students' involvement after graduation, such as giving guest lectures and being part of an educational advice committee. How former students perceive the quality of the relationship they had with their educational faculty/staff might be an important predictor of how former students perceived their studies, that is, how they were engaged in studying, and consequently, how they now (still) feel connected to their former university and show their loyalty. Hence, this study aims to assess the influence of peer influence, promotion and financial support on self-efficacy and the influence of self-efficacy on intention to further study among open distance learning (ODL) institutions' alumni in Malaysia.

In addition, this study will benefit those who are pursuing their studies with the intention of improving their knowledge. The study will also benefit decision makers, educational entrepreneurs, and institutions of higher learning in upholding academic excellence and creating a knowledge society. As such, it enhances the development of human capital for the country besides contributing to the country's political, economic, and social progress.

## **Literature Review**

Malaysia, like many other countries, aspires to be a developed nation. Malaysia's 11th Malaysia Plan (RMK-11) aims to create more master's and doctoral degree holders in order to speed up the development of knowledge employees, or K-workers (Malaysia Ministry of Education, 2018). With this vision in mind, another step forward in advancing education in Malaysia is to provide life-long learning opportunities for all with the emergence of open and distance learning (ODL) institutions. Open and Distance Learning (ODL) is described by UNESCO (2002) as "teaching primarily by someone who is separated from the learner in time and space". Its objective is openness and flexibility in access, curriculum, and other elements in its structure. The Commonwealth of Learning (2003) defines ODL as separation in time and space between teacher and learner, use of mixed-media courseware, two-way communication and using learning resources rather than attending classroom sessions. Ahmad et al. (2010) explains ODL as the provision of flexible educational opportunities in terms of access and multiple modes of knowledge acquisition. In this study, ODL refers to a flexible and accessible remote learning method with the use of various delivery systems and learning resources available to learners. Hence, ODL is basically a revolutionising learning and emancipating educational practices by providing knowledge to anyone, anywhere at any time (Appavoo, 2018).



## Statement of Problem

Open and Distance Learning (ODL) institutions in Malaysia are facing stiff and fierce competition, not only from local conventional universities but also global competition online and web-based education such as international free online courses like Massive Open Online Courses (MOOCs) that are being offered by Udacity, edX and Coursera. Currently in Malaysia, there are a few private universities providing ODL; Open University Malaysia (OUM), Wawasan Open University (WOU), Universiti Tun Abdul Razak (UNIRAZAK), Asia eUniversity (AeU), Al-Madinah International University (MEDIU) and International Centre for Education in Islamic Finance (INCEIF) (MOHE, 2011). Lifelong learners in Malaysia refer to working adult learners who seek higher academic qualifications for various reasons. They will have wider choices of where to study and pursue their graduate studies once finishing their degrees. For example, Open University UK faces challenges of increasing tuition fees and student numbers are declining rapidly (Tait, 2018). Ali (2015) highlights the challenges that ODL institutions in Malaysia are currently facing such as stiff competition from the MOOCs that provide free courses to anyone. The findings of a survey by University of Pennsylvania involving 35,000 students from 200 countries indicates that the majority of students were well-educated, young men looking for new skills to advance their careers (United Nations Asian and Pacific Training Centre for Information and Communication Technology for Development (UNAPCICT), 2018). The next problem for Malaysian ODL institutions is to look into their alumni students who are having difficulty continuing their education. Learners face issues such as demotivation, life obligations, peer pressure and insufficient time management when attempting to juggle learning, employment, and family life (Mohd Amin et al., 2017).

## Significance of the Study

The finding of this study will contribute greatly towards the substantial contributions in both theoretically and managerial spheres. For theoretical contribution, this study's findings will help to determine the actual reasons that influence lifelong learners' intention to pursue further studies in ODL institutions in Malaysia. Secondly, the findings will help marketers in ODL to understand the importance of promotion and marketing elements that will attract more working adult learners to join their ODL institutions.

## Theory of Planned Behaviour (TPB)

This study has adopted Azjen's Theory of Planned Behaviour (TPB). Azjen (1991) has presented a Theory of Planned Behaviour (TPB) to predict an individual intention at a specific time and place. He stresses that behaviour is driven by intentions and is a function of three important determinants which are:

- a) The attitude (opinions of oneself about the behaviour)
- b) The subjective norm (opinions of others about the behaviour)
- c) The perceived behavioural control (self-efficacy towards the behaviour)

Azjen (1991) states that his theory that intention is a good predictor of the actual behaviour. Therefore, in this study, this theory will be utilised in order to investigate whether brand leadership, relationship marketing and self-efficacy have any significant relationship with the student's intention to further their studies at ODL institutions in Malaysia.

### **Peer Influence on Intention to Study**

Previous study mainly focuses on institutional factors such as cost of education, degree content and structure, physical aspects, value of education and other institutional information (Koe & Saring, 2012; Yusof et al. 2008; Wagner & Fard, 2009). Yusof et al. (2008) has found that cost of tuition is an important factor to consider when the parents selected the higher education institution. Supporting these findings, Wagner & Fard (2009) and Koe & Saring (2012) also found out the cost of tuition is an important factor in choosing the learning institution. In addition, from Koe & Saring (2012)'s findings, they discovered more important variables influencing foreign undergraduates' intention to study at graduate school of a public university in Malaysia. This includes location, low cost, university reputation, academic programmes, learning facilities and country image. For foreign students, the selection will be strict since this decision is a big decision that will involve their future. Hence, the foreign students' criteria are wider compared to local students. For local students' criteria, however, Wagner & Fard (2009) has found out that local Malaysian students will select HEI institutions based on physical aspects, facilities of HEI together with information received by students. Thus, these variables have been proven time and time again to have positive and significant affect towards students' intention to study at HEIs. Although no study has focused substantially on peer impact in the study at ODL literature, yet, past research implies that a student's peers have a role in the decision to study at higher education institutions (HEIs) (Wagner & Fard, 2009; Koe & Saring, 2012).

### **Promotion on Intention to Study**

As a result, ODL institutions in Malaysia must make greater efforts to entice alumni students to resume their studies through graduate school in order to foster a long-term partnership between customers and institutions. Previous empirical studies mainly focused on internal factors that influence student's intention for further study such as institutional, the students themselves, services support, or course evaluation (Cheawjindakarn et al., 2012) and failed to address marketing elements as presented in this study. The potential gains that can be realised if ODL institutions are aware of their marketing elements that will influence their students' intention to continue pursuing their studies at their institutions. Marketing is the heart of business success (McKenna, 1991) and it is the main factor that will make or break a business and it is essential especially in ODL institutions in Malaysia. Zain et al. (2013) finding is interesting and relevant to this study since the researchers have selected one marketing element, which is promotion. They found that promotion is an important factor that impact the student's choice of HEI institutions in Malaysia. Their research revealed that students choose institutions that are mainly promoted through radio and television. Thus, this finding can be a reason why this study is using marketing elements, which has not been researched before, such as brand leadership and relationship marketing.

### **Financial Support on Intention to Study**

Institutions of higher education are spending significant sums of money to entice students to choose their college or university, and many need to refine their strategies and focus on the most successful techniques (Capraro, Patrick, & Wilson, 2004). College and university admission administrators are faced with determining which factors influence students' choices, which strategies they can employ to attract students, and at the same time, determine how resources should be allocated. Johnston (2010) stated that universities face the challenge of attracting good students to enroll each year, while they compete with other universities and colleges. To enrol in college, students need to pay a large amount of





tuition fees and also living fees. The presence of financial aid shows that college acknowledges that students have a greater need for financial assistance, especially for those who have a greater academic ability to enroll into college (Klauuw, 2002).

Lack of financial aid is one of the factors that cause high dropout rates in institutions (Melguizo, Torres & Jaime, 2011). Therefore, institutions have offered some financial aid packages such as grants, loans, and work study assistance to help students meet their financial needs. Financial aid packages are design to minimise the gap between what the student and their family are expected to contribute to the cost of education and the actually cost needed to attend college (Heller, 2006). Financial support or financial aid refers to any scholarships, grants, or loans, albeit from financial institutions or government, for alumni to continue their studies (Herbaut & Geven, 2019).

### **Self-Efficacy**

Bandura (1997) defined self-efficacy as performing the task with the belief on ability, and self-efficacy also can explain as self-evaluation of one's competence to succeed in their action and reach the outcome. People who have low sense of efficacy will avoid completing the task, meanwhile people with high sense of efficacy will be ready to complete the task. People who are suffering the difficult than the others will doubt on their capabilities and feel alert because they need to work harder and longer. Self-efficacy is one's own expectation and belief to perform specific behaviours (Barbaranelli et al., 1996). Bandura (1997) defined self-efficacy as a belief and confidence of a person that he or she has the ability to complete certain tasks. In ODL, this is a crucial factor since learners themselves must have the ability to learn at their own pace.

Students will have high interest when they have strong self-efficacy, and this will lead to the outcome's expectations. To control an individual action, self-efficacy will offer a set of beliefs based on the individual's capabilities (Bailey, 2012). Based on perceived self-efficacy, high self-efficacy beliefs can be powerful when it is influencing the level of accomplishment. When a learner has high sense of self-efficacy, it can help the learner to have positive action on capability, effort and in facing challenges. The more self-efficacy the learner has, the more knowledge and skill the learner has in facing different situations (Bandura, 1997).

### **Conceptual Development**

Previous study mainly focuses on institutional factors such as cost of education, degree content and structure, physical aspects, value of education and other institutional information (Koe & Saring, 2012); Yusof et al. 2008; Wagner & Fard, 2009). Yusof et al. (2008) found that the cost of tuition is an important factor to consider when the parents selected the higher education institution. Supporting these findings, Wagner, Karl and Fard, Pooyan Yousefi (2009) and Koe & Saring (2012) also found that the cost of tuition is an important factor in choosing the learning institutions. In addition, from Koe & Saring (2012)'s findings, they discovered more important variables influencing foreign undergraduates' intention to study at graduate school of a public university in Malaysia. This includes location, low cost, university reputation, academic programmes, learning facilities and country image. For foreign students, the selection will be strict since this is a big decision that will involve their future. Hence, the foreign students' criteria are wider compared to local students. For local students' criteria, however, Wagner & Fard (2009) found that local Malaysian students will select HEI institutions based on physical aspects, facilities of HEI together with information received by students. Thus, these variables have been proven time and time again to have positive and significant affect towards students' intention to study at HEI.

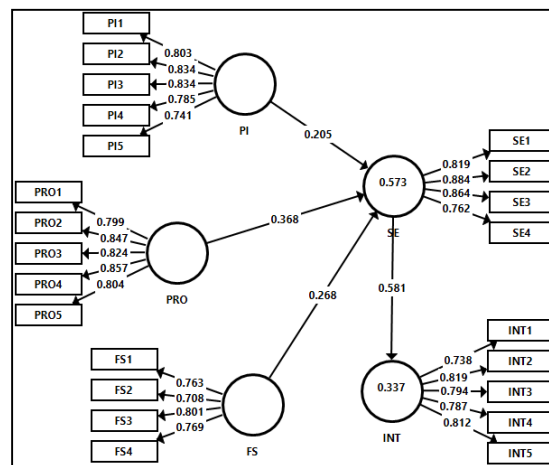
The finding of Zain et al. (2013) is interesting and relevant to this study since the researchers have selected one marketing element which is promotion. They found that promotion is an important factor that impact the student's choice in HEI institutions in Malaysia. Their research revealed that students choose institutions that are mainly promoted through radio and television. Thus, this finding can be a reason why this study is using marketing elements, which has not been researched before, such as brand leadership and relationship marketing.

Given the above literature review, the following research hypotheses were proposed:

- H<sub>1</sub>*: There is a relationship between financial support and self-efficacy among online distance learning alumnus in Malaysia.
- H<sub>2</sub>*: There is a relationship between peer influence and self-efficacy among online distance learning alumnus in Malaysia.
- H<sub>3</sub>*: There is a relationship between promotion and self-efficacy among online distance learning alumnus in Malaysia.
- H<sub>4</sub>*: There is a relationship between self-efficacy and intention to further study among online distance learning alumnus in Malaysia.
- H<sub>5</sub>*: There is a mediating effect of self-efficacy on the relationship between peer influence and intention to further study among online distance learning alumnus in Malaysia.
- H<sub>6</sub>*: There is a mediating effect of self-efficacy on the relationship between promotion and intention to further study among online distance learning alumnus in Malaysia.
- H<sub>7</sub>*: There is a mediating effect of self-efficacy on the relationship between financial support and intention to further study among online distance learning alumnus in Malaysia.

**Figure 1**

*Research Model*



*Note:* PI = Peer Influence, PRO = Promotion, FS = Financial Support, SE = Self-Efficacy, INT = Intention



## Methodology

### Approach, Design & Software

In this study, the research model included peer influence, promotion, financial support, self-efficacy, and intention. There were 5 latent variables and 23 observed variables. Independent variables consisted of peer influence (5 measurement items), promotion (5 measurement items) and financial support (4 measurement items). Mediator consisted of self-efficacy (4 measurement items) and dependent variable (5 measurement items). Quantitative research approach was adopted in this study by utilising primary data. All the 23 measurement items that represent their respective constructs were evaluated by using 5-point Likert scales ranging from strongly disagree to strongly agree. This was intended to allow most of the response quality and response rate and to decrease the respondents' frustration level (Babakus & Boller, 1992; Sachdev & Verma, 2004). Data collected were screened and cleaned by using SPSS 18 before performing the actual data analysis. As suggested by Hair et al., (2017), partial least squares–structural equation modeling (PLS-SEM) was used to analyse the data and SmartPLS 3 software (Ringle et al., 2015) was utilised for the purpose of data analysis.

### Sample

This study focused on online distance learning students' alumnus in Malaysia. Online distance learning students' alumnus included ODL students who were studying at diploma, degree, master, and doctorate level and they were the respondents in this study. Three ODL higher institutions' students consisted of Open University Malaysia, Wawasan University, and Asia e-University in Malaysia were involved in the study. The questionnaires of online version were e-mailed to 395 students from three ODL institutions in Malaysia. A total of 301 students (response rate = 76.2%) had answered and returned the survey questionnaires. Since this study utilised a variance-based approach for data analysis, and after taking into account that no specific standard for the minimum acceptable response rate in performing the online survey (Hamilton, 2003), the sample obtained were sufficient for the data analysis. Subsequently, the data screening technique as suggested by Field (2013) was performed. This was done by the using of SPSS 18 to re-evaluate and ensure that there was no outlier that was present in the data. By doing this method, 15 outliers were detected and eliminated before running the main data analysis. Therefore, the PLS-SEM algorithm was performed for a sample of 289 respondents in ODL higher institutions context.

## Data Analysis

### Descriptive Analysis

Based on Table 1, male constitutes 71.6% of total respondents and female 28.4%. Age of the respondents, 50.2% are less than 30 years old, 42.9% are between 31 and 40 years old, 5.2% are between 41 and 50 years old and 1.7% are between 51 and 60 years old. Respondents who are married make up 60.2%, single 34.9%, and divorcees 4.8%. Qualifications of the respondents are certificate 2.8%, diploma 22.1%, bachelor 51.6%, master 20.1% and doctorate 3.5%. Respondents who work in the public sector comprise 35.6%, private sector, 55%, while entrepreneurs make up 9.4%.

**Table1**

*Respondents' Profile*

		Frequency	Percent
Gender	Male	207	71.6
	Female	82	28.4
	Total	289	100.0
Age	<30	145	50.2
	31 - 40	124	42.9
	41 - 50	15	5.2
	51 - 60	5	1.7
	Total	289	100.0
Status	Married	174	60.2
	Single	101	34.9
	Divorce	14	4.8
	Total	289	100.0
Edu	Certificate	8	2.8
	Diploma	64	22.1
	Bachelor	149	51.6
	Master	58	20.1
	Doctorate	10	3.5
	Total	289	100.0
Employ	Public sector	103	35.6
	Private sector	159	55.0
	Entrepreneur	27	9.4
	Total	289	100.0

**Common Method Bias**

Kock (2015) and Kock & Lynn (2012) have proposed the entirety of collinearity test as a thorough method for the corresponding evaluation of vertical and horizontal collinearity. The variance inflation factors (VIFs) higher than 3.3 signified the pathological collinearity, and it also signaled the common method bias problem of the model. That's why, if the total collinearity checks VIFs were lesser than 3.3, it's assumed that the model poses no common method bias concern. Table 2 depicted the total collinearity check VIFs, which were less than 3.3 and as a result there was no issue of common method bias.

**Table 2***Full Collinearity (VIF)*

	INT	SE	PI	PRO	FS
INT		1.451	1.543	1.556	1.567
SE	2.256		2.385	2.257	2.291
PI	2.527	2.514		2.112	2.465
PRO	3.036	2.835	2.517		2.787
FS	2.277	2.142	2.188	2.075	

### Reflective Measurement Model Evaluation

This study adopted technique of evaluating each of the measurements in the first order and second order as suggested by Hair et al., (2017). This technique allows for the identification of items with low loading below the threshold of 0.7. However, all the measurement items for each construct were all above 0.7 and met all the statistical requirements to confirm the reliability and validity of the proposed research framework and all the item factor loadings were shown in Figure 1. Table 3 sums up the proposed model figures of Cronbach's alpha, composite reliability, together with the convergent validity evaluation. These assessments confirmed the absence of any issue of internal consistency validation. Furthermore, each of the Average Variance Extracted (AVE) figures were higher than 0.5 signifying the establishment of convergent validity (Hair et al., 2017) for each construct in the research model. To ascertain the establishment of discriminant validity, first the evaluation of cross loading was done, and it showed that based on the loadings, all the items rightfully represent and measured their respective construct (Table 4). The discriminants validity was further evaluated by computing and analysing the Hetrotrait-Monotrait (HTMT) ratio. HTMT technique was an advisable criterion to assess discriminant validity in Variance-Based Structural Equation Modeling (VB-SEM); (Henseler et al., 2015). Table 3 demonstrated the HTMT ratio figures of the constructs with the original sample and 95% confidence intervals (two-tailed), signifying the discriminant validity compliance on HTMT 0.85 and the upper level of the Bias-Corrected and Accelerated bootstrap confidence intervals were less than 1.

**Table 3***Construct Reliability & Validity*

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
FS	0.757(0.694, 0.806)	0.757(0.689, 0.804)	0.846(0.813, 0.873)	0.579(0.521, 0.632)
INT	0.851(0.813, 0.883)	0.86(0.822, 0.887)	0.893(0.868, 0.915)	0.625(0.568, 0.683)
PI	0.859(0.818, 0.889)	0.86(0.815, 0.888)	0.899(0.875, 0.919)	0.64(0.582, 0.693)
PRO	0.884(0.848, 0.911)	0.886(0.848, 0.910)	0.915(0.892, 0.934)	0.683(0.621, 0.737)
SE	0.853(0.817, 0.883)	0.861(0.830, 0.887)	0.901(0.879, 0.919)	0.695(0.647, 0.739)

*Note:* Confidence interval computed based on percentile bootstrapping test with 1000 sub-samples and at 5% confidence level.

**Table 4**

*Hetrotrait-Monotrait (HTMT) Ratio*

	FS	INT	PI	PRO
FS	-			
INT	0.577(0.449, 0.686)			
PI	0.807(0.711, 0.686)	0.594(0.474, 0.683)		
PRO	0.861(0.781, 0.922)	0.601(0.478, 0.705)	0.855(0.779, 0.914)	
SE	0.819(0.715, 0.888)	0.668(0.549, 0.750)	0.758(0.660, 0.827)	0.811(0.720, 0.877)

*Note:* A two-tail percentile bootstrap test at 5% confidence interval (2.5%, 97.5%) with 1,000 sub-samples were performed.

**Structural Model**

The directed principle of Hair et al., (2017) was adopted to evaluate the structural model in this study and to ascertain the significance of path coefficients. Table 5 exhibited the result of the hypotheses testing. *H1* suggested there is a positive relationship between financial support and self-efficacy, and the result of statistical analysis showed that there was a positive and significant influence of financial support on self-efficacy. ( $\beta = 0.268$ ,  $t = 4.607$ ,  $p = 0.000$ ); therefore, *H1* was not supported. The statistical result of *H2* showed there was a significant and positive relationship between peer influence and self-efficacy ( $\beta = 0.205$ ,  $t = 3.340$ ,  $p = 0.001$ ), therefore *H2* was supported. *H3* also proved that promotion has a positive and significant influence on self-efficacy ( $\beta = 0.368$ ,  $t = 5.298$ ,  $p = 0.000$ ); as a result, *H3* was also supported. *H4* result also has demonstrated a positive and significant on the relationship between self-efficacy and intention ( $\beta = 0.362$ ,  $t = 4.609$ ,  $p = 0.000$ ); thus, *H4* was also supported. For *H5*, it suggested that there was a significant mediating effect of self-efficacy on the relationship between peer influence and intention and the statistical result showed that it has significant mediating effect (Total indirect effect = 0.119,  $t = 3.238$ ,  $p = 0.001$ , LLCI = 0.045, ULCI = 0.194); therefore, *H5* was also supported. For *H6*, it showed that self-efficacy has a significant mediating effect on the relationship between promotion and intention (Total indirect effect = 0.214,  $t = 4.701$ ,  $p = 0.000$ , LLCI = 0.123, ULCI = 0.294), and therefore, *H6* was supported. Lastly, *H7* was found to be supported as well when self-efficacy has a significant mediating effect on the relationship between financial support and intention (Total indirect effect = 0.155,  $t = 4.317$ ,  $p = 0.000$ , LLCI = 0.081, ULCI = 0.230).

**Table 5***Hypotheses Testing Results*

Path	Beta	T Statistics	P Values	LLCI 2.5%	ULCI 97.5%	Decision
<i>H<sub>1</sub></i> : FS -> SE	0.268	4.607	0.000	0.143	0.379	<i>Supported</i>
<i>H<sub>2</sub></i> : PI -> SE	0.205	3.340	0.001	0.073	0.330	<i>Supported</i>
<i>H<sub>3</sub></i> : PRO -> SE	0.368	5.298	0.000	0.218	0.493	<i>Supported</i>
<i>H<sub>4</sub></i> : SE -> INT	0.581	13.155	0.000	0.470	0.651	<i>Supported</i>
<i>H<sub>5</sub></i> : PI -> SE -> INT	0.119	3.238	0.001	0.045	0.194	<i>Supported</i>
<i>H<sub>6</sub></i> : PRO -> SE -> INT	0.214	4.701	0.000	0.123	0.294	<i>Supported</i>
<i>H<sub>7</sub></i> : FS -> SE -> INT	0.155	4.317	0.000	0.081	0.230	<i>Supported</i>

## Discussion

The purpose of this study is to evaluate the influence of peer influence, promotion, financial support and self-efficacy on the intention of the ODL students' alumnus to further their study during the Covid-19 pandemic in Malaysia. Based on the above statistical analysis, this study found that financial support plays an important role in determining the alumnus of ODL higher education institutions intention to further their study. Availability of financial assistance for the alumnus can attract and create influence on them to develop their self-belief and self-determination and enhance their self-efficacy. This has been concurred by the above statistical analysis ( $\beta = 0.268$ ,  $t = 4.607$ ,  $p = 0.000$ ). Therefore, the ODL higher institutions should consider coming out with plans and strategies to allocate certain portion of their budget as financial assistance to be offered to their alumnus to attract and develop their intention to further their study. Peer influence in the learning process of the students in ODL setting plays a crucial role in determining that their learning process will be effective. Students interact and communicate with one another to discuss various topics related to their study. This will eventually develop their self-efficacy by enhancing their self-belief and self-determination. This is very important because students need to be confident and know what they can achieve in their study. The above statistical analysis result has proven that peer influence has a positive and significant relationship with self-efficacy ( $\beta = 0.205$ ,  $t = 3.340$ ,  $p = 0.001$ ).

The ODL institutions especially the tutors must take a bigger role to ensure students registering for their course will interact and communicate. By doing so, this will encourage the students to be involved in more discussions with their peers about the course they are taking and learn as a team especially on how to solve problems they face in their study. Frequent interaction and communication among the students help build up their confidence throughout their academic journey in order to excel academically. Besides financial support and peer influence, the role of academic promotion made by the ODL higher education institutions has the strongest direct relationship influence among the three independent variables on the self-efficacy. The statistical result shows that promotion has a strong positive and significant influence on self-efficacy ( $\beta = 0.368$ ,  $t = 5.298$ ,  $p = 0.000$ ). Therefore, it shows how important promotional factors in developing the students' self-efficacy to further their study. With a strong self-efficacy, the students will develop their strong intention to further study at tertiary level. This is evidence from the above statistical analysis results.

The mediating relationship of financial support, self-efficacy, and intention, it shows that self-efficacy significantly mediates the relationship between financial support and intention ( $\beta = 0.155$ ,  $t = 4.317$ ,  $p = 0.000$ , LLCI = 0.081, ULCI = 0.230). Second mediating relationship involved peer influence, self-efficacy and intention and the statistical analysis result also shows that self-efficacy significantly mediates the relationship between peer influence and intention among the alumnus to further their study ( $\beta = 0.110$ ,  $t = 3.238$ ,  $p = 0.001$ , LLCI = 0.045, ULCI = 0.194). The third mediation relationship consists of promotion, self-efficacy and intention and it demonstrates that self-efficacy has significant mediating effect on the relationship between promotion and intention. From the above of three mediating relationship results, it clearly shows that self-efficacy is very important to determine the alumnus intention to further their study.

Therefore, it is very important for the ODL higher education institutions to assist students in term of financial aid because with financial support, the self-efficacy of the alumnus will be enhanced and the intention to further study will be strengthened. Peer influence can lead to the alumnus' intention to further study with the present of self-efficacy as a mediator. The same goes to promotion made by the ODL higher institutions, as it will be more effective to develop alumnus intention to further their studies with the introduction of self-efficacy as a mediator. Alumnus must have a strong self-efficacy prior to their intention to further study. Alumnus must always believe in themselves on what they can achieve if they further their studies. This self-belief and self-determination will lead to academic success which is the main objective in continuing their study. ODL higher education institutions need to come out with strategies such as during their promotion activities, emphasis on the assistance that they can provide to the alumnus such as financial support and give talks on issues that can enhance the self-efficacy of the alumnus. This will elevate their desire and intention to further their study.

## Conclusion

This study aimed at identifying the direct and indirect effects of financial support, peer influence, promotion, and intention among alumnus in Malaysian online distance learning higher education institutions to further their study. The statistical data analysis results have shown that self-efficacy has a very important role as a mediator that mediates the relationships of financial support, peer influence and promotion with intention among ODL alumnus in Malaysia. With reference to the results obtained, ODL institutions must place greater emphasis to plan and strategise on how to enhance financial support, peer influence, promotion, and self-efficacy simultaneously among the ODL alumnus. This will ensure that the intention of the alumnus to further his or her study will be further enhanced. Online distance learning education providers must be ready to take the creative and innovative initiative to implement the strategy to offer more financial assistance to the qualified alumnus and this must be made known to the alumnus. Also, the focus must also be given to encourage student influence through interaction and communication. Promotion of the academic programme must be actively done to disseminate the information about the academic programme offered. For future studies, it is recommended that other variables such as family support, time management and quality of academic programmes be used as variables in developing the research model to study the alumnus intention to further study at online distance learning higher education institutions.





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## Shifting it Online: Instructional and Assessment Strategies in the Context of the Covid-19 Pandemic

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### Abstract

*This paper presents the quantitative and qualitative result of a small case study that examined lessons conducted fully online particularly on instructional and assessment strategies employed in upper secondary schools during the Covid-19 pandemic lockdown period. The case study involved two experienced Biology teachers from two different high-performing schools in the town of Kuching. Data collected through classroom observation and standard observation instruments revealed adapted instructional and assessment strategies employed by the teachers when transitioning from conventional pedagogical practices to a total virtual environment. Participants of the study demonstrated the urgency for alternatives or improvised strategies to fulfil the intended learning outcomes. Data analysis also indicated suitability of the curriculum and teacher adaptation to ensure a successful lesson, especially because the shift to total online teaching is more of an emergency intervention. This paper contributes to the literature in two-fold: first, as a contribution to the literature on total online instructional and assessment strategies, and second, as a valuable insight to policy makers in designing and devising teacher training programmes.*

**Keywords:** *Online Teaching and Learning, Online Instructional Strategies, Online Assessment Strategies*

### Introduction

Teaching and learning in the Malaysian context are heavily guided by the development of the national curriculum, which is spelt out in the form of curricular specifications. These documents outline specific skills, designated timelines and intended learning outcomes to ensure the realisation of the National Education Philosophy. These documents also provide examples of instructional and assessment strategies, followed by periodic upskilling programmes for teachers based on situational needs. Such detailed guidelines represent rigidity when schools in Malaysia were ordered to close due the Covid-19 pandemic in March 2020.

In general, it is agreed that online teaching should take the definition of “teaching with technology throughout the curriculum” (Fougler et al., 2017). This contradicts how Malaysian teachers are trained to teach: they have often been trained in the form of long or short courses during the training years to now learning how to teach with technology. In fact, it has also been reported in previous studies that in order to teach an online curriculum, it requires “a diverse set of competencies” (Bawane & Spector, 2009; Hodges et al., 2020).

When schools were ordered to close in March 2020, many teachers who may or may not have previously undergone “technology integrated teaching” courses, found themselves grappling to fulfil their obligations to ensure the process of teaching-learning continues while learning on-the-go. The situation did not only affect schools in Malaysia, but it was a worldwide phenomenon that schools were ordered to shift everything online, which was radical and unprecedented. Researchers address this as Emergency Remote Teaching (ERT) and distinguish it from online education (online teaching and learning) (Hodges et al., 2020).

The mismatch is clearly evident in the purpose of ERT and the Malaysian National Curriculum; in which the former was initiated as crisis intervention and the latter a long-term vision of human capital development. Therefore, it is worth investigating how Malaysian teachers are compelled to forego familiar teaching practices and be quick-thinking in embracing new approaches.

### **Research Questions**

Subsequently, this small-scale case study intends to document instructional and assessment strategies employed by Malaysian teachers in the context of the pandemic as stated in the following research questions:

1. What are the online instructional practices of Malaysian teachers in the fulfilment of the Malaysian Education Quality Standard Document in the time of pandemic?
2. What are the online assessment strategies of Malaysian teachers in the fulfilment of the Malaysian Education Quality Standard Document in the time of pandemic?

### **Literature Review**

In Malaysia, a particular lesson is guided by the standard document detailing expected instructional and assessment strategies. There are several suggested strategies to develop a lesson: inquiry-based learning, problem-based learning, and project-based learning are enlisted as alternative instructional strategies in the 21<sup>st</sup> century learning handbook (Ministry of Education (MOE), 2017a). As for assessment, guidelines from the MOE suggested formative assessment through observation, written form, spoken form, self-assessment, and peer assessment (Ministry of Education (MOE), 2019b).

### **Instructional Strategies**

Educational psychologists categorise instructional strategies as teacher-directed instruction, and student-directed instruction. The terms “teacher-directed instruction” and “student-directed instruction” are sometimes known as “teacher-centred instruction” and “student-centred instruction” as well (Ormron, 2014).

Instructional strategies largely refer to how a lesson is conducted, beginning with advance planning, to developing the lesson, and devising intervention to create a productive learning environment. One of the common strategies of advanced planning is the use of backward design (Wiggins & McTighe, 2005; Gacs et al., 2020). Backward design has the teacher getting the end goal (lesson objective) in mind, identifying the evidence of learning, and finally devising the activities for a lesson. This is different from the contemporary instructional design that starts off with determining the end goal (lesson objectives), devising



different activities accordingly and finally determining the evidence of learning. The backward design shifts the focus of a lesson to the process of learning in which teachers are constantly looking out for evidence of learning. It is also quoted as a more appropriate advanced planning for online lessons (Gacs et al., 2020).

In order to create a productive learning environment, instructional strategies have to take into consideration classroom management. This includes modifying instructional strategies. According to educational psychologists, one has to take into account developmental differences (Ormron, 2014). Gardner (1983) in his Multiple Intelligence Theory has generally categorised learners accordingly. Therefore, it is crucial that every individual has something to take away from the lesson.

### **Assessment Strategies**

Instructional strategies are inseparable from assessment strategies since the effectiveness of an instructional strategy can only be measured through an assessment. There are multiple approaches to assessment. Generally, assessment can be done either formally or informally. Formal assessment is a popular method schools or learning institutions would employ to administer a test to a generally larger group. Informal assessment often happens via observation, and it can be less structured or even unplanned.

The existing body of literature on instructional and assessment strategies very much focus on the context of conventional brick-and-mortar classrooms. If researchers make the effort to distinguish “technology integrated teaching” and “teaching with technology throughout the curriculum”, surely instructional and assessment strategies are expected to digress greatly. In fact, researchers believe that by simply transferring conventional approaches to online classrooms, not only is it ineffective, it also creates tensions (Natriello, 2005).

In fact, there has also been a paradigm shift towards formative assessment, especially in the context of online lessons. A global scale study has stated that alternative assessment and evaluation methods should be taken into consideration (Bozkurt et al., 2020). Formative assessment might be fairer in gauging a learner’s performance over a period of time; however, it is not without critiques in terms of definition, effectiveness, domain dependency, measurement, professional development, and system (Bennet, 2011; Black, 2009).

### **Research Method**

The study employed both quantitative and qualitative data to make inferences about the different instructional and assessment strategies used by the teachers.

### **Research Design**

This was a small-scale case study of two selected high-performing secondary schools. The researcher was tasked to “drop in” in classes for monitoring purposes of the two schools. Teacher observation is a standard practice to identify areas for improvement and ensure the quality of teaching and learning. Each year, teachers are observed up to two times with a self-evaluation prior to the observation. In the pre-pandemic period, teachers were usually observed by school administrators. During the lockdown period, education officers in the district office, particularly the School Improvement Specialist Coaches (SISC+), were tasked to observe and identify support that the district office can offer to schools.



The researcher had asked for permission from the school administrators and the teachers involved to utilise the observation data for academic research purposes. The lesson observed was from an hour-long Fourth Form Biology session. During the lesson, the researcher remained quiet and only observed the conduct of the lesson using the standard instrument.

### ***Participants***

The participants of this study were two Fourth Form Biology teachers from two different high-performing secondary schools in the town of Kuching. These participants' names were submitted by their respective schools and the researcher did not interfere with the selection process.

### ***Instrument***

The principal instrument employed in this study is the Malaysian Education Quality Standard Document (MEQSD) governed by the School Inspectorate Department. The standard document comprises five different standards, detailing measuring items to address and ensure quality school and education. The component relevant to this study is the fourth standard (learning and facilitation); a component that is detailed in six different aspects to address the effectiveness of a lesson. Each aspect is computed into a weighted score, which is eventually translated into a total score with a maximum score of 100.

### ***Data Collection***

There are three types of data collected in this study, namely the demographic data of the two participants, quantitative data from standard documents, and qualitative data from lesson observation.

Data from the instrument and researcher's field note were collected during two separate online lessons in November 2020. These data were collected virtually through Google Meet. The online sessions were also recorded, and the video files were accessible after the lesson observation sessions.

Demographic data of the two participants were collected after the online lesson observation sessions. These demographic data were collected through a brief interview over Google Meet and WhatsApp.

### ***Ethical Considerations***

Kubanyiova (2013) paints the general landscape of ethics in research through three core principles, namely respect for persons, beneficence, and justice.

#### ***Respect for Persons***

An elaborated briefing detailing the purpose of this study was conducted for the school heads and participants. Both participants were informed of their roles and contributions. Each participant was also asked for their consent to be video recorded, interviewed, and participate in the study. Participants were allowed to withdraw, stop, terminate, or change their minds during the study. The participants were not obliged to participate in this study. The names of the schools and participants have been omitted from the study in respect of privacy and confidentiality.



### **Beneficence**

An appreciation letter was issued to the participants to acknowledge their time and effort. The researcher sent the complete copy of the report to the respective schools formally through the District Education Office as well. The findings of the report were shared with the district office and teachers at the schools involved for professional development purposes. In addition, the participants were awarded with credit hours for their professional development.

### **Justice**

It was also made clear to the participants that the data collected in this study would not be used against them or as a form of input for their appraisal and performance evaluation. Their participation in this study should not affect their appraisal, performance, or opportunities in their career advancement in any way.

## **Findings**

The findings of this study will be discussed in three-fold: demographic data and data from the fourth standard in the Malaysian Education Quality Standard Document (MEQSD) with supporting evidence from video frame analysis and the researcher's observation notes.

### **Demographic Data**

The two participants in this study were one male (A) and one female (B) teacher with very similar teaching experiences and backgrounds. Both were 52 years old at the time of the study. A is a graduate with a major in Microbiology with 26 years of teaching experience. B is also a graduate with a major in Biology with 24 years of teaching experience. A currently holds the position of the Panel Head for Biology while B shoulders the extra duty as a home class teacher. Both participants are teaching in high-performing schools under high-performing school leaders.

### **The Malaysian Education Quality Standard Document (MEQSD) – Aspect 4: Learning and Facilitation**

The main instrument employed in this study is a standard document used to gauge the presence of different instructional and assessment strategies. The fourth standard in the MEQSD is a six-aspect scoring document with matching rubrics. It is commonly used by the teachers to self-assess, the schools to monitor teachers' performance, and officers to identify gaps for intervention. Classroom observation score of both participants is presented in Table 1 below:

**Table 1***Total Score for Different Aspects in the 4<sup>th</sup> Standard in MEQSD*

Aspect	Item	Participant A	Participant B
4.1	4.1.1	100.00	100.00
4.2	4.2.1	87.44	81.25
	4.2.2	100.00	100.00
4.3	4.3.1	100.00	100.00
4.4	4.4.1	71.38	60.69
	4.4.2	60.94	65.63
4.5	4.5.1	78.75	78.75
4.6	4.6.1	33.88	20.56

The instrument is calculated based on different weightage for different aspects. The percentage count is the achievement for each item listed in the aspect. Below is the analysis for each aspect recorded based on classroom observation.

**Aspect 4.1: Teacher as Planner**

There are three items listed in this particular domain in relation to how a lesson is planned according to the specification of the syllabus, determining different assessment strategies employed for the lesson, and the preparation of teaching aids. Both participants fulfilled all the requirements indicated by the quality document, where lessons were planned according to the syllabus and the use of teaching aids were explicit and evidential. Both participants also prepared assessment strategies in terms of questions (oral), past examination questions (exercise) and written work as assignment/homework.

**Aspect 4.2: Teacher as Manager**

Domain 4.2 listed seven items in relation to how teachers managed the classroom for both the learning process and learning environment. One of the items detailed "rearranging students seating plan" was not applicable in the case of both participants causing the item to be nulled. Both participants scored slightly lower in the aspect of their roles as manager of the learning process (87.44% and 81.25%) as the item "provide opportunity for students' active participation" was limited to a certain extent by the nature of the delivery mode and not necessarily the ability of the participants in managing a lesson.

**Aspect 4.3: Teacher as Coach**

There are five items enlisted for this aspect in relation to how teachers demonstrate or provide guidance to help students master a concept or content knowledge. The items listed also specify the criteria of guiding and driving students to make decisions and solve a problem in the lesson. Last but not least, the lesson should demonstrate elements across the curriculum with integrated values and skills. Both participants did not show any issue in this aspect, as they were able to explain scientific concepts clearly with the aid of relics and digital resources.





#### **Aspect 4.4: Teacher as Motivator**

For aspect 4.4, teachers are to motivate students cognitively and emotionally. There are 11 items listed in this domain (i.e., seven for cognitive motivation and four for emotional motivation) as shown in Table 2. Cognitive motivation refers to how teachers facilitate collaboration among students and trigger students towards critical and creative thinking, solving issues, and making decisions. Emotional motivation refers to acknowledgement and assurance from the teachers in relation to desirable classroom behaviour.

**Table 2**

*Score for Cognitive Motivation and Emotional Motivation*

	Participant A	Participant B
4.4.1 (Cognitive motivation)	71.38	60.69
4.4.2 (Emotional motivation)	60.94	65.63

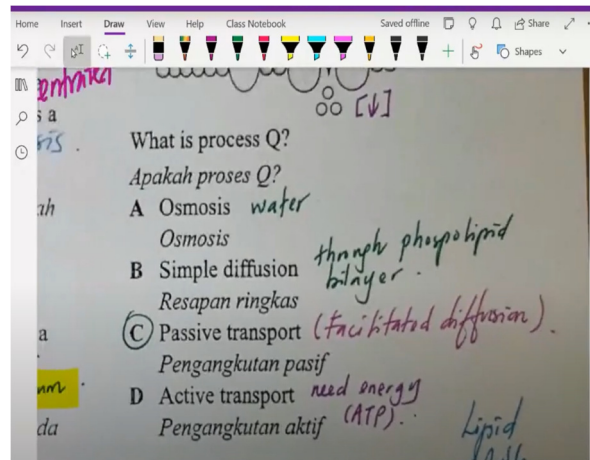
Both classroom observations recorded missing criteria that contributed to a lower score for both respondents (71.38% for respondent A and 60.69% for respondent B). For 4.4.1, it was recorded the element of facilitating collaboration was absent from both lessons. The online lesson had not included activities for students to work collaboratively on a task during the online lesson. The online lesson was more teacher-directed, during which a huge chunk of the lesson was dedicated to the demonstration and guidance of scientific concepts from the teachers. Respondent A scored higher (71.38%) because students were given an opportunity to take action (download materials and share, share screen to project lesson materials), although this was not respondent A's initial plan but rather a technical glitch.

As for 4.4.2, both participants were observed to give praise and show concern for their students. However, this was limited to only a small number of students since the majority of the students were not responsive. Participant B did not make it compulsory for the students to keep their cameras on, while it was observed that most of the students had their cameras on in participant A's lesson. Students in participant A's lesson were more responsive too, even though this involved just short "yes/no" responses frequently from a few specific students.

#### **Aspect 4.5: Teacher as Assessor**

The standard document requires teachers to employ different assessment strategies in a lesson. The minimum strategies suggested for each lesson are two strategies of the teacher's choice. Both respondents employed two assessment strategies as planned, although the strategies employed were different for both participants (78.75% for both participants).

Participant A employed chain questions and problem-solving questions in the lesson, while participant B employed the use of questions and written work. For participant B, students' responses were delayed since none of them provided any spoken answers interactively during the lesson. However, these students submitted their answers after the lesson through a chat application. To compensate for this, participant B also used notes and discussed assessment items from item collection to facilitate the assessment of the students as shown in video screenshot in Figure 1. It was recorded that one student had engaged in asking for further explanation.

**Figure 1***Teaching Notes Used by Participant B*

#### **Aspect 4.6: Students as Active Learners**

Both lessons were observed, and the percentage of students engaged in the lesson as active learners were recorded. Based on the instrument, there are seven items listed as evidence with a specific range of student participation percentage mentioned in the rubrics.

Participant A received a score of 33.88%, indicating 25%-49% of student participation in terms of giving response, communicating, asking questions, and/or solving problems. Participant B received a score of 20.56%, indicating 10%-24% of student participation in terms of giving response, communicating, asking questions, and/or solving problems.

Both participants had not included any collaborative task in the lesson, thus students were recorded as not involved in any collaboration in the lesson.

### **Discussion**

This section discusses the finding of the study in relation to the two research questions stated in the earlier section of the paper. Based on the data analysis of the MEQSD and observation notes, there are two main instructional strategies employed by teachers in explaining concepts, i.e., animated visuals and static visuals.

Animated visuals include the teacher's own visibility, with which paralinguistics elements such as facial expressions and body language are visible. It also includes the use of realia to make tangible visuals.

On the other hand, static visuals are projections of two-dimensional materials such as pictures and images. This particular instructional strategy is not a new approach compared to what teachers do in the conventional classrooms. However, the extent of the use of this instructional strategy in an online lesson is observed to be different.

First of all, the use of realia is restricted to only the teacher as it cannot be passed on to students for close inspection. Secondly, teacher visibility can be absent in certain circumstances, for example during the presentation of slides, as a video communication platform like Google Meet will pin the shared screen instead of the teacher's camera, putting even more distance between the teacher and the students. This is different from a



conventional classroom, in which students could see the teacher and the visuals simultaneously. It could be argued that students would then pay more attention to the learning materials and focus better on learning. Nonetheless, it also diminishes the human touch in education, especially when it has also been reported that these students had never physically met their teachers as they are new to the upper secondary level and schools were closed with their third form assessment (PT3) results put on hold. While there may be no tangible correlational study between teacher visibility and learning impact, it is still a fairly new learning experience for students who are used to associate the visuals of their teachers and learning materials. What is obvious is that the use of similar instructional strategy from the conventional classroom in an online lesson does not assist in students' active participation. It takes more than merely calling out students' names in a lesson to establish student engagement in a lesson.

To answer the second research question, it is observed that online lessons place a noticeable emphasis on formative assessment. In both cases, teachers relied heavily on questions to harness and gauge students' understanding. As it is evidently challenging to ensure student engagement, questioning to harness and gauge students' understanding becomes even more daunting. When the participation rate is low, a shift to formative assessment does not guarantee a reliable projection of the learning process. It is almost certainly difficult for teachers to continuously assess how well the students are following or mastering what has been taught. Therefore, even though questioning is a very common approach to formative assessment in the conventional classroom, it does not necessarily work in an online lesson. On top of questioning, other assessment strategies employed include homework. Homework or drills are common practice in conventional classrooms, and this may yield the similar effect for online lessons as well.

Undoubtedly, this case study is limited in many ways especially in its ability to generalise a phenomenon. It is recommended for future studies to involve a wider population to enable the generalisation of the phenomenon.

## **Conclusion**

This study is interested in finding out the different instructional and assessment strategies employed by teachers when the process of teaching and learning is instructed to move online due to the threat of Covid-19. Data collected in this study generally showed that teachers are just transferring familiar conventional teaching approaches with minute modification into their online lessons. Perhaps there is some awareness in the urgency for alternatives or improvised strategies to fulfil the intended learning outcomes. Nonetheless, it would require proper training of different skill sets, and pedagogy that is designed to teach with technology for an online curriculum. This study also reveals that the suitability of the curriculum is compromised especially when certain items become irrelevant with change in the lesson setting. One of the perspectives is that a well-meaning detailed guideline has lost its flexibility and become rigid for a different context. If policymakers believe that the situation is temporary, adjustment to the evaluation of lesson effectiveness must be made. However, if policymakers would like to embrace the crisis, then the curriculum must be redesigned to be resilient enough in facing disruptive situations.

## **Acknowledgement**

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# A Systematic Review of the Influence of Teacher Self-Efficacy on the Use of Assistive Technology

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## Abstract

*Assistive technologies are essential in narrowing down the achievement gap between students with learning disabilities and able peers. Higher levels of self-efficacy in teachers have consistently shown to correlate with the use of assistive technologies in teaching. This study aimed to review the impact of self-efficacy among elementary and secondary school teachers with their use of assistive technologies. This review intended to summarise the context of self-efficacy in the domain of general inclusive education and explored the instrument used, sample selection, validity and reliability as reported in the selected studies. The electronic databases Education Source, ERIC (Educational Resource Index and Abstracts), EBSCOhost by Elton B. Stephens Company, and Scopus were systematically searched. This study also reviewed published studies from January 2011 to January 2021 with the inclusion criteria selecting studies that focused on self-efficacy and their use of assistive technologies with special educational needs students in inclusive education. Of the 17 reviewed published studies, teacher self-efficacy reported a positive influence and can be used as a predictor for their use of assistive technologies in teaching in inclusive education. Recommendations for future studies include professional development on facilitating changes in teacher self-efficacy to further enhance their use of assistive technologies.*

**Keywords:** *Inclusive Education, Self-efficacy, Assistive Technology, Teacher*

## Introduction

### Self-Efficacy

Adaptation and change are the important components in teaching in today's world, which along with the evolution of technology have changed the education landscape. Grounded in Bandura's Social Cognitive Theory, self-efficacy is the belief that teachers hold for their capabilities and this power of belief in what they can produce affects their actions (Bandura, 2001). Perceived self-efficacy plays a pivotal role in affecting how people adapt and change in life. When faced with challenges or changes, perceived self-efficacy influences people's self-hindering or self-enhancing thinking, and thus decides how much effort should be put in in order for them to achieve their goals (Bandura, 2001). The decision on which challenges to choose, the urge to persevere when faced with challenges, and how a person treats challenges, i.e. either as motivation or hindrance, are very much dependent on the level of self-efficacy (Bandura, 2001).

On the other hand, the self-efficacy theory emphasises that these four factors are believed to be the main influences on one's level of self-efficacy, i.e., mastery experience, vicarious experience, verbal persuasion, and somatic and emotional state (Bandura, 1994, 1997; Pajares, 2002). Of the four factors, mastery experience is believed to have the strongest influence on the development of self-efficacy. Before a sense of efficacy can be firmly established, failures may weaken it while successes help in building it (Bandura, 1994, 1997). In other words, if one achieves success easily, it does not help in building a strong belief in self-efficacy and therefore, one can easily become demoralised by failures. A sense of self-efficacy needs to be built overtime, through the experience of overcoming obstacles, perseverance in the face of hardship, and bouncing back from failures. The mastery experience that allows people to learn what it takes to succeed and how to bounce back from failures help to establish a strong sense of self-efficacy.

Meanwhile, vicarious experience happens by observing social models that are similar to oneself, which means seeing them succeed through continuous effort will make the observers believe they are also capable in achieving the same goals (Bandura, 1994, 1997). The perceived similarity to the social models is very influential on observers' perceived self-efficacy (Bandura, 1994, 1997). Based on the modelling concept, if the persons perceive the models to be very similar to themselves, the models' behaviours, successes, and failures have a huge impact on what they believe and hence, also influence how they see their own capabilities in accomplishing a particular goal. Verbal persuasion helps to persuade people that they have what it takes to succeed (Bandura, 1994, 1997). When people are not confident in their personal capabilities and hold on to negative beliefs that focus on their flaws, verbal persuasion helps to provide the boost that can lead them to try harder, persevere, and develop the sense of self-efficacy in the process of cultivating potentialities. Bear in mind that verbal persuasion needs to be realistic and structured. When people are placed in structured situations that allow them to see their own self-improvement, they can validate their success and focus on the potentialities. Lastly, negative affectivity like stress or anxiety also affects persons' emotional state, which in turn affects their self-efficacy and influences their decision-making. A person with a high sense of self-efficacy tends to perceive and interpret emotional arousal as something pleasurable that can continue to motivate them to behave or persevere. This can have positive interpretations on their physical states.

Teacher self-efficacy is defined as a teacher's judgment of his/her own capabilities in bringing success into engagement and learning for all students, including those who are difficult or not motivated (Tschannen-Moran & Hoy, 2001). In an inclusive classroom, teaching students with learning disabilities together with their able peers can be stressful and exhausting due to the effort needed to differentiate, accommodate, and support many different areas. Studies on the influence of teacher self-efficacy on inclusion have found that it is an important mediator of teachers' attitude and their acceptance of inclusive education (Sokal & Sharma, 2014; Desombre, Lamotte & Jury 2019). As teachers in inclusive education experience a high level of negative affectivity, self-efficacy works as a shield to protect them from these negative arousals and motivate them to continue believing in their capability in supporting and accommodating students with learning disabilities in class.

In addition, it is worth mentioning that teacher self-efficacy can potentially influence their instructional behaviour, classroom atmosphere, well-being, classroom engagement, work commitment, student self-efficacy and performance, and a wide range of influences (Klassen & Chiu, 2011; Klassen & Tze, 2014; Skaalvik & Skaalvik, 2014; Tschannen-Moran & Hoy, 2001). These studies prove that self-efficacy is an important element that needs to be highlighted and developed because it can greatly affect teachers, students, and the whole teaching and learning experience.



## Use of Assistive Technology (AT)

Nowadays, with advancements in technology, teachers need to adopt, consolidate, and embrace the relevant technology to accommodate changes in inclusive education. AT is used in inclusive education to train, rehearse and enable learning (World Health Organisation (WHO), 2015; Ahmad, 2015). The use of AT helps to bridge the gap between able and disabled students in the same classroom, thus helping all students to learn and understand a similar topic or concept in a different way by removing barriers in learning and compensating for their lack in certain abilities, and work on their strengths. There is increasing evidence that these practical tools connect students' cognitive abilities with their learning opportunities and provide accessibility in classroom learning (Nkwoagba, 2011; Ahmad, 2015). AT provides alternative ways for students to learn, show their learning, complete the work given by their teachers, and increase their own independence.

Interestingly, Shapley et al., (2011) found that teachers who use AT manage their classes differently, in which Special Education Needs (SEN) students are found to have better interaction and collaboration. This results in better engagement in class, improved school attendance and fewer disciplinary issues. Ertmer and Ottenbreit-Leftwich (2013) also claimed that the use of technology will help student learning in the classroom. They focused on the integration of technology and the pedagogical approach through which technology can be used as a cognitive tool to help students in authentic learning and called for a shift from technological integration to technology-enabled learning. Access to the appropriate AT is useful for SEN students' education and creates equal opportunity in education, which will also serve the purpose of AT in improving SEN students' life in many areas in education and also in their social life (Erdem, 2017). These studies have shown how AT can be used in class to help SEN students learn, engage, and collaborate with peers from the students' own perspectives, but they did not include the teachers' perspectives. Teachers' experiences in using AT to build or enhance this positive learning environment can enhance the essence of AT immersion, which allows the researcher to see the context of AT from a different perspective.

Different areas of function need different types of AT to compensate the lack of ability. For example, students with difficulties in decoding can use text-to-speech software to help with reading, while students with limitations in executive functioning can use a graphic organiser or work clock as their organisation tools, and students who struggle with writing can use word processors or speech-to-text as AT for spelling (Ahmad, 2015; Park et al., 2017). With the use of these tools, students with learning needs will be able to accomplish tasks that are difficult or seem impossible to them, and this can encourage them to continue trying and learning.

## Teacher Self-Efficacy and the Use of AT

The use of AT is necessary to help teachers keep up with the changes and support meaningful teaching and learning in inclusive education. Therefore, teacher self-efficacy is certainly important to ensure teachers have the intention of integrating AT in their teaching, are confident with using AT and their own technology usage in teaching (Krumsvik, 2011; Teo, 2014; Azeema et al., 2016). Studies have proven there is a significant positive correlation between teacher self-efficacy and their use of AT (Haight, 2011; Hatlevik, 2017; Azeema et al., 2016).

Teachers with a high level of self-efficacy reported higher levels of confidence in using AT and greater usage of AT. They are also often better at finding ways to overcome the obstacles of technology integration and have higher levels of self-belief as an efficient teacher with technology (Ertmer et al., 2012; Fanni et al., 2013). On the other hand, teachers with lower levels of teacher self-efficacy reported to use AT less frequently due to their negative attitude in technology acceptance (Hammond et al., 2011; Sabzian & Giakjani, 2013). These studies on the use of low- to high-level AT have identified several factors that influence teachers' use of AT and self-efficacy is one of the factors that play a crucial role in the implementation of technology and their successful use to enhance student learning. When teachers do not believe in their self-capability in using AT, they feel incompetent and are therefore less willing to persist in technology integration. Many studies have looked into the correlation between teacher self-efficacy and their use of AT, but to the researcher's knowledge, a systematic review for these studies is currently not available. Thus, a systematic review of the influence of teacher self-efficacy on the use of AT is important to identify, evaluate and summarise all the relevant studies, provide an authoritative overview of current studies that are related to teacher self-efficacy and AT, and finally, make the available evidence more accessible to decision-makers in inclusive education.

### **Method**

This study aims to analyse, through systematic review, studies on the influence of teacher self-efficacy on the use of AT primarily in inclusive education. Systematic review is defined as a scientific tool that can be used to select the relevant studies in all design, then summarise, appraise, and communicate the results of these unmanageable studies in answering a particular research question (Petticrew & Roberts, 2006). Using this method, research-based information is summarised comprehensively and aims to be used and can help practitioners and decision-makers in this field (Brettell, 2009). This systematic review is guided by Petticrew and Roberts' systematic method, which involves seven stages, i.e. defining the question, determining the types of studies needed to answer the review question, carrying out the literature search, screening the references and assessing the remaining studies against the inclusion/exclusion criteria, critical appraisal, synthesis of primary studies and considering the effects of publication bias and other internal and external biases and lastly, writing the report (Petticrew & Roberts, 2006).

The review question that guided this study is, "What is the influence of teacher self-efficacy on the use of AT?" In accordance with the research objective, relevant studies were searched in several electronic databases, including Education Source, ERIC (Educational Resource Index and Abstracts), EBSCOhost by Elton B. Stephens Company and Scopus. These databases were systematically searched to capture as many relevant citations as possible, and lastly, Google Scholar was used as a secondary source. The specific descriptors like self-efficacy, teacher, AT, and ICT were entered into the search engines mentioned above to identify the relevant studies. Qualitative and quantitative studies that collected data on participants' perception about their self-efficacy and their use of AT have also been included in this study to involve a broader range of evidence and reduce the risk of biased conclusions (Petticrew & Roberts, 2006).





## Inclusion and Exclusion Criteria

The inclusion criteria that were used in the initial search for relevant studies are:

- i. The study must be published in English;
- ii. The study must include the specific descriptors mentioned above, published between January 2011 and January 2021;
- iii. Participants must be teachers, with no age limit, either from primary or secondary schools;
- iv. All genders and any country; and
- v. Teacher self-efficacy and the use of AT must be the key measurements/assessments, with evidence.

On the other hand, three exclusion criteria were established. These were studies that have been published in other types of publications (books, books chapter, conference papers and dissertations), studies that do not include the use of AT as a teaching tool, and studies that are not empirical. Using both inclusive and exclusive criteria, the researcher successfully yielded 21 relevant studies. Next, an additional inclusion criterion was included, i.e., the influence/relationship between teacher self-efficacy and use of AT. Through this approach, 17 studies were chosen for an in-depth review.

## Critical Appraisals

After identifying the relevant studies, data were extracted based on the review question. The relevant information included the year of publication, number of participants, sample population, research method, sampling method, reliability and validity, and finally, the influence of teacher self-efficacy on the use of AT were extracted and analysed to determine whether or not the studies are adequate in answering the review question. This is shown in Table 1 below.

**Table 1**

*General Characteristics of the Studies*

Authors	YOP	Country	Method	NOP	SM	SP	Findings
Nam et al.	2013	USA	Quantitative	136	Non Random	PST SST	TSE +ve use of AT
Yamamoto & Yamaguchi	2016	Mongolia	Mixed Method	838	Random	PST	TSE +ve use of AT
RTI International	2017	Ethiopia	Mixed Method	109	Non Random	PST	TSE +ve use of AT
Azeema et al.	2016	Maldives	Quantitative	119	Random	SST	TSE +ve use of AT

Authors	YOP	Country	Method	NOP	SM	SP	Findings
Thurm & Barzel	2020	Germany	Quantitative	39	Random	SST	TSE +ve use of AT
Letwinsky	2017	USA	Quantitative	90	Random	SST	No correlation
Hatlevik	2017	Norway	Quantitative	312	Random	SST	TSE +ve use of AT
Şimşek & Sarsar	2019	Turkey	Quantitative	387	Random	SST	TSE +ve use of AT
Bakar et al.	2020	Malaysia	Quantitative	66	Random	PST SST	TSE +ve use of AT
Kwon et al.	2019	USA	Quantitative	57	Non Random	PST SST	TSE +ve use of AT
Kazan & ELDaou	2016	Lebanon	Mixed Method	11	Non Random	SST	TSE +ve use of AT
Tilton & Hartnett	2016	Germany	Qualitative	5	Non Random	PST SST	TSE +ve use of AT
Elstad & Christophersen	2017	Norway	Quantitative	156	Non Random	SST	TSE +ve use of AT
Coban & Atasoy	2019	Turkey	Quantitative	136	Random	PST SST	TSE +ve use of AT
Wei	2021	Taiwan	Quantitative	32, 989	Random	PST	TSE -ve use of AT
Coleman et al.	2015	USA	Quantitative	392	Random	PST SST	TSE +ve use of AT
Sangkawetai et al.	2020	Thailand	Quantitative	77	Random	PST SST	TSE +ve use of AT

*Note:* YOP = Year of Publication; SP = Sample Population; SM = Sampling Method; NOP = Number of Participants; PST = Primary School Teachers; SST = Secondary School Teachers; TSE = Teacher Self-efficacy; AT = Assistive Technology; +ve = positively influenced; -ve = negatively influenced



The quality of the relevant selected studies was then analysed using the EPPI-Centre Weight of Evidence (WoE) tool by Gough (2007). WoE allows the researcher to separate judgement on separate generic elements, such as coherence and integrity of the studies (WoE A), appropriateness of that form of evidence (WoE B) and the relevance of the focus of the evidence for answering the review question (WoE C) and finally, these three separate judgements will be used to form an overall assessment (WoE D) of the extent of the studies in answering the review question (Gough, 2007). The synthesis table below show the analysis of studies based on several aspects mentioned above as the extracted data from the studies.

As the analysis shows in Table 2, 10 studies were rated as high-quality research because one of their primary focus points involved looking at the influence of self-efficacy on the use of AT, the design of the studies and the process of recruiting participants were clearly explained, limitations of the studies were cited, and the measurements were reliable, i.e. there were high levels of coherency and integrity of the evidence in their own term (Nam, et al., 2013; Yamamoto & Yamaguchi, 2016; Letwinsky, 2017; Hatlevik, 2017; Şimşek & Sarsar, 2019; Bakar et al., 2020; Kwon et al., 2019; Tilton & Hartnett, 2016; Wei, 2021; Sangkawetai et al., 2020). Furthermore, the form of evidence collected in these ten studies were found to be appropriate in answering the review question as the evidence was taken from the appropriate context, which can be generalised to answer the review question.

On the other hand, two of the studies were rated as medium/high quality because the influence of self-efficacy on teachers' use of AT was not their main focus (Thurm & Barzel, 2020) and they did not have the type of evidence gathering and analysis. The two studies also found that teacher self-efficacy perception on ICT was negatively correlated with ICT usage but teachers' self-efficacy in ICT use was the significant predictor of ICT usage (Coban & Atasoy, 2019). Despite the coherency and integrity of the evidence found in the studies, five of the studies were rated as medium-quality studies. These studies had sample size limitation by the fact that classroom observation had a very small cell size and confidence intervals were large (RTI International, 2017), small sample sizes (Kazan & ELDaou, 2016), did not mention study limitations (Azeema et al., 2016), the type of sample only focused on sixth year teachers (Elstad & Christophersen, 2017), and the response rate was not calculated (Coleman et al., 2015). These affected the fitness for the purpose of that form of evidence, ethics of research and generalisability of the results to answer the review question.

**Table 2**

*Analysis of the Quality of the Studies using Weight of evidence (WoE) Framework*

Authors	WoE A	WoE B	WoE C	WoE D
Nam et al.	High	High	High	High
Yamamoto & Yamaguchi	High	High	High	High
RTI International	High	Medium	Medium	Medium
Azeema et al.	High	Medium	Medium	Medium
Thurm & Barzel	High	High	Medium	Medium/High
Letwinsky	High	High	High	High
Hatlevik	High	High	High	High
Şimşek & Sarsar	High	High	High	High

Authors	WoE A	WoE B	WoE C	WoE D
Bakar et al.	High	High	High	High
Kwon et al.	High	High	High	High
Kazan & ELDaou	Medium	Medium	Medium	Medium
Tilton & Hartnett	High	High	High	High
Elstad & Christophersen	High	Medium	Medium	Medium
Coban & Atasoy	High	High	Medium	Medium/High
Wei	High	High	High	High
Coleman et al.	High	Medium	Medium	Medium
Sangkawetai et al.	High	High	High	High

## Discussion

The overall review and synthesis of the studies have revealed a positive correlation between teacher self-efficacy and their use of AT, and as for additional insight, teachers were found to have high self-efficacy in many of the studies. It was found that in most of the studies ( $n = 15$ ), teacher self-efficacy has a positive influence on their use of AT (Nam et al., 2013; Yamamoto & Yamaguchi, 2016; RTI International, 2017; Azeema et al., 2016; Thurm & Brazel, 2020; Letwinsky, 2017; Hatlevik, 2017; Şimşek & Sarsar, 2019; Bakar et al., 2020; Kwon et al., 2019; Kazan & ELDaou, 2016; Tilton & Hartnett, 2016; Elstad & Christophersen, 2017; Coban & Atasoy, 2019; Coleman et al., 2015; Sangkawetai et al., 2020). However, through this critical review, the results have also indicated an insignificant result and negative correlation between teacher self-efficacy and the use of AT. This was explained as teachers' high level of self-efficacy does affect their attitude towards technology but may not indicate their actual use of AT in teaching. There may be other factors that work hand-in-hand with teacher self-efficacy, such as technological knowledge or training in AT that can enhance its implementation in teaching. Moreover, professional development opportunities on facilitating changes in teacher self-efficacy can be emphasised to further enhance their use of AT.

In relation to this, it was found that of the 17 articles reviewed, four were conducted in the United States of America (Nam et al., 2013; Letwinsky, 2017; Kwon et al., 2019; Coleman et al., 2015), two in Norway (Hatlevik, 2017; Elstad & Christophersen, 2017), two in Germany (Tilton & Hartnett, 2016; Thurm & Barzel, 2020), and two in Turkey (Şimşek & Sarsar, 2019; Coban & Atasoy, 2019). These have the second highest number of articles published relating to the influence of teacher self-efficacy on their use of AT, and it is worth mentioning that the United States, Norway, Germany, and Turkey are developed countries where AT is easily available.

In relation to the methodologies employed by the studies reviewed, it was found that most of the researchers employed a quantitative method ( $n = 13$ ), while a few employed mixed method approaches ( $n = 3$ ), and one study employed a qualitative method. A qualitative measure involved in a mixed method, or a solely qualitative study aimed to gain more insight around issues related to teacher self-efficacy. For instance, the semi-structured interviews attempted to obtain deeper insights into issues around teacher self-efficacy, exploring teachers' perception on successful teacher self-efficacy (Yamamoto & Yamaguchi,



2016), experiences of technology implementation (Tilton & Hartnett, 2016), classroom observation to further explore teacher self-efficacy and student participation (Kazan & ELDaou, 2016), and teachers' knowledge of the prevalence of disability among their students (RTI International, 2017).

Looking at the year of publication, there has been an increment in the number of publications across different countries from 2016 onwards, i.e., 2016 (n = 4), 2017 (n = 4), 2019 (n = 3), 2020 (n = 3) and 2021 (n = 1). As the theoretical framework for the studies, Bandura's self-efficacy theory was the most used, followed by Tschannen-Moran & Hoy's Teacher Self-Efficacy Model. For AT, the most popular models were the Technological Pedagogical Content Knowledge (TPACK) Model by Mishra & Koehler (2006) and Davis' Technology Acceptance Model (TAM) (1989). Surveys/online surveys were found to be commonly used in collecting data for quantitative studies and semi-structured interviews were included in the research design for mixed-method and qualitative studies. Moreover, this review found that the studies employed a large number of participants, i.e., between 100 and 300 teachers from either primary or secondary schools, or both. This shows that the quantitative measure is more popular among researchers in collecting evidence on teacher self-efficacy and their use of AT. Only one research opted for a qualitative measure, which proposes that more qualitative studies are needed in this particular aspect. Findings also showed that secondary school teachers were selected in the majority of the studies (n = 7) and only several studies involved primary school teachers (n = 3). Therefore, as a recommendation, a greater number of studies could involve primary school teachers as the sample population, considering the primary school context that could potentially yield interesting findings.

## Conclusion

The present systematic review of 17 studies on teacher self-efficacy and the use of AT has revealed that there are areas around the issues of teacher self-efficacy and use of AT that need to be researched. First among these are ways to further strengthen teacher self-efficacy as it is known to positively influence use of AT. Secondly, training or professional development in the area of AT can be further explored as this was also an area of emphasis in several studies (Yamamoto & Yamaguchi, 2016; RTI International, 2017; Şimşek & Sarsar, 2019; Kazan & ELDaou, 2016; Tilton & Hartnett, 2016). There are several limitations in this study included in the relevant studies, such as the variability of the measures used for teacher self-efficacy and their use of AT, which might result in differences in the reliability of data collected. Searches of studies, screening of references, and quality ratings were performed by one researcher, which might result in reporting bias. In conclusion, this review has presented findings and recommendations to assist researchers in the overall understanding of the current literature on teacher self-efficacy and AT. This review has also suggested a few recommendations for future studies.



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## **Psychology Students Feedback on the Overall Programme Structure in ODL Context: A Case Study at OUM**

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### **Abstract**

*Generally, the study of students' feedback may serve various purposes such as for programme improvement; accountability and decision making; judgments of merit, worth, and significance of the programme. The ultimate goal of this study is to enhance the effectiveness of online study and delivery. The aim of this paper is to study psychology students' feedback on the overall structure of the Bachelor of Psychology programme offered in OUM. The specific objectives of the study are to determine whether the curriculum matches their needs, whether they can pursue a profession after graduation, whether they are satisfied with the courses, and whether they learned psychology courses as planned. This is a descriptive study and case study technique was utilised. The sample consists of 436 psychology active students throughout the country. Structured questionnaire was used to collect the data and the questionnaires were distributed via Google Drive. The Cronbach Alpha for the instrument was 0.79. The study results indicated that students' feedback was very positive with the overall structure of the psychology programme. The data shows that the mean score for all the items fall into the high category. The score mean ranges from 3.806 to 4.164. This finding indicates that the psychology programme offered in OUM is satisfactory and well accepted by the students.*

**Keywords:** *Feedback, Psychology Students, Overall Structure of the Programme*



## **Introduction**

In the current global educational trend, many universities offer open and distance learning or online education to address the diverse educational needs of students and to stay current with advancing technology. The World Wide Web has made information access and distribution of educational content available to a large portion of the world's population and helped to move Distance Education (DE) to the digital era. DE has become increasingly common in many universities worldwide (Bentley et al., 2012); Lapointe & Reissetter (2008); Landry et al., (2008); Williams & Williams (2010); Coffey & Gibbs (2000) and (2001); Ballantyne et al., (2000); and Jara & Metler (2010). Some institutions facing increasing exponential development and dynamic use of modern information and communication technologies should not suggest to scholars and practitioners in distance learning to pay attention only to the physical framework or infrastructure part of ICT. This means that technology infrastructure and human aspect is equally important. The Practitioners must pay equally dominant attention to students' feedback as a way of making service delivery more effective (Bentley et al., (2012); Lapointe & Reissetter (2008); Landry et al., (2008); Williams & Williams (2010); Coffey & Gibbs (2000) and (2001); Ballantyne et al., (2000); and Jara & Metler (2010). Literature study has indicated that students' feedback, whether on the processes of assessment of instruction or of the quality of academic service delivery, is embedded firmly in all educational processes as a productive venture (Price et al., 2011). Therefore, the growing number of studies and body of literature on the subject on how best to provide quality services to clients in adult ODL programmes should not be ignored. Good feedback practice helps clarify what good performance is (goals, criteria, expected standards). (Nicol & Macfarlane-Dick, 2006). Therefore, this paper will share some insight concerning Open University Malaysia (OUM) Bachelor of Psychology Students' feedback about the overall structure of the programme.

## **Objectives of the Study**

The general objective of the study is to determine students' feedback on the overall structure of the psychology programme. The specific study objectives are as follows:

- to determine whether the curriculum matches their needs;
- to identify whether they can pursue a profession after graduation;
- to study whether they are satisfied with the courses; and
- to find out whether they learned psychology courses as planned.



## Literature Review

In the educational delivery context, students' feedback is considered as one of the most important components of the improvement process. Periodic review of the educational programme would ensure the programme remains consistent with the institutional mission, needs and criteria. Henderson et al., (2019) propose that feedback needs to be understood as an interaction between practices, context, and individuals. In addition, feedback can be one of the most powerful influences on student learning (Hattie & Timperley, 2007).

According to Henderson et al., (2019), students and educator dissatisfaction with feedback practices continues to remain a significant problem in higher education. Furthermore, programme evaluation is essential. One question that always arises is what areas should be assessed? According to Carnegie Mellon University (2016), there have a few important components, and it could be divided into three major components: programme outcomes, direct measures, and indirect measures. In programme outcomes, knowledge skills and abilities identified, and students are able to demonstrate their knowledge skills and abilities upon completion of the programme. Direct measures of the assessment methods are used by the faculty to assess their students' achievement of the program outcomes. This measurement includes exam, case studies, or representation, written assignment, and portfolio. In indirect measures, on the other hand include the student's perception on whether or not they have or achieving a learning outcome (Carnegie Mellon University, 2016).

According to Hattie & Timperley (2007), the process of effective feedback must focus on 3 questions:

- i. Where am I going? (What are the goals?);
- ii. How am I going? (What progress is being made towards the goal?); and
- iii. Where to next? (What activities need to be undertaken to make better progress?)

Good feedback practice helps clarify what good performance is (goals, criteria, expected standards) (Nicol & Macfarlane-Dick, 2006). In general, feedback is a fundamental learning and teaching activity that has a significant impact on student learning and achievement (Gibbs & Simpson, 2004). Therefore, as an educational provider, it is important to carry out student's evaluation or feedback survey for the continuous improvement periodically.

In this context, programme feedback is about understanding the programme through a routine, systematic, deliberate gathering of information to uncover and/or identify what contributes to the 'success' of the programme and what actions need to be taken in order to address the findings of the evaluation process (Frye & Hemmer, 2013; Henderson et al., 2019). This study would focus on educational programme evaluation mainly from the OUM undergraduate psychology students' perspective.

In the literature study, it found that some interesting research was done to find out any different responses between online and traditional courses student. The study concerning online, and traditional course students found that students' reasons for taking online courses included flexibility to accommodate work and family schedules, the ability to avoid commuting to the university and more online courses being available to them (Dobbs et al., 2017). Besides, the study found that both online and traditional students agreed that traditional courses were easier, and they learned more in that format. They also concurred that online courses required more effort. Experienced online students indicated that the



quality of their courses was good, while traditional students who had never taken an online course felt that the quality of online courses was lower. So, how about ODL students in Malaysia? How do they perceive online study education programme?

In another study, students who enrolled in a massive open online course or MOOC were motivated to take other courses in this format based on their perception that it was useful for achieving their goals. In addition, their motivation was high if the course was posted on a platform that was easy to use (Aharony & Bar-Ilan, 2016). This study also found that as the students proceeded through the course, they gained confidence. In addition, blended learning offers the familiar face-to-face instruction and some of the conveniences of DE which may be why participants are interested in this model. Meanwhile, distance education is an educational experience where instructors and learners are separated in time and space (Keegan, 2002). It can happen away from an academic institution and can lead to a degree or credential (Gunawardena et al., 2008). Since this is a case study in OUM, it is important to explore how OUM learners perceived or gave feedback to the programme which they enrolled, particularly for the psychology undergraduate programme.

In terms of theoretical framework, this study would be based on a logic model. It found that the logic model is useful for university to conduct programme evaluation. In addition, its appropriateness for each context should be able to assess if we think logically (Soleiman et al., 2014). In order to provide a clear framework for evaluators, attention to the basic principles of proposal writing is essential. To achieve a better conclusion, it is important to give the proposed format to reviewers for comments and advice. The logic model is rooted within the complexity theory and theory of change. It uses components to describe the sequence of activities thought to bring about change and talked about the link between these activities and the results of the programme (Soleiman et al, 2014).

According to Soleiman et al. (2014), the common components of a logic model can be seen as below:

- i. Situation: it is important in stating the main problem and considering the background of the programme from many dimensions, such as social, political, economic and so on;
- ii. Inputs: it refers to resources such as staff, money, time, equipment, partnerships and so on that are invested in the programme;
- iii. Outputs: it includes activities, services, products and all of what is reached at the end of the programme, including a variety of products from books, workshop groups, graduates, etc.; and
- iv. Outcomes: ultimate desires of taking a programme, which include short-term such as changes in knowledge, attitudes, and skills; medium-term such as changes in behaviours, decision-making, etc.; and long-term (impact) such as changes in social, economic, and environmental conditions.

Based on this logic model, besides identifying the main problem in the current situation and context, determination of the ultimate outcomes and choosing the best strategy for achieving the level of outcomes are considered. It seems that the logic model is simple and more applicable for today's educational organisations. Preparing appropriate and measurable indicators for a logic model evaluation programme is the key for a successful evaluation. Providing the indicators must be done with the participation and viewpoints of the main stakeholders of the programme, such as learners, faculty members, etc.

## Research Methodology

In terms of research design, this is a quantitative study by using a descriptive study approach. Since, the study was carried out in OUM, then it has become a case study which the research is mainly focused on OUM psychology learners. In order to achieve this research goal, a survey method via questionnaire was used in this study. The collected data will then be analysed with SPSS. The result would be shown in terms of mean and frequency.

### Samples and Sampling Selection

The sample population of this study is OUM psychology undergraduate students. A total of 800 questionnaires had been distributed and sent to all learners taking the Bachelor of Psychology with Honours nation-wide. It covers all learning centres from Klang Valley, East Coast, Northern region, Southern region, and East Malaysia comprising Sabah and Sarawak. The samples involve those who are still active in the system. They include senior learners who have enrolled for at least 2 semesters at OUM, regardless of their age, gender, ethnicity and geographic location. Convenience sampling technique is used in this study.

Based on the questionnaire sent, a total of 258 female participants (58.77%) and 181 male participants (41.23%) had responded and returned the completed questionnaire to the researchers.

### Survey Instrument

The instrument used in this research is a questionnaire. It is divided into several parts, such as respondents' profile, learning materials, tutors, assessment matters and the overall aspects of this programme. However, in this paper, only the overall programme structure components or construct will be analysed and discussed. The questionnaires were distributed to the samples via Google Drive and e-mail.

Finally, the collected data was analysed and shows the mean score. The scale used in this survey ranging from 1 to 5: 1.00–2.33 as low level of satisfaction, 2.34–3.66 as medium and 3.67–5.00 considered as high level of satisfaction.

### Reliability Result

The reliability of the survey instrument was high. The Cronbach Alpha indicated 0.79 for the overall structure of the programme.

## Findings

The study is to determine students' feedback on the overall psychology programme structure. The data is presented in the table below. This construct (overall structure of the programme) comprises six items. Interestingly, the result demonstrated that 439 respondents perceived the overall psychology programme structure offered in OUM very positively. The data shows that the mean score for all the items fall into the high category. The score mean ranges from 3.806 to 4.164. All those items are as follows: the structure of the programme perfectly fits my need; the programme will help me in building my career after graduation; satisfied with the courses offered in this programme; enjoy study psychology programme; learned psychology courses as expected; and the programme offered via ODL suits my need. The findings can be seen in Table 1 below.

**Table 1**

*Learners' Feedback about the Overall Psychology Programme Structure (N = 439)*

No.	Question	Mean	Level
1.	The structure of the programme perfectly fits my need.	3.918	High
2.	The programme will help me in building my career after graduation.	4.073	High
3.	Satisfied with the courses offered in this programme.	3.964	High
4.	Enjoy study psychology programme.	4.164	High
5.	Learned psychology courses as expected.	3.943	High
6.	The programme offered via ODL suits my need.	3.806	High

*Note.* Indication: mean 1.00–2.33 Low, mean 2.34–3.66 Medium, mean 3.67–5.00 High

## Discussion

Generally, as observed, online learning has become the key to a new trend of education particularly during the Covid-19 pandemic situation. In fact, online learning/ e-learning has become one of the most popular ways of gaining access to an education (Huey Siew, 2016). In terms of terminology, the terms distance learning was given by Greenberg (1998 as cited in Mahmood et al., 2016) as “a planned teaching/learning experience that uses a wide spectrum of technologies to reach learners at a distance and is designed to encourage learner interaction and certification of learning” (p.36). In this ODL environment, many researchers would like to know whether the ODL students are happy and satisfied with the programme that they enrolled. Therefore, it is important to carry out an empirical study to get their feedback on the overall programme structure which they registered. As such, a case study was carried out in OUM.

Meanwhile, the attainment of the programme’s educational objectives, student outcomes and continuous improvement is an important element in the programme accreditation and continuous improvement process, (Oduaran, 2017). This practice is also aligned with the Malaysian Qualifications Agency (MQA) requirement. Probably, students’ feedback on the improvement of adult higher education via ODL is significant particularly to the educational provider.

In this descriptive study, it is proudly noted that all the respondents involved in this study have given a very positive feedback to the Bachelor of Psychology programme structure offered by OUM. All the items (mean scores) have shown high level of scores. In other words, OUM psychology degree is well accepted, recognised and valued very positively by its learners. This result is also significant and meaningful to OUM particularly as an ODL provider in the country. Without a doubt, ODL has gained a strong trust and confidence among Malaysians. This finding has confirmed the result of a similar study conducted by Seok et al., (2010). In general, instructors and students indicate that teaching and learning online was effective. Female students responded more positively to most questions concerning effectiveness, and instructors also found it to be more positive (Seok et al., 2010).

Besides this, another study found ODL education programme to be well-accepted by the society. Blended learning (BL) was examined by Kurt & Yildirim (2018) to determine students' satisfaction and what they considered to be important features of the blended format. The finding of their research indicated that the Turkish students who participated, almost unanimously felt that BL was beneficial to them, and that their own role and the instructors' role were central to their satisfaction. The researcher stated, "the prominent components in the process have been identified as face-to-face lessons, the features of online course materials, LMS used, design-specific activities, process-based measurement and evaluation, student-student interaction, and out-of-class sharing, respectively" (p. 439). DE has a growth potential and offers the opportunity to reach many people (Fidalgo, 2012); hence, it can be used as a technique for mass education (Perraton, 2008). According to Perraton (2008), DE can be adapted to the needs of current and previous generations who did not complete their education. DE can also reach individuals who live in remote locations and do not have the means to attend school. In fact, this mission and vision was also shared by ODL institutions in Malaysia.

### **Recommendations and Suggestions for Further Studies**

In relation to this research topic, we would like to recommend that future study could include elements such as effective management, academic support, and subject matter delivery. So, the study outcomes probably could provide more insight for the stakeholders who are involved in ODL or fully online education. Finally, in the near future, the study also could look into the general public readiness to take ODL or fully online education programme.

### **Conclusion**

This study has provided useful information regarding undergraduate psychology students' feedback on the overall structure of the psychology programme. The study covered mainly on the structure of the programme perfectly fits my need; the programme will help me in building my career after graduation; satisfied with the courses offered in this programme; enjoy study psychology programme; learned psychology courses as expected; and the programme offered via ODL suits my need. It is proud to note, the study shows that ODL learners have a very satisfactory perception on the overall structure of the Bachelor of Psychology programme at OUM. Therefore, the learners demonstrate a strong interest in enrolling themselves in the online programme, instead of taking the conventional education programme.

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# Nurturing Numeracy Literacy Via Online Learning: A Case Study on the Effectiveness of the Online Forum Discussion

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## Abstract

*Numeracy skills is one of the required skills in the Malaysian Qualification Framework (MQF) for tertiary education in Malaysia. Numeracy skills is recognised as one of the must-have daily skills because it develops logical thinking and reasoning strategies in one's daily activities. Numeracy skills is a quantitative skill and living skill needed to solve problems and make sense of numbers, time, patterns, and shapes for daily activities. Having an adequate level of numeracy can improve many aspects of our life, including social life, education, and employment opportunities. Nevertheless, numeracy courses are also one of the most difficult courses and hence, it is vital to instill this skill for graduates. It will pose a greater challenge to adult learners in the open distance learning (ODL) environment. This study is carried out to explore the effectiveness of online forum discussion for Numeracy topic in Learning Skills for 21st century course (OUMH1603) using three essential elements in the online learning process – teaching presence, social presence, and cognitive presence. The outcome of this study will be useful to facilitate effective and quality teaching and learning processes for this topic.*

**Keywords:** Numeracy Skills, Community of Inquiry, Open and Distance Learning, Online Learning

## Introduction

Open and distance learning (ODL) is a learning process that takes place regardless of the distance between the facilitators and the learners. Open University Malaysia is the first open university in the country that has adopted a blended learning approach since its inception. This approach is commonly used by open and distance learning higher education institutions and according to Melton et al. (2009), it has been found to be helpful in increasing retention rates. OUM's mission is to widen access to quality education and to provide lifelong learning opportunities by leveraging technology, adopting flexible modes of learning, and providing a conducive and engaging learning environment at a competitive and affordable cost. Prior to the wide-spread COVID-19 pandemic in 2019, online learning became one of the prevalent modes of continuing and furthering education, particularly for

working adults. Tutors' support in online learning is essential for learners to successfully engage in the learning outcomes as tutors are the ones who interact directly with their learners.

Starting from year 2019, a compulsory university course OUMH1603 Learning Skills for the 21st Century is offered to all OUM undergraduate learners during their first semester of study. According to Ester van Laar et al. (2020), there are certain skills needed for education and the workplace in the current economy. The 21st century skills comprise skills, abilities, and qualities to be successful in 21st century society and workplaces. Most of these skills are associated with higher order thinking skills, which are based on analytic reasoning, complex problem solving, and teamwork. These skills are useful in mastering the knowledge in learners' academic content. There are four dominant categories of 21st century skills as shown in Figure 1. These categories are learning and innovation, digital literacy, career and life skills, and metacognitive skills.

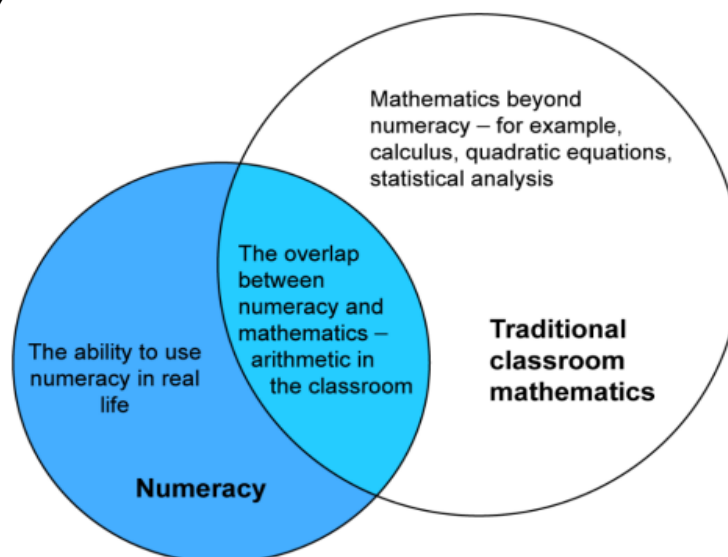
**Figure 1**

*Dominant Categories of 21st Century Skills*



The third topic of the course introduces learners to numeracy skills which is categorised under the career and life skills. The aim of the topic is to provide quality numeracy instruction and help them achieve the mathematical knowledge and skills that enable them to adjust to the growing demands of society. Numeracy is considered a fundamental mathematical skill which includes the ability to understand and analyse numerical information, express ideas based on numerical information, and to make the right conclusions and decisions. Fundamental arithmetic including addition, subtraction, multiplication, and division are considered as basic skills in numeracy. The important aspects of numeracy also include numbers and operations, computation, measurement, geometry, statistics, and probability.

The concept of numeracy and its relation with mathematics is depicted in Figure 2. Mathematics is formally taught in formal education institutions and considered as one of the core subjects. Mathematics is beyond numeracy and arithmetic, geometry and algebra, and maybe even statistics or calculus. Numeracy does overlap significantly with a subsection of what is taught in schools. Learners are indirectly introduced to numeracy such as shapes, numbers, time, and patterns in daily classroom mathematics activities especially when applying mathematical problems to real-life situations.

**Figure 2***Concepts of Numeracy*

Numeracy is one of the most needed skills in life as it is a set of skills that enable one to read, count, and analyse numbers that are used in one's daily activities. These days as the world is evolving, numeracy skills is important for one to make predictions and estimation in various matters in life, business, governmental policies, etc. Numeracy courses hold a unique and significant position in the education curriculum. Numeracy also plays a vital role in transforming one into a socially engaged citizen. Numeracy related courses have been introduced since the early education in one's life such as in preschool centres, etc. Although numeracy courses have been introduced at such an early stage, the interest of related programmes at the tertiary level is still relatively low among learners. Hence, teaching and learning numeracy related courses can pose a challenge to the learners at all levels of education.

There are a range of difficulty levels on numeracy skills with the ability to understand and analyse numerical information, expressing ideas based on numerical information, to making the right conclusions and decisions. The numeracy topic involves quantitative skills which apply mathematical courses including algebra, calculus, and statistics in real-life situations. There are various levels of difficulties for such courses. Nevertheless, the need to engage the interest among learners for such courses to equip them with numeracy skills is needed, regardless of its difficulty levels. Learners perceive numeracy courses as difficult and tend to have lower interest in such courses. Quantitative courses could pose a challenge to tutors to teach online.

Therefore, there is a need for a study to explore the effectiveness of online forum discussion for the Numeracy Skills topic in the OUMH1603 course using the Community of Inquiry (CoI) model. Within the Community of Inquiry theoretical framework (Garrison et al., 2000), a successful higher education experience is held to be supported by the presence and interaction of the elements of cognitive, social, and teaching presences. The framework has been extensively used, from a constructivist perspective, to examine the quality of online discussion forums.



## Research Objectives

The research objectives are:

- To examine the level of social, teaching and cognitive presence of the OUMH1603 course for January 2021 semester; and
- To recommend steps to be taken by OUM to improve the effectiveness and quality on the numeracy topic based on the findings of the study.

## Literature Review

Numeracy seems to reflect the way in which learners approach their mathematics, valuing the confidence in and understanding mathematics. Thus, teaching and learning, especially online, can pose a challenge to educators and learners for quantitative courses such as Mathematics, Accounting, Finance, and Economics due to the nature of the courses. These courses are not easy to teach and learn in a conventional classroom setting; hence, it would be even more challenging to teach them in a virtual classroom setting (Abu Zarin et al., 2008). In a conventional setting, learning occurs during classroom activities in which learners engage in live practice, and trial and error; and receive immediate feedback from their teachers throughout the course. Distant learners, on the other hand, struggle through these courses primarily in isolation. It is also difficult for educators to create teaching and learning activities that meet the needs of these isolated learners. They should ensure that learners are engaged, motivated, and focused throughout the course, in addition to encouraging independent learning. Considering the course's difficulty, it is not surprising that these learners typically perform below-average.

ODL learners mostly are working adults who need to balance life between work and family, apart from pursuing their studies on a part-time basis. Time management can pose a great challenge to these learners as they need to manage their time for work, family as well as studies. Hence, the time allocated for studies would most likely be lesser than full-time learners. Working adults are mostly equipped with rich working experience instead of book-knowledge, and it can pose an even bigger challenge when they do not use much of the higher-level numeracy skills in their life as an adult. Apart from that, handling a rather “challenging” course such as numbers-related can definitely be difficult for them when they have left school life for a long time. According to K. Abdul Gafoor & Abidha Kurukkan (2015), the factors that make Mathematics a difficult course for learners to study are accelerated forgetting of previously learned material and conceptual confusion. Learners who struggle with Mathematics claim to be lacking in learning strategies. Furthermore, these learners lack self-efficacy and struggle to learn Mathematics. Mathematics seems to be neglected more easily by learners who find it challenging. On the other hand, learners who believe Mathematics is a simple course, claimed their educators taught them well and easily grasped the concepts. Therefore, learners who believe mathematics is incredibly difficult are more likely than learners who believe the subject is easy to abandon the task with little effort.

The facilitators who are passing the knowledge and skills to the learners are also a factor in engaging learners with certain courses. Facilitators need to be able to share the knowledge with the learners in an understandable, fun and logical manner. Educators should then connect what learners learn in school and what they see in the real world, hence incorporating numeracy skills into the curriculum is very critical. An explicit focus on using different mathematical processes (such as communication, modelling, devising strategies, representation, and reasoning); an explicit focus on all stages of mathematical modelling (formulating, employing, and interpreting/evaluating) and how to see and excavate the

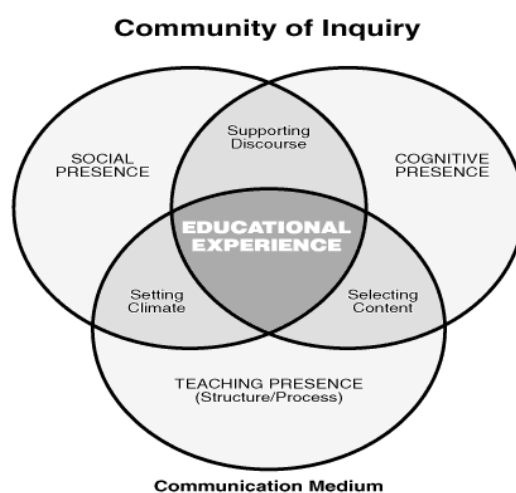


mathematics out of context are all requirements for engaging learners (Victoria State Government, 2020). Educators must teach learners how to "read" and interpret the sense in which mathematics is embedded, which is often in the form of a tangible object, either in a written or digital format. Furthermore, when teaching numeracy, educators must specifically cover a variety of cognitive processes and mathematical content areas, as well as the skills necessary to reason, contend, reflect, and assess, and also convey the results.

The term 'community of inquiry' or CoI was originally used by Lipman (1991) where it refers to a learning community which is facilitated by a teacher; where "students will listen to others with respect and then ideas are built based on one another's idea followed with asking justifications for unsupported views and lastly, they will help each other in building inferences from what has been transpired, and seek to identify one another's assumptions" (Garrison and Anderson, 2003). Knowledge building is a contextualised social process that is based on the critical learning community concept, where there are students, teachers and the constructivist learning assumptions, which can be seen in the CoI model as in Figure 3. The CoI model comprises three mutually interacting and reinforcing elements of cognitive, social, and teaching presences supported in online instructional environments.

**Figure 3**

*Community of Inquiry Model (Garrison et al., 2000)*



**Cognitive presence** is defined as the extent to which participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication (Garrison et al., 2000). The construct was also used to refer to the intellectual environment that supports sustained critical discourse and higher-order knowledge acquisition and application (Garrison & Anderson, 2003).

**Social presence**, a term first coined by Short, Williams, and Christie (1976), is used in this model to refer to the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop interpersonal relationships by way of projecting their individual personalities (Garrison, 2009).

**Teaching presence** is the design, facilitation, and direction of cognitive and social processes for the purpose of realising personally meaningful and educationally worthwhile learning outcomes (Anderson et al., 2001).

## Research Method

For the purpose of this study, an instrument of 34 questions rated on a five (5) Likert scale developed by Swan et al., (2008) was used to evaluate and measure the teaching, social, and cognitive presence in the online forum. Thorough observation was made for each forum searching for social, teaching, and cognitive presence and 34 questions were rated accordingly. The questions in the instrument consist of 13 questions for teaching presence, 9 questions for social presence and 12 questions for cognitive presence. The interactions and discussion in the forum were observed and analysed for each tutor for the January 2021 semester. The same will be conducted by another researcher to ensure consistency. Finally, the researchers discussed their analysis and observations, and made their recommendations.

The subject (OUMH1603) Chapter 3 is chosen based on the following criteria:

- i. The subject was offered in January 2021 with a total number of 2608 learners and 100 total postings made by learners;
- ii. In total, there were 19 instructors assigned to teach this subject via online teaching and online forum with a total posting of 336;
- iii. It is a foundation subject and one of the core subjects for those taking any programmes in OUM; and
- iv. The subject is a first semester subject for new learners.

## Findings and Discussion

A total of 19 forums for the numeracy topic in Learning Skills for the 21st Century (OUMH1603) course was observed and rated based on Col's three elements: teaching presence, social presence, and cognitive presence. The overall results are as shown in Table 1.

**Table 1**

*The Mean Score for Each Col Element*

	Characteristics	Score
Teaching presence	Design & Organisation	3.342
	Facilitation	3.324
	Direct Instruction	3.561
	Mean	3.409
Social presence	Affective Expression	3.614
	Open Communication	3.649
	Group Cohesion	3.263
	Mean	3.508
Cognitive presence	Triggering Event	3.280
	Exploration	3.228
	Integration	3.192
	Resolution	3.368
	Mean	3.267
	Overall mean	3.394





It is observed that the score obtained for social presence was the highest with a mean score of 3.508 for the Numeracy topic. It indicates learners are comfortable interacting with their peers via online forums. Learners were often observed to assist their peer learners in answering questions that were posted and in helping other learners to understand the concepts of Numeracy. This finding is in line with what was emphasised by Herranen et al., (2018) that is, collaborative learning is student-centred rather than facilitator-centred since learners decide what is interesting and useful for them, and the facilitator creates learning environments, which enable and stimulate learners to learn and act for sustainability. This result also indicates that learners preferred peer interactions compared to their facilitators as found in a study conducted by Rourke and Anderson (2002).

It is also worth mentioning that the score of affective expression and open communication are higher than the group cohesion. This result coincides with the study of O'Regan (2003) who stated that learners express their emotions in relation to the various aspects of an online course such as design and organisational issues (i.e., a lack of clear instructions), cognitive issues (i.e., learning materials, success), social issues (during communicating), time management, or technology. The higher level of peer interaction could be due to many factors such as an improved and stable myINSPIRE platform, more affordable computer peripherals, higher computer skills and literacy among learners, faster Internet access (wireless and broadband), an increase in accessibility to information, and learners are more familiar with online communication.

Meanwhile, cognitive presence scored a mean of 3.267 which is close to the neutral score of 3, indicating a balanced agreement and disagreement of the existence of triggering events, exploration, integration and resolution characteristics in the online forum. This study revealed an insubstantial level of cognitive presence due to lack of learning and reflection activities in the numeracy discussion forum which may help learners to understand the fundamental concepts of numeracy and hence construct the explanations and solutions through cognitive presence is an important component in the teaching and learning process.

The mean score of 3.409 obtained for teaching presence indicated that all the e-tutors for OUMH1603 played their roles adequately. It is noted that all the appointed e-tutors have more than 5 years of teaching experience and completed the e-tutor training by the tutor management and development unit of OUM. Another contributing factor is the design and organisation of the forum discussion with the inclusion of e-lesson for the topic. E-lesson is developed as one of the supporting learning materials and activities for learning. Several OER-linked videos are shared, and two sets of online quizzes (pre and post) were prepared for learners to do self-checks. In an online learning environment, teaching presence is vital as it can make a significant difference in the engagement of learners and the facilitation of learning. This is because adult learners need clear guidance, feedback, and motivation from their instructors in order to manage their self-learning effectively.

**Table 2**

*Forum Postings in Numeracy Topic*

Role	Number of Postings
E-tutors	336
Learners	100
Total	436

Table 2 represents the total number of postings for the Numeracy topic in the semester of January 2021. It is noted that the e-tutors made more postings than the learners and it corresponds to the teaching presence mean score as shown in Table 1. On the other hand, with a total of 100 postings made amongst the 2608 learners, it is shown that the online engagement of learners is rather low compared to the total postings by the e-tutors. This may be considered a hindrance to effective online learning. Nevertheless, the postings by the learners are rather engaging with the e-tutors as shown in Table 1 with a higher than mean of 3.0 for all the Col components. The quality of the postings is considered as an indicator of an effective teaching and learning of the numeracy skills for the course.

## **Conclusion and Recommendations to Improve Online Interactions**

Online forum is an essential platform in teaching and learning for learners in OUM because learners can communicate with e-tutors here apart from e-tutorials that were conducted. This is because asynchronous discussions are frequently used in online courses to allow learners to openly communicate and build shared understanding, while instructors skilfully facilitate the process (deNoyelles et al., 2014). The participants must perceive interrelated presences; social, cognitive, and teaching; in order to have a successful educational experience. Forum is a teaching and learning tool that plays a vital role in assessing the learning process to learners as well as it covers all the Col components. Educators need to employ discussion strategies such as providing prompt but modest feedback, peer facilitation, protocol discussion prompts, and providing audio feedback that integrates all three presences to support an effective online Col (deNoyelles et al., 2014).

Several measures that could be taken in OUM to enhance the effectiveness of online forum discussions for the numeracy topic especially to improve the cognitive presence and to increase the number of posting by learners. Since the Learning Skills for 21st Century course is offered to all registered undergraduate learners during their first semester, OUM is suggested to prepare them for the online learning experience. Learners who are used to learning in a classroom may have trouble adjusting to the online learning experience. Although all the learners are provided with an introduction session during their orientation session by the respective learning centres, they must be guided by a video tour through myINSPIRE, pointing out the different features and functionality, including the online community. They must be taught how to find materials, assignments, and assessments, and how to communicate with their instructor and fellow learners. A “spark” and engaging discussion questions can be posted by the e-tutors to encourage learners to have engaging discussions with e-tutors on the forum. There are discussions that took place outside the forum among the peers as well as with the e-tutors. Therefore, e-tutors can encourage the learners to post questions in the forum instead of other platforms such as emails, calls, and WhatsApp messages among peers and with e-tutors.

Another recommendation is to get learners to take action on what they have learned. These actions could include participating in an online forum discussion, providing examples or scenarios, solving a problem, and reviewing what they have learned in reflective notes or reports. Learners should be awarded marks according to their submission and this will contribute to their final grade at the end of the semester. This recommendation is supported by a study done by Wells (1999) who stated that reflection is essential to deep learning and problem solving. From a socio-cultural perspective, reflection is developed through social interaction and semiotic mediation.



## Further Research

We propose to further this research by evaluating the score of the pre-test and post-test of the topic. Such a study could further explain how online learning occurs through the effective interaction between teaching presence, social presence, and cognitive presence. Besides that, other learning materials such as lesson plan, e-tutorial class recording, etc can be observed as well because discussions among the e-tutors and learners may also take place in a more engaging manner. Apart from that, feedback from learners may also be collected and analysed on the Numeracy topic for this course on the effectiveness of learning numeracy skills from the course.

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## Effects and Challenges of Covid-19 Pandemic on Students Learning and Assessment Results: Case Study in a Malaysian Government School

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### Abstract

*The Covid-19 Pandemic has caught all educators and students of the Government Schools in Malaysia by surprise as they were forced to learn from home. The Malaysian Government has instructed all schools to be closed for face-to-face teaching and learning since March 2020. The learning then took place in students' homes, which were not equipped for such tasks, as the technology and pedagogy was not up to par. Distance learning platforms such as Google Classroom, WhatsApp and Telegram were utilised by teachers and schools to reach their students remotely to limit the disruption of education. Students use laptops, desktop computers and mobile phones when engaging with the online learning. Most of the students are from lower-income B40 families, and had little or no resources for learning except what was offered online to them. This study has investigated the effects of online learning during the COVID-19 Pandemic on the students' online learning during PdPR and their assessment results. Another aim of the study is to investigate the effects of socio-economic status (B40) of the students and their attendance during PdPR. Lastly, the challenges faced by the students were also determined. In order to do this research, primary data is collected from six classes in a Government High School in Selangor. Structured interviews are used as a data collection tool to determine the challenges faced by students during their PdPR sessions. The findings of the correlation analysis between student attendance and their assessment results shows a significant relationship ( $r = 0.8321$  for History and  $r = 0.9263$  for Malay Language). Furthermore, the results of the correlation analysis between student socio-economic status (B40) and their attendance also show a significant relationship ( $r = -0.8231$ ). Through the findings of this paper, it can be concluded that the student's learning interest online promotes higher attendance, which in turn ensures higher assessment results. A secondary finding of students belonging to the B40 group determines their assessment results is found to be interesting.*

**Keywords:** Open and Distance Learning, Technology, Online, Collaboration, Innovative Pedagogy



## Introduction

Covid-19 pandemic, which began in the year 2019, has affected educational systems worldwide including Malaysia since March 2020. The government of Malaysia decided to close the educational institutions during the first Movement Control Order (MCO) for 110 days in 2020. During this time, the Education Ministry (MOE) implemented the *Pengajaran dan Pembelajaran di Rumah PdPR* (Home-based Learning) for all of its educational institutions including secondary schools. In 2021, the PdPR was again ordered for Form 1 to Form 5 students starting from 20 January 2021 till 26 March 2021.

Teachers are required to teach from home using the PdPR manual (MOE, 2021) as an alternative for new normal education. PdPR implementation must fulfil the basic principles that are needed to allow schools to arrange strategies for the optimisation of teaching and learning to occur at an optimal level. The main principles highlighted in the manual are:

1. No student will be left behind
2. Basic learning is fulfilled
3. Socioemotional well-being of students is paramount

The PdPR means that the teaching and learning is implemented from home or community centre or any other suitable location. This PdPR can be done online or offline, in a structured and planned manner. Teachers can use any of these means or a combination of means that are suitable:

- PdPR Online  
The online learning is through Internet access and using of devices that allows the student to learn in real time. Teachers can use PdPR through learning platforms such as Digital Educational Learning Initiative Malaysia (DELIMa), Cikgootube, EduWebTV and other social media such as Telegram and WhatsApp. Teachers can also do live streaming using GoogleMeet or Microsoft Teams, or other means such as gamification, video, audio clips, e-books, and recordings or online assignments.
- PdPR Offline  
The PdPR offline is applicable when students do not have online access, but they can use devices such as computers, laptops, tablets, or smart phones. The learning can be through textbooks and other learning materials, such as video, audio, slides, notes and downloaded exercises.
- PdPR Offsite  
This learning approach happens at the community centres or other suitable premises, through self-learning or with PPD officers or academic support teams (AST).

Schools are required to come up with their own suitable timetables, taking into consideration the short breaks in between 30 minutes' sessions (Appendix 1). Schools are also given guidelines on how to record student attendance daily for their PdPR.

The Government School is situated in Sungai Buloh, Selangor, Malaysia, has a current student population of 1153 and 89 teachers, opened in 2011, and is a two-session school. The majority of students are Malay (71%), with Indian (15.8%) and Chinese (10%) students in Form 1 to Form 5. This secondary school offers the Malaysian Education Certificate (SPM) to 17-year-old students. 71.5% of the students are in the B40 category which indicates 40% below poverty in household income.



There are two subjects taught that are compulsory for the students to pass their SPM, namely History and Malay Language (Bahasa Melayu). In line with the instructions given by the Ministry of Education, the government school implemented the PdPR for its students as PdPR online and offline. Teachers brought the classroom into the student's homes, using three modes of instruction of the lessons: 1) via social media (WhatsApp and Telegram), 2) Google Classroom (DELIMa), and 3) printed modules.

The execution of the PdPR online has given a large impact to the students, teachers and parents alike from many aspects, such as their willingness to embrace online PdPR as well as the socio-economic factor. As most of the students belong to the B40 category, it was difficult for them to secure gadgets, purchase adequate Internet data and equipment necessary for the online learning. There is a need to investigate how far the online learning using PdPR has affected students' assessment results in these compulsory subjects, as well as how the socio-economic status affected their attendance. This study also investigated the challenges faced by the students to attend PdPR sessions.

### **Research Objectives**

There are three main objectives of this research, which are:

- To investigate the relationship between student attendance during PdPR and History and Malay Language assessment results;
- To investigate the relationship between student social economic status and their PdPR attendance; and
- To determine the challenges faced by students during PdPR.

### **Literature Review**

As of today, there is very little literature on the effects of COVID-19 towards student's assessment. There are many studies conducted on the online teaching and learning (Mesman & Abd Majid (2021), Mohd Yusof & Ahmad (2020), Mohd Salleh (2020)), however, there are no studies done on the impact of COVID-19 on the student's attendance which could influence their assessment results.

Abd. Rahman (2016) has found that the socio-economic factors of low-income group (B40) can only provide the basic needs for their children, such as shelter, food, and clothing, but lacks in terms of education. These families have no or lack of education and are busy earning a living, especially during the COVID-19 pandemic. These economic problems in the B40 group cannot provide tuition or purchase educational aids. Studies conducted by Arshat et al., (2018) has also indicated that B40 parents do not pay attention to their children's education. Another study conducted on B40 also mentions the effects of socio-economic factor on learning online (Jafar et al., 2020). This evidently leads towards these group of students missing out during the PdPR programmes conducted by the Ministry of Education for the home-based online learning as their parents are not able to spend money to purchase Internet data and gadgets.

According to literature (Tasir et al., 2006; Hoi et al., 2018), online teaching makes a connection between educators and students through electronic systems such as the Internet, satellite, TV, CD-ROM, radio and other such media. In the online learning system, there are three main elements, the material, the platform, and the media. Educators and students were in a sense lucky because the existing social media platform was familiar to them; so, using apps such as WhatsApp, Telegram, Facebook, Google Meet and Instagram can be adopted readily (Gardner, 2020). Nonetheless, there are also some students and teachers who were first-timers to this online learning system, and the challenges that they face makes a compelling research question that need to be answered, especially when the COVID-19 pandemic end is not yet in sight.

A study conducted on the major barriers of online learning states the major barriers as technology, individual, pedagogy, and enabling conditions (Ali et al., 2017). Another study conducted on university students also indicate ICT infrastructure, online skills, the security of the platform, support by the university, and motivation by teaching staff to students as major challenges (Munezero et al., 2016).

Therefore, the main question that remains to be answered is how students' socio-economic background (B40) can influence their attendance during PdPR sessions and ultimately affects their assessment results. Challenges faced by the students are also observed when it comes to online learning.

## **Research Method**

In order to understand the students' demographic profile and educational achievement in their Form 5 classes, the researcher used ethnographic techniques which includes interviews and field observations. The first-hand data collected includes the student's gender, attendance during the PdPR sessions and the assessment results. The data is from Form 5 students for the duration of 20 January 2021 till 26 March 2021. A sample of students (7) were interviewed to get first-hand information on the challenges that they face during their PdPR sessions.

There are 88 male and 112 female participants in this study, refer to Table 1. These students are from six different classes which are 5 ST, 5 PA, 5 SK, 5 P, 5 SRT and 5 SV. The students are allocated these classes based on the subjects that they are taking. The students are from the surrounding neighbourhood especially from Kampung Melayu, Sungai Buloh. These students' socio-economic background is categorised as B40, where the income classification by household income is below RM 2500. Refer to Table 2 for the breakdown of socio-economic background of students by their respective classes. The PdPR programme states that student's attendance is not compulsory, they are assumed to have fully attended the sessions. The student's attendance was taken by their class teachers using Google form (refer to Table 3).

The History and Malay Language subjects are compulsory subjects taken at the Malaysian Education Certificate (SPM) level. These students sat for an internal assessment that mimics the actual SPM paper that they would need to sit for at the end of their study year. The assessment comprises of 3 parts each: objective questions, structured, and essay with a total of 100%. These tests are to assess their knowledge and proficiency in the subjects. This assessment was conducted face-to-face in March 2021 when the schools were re-opened briefly.



**Table 1***Student Gender for Each of the Classes*

Class Name	Male	Female	Total
5 ST	13	19	32
5 PA	9	23	32
5 SK	11	16	27
5 P	17	24	41
5 SRT	13	16	29
5 SV	25	14	39
Total	88	112	200

*Source.* Government School in Selangor**Table 2***Student Socio-economic Background (% of B40 and Below)*

Class Name	B40	Percentage (%)
5 ST	16/32	50.0
5 PA	19/32	59.4
5 SK	14/27	51.8
5 P	30/41	73.2
5 SRT	26/29	89.6
5 SV	38/39	97.4

*Source.* Government School in Selangor

As shown in Table 2, there are a total of 143 students out of 200 (71.5%) who are at the B40 category. This information is very important as it affects the students' PdPR learning experiences.

**Table 3***Student Attendance During PdPR Sessions (%)*

Class Name	Attendance	Percentage (%)
5 ST	28/32	86.0
5 PA	21/32	63.2
5 SK	11/27	40.0
5 P	8/41	19.5
5 SRT	7/29	24.0
5 SV	3/39	8.0

*Source.* Government School in Selangor

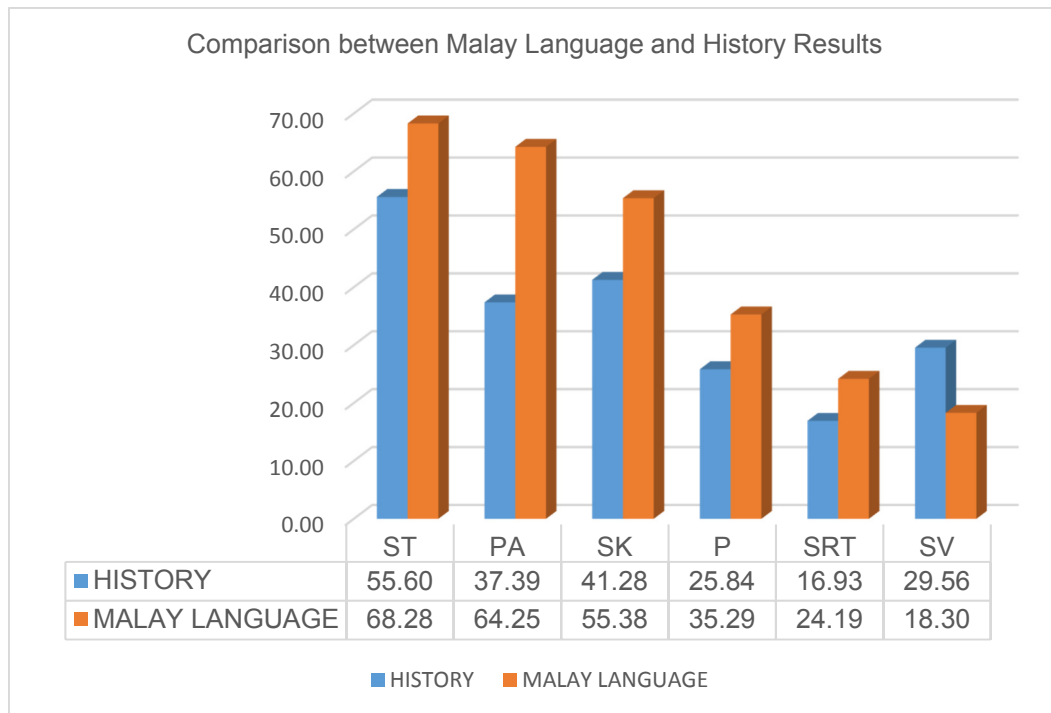
Table 3 shows the student’s attendance taken by the individual class teachers during the PdPR sessions even though it was not compulsory for the students to attend the classes. The schools’ attendance threshold is 91% pre-COVID-19 times. Table 3 clearly shows that the students in the 5 SV and 5 P classes have the lowest attendance rates. This data again shows that the student’s interest in joining the PdPR sessions is one of the main criteria for their attendance.

### Findings

This research paper has three main objectives in which the data collected and analysed shows clearly there is a correlation between student’s attendance in PdPR sessions and their performance in the two subjects, as well as the students’ attendance based on their socio-economic status (B40). Lastly, the challenges faced by the students in their online learning was discussed.

#### Diagram 1

Comparison between Malay Language and History Results



#### Findings on Assessment Results against Student Attendance

Based on Table 3: Student Attendance During PDPR Sessions and Diagram 1: Comparison between Malay Language and History Results, it can be concluded that the higher the attendance rate, the better the assessment results. The ST, PA and SK classes have an average attendance of above 40% with the highest being 86%, did much better compared to P, SRT and SV classes, which averaged below 24%. The highest History score was achieved by ST and SK with 55.6% and 41.28% respectively. The lowest History score was by SRT and SV at 16.93% and 29.56% respectively, which also had the attendance rate of 24.0% and 8.0%. A surprise finding of class SV which had a very low attendance of 8.0% (lower than SRT) but did better in History scores at 29.56%. This could be due to the school’s principal taking this class.



The Malay Language, on the other hand shows a perfect correlation between the students' attendance and their assessment scores. The highest attendance rate, ST and PA at 86% and 63.2% and the lowest attendance rate, P, SRT, and SV is at 19.5%, 24.0 and 8.0% have a range of mean scores from 68.28% to 18.30%.

This shows that there is a significant correlation between students' attendance contribution to their knowledge and proficiency in these two subjects, as shown in Table 4.

**Table 4**

*Pearson Correlation Relationship Analysis of the Attendance with History and Malay Language Assessment Results*

Construct		Attendance	History	Malay Language
Attendance	Pearson Correlation	1		
History	Pearson Correlation	0.8321	1	
Malay Language	Pearson Correlation	0.9263	0.8373	1
	N	200	200	200

Source. Government School in Selangor

### Findings on the Student Social Economic Status (B40) and Their Attendance

Students from the B40 group were having difficulties to attend the PdPR classes compared to their friends from higher socio-economic groups. The B40 students could not attend classes consistently as they were required to do housework, take care of siblings, share gadgets with family members (some students rely on the use of their parents' mobile phones), helping parents to earn extra income for the family, and many other contributing factors. This greatly impacted their ability to join the PdPR sessions. As 71.5% of the Form 5 students belongs to this group, it has a huge impact on the school's overall attendance.

The data shows that there is a significant correlation between students' socio-economic status (B40) and their interest in attending the online classes during PdPR sessions, as shown in Table 5.

**Table 5**

*Pearson Correlation Relationship Analysis of the B40 Socio-economic Factor with Student Attendance*

Construct		B40	Attendance
B40	Pearson Correlation	1	-0.8231
Attendance	Pearson Correlation	-0.8231	1
	N	200	200

Source. Government School in Selangor



## Challenges Faced by Students During Their PdPR Attendance

As students embarking on their online learning journey, many face challenges that are unfamiliar to them. The challenges are unique and different for each of the students. Not only do these students endure a total of six hours or more a day online, they also have to do their homework and revision, which undoubtedly make them tired at the end of the day, and lose interest altogether in joining the PdPR sessions every day for five days a week.

The students were interviewed through phone and face-to-face in regard to the challenges that they had faced during their PdPR sessions. There are five main issues that the students have brought up. These are:

- **Internet access**  
The Internet access is not stable, prone to breakdowns and difficult to access the correct links.
- **Attitudes**  
The students have themselves mentioned that they were more eager to play online games, do online shopping and watch videos, TikTok, YouTube and Korean drama.
- **Disturbances from family members**  
There are many students who experience family members asking them to do chores such as cooking, cleaning, washing, taking care of siblings, and even to work during the PdPR sessions. Other than that, there are also disturbances from siblings in terms of noise as well as competing for the sole gadget among siblings.
- **Difficulty in using the online system and gadgets**  
The use of hand phones as the primary gadget comes with its own challenges, as it is not entirely suitable for long-term use because it is small and has effect on the student's eyes. The overheating and battery problems are also among the challenges faced by students. The students are not familiar with using DELIMa software especially the links for online classes as they are given many access links that are different for each subject which keep changing every day.
- **Schedules**  
Students who join late will make the class schedule go over the time, and clashes with the next scheduled class. There is also downtime when there is no Internet access in school or at the teacher's home.

## Conclusion

The main objectives of the research are met when the data obtained shows good correlation between the main variables of the study. The positive correlation between the student attendance and their assessment results shows that the more the students attend the PdPR sessions, the better their assessment results. On the other hand, the correlation between student socio-economic background (B40) and their attendance with a negative correlation coefficient simply shows that the larger number of B40 students in the PdPR session the less their attendance rate. This study is supported by getting students to provide the challenges that they have faced during the PdPR sessions, and it clearly indicates that students living in poverty are greatly challenged in the COVID-19 Pandemic for their online learning experiences. The findings of the correlation analysis between student attendance and their assessment results shows a significant relationship ( $r = 0.8321$  for History and



$r = 0.9263$  for Malay Language). Furthermore, the results of the correlation analysis between student socio-economic status (B40) and their attendance also show a significant relationship ( $r = -0.8231$ ). Through the findings of this paper, it can be concluded that the student's learning interest online promotes higher attendance which in turn ensures higher assessment results. A secondary finding of students belonging to the B40 group determines their assessment results is found to be interesting.

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**Appendix 1:** Timetable for a Form 5 Class

	7.30-8.00	8.00-8.30	8.30-9.00	9.00-9.30	9.30-10.00	10.00-10.30	10.30-11.00	11.00-11.30	11.30-12.00	12.00-12.30	12.30-1.00	1.00-1.30	1.30-2.00	2.00-2.30	2.30-3.00	3.00-3.30
ISNIN	PERS PDPR	BM (PdP)		PA/SK/PSV (PdP)	PA/SK/PSV / (T)		R	KIM/ SRT/EKO (PdP)	KIM/ SRT/EKO (T)	SC/FIZ (PdP)	SC/ FIZ (T)		SEJ (PdP)			
SELASA	PERS PDPR	MT/PER (PdP)	MT/ PER (T)	KIM/ SRT/EKO (PdP)			E	KIM/ SRT/EKO (T)	SEJ (T)	PI/PM (PdP)	PI/PM(T)	BIO/TSW(PdP)	BIO/ TSW(T)			
RABU	PERS PDPR	PJK (PdP)	MM (PdP)	MM (T)			H	PI/PM (PdP)	BM (PdP)	BM (T)	BI (PdP)	BI (T)				
KHAMIS	PERS PDPR	BI (PdP)	BI (T)	BIO/TSW (PdP)			A	BIO/TSW (T)	SC/FIZ (PdP)	SC/FIZ(T)	PA/SK/PSV (PdP)	PA/ SK/PSV (T)	PJK (T)			
JUMAAT	PERS PDPR	MM (PdP)	MM (T)	BM(PdP)			T	MT/PER (PdP)	MT/PER(T)	B. TAMIL						

Source. Government School in Selangor

Note. Malay Language: BM, History: Sej (PdP – online sessions, T – Tutorial sessions).



## Teachers' Perception of Technology Integration Easiness in Teaching Preschool Children

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### Abstract

*Despite the technology included in the National Preschool Standard-based Curriculum, teachers in Malaysian preschool are yet to fully integrate technology to enhance children's learning in the classroom. Concerns such as how the preschool teacher perceived the easiness of technology integration became our main focus in this study. It is believed that teachers' acceptance and readiness influenced the outcomes of the technology used in teaching and learning pre-schoolers. This study employed a quantitative approach and data collection through a survey to investigate the teacher's perception towards technology integration in the preschool settings based on the Technology Acceptance Model (TAM). A total of 50 teachers in this survey were selected through random sampling from eight private preschools in Bandar Puteri, Puchong. Nevertheless, only 30 questionnaires were returned by the teachers. The survey was done through a questionnaire using a 5-point Likert scale. The data has been collected and analysed using the Statistical Package for Social Science (SPSS) to get the frequencies, percentages, and means of the teachers' perception of technology integration in teaching and learning. This study found that teachers aged 30 to 39 have the highest perception of technology integration in teaching and learning, and Science and Technology is the most suitable area to teach children with technology.*

**Keywords:** Technology Integration, Preschool Teacher, Easiness

## Introduction

Early childhood is a critical learning period for every human being's holistic development, including cognitive, physical, spirituality, morality, creativity, language acquisition, and social-emotional. More and more researchers nowadays focus on early childhood education as it gains greater attention from various parties such as parents, educators, and communities. Increasing numbers of early childhood research focus on knowing more about children's development and teaching for better results. One pedagogy would be technology integration into classroom teaching and learning (Sundqvist et al., 2015). Undoubtedly, technology can be found everywhere in today's society. Today's generation of children prefers to learn with technology (Morisson, 2015). Children can easily access the technology at home as the family is mainly equipped with mobile phones, computers, tablets, laptops, and other devices, which are also network enabling for communication purposes. There are still many debates on the effect of technology on young children. Researchers are still trying to ascertain if technology brings more harm than benefits to young children. One 21st century skill that will not be explored in this text is digital or technical fluency, which is the ability to effectively and proficiently navigate and function in the digital world (Daly & Beloglovsky, 2020).

Increasingly innovative uses of interactive media in all aspects of early education has become a major trend (Bredenkamp, 2017). The use of technology in the early childhood environment for instance, would help young children learn and develop, especially in terms of their social interactions (Lee & O'Rourke, 2006; Bracken, 2015 & Ralph, 2018). Ralph (2018), in his research on iPads amongst four-year-old children, found digital learning did not reveal any evidence of adverse effects but provides strong evidence of positive social behaviour. Additionally, Couse and Chen (2010) also supported computers and believed the computers help promote children's learning in a more effective and meaningful way. This includes conceptual understanding, abstract thinking development, verbal skills, and problem-solving (International Society for Technology in Education [ISTE], 2007). Morisson (2015) stated that technology is student-centred and gives students some control over their learning.

Criticism also surfaced from the researchers and educators regarding the disadvantages of introducing technology such as computers in early childhood education settings. The question is no longer whether young children should be exposed to digital media, but rather what is the quality of technological tools provided for them (Bredenkamp, 2017). Alliance for Childhood (2004) proposed to remove the computer from the school setting as it claimed that the use of a computer would be harmful to children's development either physically, emotionally, or cognitively. Besides, Bruner and Bruner (2006) also supported the statement and claimed that simply implementing computers in kindergartens and schools does not necessarily help children learn.

The moderate implementation of computers in the early childhood classroom setting could allow teachers to evaluate the computer's values and effectiveness in helping children learn. This would be meaningful as teachers who use computers during teaching and learning in the classrooms can better observe the effects of the computer on children learning. However, Bredenkamp (2017) stated that interactive media require many professional decisions on the part of early childhood teachers and media developers to ensure that they are of the highest quality and are used appropriately and effectively.

Current researches and literature are gradually changing their perceptions of technology usage in Early Childhood Education (ECE). This is due to the changing trend of the common use of technologies in the world we live in today and also the increasing number of technology penetration to the ECE settings nowadays. As a result, the





researchers' focus now has changed their direction into "how" the technologies are being used in ECE instead of "should" or "will" the computer be used in ECE (Edwards, 2005; Couse & Chen, 2010).

## **Literature Review**

With its vision of becoming a knowledge-based economy country in the year 2020, Malaysia has encouraged Malaysians to well-equipped with 21st century skills (Mustapha & Abdullah, 2004). Technology mastering skill is one of the skills required in achieving this vision. As such, Malaysia has made the necessary changes to the education blueprint by integrating technology into the curriculum. In the blueprint itself, the Malaysian government has stressed and emphasised the importance of technology learning in schools, including in early childhood education (Ministry of Education, 2013). Technology is designed as one of the core components of learning under the Science and Technology strand in the National Preschool Standard-based Curriculum (NPSC). NPSC is a standard document written by the Ministry of Education (MoE), and it serves as a guideline for preschool teaching and learning in Malaysia to follow (MoE, 2017).

After all, the changes in the curriculum would affect the ways teachers teach. Teachers have to make the necessary changes by adapting their instructional teaching tools and the curriculum content. However, the implementation of the curriculum needs competent, passionate, and skilful teachers (Abdul Halim et al., 2021). The teaching practice has to be developmentally appropriate to achieve optimum results. Developmentally appropriate practice refers to applying child development knowledge in making thoughtful and appropriate decisions about early childhood programme practices (Getswicky, 2017). Ertmer and Ottenbreit-Leftwich (2010) mentioned that teachers experiencing these changes would feel pressured to adjust their teaching methods and shape the new expectation towards their work and role. The new challenges would include adopting different teaching pedagogy, changing teacher's roles, ensuring children adapt to in-class learning, and grabbing the opportunity in learning technology tools and integrating them into the school curriculum. All these changes are required to ensure developmentally appropriate teaching and learning outcomes.

Additionally, the National Association for the Education of Young Children (NAEYC) also viewed teachers as the key players in determining how the early years' education integrates with technology. Although technology has grown over the years, teachers' usage of technology that duplicates passive pedagogy of traditional classes has become more common (Genota, 2018). Educators trying to meet the needs of the new generation effectively would need to adapt to technology and be comfortable with children multitasking and open to a technology-rich environment (Hartman, Townsend & Jackson, 2019). However, the support required to identify and implement technology is not readily available for all teachers. Therefore, teachers are not adequately equipped with the knowledge, skills, and confidence to effectively use the available technology (Hartman, Townsend & Jackson, 2019). Thus, we might need to explore the humanistic aspects of the change process as hands-on experience by the teachers (Hartman, Townsend & Jackson, 2019).

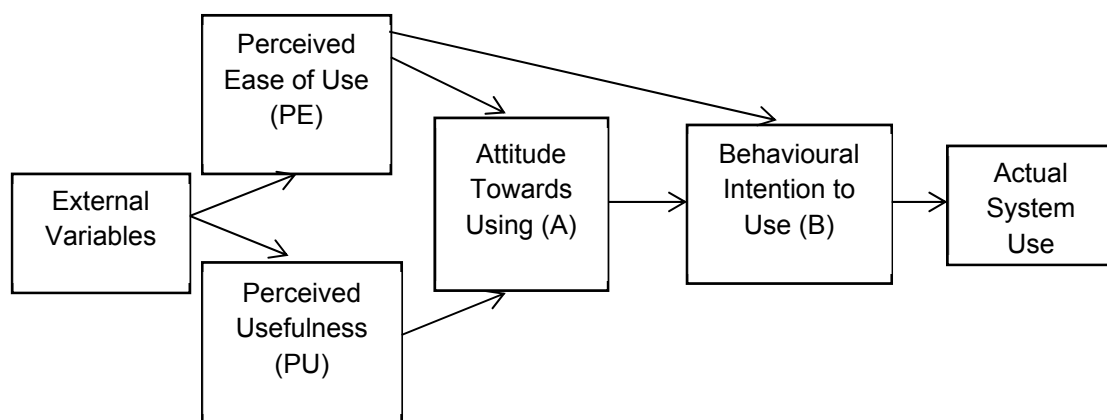
In education, technology has a tremendous impact on how teachers teach and function in their work, but also on children's experiences at home and in school (Bredenkamp, 2017). Teachers' views on technology will affect their technology teaching pedagogy in early childhood settings and, indirectly, influence the ways children learn and develop. As a result, the teacher's perception of technology implementation in ECE must be known and identified to ensure that technology has been carried out effectively and appropriately.

Teacher’s perceptions could be influenced by several factors (Buabeng-Andoh, 2012). These include the positive perception of the ease and usefulness of technology implementation. Teachers who believe technology is easy to use and flexible for their teaching are more likely to integrate technology into their classroom. In contrast, those who find difficulties in using technology would be less likely to incorporate technology in their teaching. Besides, the teachers must also find technology as being helpful to them, such as to increase their job performance, productivity, and effectiveness; and by doing so, they will choose technology as one of their teaching tools (Teo et al., 2009). Some teachers might even look at how technology can spark interest in individual children (Peter & Graham, 2016). A study done in Taiwan by Hsu (2010) found that teachers who were better trained in using technology are more likely to integrate technology into classroom instructions successfully. According to Ertmer and Ottenbreit-Leftwich (2010), teachers’ self-efficacy is another factor that directly affects teachers’ perceptions. This perception includes their ability to deliver technology teaching. Teachers who have a high level of self-efficacy will be more committed and willing to spend more time and use technology more frequently in classroom teaching. On the other hand, Cullen and Greene (2011) also stated that teachers’ positive attitude towards technology would determine how effectively the teachers deliver technology integration into their teaching.

Since technology has been included in NPSC, there is a need to understand the teachers’ practices in classroom teaching and learning by integrating technology to enhance children’s learning skills. It is believed that teachers’ perception is essential in determining teachers’ choices and practices for technology integration (Teo, 2011). The framework called Technology Acceptance Model (TAM) (Davis et al., 1989), as shown in Figure 1, has been chosen to examine preschool teachers’ perception of technology integration in preschool settings. This research would be timely and useful to identify teacher’s perception of the technology used in preschools. For preschool teachers, adopting TAM is the first step to create an engaging learning environment. Combined with the use of TAM and Constructivist theory, teaching and learning will be more interactive, developmentally appropriate and greater ease. Teacher can facilitate learning by asking children to choose the topics they want to explore and try to connect them visually through active participation. Children should have the freedom to choose the topics, collaborate with a small group, express ideas, and think deeply about the topics they explored. It is the preschool teacher’s responsibility to explore, experiment, and test the different digital technologies shared with their children.

**Figure 1**

*Technology Acceptance Model (TAM) (Davis et al., 1989)*





Children's instinctive and inquisitive desire to actively engage with their environment may be suppressed when introduced to technology at too early of an age (Daly & Beloglovsky, 2020). With changes in modern technologies, learners need to be equipped with updated knowledge that will help them adapt to the changing world (Ghavifekr et al., 2016). Research shows technology integration helps in children's development in different aspects such as social, cognitive, language, writing, literacy, and mathematics (McManis & Gunnewig, 2012). Children need the social, emotional, and cognitive capacities that are going to get them into the twenty-first century as thriving adults and effective citizens (Daly & Beloglovsky, 2020).

Theorists Jean Piaget and Lev Vygotsky laid the foundation for the practice of constructivism, which is based on the theory that children construct their knowledge and that their knowledge is unique for each child (Morisson, 2015). Vygotsky's theory has provided a new perspective in early childhood education and is valuable for early childhood educators. It helps them understand the importance of recognising the individual child's development and providing appropriate activities or experiences that enhance their learning. His sociocultural theory focuses on how the children learn, primarily through social interaction and with the assistance of the more knowledgeable peers or adults in the Zone of Proximal Development (ZPD) or scaffolding, enabling them to progress to a higher-level knowledge gaining. His theory of ZPD is widely applied in any principle means to extend to children's learning ability.

## Research Objectives

Specifically, the objective of this study is to assess the teachers' perception of technology integration easiness in teaching and learning preschool.

## Methodology

This study employed a quantitative approach and data collection was done through a survey to assess teachers' perception towards technology integration in a preschool setting based on the Technology Acceptance Model (TAM). A total of 50 teachers in this survey were selected through a random sampling from eight private preschools in Bandar Puteri, Puchong. Nevertheless, only 30 questionnaires were returned by the teachers. The survey was done through a questionnaire using a 5-point Likert scale. The quantitative data were analysed using the Statistical Package for Social Science (SPSS) to get the frequencies, percentages, and means of teachers' perception of technology integration in teaching and learning.

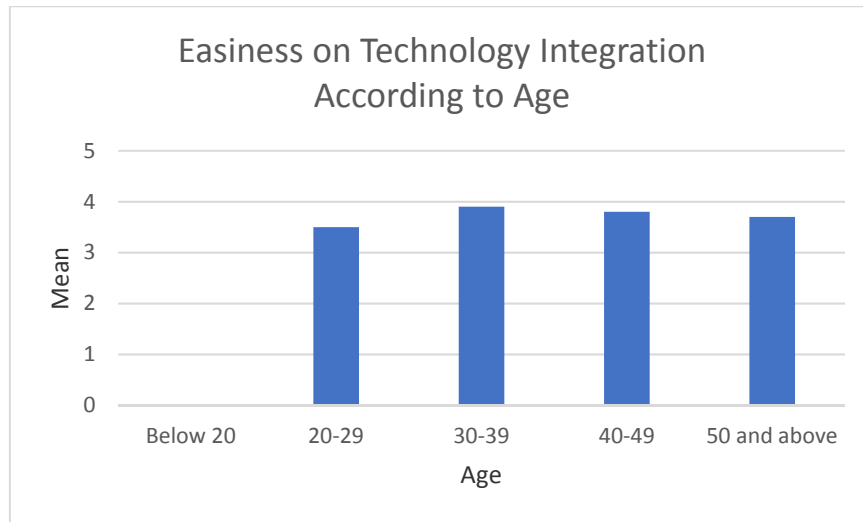
## Findings

### Teachers' Perception of Technology Integration Easiness in Teaching and Learning According to Age

The data shows that teachers aged 30 to 39 have the highest perception of the technology integration easiness in preschool. While there is no result for teachers who are 20 years and below. Teachers of age groups 40 to 49, and 50 and above show that their level of perception is almost similar. Figure 2 shows teachers' perception of technology integration easiness in teaching and learning according to age.

**Figure 2**

*Teachers' Perception of Technology Integration Easiness in Teaching and Learning According to Age*

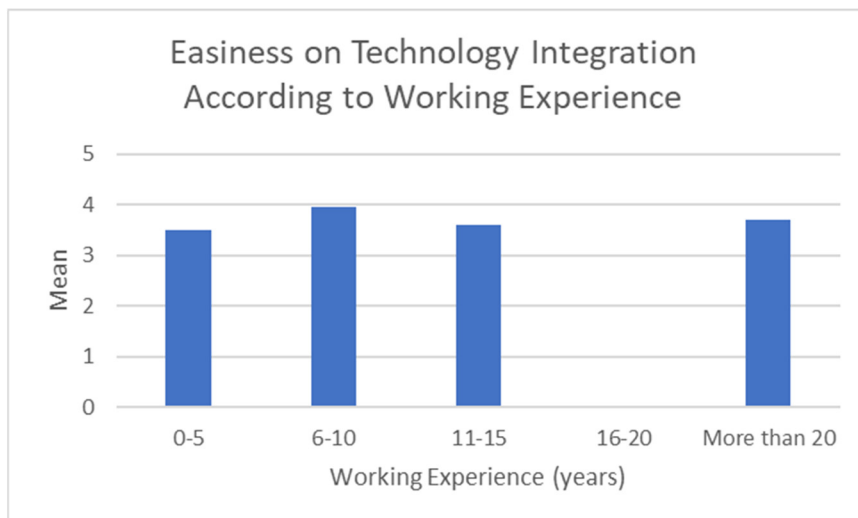


**Teachers' Perception of Technology Integration Easiness in Teaching and Learning According to Working Experience**

Teachers who have working experiences from 6 to 10 years have the highest perception of technology integration easiness in teaching and learning according to their working experience. Whereas teachers who have working experience of 16 to 20 years did not show any perception on technology integration easiness. Those who have more than 20 years of experience and 11 to 15 years' experience have a similar level of perception. Figure 3 below shows the teachers' perception of technology integration easiness in teaching and learning according to their working experience.

**Figure 3**

*Teachers' Perception of Technology Integration Easiness in Teaching and Learning According to Working Experience*



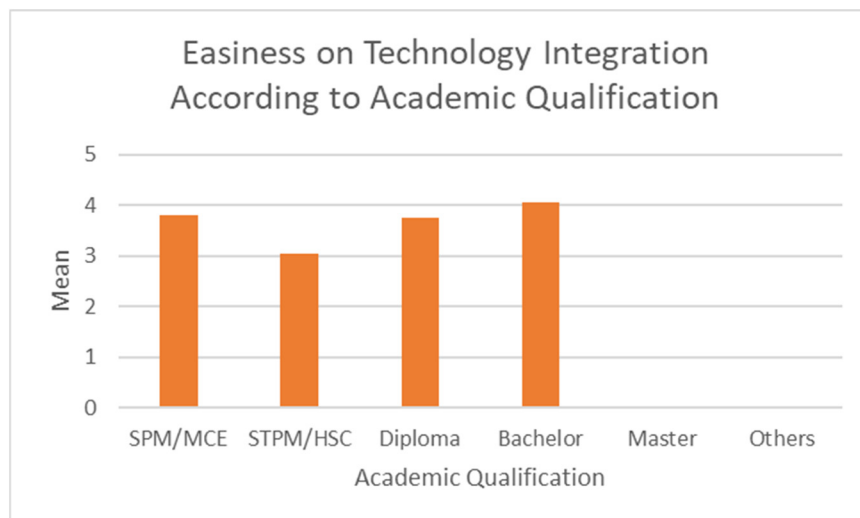


## Teachers' Perception of Technology Integration Easiness in Teaching and Learning According to Academic Qualification

Teachers with Bachelor qualifications have the highest perception of technology integration easiness, followed by those who are Sijil Pelajaran Malaysia (SPM) certificate holders and diploma holders. Meanwhile, teachers with Sijil Tinggi Pelajaran Malaysia (STPM) have the lowest perception of technology integration easiness in teaching and learning. This perception can be seen in Figure 4 below.

**Figure 4**

*Teachers' Perception of Technology Integration Easiness in Teaching and Learning According to Academic Qualification*



## Discussion

The results of this study show that teachers age 20 years and above have the highest perception of technology integration easiness in preschool. Sariçoban (2013) stated the attitude towards technology integration could be affected by age. Teo (2011) has reported that age is one factor influencing the use of technology. This group of teachers is the generation who uses technology to communicate and adapts very well to it. Pedró (2006) stated teachers within the age group of 30 to 39 and below are categorised as the New Millennium Learners (NML) who were born from the 1980s onwards and grew up with digital technology, where technology cannot be separated from their daily lives. This study also found that teachers who fall into the groups of those with working experience between 5 to 15 years and 20 years and above, have a high perception of technology integration easiness. These teachers are experienced, and they are willing to spend more time learning new technology in the classroom. Teachers with a high level of self-efficacy will be more committed and willing to spend more time and use technology more frequently in classroom teaching (Leftwich, 2010). A good early childhood teacher must have the ability to be self-aware and possess the intrinsic motivation to teach (Biddle et al., 2014).

Buabeng-Andoh (2012) stated the successful technology integration are influenced by many other factors such as gender, teaching experience, teaching workload, and institutional characteristic. The TAM model is suitable for assessing the technology easiness among preschool teachers. These findings present powerful evidence for the applicability of the TAM model. The results also indicate that teachers' academic qualification is another factor that is assessed in this study. Teachers with a bachelor's degree have the highest perception towards the technology easiness integration. The second highest is from the teachers with SPM qualification, followed by STPM holders. The crucial strategy is to become a good observer of children (Gestwicki, 2017). Vygotsky's theory focuses on various forms of how children learn, primarily through social interaction. With the assistance of the more knowledgeable peers or adults in ZPD (scaffolding), they can progress to a higher-level knowledge gaining (Morrison, 2015). Thus, the teacher as the primary mediator plays a vital role in implementing and incorporating technology teaching in young children's learning (Edwards, 2005). Teachers must use various strategies through technology to support children learning and development. Learning how to use technology to help children learn and how to involve them in the use of technology to ensure their learning is an essential role of teacher's today (Morisson, 2015).

### Conclusion

The findings of this study can be utilised to encourage positive perception among teachers through various efforts to transform to the full implementation of technology integration and recognise its importance in developing one of the children's 21st century learning skills. To succeed in the twenty-first century, children will need to accurately assess their personalities, strengths, and areas of growth and seek ways to continually develop their skills (Daly & Beloglovsky, 2020). In addition, it can be used by different parties such as policymakers and preschool management. The finding of this study will help different parties understand the importance of teacher's perception and the drawbacks that need to be overcome to encourage more technology integration easiness in preschool teaching and learning.

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## A Portal for Web-Based Information System for Secondary Schools in Malaysia

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### Abstract

*This research is part of a wider study that looked into how secondary school teachers may be empowered to use Web-tools to integrate technology into their teaching. This study enlisted the participation of selected teachers from Perak's nine districts, both rural and urban. Data was collected from 648 graduate teachers from 216 SMK schools in Perak for this study, which used both quantitative and qualitative research approaches. One of the study's objectives was to evaluate and empower teachers working in an online teaching and learning environment. Further, this paper defines a framework for using Web-based information system based on Salmon's five-stage model at the Secondary School level in Perak, Malaysia.*

**Keywords:** Portal, Web, Secondary School

### Introduction

The roles and responsibilities of a teacher at a secondary school level are infinite along with limitless. A well-adjusted teacher is a source of inspiration to his students and a boon to the society. On the other hand, a maladjusted teacher can create havoc with his students and his own mental health. In order to bring about improvement in the teacher education such maladjusted teachers have to be empowered with the technology that is vastly available. Educational technology is a combination of the process and tools involved in addressing educational needs and problems, with an emphasis on applying the most current tools: computers and their related technologies (Roblyer & Edwards, 1998). Also "Whenever new technology is introduced into society, there must be a counterbalancing human response... the higher tech (it is), the more high touch (is needed)" (Naisbitt, 1984, p.35). For this reason, this study has been thought over.

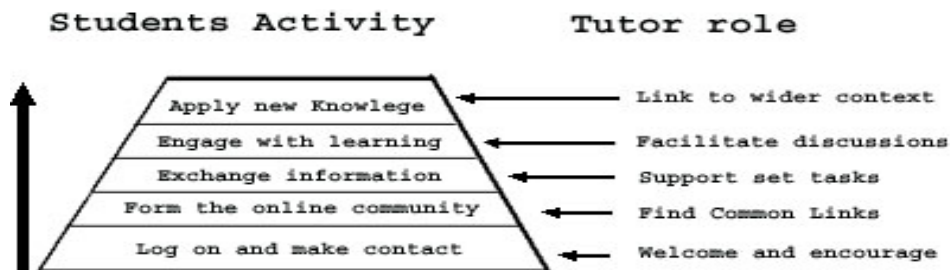
### Linking Teachers with Web-Tools

It is not possible for a secondary school teacher to use what he thinks is a suitable Web-tool. This is because Web-tools are meant for a collaborative- and interactive-centred teaching environment and is intended to be used in the long run. Therefore, selecting an online tool has to be very strategically viewed as it connects the present technology with the future expectation of a teacher.

For these reasons Salmon's studies (2000) have identified five common stages in students' behaviour online, which illustrate the gradual development underpinning meaningful collaboration and constructivist learning. The Figure 1 below shows Salmon's 5-stage model, which indicates how the tutor's role should also change in order to support and encourage the students as they progress through these stages.

**Figure 1**

*Salmon's 5-Stage Model*



## The Research

The literature on the application of Web-tools to supplement secondary schools in Malaysia is not much of an attempt to review the literature in the area of technology teaching using Web-tools, particularly in Malaysia, as it revealed nothing much has been reported in this area. This study will make contribution towards a better understanding of introducing a Web-based solution to secondary schools in Malaysian classrooms and it will also contribute as a powerful resource for the teaching community to integrate ICT with the existing classroom teaching methodology. The following questions guided the researcher in this study:

1. How far can the teachers adapt themselves to Web-tools?
2. What is the learning curve of the teachers while infusing Web-tools in their teaching?

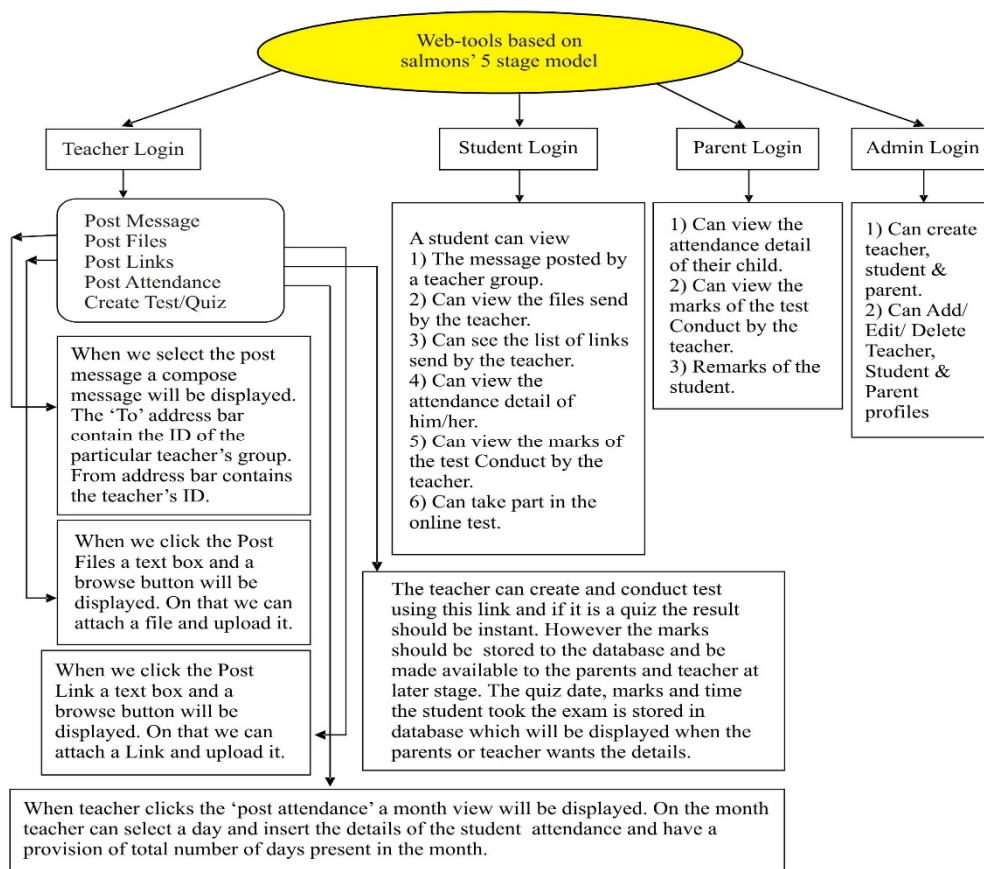
## Research Methodology

Although this study included quantitative and qualitative methods, the data and discussion shown here are based on qualitative research only. The reason for including a qualitative component in this study is that there has been virtually no previous research on this topic in Malaysia. "By collecting information about beliefs and interviewing randomly, more can be learned about the subject than merely a comparison of gain scores" (Gall, Borg & Gall, 1996, p. 603). For this reason, this study is divided into Phases: Phase 1 consists of interviews and questionnaire (quantitative), which was useful for identifying the pedagogical belief, pedagogical philosophy, pedagogical preferences, and pedagogical acceptance of the Web-tools in the teaching strategy. Phase 2 consists of observations using Web-tools followed by interviews (qualitative). The Web-tools designed were based on Salmon's 5-stage model and the system design is shown in Figure 2.



Figure 2

## System Design of Web-Tools Used for Teacher's Observation



### Discussion of Findings

In assessing how far the teachers can adapt themselves to Web-tools, learning contracts were used. Learning contract is a teaching and learning tool for increasing learner's self-direction, while attaining specified learning objectives. The learner develops the contract's contents in collaboration with the teacher who acts as a facilitator and subject matter expert (LeJeune & Richardson, 1998).

Observation charts were also used to scale the comfort levels in using Web-tools in each module, with scales "Limited", "Moderate" and "High". Thus, after the observations of the ten teachers were complete, they were assessed based on their level of difficulties and skills exhibited using the observation chart and case-ordered effects matrix. The first part of the learning contract assessed what knowledge, understanding, skills, and attitudes the teacher participants seek to acquire while administering the Web-tools based on their existing knowledge. For this first observation, the extent of how far the teachers used their current knowledge in posting messages and uploading notes was observed. Supporting this observation were interviews with the teachers, which were useful to understand what these teachers felt; thus, giving an opportunity to compare what was observed against what the teacher participant felt.

The second part of the learning contract focused on what resources and teaching strategies the teachers used in order to reach their objectives. Thus, in the second part of the learning contract, the observations were based on how the teacher's created online lesson plans and hyper links for the students to become more knowledgeable about specific topics. This constructive approach is necessary in Web-based learning because students are forced to access, retrieve, reconstruct, adapt, and organise information in a way that is meaningful to their learning. Thus, the second part of the learning contract focused on what resources and learning strategies the teachers used in order to reach the above objectives.

The third part of the learning contract element is the evidence of accomplishment, the proof and recognition of the goals. As the third part of the learning contract assessing process, the third and fourth observations were utilised in which assessment were based on how the teachers administered attendance and also posted remarks and reports in an online environment using Web-tools. The last part of the learning contract emphasised the contract relating to measurement. The criteria and means of validating the evidence measure the level of attainment of the learning objectives (LeJeune & Richardson, 1998). For assessing this stage of the learning contract, the fifth and sixth observations were used in which assessment were based on how the teachers administered online quizzes. Apart from the quiz administration, teachers were also observed on how they were able to manage the Web-tools. At the end of the last learning contract observation, it was evident that only four out of the ten participants who were involved in this study were able to journey through the Web-tools without any hindrance (Table 1).

**Table 1**

*Teachers' Attainment Through Various Modules of Web-Tools*

Name	Lesson Plan			Posting Message			Uploading Notes			Creating Links			Atten.			Reports/Remarks			Quiz			Web-tools Usage			
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	
Vel		✓				✓		✓					✓					✓	✓			✓			
Gouri			✓			✓			✓			✓			✓			✓			✓				✓
Azila			✓			✓			✓		✓				✓			✓			✓				✓
Lau			✓			✓			✓			✓			✓			✓			✓				✓
Suriathy			✓			✓			✓		✓			✓				✓			✓				✓
Khalijah			✓			✓			✓			✓			✓			✓			✓				✓
Padhma		✓				✓			✓		✓			✓				✓	✓						✓
Krishna			✓			✓			✓			✓			✓			✓			✓				✓
Loh		✓				✓		✓			✓			✓				✓	✓						✓
Mohan			✓			✓			✓			✓			✓			✓			✓				✓

Notes. L – Limited M – Medium H – High

However, one would notice from Table 1 that three teachers (Vel, Loh and Padhma) were not comfortable while journeying through the first module of the Web-tools. It was evident from their interviews that they did not utilise the Web-tools in the classroom or seem to have little commitment to using the technology as a pedagogical tool. Supporting the above facts from the teachers' observations, the dialogues taken from the interviews of these three teachers, give an opportunity to understand the teachers' attitude in a precise manner.



- *Vel: I think I did find many difficulties. If I do it continuously, I think it would not be a problem as a part of my job [215UA]. I have really not tested it, so it was only during the observation I have tested [214UA].*
- *Loh: I think there is no difficulty, but I think I have to spend more time in working with the Web-tools. [315RI]*
- *Padhma: but...when it comes to lesson plan and linking it to website was bit difficult [315RG].*

From the statement of Vel, it is clear he has not used the Web-tools in the classroom, as he mentions that he has used them only during his observation sessions. Also, it is clear from his statement that he does not use them continuously as a part of his job. Similarly, Loh mentions that she has not spent much time using Web-tools. Thus, there seems to be a lack in technology integration of Web-tools or a desire to use them continuously in their classroom. In the case of Padhma, she was able to post messages with ease using the Web-tools, but she found posting lesson plans to be bit hard. This is an interesting point to note, as posting messages and uploading lesson plan had identical user interface and same the strategies, but still she mentions that uploading lesson plan and linking it to a website were a bit difficult. This shows that she had not shown the same desire as she had during her first observation, as she moved to the next stage of her observation.

The remaining seven participants were accepting in their use of Web-tools and used it as an integral part of their teaching in terms of delivery, learning, management, or other aspects of the class. This was also evident from the observations with these teachers that they were able to use the Web-tools as an integral part of their teaching. However, Suriathy, Krishna and Azila faced problems during the Quiz and Web-tools administration modules. Thus, only four out of seven teachers in this stage were able to adopt the Web-tools so as to facilitate teaching within their classroom and beyond. These four teachers who were successful in integrating the Web-tools and tried it in the classroom were also the teachers who could successfully journey through the entire Web-tools without much hindrance (Table 2). These teachers with the experience gained with commitment were able to modify and infuse technology as a tool in their classroom. However, it is quite difficult to estimate if such commitment and ability of the teachers to infuse technology was due to the additional knowledge these teachers had before the observations were conducted. Moreover, this has to be seen in the context of Shulman's argument (1986), which states that having knowledge of the subject matter and general pedagogical strategies, though necessary, is not sufficient for capturing the knowledge of a good teacher.

Although Shulman (1986) did not discuss technology and its relationship to pedagogy and content, it was Punya and Matthew (2006), who blended technology with Pedagogical Content Knowledge (PCK) and emerged with a new approach, called Technological Pedagogical Content Knowledge (TPCK). This TPCK is a form of knowledge that expert teachers bring into play anytime while integrating technology with PCK. For example, in the case of Khalijah, during her observation session she mentioned that "I think yeah, everything I have learned in these six observations are good, but as I mention now there are few other things that you can do to it to be more useful" [314RF]. "For me, I'm a mathematics teacher, so I need space for using formulae. I need some thing that can be used to do calculations and so on" [316RF]. From these statements, we can see that she is looking forward to more added features, in addition to what she had mentioned as "good" after all her six observations; thus, we can see that there seem to be a "knowledge quest" and an improvement in her TPCK.

Therefore, the four teachers who were able to infuse Web-tools successfully without much hindrance and integrate it into their classroom teaching were those teachers who had sufficient TPCK, which seems to have allowed them to effectively transform their subject knowledge for the purpose of technology teaching.

This finding concurs with the model for the adoption of new technologies by Hooper and Rieber (1995). They proposed a model that consists of five specific phases: familiarisation, utilisation, integration, reorientation, and evolution. In the familiarisation phase, the teacher simply learns how to use the technology. At the utilisation phase, the teacher uses technology in the classroom but has little understanding of, or commitment to, the technology as a pedagogical and learning tool. During the integration phase, the technology becomes an integral part of the course in terms of delivery, learning, management, or other aspect of the class. Later in the reorientation phase, the teacher uses the technology as a tool to facilitate the reconsideration of the purpose and function of the classroom. Finally, teachers who reach the evolution phase were continually able to modify the classroom structure and pedagogy to include evolving learning theory, technologies, and lessons learned from experience.

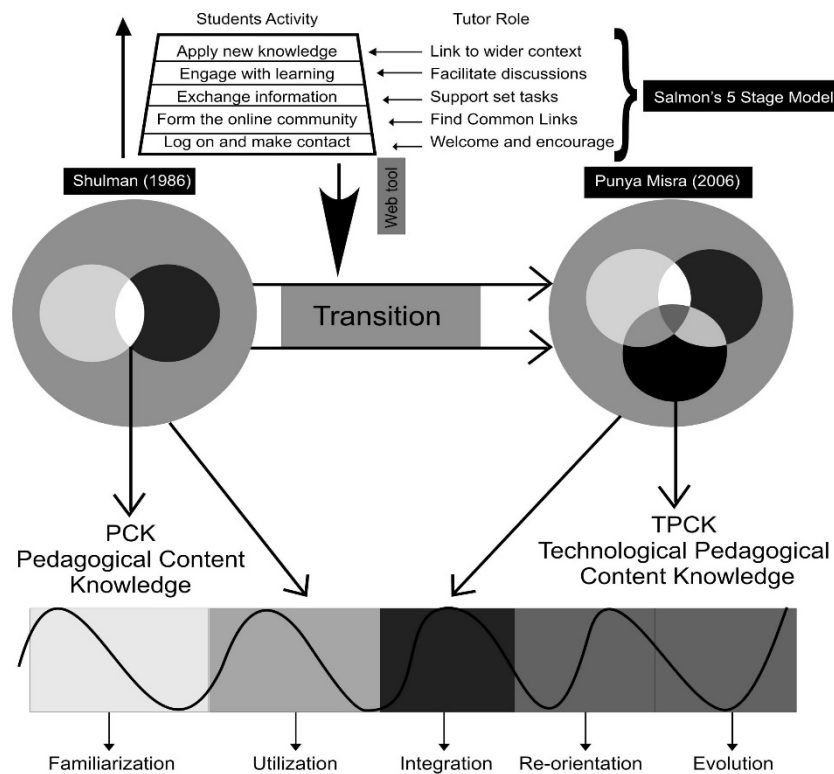
According to Hooper and Rieber (1995), many teachers progress only to the integration phase and do not transform their philosophical orientation of how learning can occur in the classroom through technology. From the various levels of attainment, the teacher participants managed to journey through the Web-tools (Table 2), showed that the lifespan of the majority of the teachers who were observed with the Web-tools were only able to reach the utilisation phase and not, as mentioned by Hooper and Rieber, progress until the integration phase. This is because effective content integration takes time, and new technologies may have glitches. As a result, the teachers' first technology projects generate excitement but often little content learning. Often it takes a few years until the teachers can use technology effectively in their core subject areas (Goldman, Cole, & Syer, 1999). Looking into the levels of attainment of these teacher participants as a whole, it is worth noting that these outcomes were only based on the administration of Web-tools based on the conceptual framework of Salmon's 5-stage model, which indicates how the tutor's role should also change in order to support and encourage the students as they progress through these five stages.

However, from the observation results of only four teacher participants (Gouri, Khalijah, Loh and Mohan) they seem to have experienced in the manner Salmon defines in his 5-stage model. Therefore, we can see that the learning curves of the teachers tend to bend as they progress through different stages of the Web-tool. However, there can be many factors that influence the teachers in not effectively infusing the Web-tools. Some of the predominant factors can be: i) desire to adapt to new teaching style; or ii) low level of self-efficacy; or iii) the unwillingness to shift from traditional modes of delivery to Web-based teaching; or iv) no conducive learning environment. Thus, it would be worth looking at the diagrammatic illustration (Figure 3), as to how this transition affects the teachers' level of attainments during the integration of technology in their classrooms using Web-tools.



Figure 3

## Integration with Hooper &amp; Rieber 5-Phased Model



## Hooper &amp; Rieber (1995)

## Conclusion

This study attempted to find a means of empowering the secondary school teachers in Malaysia by giving a new dimension in integrating technology in their teaching using Web-tools. Various reasons seem to have contributed towards this state of pedagogical traits that exist among the secondary school teachers. Some of them are contributed by the teachers themselves, and there are other factors, which are contributed by various other players. Although the reformers at the Ministry of Education seem to have a clear objective when mandating technology teaching in secondary schools, they may have failed to look upon the factors that can help teachers carry out the transition from Technology Content Knowledge (TCK) to Technological Pedagogical Content Knowledge (TPCK). This study therefore serves as a portal for the reformers who wish to integrate technology teaching using Web-tools with the conceptual framework of Salmon's 5-stage model.



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## The Perception of Islamic Studies Learners Towards a New Approach in Knowledge Transfer for Islamic Studies Programmes at OUM

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### Abstract

*Knowledge transfer is the sharing or dissemination of knowledge and the provision of input for problem solving. The Covid-19 pandemic has changed lives in various ways, including the way of learning and transferring knowledge. The process of knowledge transfer has also changed due to technology-assisted learning and the needs of the process. According to Islamic scholars, the authenticity of knowledge is confirmed through a specific medium, i.e., face-to-face meeting or discussion with a teacher (talaqqi). Thus, some may not be open to a new approach in knowledge transfer in the field of Islamic studies, which is online learning. This study is aimed at identifying the perception of Islamic Studies students at OUM towards the medium of knowledge transfer in Islamic Studies programmes. The quantitative method of questionnaires was used to obtain data. The findings of the data, which was analysed using descriptive statistics on SPSS, revealed that the perception of a sample of Islamic Studies students at OUM towards the concept of online learning was aligned with the proposed transfer of knowledge based on the Islamic view. They presented a high level of understanding, acceptance, and recognition of the benefits and usefulness of the medium of knowledge transfer in Islamic Studies.*

**Keywords:** *Islamic Studies, Knowledge Transfer, Talaqqi, Online Learning, New Approach*



## Introduction

The Covid-19 pandemic has severely affected the economic sector of almost every nation in the world. The higher education sector has been affected as well (World Health Organisation [WHO], 2020). Both the teaching faculty and students have had to cope with unprecedented challenges such as social distancing, quarantines, isolation measures, campus closures, border closures, and travel restrictions.

Due to the rapid spread of the disease and the closure of physical classes, online learning through the use of personal computers, laptops, tablets, and mobile phones with Internet access in synchronous and asynchronous environments have become the alternative learning methods. Through these learning methods and environments, students have freedom in learning and can connect with their teachers anywhere they wish (Singh & Thurman, 2019).

There are two modes of online learning, synchronous and asynchronous, thereby providing options in the timing of interactions (Algahtani, 2011). Synchronous online learning provides direct interaction between lecturers and students during class through tools such as video conference and chatroom. Meanwhile, asynchronous online learning enables lecturers and students to interact before or after an online class through discussion threads and emails. Online learning is advantageous for independent learning and the development of new skills, and can lead to the practice of lifelong learning (Dhawan, 2020).

Since the establishment of OUM as an open and distance learning (ODL) institution, teaching and learning had been conducted in the blended learning mode. Learners studied online through the myINSPIRE learning platform and attended face-to-face classes with lecturers at the university's learning centres. Due to the Covid-19 outbreak, OUM introduced fully online teaching and learning and replaced physical meetings with virtual synchronous meetings through Google Meet. In addition, all examinations started being conducted as take-home online examinations, which resulted in learners having more time to answer the questions.

As a university for all, OUM has been offering Islamic Studies programmes, which are in much demand. In line with the changes that have taken place, these programmes are now being offered fully online, with virtual synchronous meetings through Google Meet and take-home examinations. Thus, the Islamic Studies programmes have embraced fully online learning as the new approach for knowledge transfer.

## Problem Statement

Based on a questionnaire given to a group of Islamic Studies learners at OUM in May 2020, it was found that their level of readiness was moderate, whereby 60% did not agree for classes to be held totally online. However, the learners did not completely reject the use of technology in learning because 87.9% accepted that Islamic studies were conducted in a blended method, which combined face-to-face classes with online learning (Malaysian Qualifications Agency, 2021).



## Theory and Framework of Talaqqi

Islamic studies involves the traditional way of knowledge transfer, *talaqqi*, which requires a learner to face the teacher directly. This term comes from the Arabic term *لقي* (*laqiya*) which means to meet (Mohd Idris, 1990). It also means learning the Qur'an directly from the pronunciation of the teacher who continued his narration from Prophet Muhammad. According to Abd al-Salam (2000), the word *al-talaqqi* is taken from *الإلقاء* (*al-ilqa*) which means to throw or convey orally, by hand or otherwise.

In terms of terminology, *talaqqi* refers to a methodology of learning laid down by the *syara'* (law giver) which requires a teacher to teach the Qur'an by reading verses from it and the students to learn by listening to the teacher and repeating the verses.

In the Qur'an, Allah stated that Prophet Muhammad learnt from the angel Jibril through *talaqqi*:

*“And Indeed, (O Muhammad) you receive the Qur'an from one Wise and Knowing.”*  
(The Qur'an, 27:6)

This matter was narrated by al-Imam Ibn al-Jazari from the words of Zaid bin Thabit in his book, *Munjid al-Muqriin* (Al-Jazari, 1994), as follows:

*“The recitation of the Qur'an is a sunnah (following) that is accepted by talaqqi by someone who is later than the person who is earlier.”*

The entire process depicted the role of Jibril as a comforter, and at the same time, an austere teacher.

This method was widely adopted by *sekolah pondok* or religious schools (Abd Rahim et al., 2016). Muhammad (2011) detailed the meaning of *talaqqi* as a method of studying religious knowledge face to face with qualified teachers in the subject matter, *Tsiqah* (reliable), and *Dhabit* (estounding memorization capability), and possess the knowledge of *Muttashil* (continuity of their chains of transmission from the Prophet). These teachers specialised in Islamic knowledge and were regarded as *aalimin* (knowledgeable) and *aarifin* (wisdom).

The definition of *talaqqi* is consistent with the study by Susianti (2017) which described it as a method which involved a teacher reading the Qur'an to a student face to face in a quiet and comfortable sitting position, and then guiding the student to repeat the verses until the student fully memorises them.

Victoroff and Hogan (2006) identified three characteristics to describe an effective learning experience: (a) characteristics of the instructor (personal qualities, checking in with students, and an interactive style), (b) characteristics of the learning process (focus on the big picture, modelling, and demonstrations, opportunities to apply new knowledge, high-quality feedback, focus, specificity and relevance, and peer interactions), and (c) learning environment (culture of the learning environment, technology).

Conole et al. (2004) suggested 10 outcomes from an effective learning environment, which are shown in Table 1.

**Table 1**

*Ten Outcomes from an Effective Learning Environment*

No.	Outcomes
1.	more connected knowledge
2.	wider range of strategies
3.	greater complexity of understanding
4.	enhanced actions that are appropriate for goals and context
5.	increased engagement and self-direction
6.	more reflective approach
7.	more positive emotions and affiliation to learning
8.	more developed vision of future self as a learner
9.	greater facility in learning with others
10.	bigger sense of participation in a knowledge community

These wide range of outcomes from an effective learning environment provide myriad opportunities for students to engage in learning that indirectly enhances their positive traits and lifelong learning prospects. The academic knowledge remains in student's self consciousness, applied and permeated in their daily life for the application of knowledge.

There are three pillars in the process of *talaqqi* (Abd al-Salam, 2000), as shown in Table 2.

**Table 2**

*Three Pillars of the Talaqqi Process*

No.	Pillars
1.	المتلقي : al-mutalaqqi (the students)
2.	الملقي : al-mulqi (the teacher)
3.	الملقى : al-mulqa (the knowledge or the Qur'an)



Ahmad (2016) divided the methods of *talaqqi* among the *Qurra'* (reciters) into five types, as listed in Table 3.

**Table 3**

*Five Types of Talaqqi Methods*

No.	<i>Talaqqi</i> Methods
1.	<i>Al-Talqin</i> (التلقين) (teacher to read aloud to the students at low level)
2.	<i>Al-'Ard</i> (العرض) (students recite in front of the teacher)
3.	<i>Al-Sima'</i> (السماع) (students listen to the teacher at advance level)
4.	Riwayat al-Huruf (رواية الحروف) or History of al-Huruf
5.	<i>Ijazah Mujarradah</i> (إجازة المجردة) or (teacher to give permission to the students)

Interaction is a silent feature of effective learning. In this context, interaction refers to the relationship between the teacher, student, knowledge (*ilm*), meeting (*laqiyyah*), and process of assessment and evaluation.

A study by Kamarul and Mohd Izzuddin (2015) revealed several models of teaching and learning the Qur'an. These are the models of Prophet Muhammad, al-Ghazali, Ibn Khaldun, Abu Hanifah, al-Shatibi, Salim, Ahmad and Abu Saleh, Kamarudin, Wan Bakar, Jabir, As'ad, Jamaluddin, Iqbal, and the Ministry of Education of Malaysia.

*Ta'lim insani* is learning with human guidance. This common approach involves the use of sensory organs. The *Ta'lim insani* process is divided into two: i) external processes through learning and ii) internal processes through *tafakkur* (deep thinking). According to al-Ghazali (2008), in the teaching and learning process, knowledge exploration activities occur and result in changes in behaviour. A teacher explores the knowledge he has to pass on to his students, while students seek knowledge from their teacher in order to gain knowledge.

Al-Ghazali's view of learning covers how students should learn, and the duties and manners of the teacher. These three components can be described as follows:

- a. Creating a sense of security, affection, and a conducive environment that allows students to learn comfortably. The teacher should love and treat students with tenderness, as he loves his own son. In his book *Ihya Ulum al-Din* al-Ghazali asserted that teachers are real parents.
- b. Learning must be adapted to the conditions and level of understanding of students. Teachers must adapt to the physical conditions and intellectual level of their students.
- c. Teachers must prioritise exemplary behaviour because students learn not only by listening to the words spoken by their teachers but also by paying attention to their appearance, attitude, and all visible behaviour. According to al-Ghazali, teachers who do not practise the knowledge they teach are like a needle making clothes for others while remaining naked or a lamp wick illuminating its surroundings but burning itself.



## ODL as a New Approach in Knowledge Transfer

Distance learning has been in existence for over a century now (Evans & King, 1991). However, ODL is a relatively new term in the field of education, having gained prominence only in the past 40 to 45 years (Commonwealth of Learning & Asian Development Bank, 1999, p. 3). The concept of ODL refers to a method of instruction and gaining knowledge using computers and technologies through the Internet (Mathew & Iloanya, 2020).

According to UNESCO (2002, p. 7), open learning and distance learning “represent approaches that focus on opening access to education and training provisions, freeing learners from the constraints of time and place, and offering flexible learning opportunities to individuals and groups of learners. Other terms such as continuing education, distance learning, and adult education, have been used to describe ODL (Commonwealth of Learning and Asian Development Bank, 1999).

The strategic advantages of ODL are that it provides students with learning adaptability, convenience, and an easy virtual learning process. Students do not need to go to a physical lecture hall, which is cost-effective as they do not have to spend on transport, accommodation, and meals. ODL is unique in its philosophy and procedure, being fundamentally different from typical distance education in several ways (Abdulrahman et al., 2020).

Openness in ODL as a focus on the removal of hindrances to access to learning cannot be overemphasised (UNISA, 2008). The convenience and flexibility of ODL have enabled millions of people to access higher education and this would have been an impossibility without ODL (Sharma et al., 2019).

ODL refers to the provision of flexible educational opportunities in terms of access and multiple modes of knowledge acquisition. In this context, flexible, accessible, and multiple modes can be explained as follows:

- 1) Flexible means the availability of choices for educational endeavours anywhere, anytime, and anyhow.
- 2) Access means that the opportunity is made available to all, freeing them from the constraints of time and place.
- 3) Multiple modes means the use of various delivery systems and learning resources.

ODL is becoming an accepted and indispensable part of mainstream education, prompted by the need to make learning more flexible and accessible for a wider population, the growing need for continual skill upgrading and reskilling, and advances in technology that have made it possible for teaching to be conducted from a distance.

To produce good learning outcomes and competent graduates, student engagement is the key element in the design of ODL programmes. Among the more commonly used terms related to ODL are: correspondence education, home study, independent study, external studies, continuing education, distance teaching, adult education, technology-based or mediated education, e-learning, mobile learning, learner-centred education, open learning, open access, flexible learning, and distributed learning (COPPA: ODL, 2013).



## Studies on Perception of New Approach in Knowledge Transfer

Studies have found that students' readiness for online learning is at a moderate level, as they are not yet fully prepared for the learning content and to interact with fellow students (Muhammad Izzat et al., 2020). Similarly, the preparation of teaching staff to implement teaching and learning in a blended manner in public universities is still moderate (Suzana & Raman, 2015). However, they positively accept the use of e-learning in assisting the teaching and learning process (Amirudin et al., 2015) as one of the teaching aids to facilitate and speed up the process of presenting information to students. For students, interest in online teaching and learning should be seen in the presentation and teaching techniques implemented by the teaching staff as the study found that content, quizzes, and activities in the form of games can stimulate their interest (Faridah & Afham, 2019).

Learners' moderate perception of ODL implementation is due to several factors. The main factors are the speed of broadband (Internet) itself (Azlan et al., 2020; Muhammad Izzat et al., 2020), environmental disturbances, responsibilities at home (Azlan et al., 2020), lecturers' readiness, lack of motivation (Muhammad Izzat et al., 2020; Norfarahi et al., 2020), learners' attitude, literacy and computer facilities (Zaidatun et al., 2006), and non-interactive learning content. This is supported by Mahizer (2007) and Ismail (2002) who found that active discussion of content and motivation from lecturers indirectly encourage learners' participation in ODL.

Teaching staff do not completely reject ODL as they are ready to convey knowledge according to current trends and understand the context of the implementation of teaching and learning online because it has a positive impact on their teaching (Fadzliyah et al., 2020). The same goes for the readiness of students at institutions of higher learning and schools. The study found that schoolchildren are ready to engage in online learning if good learning facilities are provided at home or school (Nor Sahara & Zulkarnain, 2021). ODL is more accepted by adult students because they see the use of a blog platform as a career training medium for the organisation where they work (Huzaimi & Rosseni, 2020). ODL also plays a role in shaping the thinking and attitude of students to be more positive in facing present-day technological and digital challenges (Adlina et al., 2020).

## Research Methodology

A total of 127 respondents were selected through simple random sampling from among Islamic Studies learners at OUM. The quantitative approach of questionnaires was employed to obtain data from these respondents. The questionnaire comprised four parts: A. Learner's Demographics, B. Perceptions of *Talaqqi*, C. Perceptions of ODL, and D. Willingness to Learn Through ODL. A four-point Likert scale with four answer options (Strongly Disagree, Disagree, Agree, and Strongly Agree) was used to gauge learners' perception of the medium of knowledge transfer. Each construct in parts B to D contained 7 to 10 items constructed by the researchers themselves. The questionnaire form was built on the Google Form platform.

The data was analysed using Statistical Package for the Social Sciences (SPSS) software version 27.0. Descriptive statistics were used to parse and summarise information obtained from the data. The items in the first section were analysed based on frequency and percentage while the items in the remaining sections were analysed based on descriptive statistics percentage and mean.

## Findings and Discussion

The questionnaire contained questions on the background of the respondents before moving on to their knowledge and understanding, acceptance and practice of the new approach in knowledge transfer. Finally, their views were sought on the benefits and usefulness of the new approach. These questions were categorised as shown in Table 4.

**Table 4**

*Question Categories of the Questionnaire*

Part	Items	Total No. of Questions
A	Respondents' background	6
B	Respondents' understanding/knowledge	5
C	Acceptance/practice	5
D	Benefits/usefulness	5

Table 5 shows that the respondents comprised 74 Bachelor of Islamic Studies (BIS) learners (58.3%), 33 Master of Islamic Studies (MIS) learners (26%), and 20 Diploma of Islamic Studies with Education (DIS) learners (15.7%). The majority of learners were in their fourth year and above (26%), had enrolled through normal admission (77.2%), and ranged in age from 20 to 40 years old (66.2%). The interesting thing about Islamic Studies learners at OUM is that some are aged 50 and above (4%). This is in line with the main national education agenda that supports, empowers, and appreciates lifelong education, as contained in the Malaysian Education Development Plan 2015–2025 (Higher Education).

**Table 5**

*Part A: Demography*

		Frequency (f)	Percentage (%)
Programme	DIS	20	15.7
	BIS	74	58.3
	MIS	33	26
Academic Year	1	26	20.5
	2	20	15.7
	3	33	26
	4 and above	48	37.8
Intake/Admission Mode	Normal	98	77.2
	APEL/FE	29	22.8
Age	Below 20	1	0.8
	21-30	41	32.3
	31-40	43	33.9
	41-50	37	29.1
	51-60	3	2.4
	61 and above	2	1.6





## Understanding and Knowledge of the New Approach of Knowledge Transfer

In part B, the items were evaluated based on the mean average. Items that recorded a mean average of less than 1.00 indicated a low level, while those with 2.00–2.99 indicated a moderate level, and those with more than 3 indicated a high level. This is detailed more clearly in Table 6 below.

**Table 6**

### Understanding and Knowledge

No.	Item	Strongly Disagree f (%)	Disagree f (%)	Agree f (%)	Strongly Agree f (%)	Mean	Total
B1	I understand the meaning of <i>talaqqi</i>	1 (0.8)	4 (3.1)	70 (55.1)	52 (20.9)	3.36	127
B2	Online meetings such as in Google Meet fulfil the concept of <i>talaqqi</i>	2 (1.6)	23 (18.1)	81 (63.8)	21 (16.5)	2.95	127
B3	I understand about self-learning that can be done online	0 (0)	7 (5.5)	84 (66.1)	36 (28.3)	3.23	127
B4	<i>Talaqqi</i> is the best way to study religion	1 (0.8)	3 (2.4)	57 (44.9)	66 (52)	3.48	127
B5	Modern technology helps the implementation of the method of <i>talaqqi</i>	0 (0)	15 (11.8)	69 (54.3)	43 (33.9)	3.22	127

Based on the findings in Table 6, the majority of respondents had a high-level of understanding and knowledge except for the item stating that online meetings such as in Google Meet fulfilled the concept of *talaqqi* ( $M = 2.95$ ). This could be due to Google Meet still being considered a new platform for the learning process at OUM. The item with the highest mean was the one which stated that *talaqqi* was the best way to study religion ( $M = 3.48$ ). This shows that learners of Islamic studies still think *talaqqi* is the best way to deepen religious knowledge.

This finding supports a study conducted by Muhammad Izzat et al. (2020) which found that students' level of readiness for online learning is still moderate, and they are not fully prepared to have online interactions with fellow students and the online learning content.

The learners' understanding of the medium of knowledge transfer in the Islamic Studies programmes is at a high level. This is explained by the use of current technology to help in the implementation of *talaqqi* (M = 3.22) and learners' understanding that self-learning is a component of ODL (MQA, 2013). However, although the learners agree that technology helps *talaqqi* a lot, they are not yet fully prepared to accept it as fulfilling the concept of *talaqqi*.

### Acceptance and Practice of New Approach in Knowledge Transfer

Table 7 below explains learners' acceptance of the medium of knowledge transfer in the Islamic Studies programmes. The majority of learners agreed with the tutors who taught their courses (M = 3.28). This includes the teaching and learning methods, notes, and teaching materials used by the tutors. Clearly, tutors and teaching staff play an important role in learners' acceptance of knowledge transfer methods. They have a significant role in shaping learners' perceptions of the way knowledge is transferred. This is in line with Abd al-Salam (2000: p. 11) who stated that the process of knowledge transfer must meet the pillars of *talaqqi*, namely the:

- student
- teacher
- knowledge or Al Qur'an

The item "I feel satisfied with learning online" received the lowest mean value (M = 2.77), which showed that learners' satisfaction in attending online classes was moderate. This is due to several factors, such as the speed of broadband (Internet) itself (Azlan et al., 2020; Muhammad Izzat et al., 2020), environmental disturbances, responsibilities at home (Azlan et al., 2020), lecturers' readiness, lack of motivation (Muhammad Izzat et al., 2020; Norfarahi et al., 2020), learners' attitudes, literacy, and computer facilities (Zaidatun et al., 2006).

**Table 7**

*Acceptance/Practice*

No.	Item	Strongly Disagree f (%)	Disagree f (%)	Agree f (%)	Strongly Agree f (%)	Mean	Total
C1	I feel happy learning online	4 (3.1)	31 (24.4)	58 (45.7)	34 (26.8)	2.96	127
C2	I joined the online classes completely according to the set schedule	3 (2.4)	36 (28.3)	70 (55.1)	18 (14.2)	2.81	127
C3	I concentrated on online classes as much as face-to-face classes	1 (0.8)	28 (22)	67 (52.8)	31 (24.4)	3.01	127
C4	I feel satisfied learning online	6 (4.7)	43 (33.9)	52 (40.9)	26 (20.5)	2.77	127
C5	I am satisfied with the tutors appointed to teach	0 (0)	7 (5.5)	77 (60.6)	43 (33.9)	3.28	127



## Benefits/Usefulness of New Approach in Knowledge Transfer

Overall, the learners' perception of the benefits and usefulness of the knowledge transfer medium in the Islamic Studies programmes is high. The item "The online learning platform items at OUM made it easier for me to learn flexibly" received the highest mean value ( $M = 3.34$ ) while the item "The myINSPIRE forum items were enough for me without the need for online face-to-face classes" obtained the lowest mean value ( $M = 2.29$ ) as learners still needed more interaction with tutors. Therefore, when OUM provided e-tutorials through Google Meet as an alternative to face-to-face classes, the majority of learners agreed and accepted it as a new and acceptable method.

The methods or modes used by OUM for Islamic studies are very beneficial to the learners. This is supported by the findings in Table 8 which show that the students could learn flexibly ( $M = 3.30$ ), teaching records could be accessed at any time ( $M = 3.11$ ), and the students' believed that online learning could improve their performance ( $M = 2.91$ ). The students were of the opinion that knowledge could not be transferred through forums alone. They still needed other methods of knowledge transfer such as online classes, virtual discussions, and forums such as email, WhatsApp, and Telegram.

**Table 8**

*Benefits/Usefulness of New Approach in Knowledge Transfer*

No.	Item	Strongly Disagree f (%)	Disagree f (%)	Agree f (%)	Strongly Agree f (%)	Mean	Total
D1	The myINSPIRE forum is enough for me without the need for e-tutorials (online face-to-face classes) (GM)	14 (11)	62 (48.8)	39 (30.7)	12 (9.4)	2.29	127
D2	I watched back the recorded video in GM	2 (1.6)	12 (9.4)	83 (65.4)	30 (23.6)	3.11	127
D3	Online learning can improve my performance	3 (2.4)	29 (22.8)	71 (55.9)	24 (18.9)	2.91	127
D4	The learning method at OUM can be achieved at any time according to the suitability of my time	1 (0.8)	7 (5.5)	72 (56.7)	47 (37)	3.30	127
D5	The online learning platform at OUM makes it easy for me to learn flexibly	1 (0.8)	5 (3.9)	71 (55.9)	50 (39.4)	3.34	127

Several factors are seen to affect the relationship between the learners and the medium of knowledge transfer in the Islamic Studies programmes, namely, age, mode of admission (intake), and programme of study. Spearman's rho correlation test was used to see the existence of a relationship between the items or variables. The classification of the strength values of this correlation relationship is based on the classification presented in Pallant (2001) as shown in Table 9 below.

**Table 9**

*Correlation and Strength*

Value of Correlation Coefficient	Nature of Relationship between Variables
±0.10 – 0.29	A small, weak relationship
±0.30 – 0.49	Moderate relationship
±0.50 – 1.00	Big, strong relationship

Source. Pallant (2001)

Table 10 below shows the output from the Spearman rho correlation test performed between Parts B to D and learners’ demographics such as age and year of study. The purpose of this correlation was to determine whether there was a significant relationship between the perceptions of the learners on the medium of knowledge transfer in the Islamic Studies programmes and these factors.

**Table 10**

*Perception Test Results of OUM Islamic Studies Learners with Other Factors*

		Understanding	Acceptance	Benefits/ Usefulness
Perception Score_Semester of Study	Value of the Pearson correlation coefficient	.241	.372	.275
	P-value	.006*	.000*	.000*
Perception score_Study programme	Value of the Pearson correlation coefficient	.241	.372	.275
	P-value	.000*	.000*	.000*
Perception Score_Intake Mode	Value of the Pearson correlation coefficient	.038	.010	.006
	P-value	.673	.908	.942
Perception Score_Age	Value of the Pearson correlation coefficient	.030	.119	-.047
	P-value	.738	.181	.601

\* \* significant at the 0.05 level



## Conclusion

*Talaqqi* is a teaching and learning method used to deepen knowledge of Islamic studies which requires learners to meet their teachers face to face to acquire accurate and authentic knowledge, as it was stated in the Qur'an that Prophet Muhammad learnt from the angel Jibril through *talaqqi*. The development of technology and the current situation have brought about changes in the teaching and learning including the religious knowledge, which is the face-to-face online method, as this can be accepted by all levels of learners without affecting *talaqqi* which had been in practice before the emergence of the new approach.

The online learning of Islamic studies can be strengthened through the implementation of the following suggestions:

1. Tutors should enhance their commitment and expertise as learners face challenges such as busy working hours, slow Internet network, and lack of understanding of assignment questions.
2. The OUM library should expand its collection of Islamic studies reference materials to include e-books and books in pdf format and facilitate loan arrangements.
3. Tutors should encourage learners to participate in the learning process by requiring them to have their computer camera switched on during teaching sessions and by diversifying approaches to attract their learners' participation.

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**SUB-THEME:**  
Innovative Digital Solutions





# **A Study on the Relationship between Transformational Leadership and Creativity and Innovation from an Organisational Perspective: A Conceptual Model**

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## **Abstract**

*This study aims to understand a conceptual model on the relationship between transformational leadership and creativity and innovation among Malaysian telecommunication mobile operators. The problem addressed in this study is the rapid technological changes that need telecommunication service providers, similar to other industries such as education, to be innovative from an organizational standpoint to adapt and achieve competitive advantage. A transformational leadership style is seen as the catalyst for creativity and innovation, which are influenced by strategy, structure, behaviour, and support mechanisms within an organisation. Although leadership has been routinely covered in reviews of creativity and innovation, it is usually covered briefly and noted as an area for future research, especially in technology-dependent industries such as telecommunication and education. These two variables are seen as essential to any organisation that wishes to sustain its competitive advantage in today's world of accelerated globalisation. The main objectives of the model are to determine the relationship of transformational leadership (covering intellectual stimulation, individual consideration, idealised influence, and inspirational motivation) with creativity and innovation (organisational factors). This paper attempts to offer significant theoretical and practical contributions and can be adapted in the education industry which is going through a massive digital paradigm shift with online learning.*

**Keywords:** Transformational Leadership, Creativity, Innovation, Competitive Advantage



## Introduction

Transformational leadership (inspirational motivation, idealised influence, individual consideration, and intellectual stimulation) is defined as a style of leadership that emphasises collective interest between the employees of an organisation working to achieve the same objective. It is in contrast with transactional leadership which focuses on individual interest and commitment towards the goal (Herrmann & Felfe, 2014; Boies et al., 2015). According to Bass (1999), most organisations exhibit both transactional and transformational leadership to different degrees. Although leadership has been routinely covered in past reviews of creativity and innovation, it is usually covered briefly, in a predominantly descriptive manner, or noted as an area for future research (De Clercq et al., 2013). Transformational leadership has been described based on idealised influence, inspirational motivation, intellectual stimulation, and individual consideration (Bass, 1985; Nemanich & Keller, 2007; Bass & Riggio, 2006; Mittal & Dhar, 2015). The variables of transformational leadership have been found to have significant associations to follower creativity (Huang et al., 2016).

Creativity and innovation (organisational factors such as support mechanism, structure, strategy, and behaviour) have become essential to organisations that wish to sustain their competitive advantage in today's world which has a high growth of new knowledge, ideas, and accelerated rate of globalisation, and research in the field has revealed interesting findings (Anderson et al., 2014). It is safe to say that creating a high-performing organisation is dependent upon the degree of creativity and innovation present, which will determine the success and survival of the organisation in the long run. Even though some organisations may have already attempted to encourage creativity and innovation by promoting human capital development, the extent may have been limited due to other influencing factors (Martins & Terblanche, 2003). Creativity and innovation are often seen to have a complex relationship and warrant detailed analysis to prove their outcome (Mumford & McIntosh, 2017).

Competition and rivalry among telecommunication mobile service providers is much more intense now compared to 20 years before. The specific phenomenon that this study attempted to address is the trend of decline in organisational performance from various perspectives as experienced by Malaysian mobile service providers with high competition, which is accelerated by rapid technological changes and constant change in the CEO in charge, which influence an organisation's adaptation to transformation. Increasing competition in the telecommunication market and gap in achieving competitive advantage need to be addressed, especially in Malaysia. The performance of incumbent telecommunication operators can be further analysed by looking at individual statistics such as market share, revenue stream, subscriber base, service performance, customer satisfaction, and others which will be addressed in the following sections. The highly competitive global market of today calls for a more dynamic approach towards leadership (Levy et al., 2010).

Telecom service providers have exhibited the highest CEO turnover rate of any industry over the past 5 years, with an average of one in four telcos appointing a new CEO every year (PWC-Communications Review, 2017). In their drive to transform for today's increasingly digital-driven and customer-focused environment, a number of telecoms operators – especially those in mature markets – are expanding dramatically into new areas outside their traditional network business. Such moves help to reduce reliance on returns generated from investments in networks, while also expanding the range of skills they will need in future, which demands rebalancing towards more creative talent. In today's fast-changing marketplace, telecom operators across the world are more likely than companies in most other industries to recruit a CEO with transformational leadership skills to help in the transformational change of an organisation.



The purpose of this study was to evaluate the significance of the CEO's transformational leadership in influencing the creativity and innovation of the employees in the organisation. A framework from a study by Garcia-Morales et al. (2012) was adapted to answer questions regarding the relationship between these variables and is useful to minimise gaps in companies that hamper the extent of these determinants. The nature of the organisation as a whole determines the effects of having creativity and innovation to facilitate its performance (Cantner et al., 2011). In summary, the objective of this paper is to establish an understanding of the relationship between transformational leadership (idealised influence, intellectual stimulation, individual consideration, and inspirational motivation) with creativity and innovation (organisational factors based on strategy structure, support mechanisms, and behaviour). It will then be adapted to current mobile network operators in Malaysia, which comprise both local and partial or fully foreign owned companies by having an empirical test of the framework. There is a lack of studies which investigate the simultaneous effects of transformational leadership on creativity and innovation. The magnitude of the relationship is hugely variable and some studies are only experimental in nature (Boies et al., 2015), and there is a lack of survey-based field studies. The fast-changing dynamics of the telecommunication industry, with its technological revolutions, require a transformational CEO to drive creativity and innovation so as to continuously improve organisational performance and drive towards competitive advantage. This is the gap that the study intended to address. Furthermore, a similar conceptual model can be adapted to other transformative scenarios such as online distance learning in the education sector.

## Literature Review

### Malaysian Telecommunication Services

The telecommunication industry remains the largest industry today, considering its significant role in facilitating everyone's life (Hsu, 2017). This industry is continuously innovative in every aspect of how consumers interact with one another. Mobile technology can be traced to its 0G history, in which it is the first mobile communication service right after World War II. Evolution then happened with advancements in 1G, 2G, 2.5G, 3G, and 4G. Telecommunication operators had to leave behind old traditional business models and alter their strategies from voice-based subscription to innovative bundle plans that included internet data, voice, messages, etc. (Hajar et al., 2020) with the emergence of 5G technology.

Malaysia has a competitive telecom sector which has thrived on the progressive opening up and reform of the local market. The changing commercial landscape has seen significant restructuring of all the main players over time. Supported by the efforts of the government, there has been a general rationalisation of what was seen as an "overcrowded" mobile operator market. During the first 10 years (from 1984 to 1995), the industry was monopolised by a single mobile service organisation: Celcom. Subsequently, through the government's liberalisation policy, the industry was opened up to other players, resulting in seven telecommunications players. Four big names are traditionally associated with Malaysian telco companies: Digi, Maxis, Celcom, and U Mobile. The big three incumbent major telecommunication market shareholders – Digi, Maxis, Celcom – have been dominating the industry since privatisation by the government and are listed on Bursa Malaysia. Meanwhile, U Mobile being the smallest among the four, has been very aggressive in making a mark in the very competitive market with more innovative approaches in its promotion, pricing, and rapid network roll-out, capitalising on the emergence of LTE technology (Yapp, 2017).

The increasing competition in the telecommunication market and the gap in achieving competitive advantage need to be addressed, especially in Malaysia. The performance of the incumbent telecommunication operators can be analysed by looking at individual statistics such as market share, revenue stream, subscriber base, service performance, customer satisfaction, and others. The highly competitive global market of today calls for a more dynamic approach towards leadership (Levy et al., 2010). The transformational style of leadership plays an important role in building competitive advantage and maintaining market leadership abreast with current trends (Lee, 2008).

A study conducted in Poland by Kasia and John (2007) revealed that current rapid globalisation growth required the country to embrace creativity and innovation to reduce gaps in economic development challenges. A nation's economic growth is accelerated by corresponding telecommunication activities (Gary & Scott, 2000). Nevertheless, telecommunication organisations faced a difficult market situation where competition is fierce, accelerated by fast development of information technology in the form of the internet (Chong et al., 2009). Globalisation and the competitive trend force companies to adapt to a more efficient and effective strategy in the form of transformational leadership (Davenport & Prusak, 1998). This implies that the role of the telecommunication industry in facilitating the transformation of Malaysia towards becoming a knowledge-based economy (Chong et al., 2009) is dependent upon the state of the telecommunication industry driven by the CEOs.

### **Transformational Leadership**

Transformational leadership has been defined in terms of idealised influence, inspirational motivation, intellectual stimulation, and individual consideration (Bass, 1985; Bass & Riggio, 2006; Nemanich & Keller, 2007; Vasilaki et al., 2016) and the same has been adapted into this study. Transformational leaders often work out new initiatives for improvement and progress by generating novel ideas and looking at things from new perspectives (Jandaghi et al., 2009). The initial idea of a transformational leadership model was developed by James McGregor Burns, who applied it in a political context. It was subsequently applied into the organisational context by Bass (Efendi, 2015). They also emphasised change initiatives by motivating downline managers, employees, and members of the organisation by creating a strong sense of purpose and facilitating the readiness and capabilities of their followers. Transformational leadership plays a critical role in bringing about the changes necessary for effective management in an organisation (Buil et al., 2018). As suggested by Kim (2013), "Transformational leaders have the ability to transform organisations through their vision for the future, and by clarifying their vision, they can empower the employees to take responsibility for achieving that vision." Leadership theory differentiates between transactional and transformational leaders. Transactional leadership focuses on role and task requirements and utilises rewards contingent on performance. In contrast, transformational leadership focuses on developing mutual trust, fostering the leadership abilities of others, and setting goals that go beyond the short-term needs of the work group. Bass (1985) identified four independent components of transformational leadership: 1) idealised influence, 2) inspirational motivation, 3) intellectual stimulation, and 4) individual consideration. Bass' theory (1985) has been used extensively in many other studies on transformational leadership in the past three decades, such as in Boerner et al. (2007), Ling et al. (2008), Wang and Howell (2010), and Yahaya and Ebrahim (2016). Thus, the elements of transformational leadership (idealised influence, inspirational motivation, intellectual stimulation, and individual consideration) will be examined in this study.



Idealised influence is based on attributes and behaviours that build confidence and trust and provide a charismatic role model that followers seek to emulate (Eisenbeiss et al., 2008). The leaders show great persistence and determination in pursuing their objectives. They show high standards of moral and ethical conduct and have a distinct ability to generate enthusiasm and draw people together around a vision through self-confidence and emotional appeal (Avolio & Bass, 2002; Fisher, 2009).

Inspirational motivation sees transformational leaders expressing an appealing conception of the future or a vision, offering followers the opportunity to see meaning in their work, challenging them with high standards and moving team members towards action by building their confidence levels and generating belief in a cause (Eisenbeiss et al., 2008). According to Den Hartog and Koopman (2001), inspiration can be associated with the ability of a leader to act as a model to his or her followers. Thus, inspirational motivation portrays the approaches taken by leaders to influence their subordinates to meet both personal and organisational goals.

Intellectual stimulation involves changing followers' awareness of problems and their capacity to solve them (Bono & Judge, 2004). It includes stimulating their followers' efforts to be innovative by questioning assumptions, reframing problems, and approaching old situations or issues in new or novel ways (Avolio & Bass, 2002). There is no hesitation in discarding an old practice set by them if it is found to be ineffective. Den Hartog and Koopman (2001) claimed that intellectual stimulation not only influenced followers to question norms, even those of their leaders, which created an open environment for innovation.

Individual consideration involves treating people individually and differently on the basis of their talents and knowledge (Shin & Zhou, 2003) with the aim of allowing them to attain higher levels of achievement that otherwise might not be achieved (Stone et al., 2004). The leaders' requests will be more likely to be perceived to be in the followers' best interests, and so should be more likely to be fulfilled with enthusiasm (Fisher, 2009). Such leaders treat followers with respect and provide continuous follow-up and feedback (Hemsworth et al., 2013). Through individual consideration, the leaders get individual employees to make significant efforts to fulfil their needs (Ng, 2016).

### **Creativity and Innovation (Organisational Factor)**

Creativity and innovation have become essential to any organisation that wishes to be competitive in terms of performance in today's world, which has a higher growth of new knowledge, ideas, and accelerated rate of globalisation (Chan & Mauborgne, 1999). In other words, creating a knowledge-based organisation that is dependent upon creative and innovative characteristics will determine the success and survival of an organisation in the long run. Even though some organisations may have already attempted to encourage creativity and innovation by promoting human capital development, the extent may have been limited due to other influencing factors (Martins & Terblanche, 2003). Consequently, it raises awareness of the need to outline the determinants that support or hinder an organisations' attempt to be creative and innovative, which will then make it possible to develop appropriate business and operation strategies. Nevertheless, given the importance of creativity and innovation in organisations, there has been relatively little empirical work done in the area of organisational factors and creativity and innovation (Oldham & Cummings, 1996). Leaders may stimulate creative and innovative performance by providing followers with high levels of autonomy and discretion (Pan et al., 2012), allocating needed resources (Gu et al., 2015), and building followers' confidence (Liao et al., 2010).

A strategy that promotes creativity and innovation reflects also the idea of developing new products and services as part of its scheme (Robbins & Judge, 2017). Having a vision and mission that focus on the future and are collectively cultivated by everyone in the organisation can be a strategy towards promoting creativity and innovation (Covey, 1993). According to McGill et al. (1992), such a strategy will place more stress on facilitating consumer market and customer-oriented activities where quality of service plays a more significant role than productivity. In a service organisation, the capacity to comprehend and act on changes by the management represents the organisation's strategy to move forward (Martins, 2000). This argument is supported by Shin and McClomb (1998), who mentioned that those who possess the ability to visualise the future in a clear direction encourage efforts to innovate within the organisation. A clear vision and mission, while important, require the adaptability of employees to understand and act based on the guidelines given (Lock & Kirkpatrick, 1995). Employees who fully understand and are willing to follow the direction of the management will determine the extent to which creative and innovative actions are promoted.

The structure of organisation that promotes creativity and innovation can be examined by looking at the degree of freedom in the organisation to make decisions by supporting autonomy and empowering individuals (Martins & Terblanche, 2003). Supporting this notion, Judge et al. (1997) stated that it is the employee's choice to act creatively to achieve goals within the general rules set by the organisation. Additionally, scholars emphasised the importance of leadership and having support from the management to allow actions of free will to encourage the flow of creativity in problem solving. Moreover, the relationship between organisational variables such as leadership and performance can be mediated by innovation. Organisational structure provides the internal configuration, including communication and resource flows that are crucial for innovation to occur (Russel, 1990).

Creativity and innovation or behavioural factors depict that employees should be allowed to feel that risk taking and experimenting are part of normal working behaviour and are actively supported by the organisation's leadership (Arad et al., 1997; Khalil, 1996; Robbins & Judge, 2017). However, the leaders must evaluate each risk-taking activity and drive to improve on mistakes to increase the success rate. In return, the organisation will develop a culture where employees are motivated to take moderated risks to achieve success rather than seek success which may be of less motivating factors (Aber, 1996).

The supporting mechanism of creativity and innovation can be related to the organisation's direction in implementing policies that develop human capital such as technology, training programmes and other resources that reflect the level of support towards creativity and innovation (Kasia & John, 2007). Organisations should evaluate carefully their investment in employees to ensure that it does not become a cost burden to the company (Snell & Bohlander, 2007) and threaten its competitiveness. When creative behaviour is duly rewarded, it will create an organisational factor that fosters the same behaviour among the employees (Arad et al., 1997). The direction of the organisation can be portrayed by the attitude of the staff within the firm (Martins & Terblanche, 2003). Similarly, having a workforce with significantly varied backgrounds can help to build an organisation which is creative and innovative through its individual employees' contributions, which are supported by a transformational leadership style. The notion of supporting mechanism urges employees to be creative and innovative, indicates active employee involvement, and reflects organisational performance (Alrowwad et al., 2017).





## Conceptual Model

Transformational leadership can be described through four distinctive factors: inspirational motivation, idealised influence, intellectual stimulation, and individual consideration (Bass & Steidlmeir, 2016). The theory of transformational leadership is often linked to creativity of employees (Shin & Zhou, 2003). The proactive behaviours of transformational leadership iterate the importance of changing the status quo within an organisation and promoting innovation. Hence, the following hypothesis is posited:

H1. There is a positive relationship between transformational leadership and creativity and innovation.

Transformational leadership focuses on developing a high level of commitment between leaders and subordinates by emphasising common goals and the achievement of higher psychological needs (Bass, 1985; Kirby et al., 1992; Leithwood, 1992). Additionally, Shamir et al. (1993) stated that transformational leadership can motivate followers by addressing the need to cultivate common values, increasing self-efficacy, and understanding social identification within the organisation. This allows employees to exhibit creativity in problem solving and nurtures innovation at the workplace (Sosik et al., 1998; Schepers et al., 2005). The motivation of an employee increases with the level of empowerment received (Lashley, 2001). A leader's inspirational motivation plays a pivotal role in promoting creativity and innovation (Nardelli, 2017). An empowered employee feels personally effective in the outcomes related to the work carried out. This creates a more conducive and motivating working environment that facilitates creative thinking and innovative action (Arad et al., 1997). Therefore, the following hypothesis is posited:

H2. There is a positive relationship between inspirational motivation and creativity and innovation.

Leaders are able to spur followers towards creativity through their behaviour as part of organisational culture (Phipps et al., 2012). Transformational leadership in the context of idealised influence or exhibiting charismatic leadership helps to promote a higher level of creativity among subordinates (Arendt, 2009) which encourages them to accomplish extraordinary things, and develop preferences for challenging and demanding tasks, which result in more creative actions. Transformational leaders help followers feel trusted, remain loyal, and rely strongly on the leadership to guide them in exploring new challenges (Shin & Zhou, 2003). Idealised influence lets leaders inspire employees and gain their respect and loyalty (Shafi et al., 2019) to become creative and innovative. The above literature led to the creation of the following hypothesis:

H3. There is a positive relationship between idealised influence and creativity and innovation.

According to Oldham and Cummings (1996), being supportive of employees' talents and strengths encourages them to become more involved in creative activities. They also suggested that supporting employees' talents will have a positive effect on innovativeness. According to Sosik et al. (1998), in comparison with other types of leaders, transformational leaders tend to promote individual followers who are able to think more divergently and adopt generative and exploratory thinking processes that produce creative outcomes at the workplace. Through individual consideration, the leaders require individual employees to make significant efforts to accomplish what they want (Ng, 2016). Therefore, individual consideration complements the efforts of the transformational leader, who is considerate about providing the necessary support for his or her followers and helps to boost the creativity of employees in return. So, the next hypothesis is:

H4. There is a positive relationship between individual consideration and creativity and innovation.

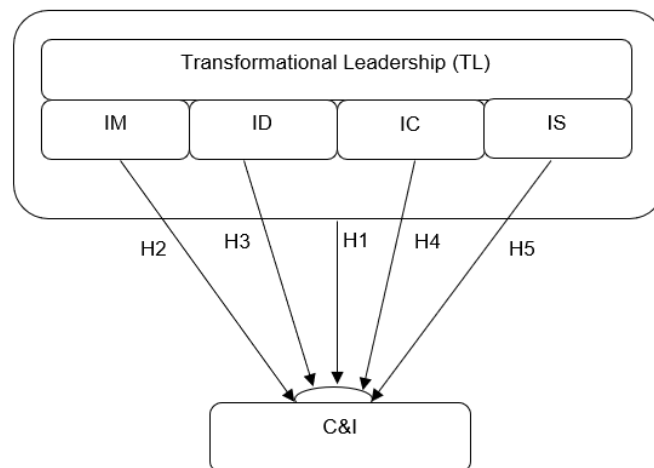
Intellectual stimulation is the act of simulating the capabilities of employees to think out of the box while solving issues and refreshing their thoughts (Gilmore et al., 2013). As mentioned by Kelly (2003), a leadership style that promotes intellectual stimulation is able to influence employees to see work-related problems from various angles and as such, develop the ability to solve the problems. Employees can be stimulated by questioning norms, re-addressing approaches towards problems, and being innovative to solve them (Avolio & Bass, 2002). A leader's intellectual stimulation plays a pivotal role in promoting creativity and innovation (Nardelli, 2017). Therefore, it appears that intellectual stimulation creates a positive effect on organisational creativity and innovation. Thus, the following hypothesis is postulated:

H5. There is a positive relationship between intellectual stimulation and creativity and innovation.

Based on the theory of resources and prior discussion related to all the variables, the conceptual model is developed as follows:

**Figure 1**

*Conceptual Model*



*Note.* TL = transformational leadership (antecedent); IM = inspirational motivation; ID = idealised influence; IC = individual consideration; IS = intellectual stimulation; C&I = creativity and innovation (Outcome)

## Conclusion

The transformational leadership of the CEO dictates the culture of creativity and innovation in an organisation that further explains its performance and growth. Increasing competition in the telecommunication industry can be addressed by employing transformative CEOs to drive initiatives to close the gap and remain competitive in the market. A conceptual model of the effect of transformational leadership on creativity and innovation can be used in future research to test and explain the relationship. The managerial implications of this model include understanding of the impact of transformational leadership on an organisation's creativity and innovative practices. Future research can



explore the relationship of the variables in other industries beyond telecommunication such as in the education sector where online distance learning is the new norm to increase the adoption of the theory. In addition, academics can use the additional knowledge in the theory behind transformational leadership, creativity and innovation, and organisational performance.

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## **Adoption of Mobile Devices During and Beyond an Online Music Pedagogy Course by Music Teacher Trainees from a Teacher Training Institution**

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### **Abstract**

*Mobile devices have evolved from being simple tools for communication to indispensable learning tools in higher education settings such as teacher training institutions. The purpose of this qualitative study is to investigate and define what pre-service music teacher trainees identify as key attributes and characteristics of using mobile devices such as mobile phones, iPads, and laptops as learning tools during and beyond an online music classroom, specifically in a music pedagogy course. This case study explores the views of 30 pre-service music teacher trainees on how learning music beyond the classroom, including music learning activities, and communication amongst classmates and music lecturers, rely heavily on mobile technology after online classes. The data in the first phase of this study was collected using an online qualitative questionnaire consisting of 20 questions targeted at pre-service music teacher trainees pursuing a degree in music education. The second phase of the study was conducted through a semi-structured interview in a focus group discussion on Google Meet. Five themes emerged from the analysis of data in this case study: a) availability of current related information in music pedagogy, b) creative and innovative activities to learn music, c) collaborative sharing amongst classmates and music lecturers, d) convenience and usability of various devices, and e) enthusiasm for adopting mobile learning. Limitations were also revealed on the use of mobile devices beyond the online music pedagogy course by the teacher trainees. However, the overall study presents encouraging insights on the use of mobile devices as tools to enhance learning in an online environment amongst pre-service music teacher trainees.*

**Keywords:** *Mobile Devices, Pre-Service Music Teacher Trainees, Learning Tools, Music Education*



## Introduction

Mobile learning, also known as m-learning, refers to any teaching and learning that happens with the use of mobile devices and platforms and is now an education system that is much preferred by learners in the 21st century. Mobile phones, smartphones, tablet computers, ebook readers, personal digital assistants (PDAs), and other similar devices can all be defined as mobile devices (Kukulska-Hulme et al., 2009).

In the last two decades, the trend of using mobile devices has become prominently important and the devices are used widely in higher education institutions. With developments in technology, mobile learning is playing an increasingly vital role in transforming the education system in an ever-changing world. Portability, networks, affordability, and availability have made it popular among people from a wide range of age groups (Newhouse et al., 2006).

It is notable that the younger generation today are versatile with the use of various mobile devices. This is prevalent at teacher training institutions where trainee teachers are digitally literate and on the move to explore the use of various mobile devices during and after lectures. The current teacher trainees are seen as a generation that would demand access to learning materials and information anytime and anywhere. When the Covid-19 pandemic struck, mobile devices made an impact on many pre-service music teacher trainees in their learning practices.

The mobile devices they commonly use are mobile phones, iPads, and laptops. Devices such as smartphones and tablets are considered more as learning hubs than multiple devices (Handal et al., 2013). These devices have made an immediate impact on teacher training life by transforming trainees' interaction patterns and learning practices.

Despite numerous studies on the importance of using mobile devices in the classroom, teacher support and training have been the least explored topics in mobile learning research (Ekanayake & Wishart, 2014). This research gap clearly shows that mobile learning is especially under-theorised in teacher education (Kearney & Maher, 2013), despite the need to inform teachers of the value of mobile technologies and how to integrate them effectively into their classes (Schuck et al., 2013). In addition, there have been few reports that examine the reactions of teacher trainees towards the use of mobile devices during and after lectures.

## Research Objectives

This case study has three objectives:

- gain insights on how pre-service music teacher trainees perceive the usage of mobile devices during and beyond online classroom settings;
- explore how pre-service music teacher trainees perceive the usage of mobile devices in a music pedagogy course during and beyond online classroom settings; and
- find out the perception of the conditions faced in the usage of mobile devices during the Covid-19 pandemic amongst pre-service music teacher trainees.



## Literature Review

Mobile devices such as mobile phones, smartphones, tablet computers, ebook readers, and PDAs are instruments that facilitate mobile learning among students these days. Students of all levels, from primary school to tertiary education, now use mobile devices to engage with their studies. With this current pandemic situation, educators recognising the potential of mobile technologies as a viable learning tool have incorporated their use in blended, distance, and face-to-face programmes (Norris & Soloway, 2011).

Mobile devices have since made an impact on teacher training by not only transforming lecturers and trainees' interaction patterns but also in teaching and learning practices with online lectures. Research on the impact of mobile devices on student learning indicates that such devices have the potential to support learners by offering them a context in which they can construct and share knowledge in media-rich and stimulating environments (Montrieux et al., 2014).

It has been argued that mobile learning constitutes "the processes of coming to know through conversations across multiple contexts amongst people and personal interactive technologies". Many studies have been conducted on the usage of mobile devices recently. Gikas & Grant (2013) conducted a study about student perspectives on learning with mobile phones, smartphones, and social media in three universities in the United States and collected data through focus group interviews. The findings showed that the participants had a good perception of the use of mobile devices. Some of the themes which emerged from the study included the ability to assess information quickly, communication and content collaboration, variety of ways to learn, and situated learning advantages and challenges.

Current studies also show that devices such as tablets and smartphones must be considered more as learning hubs than multiple devices because they dynamically integrate "all the personal learning tools, resources and self-created artefacts at one place". Besides that, mobile learning devices are also related to the concept of ubiquitous learning whereby "computing, communication, and sensor devices are embedded and integrated into the learners' daily life to make learning immersive" (Handal et al., 2013).

However, there is still a gap in the use of mobile devices within and beyond the classroom. Some drawbacks include the possibility of students engaging in a superficial way, students being distracted in class, poor wireless connectivity in some areas, and limitations in terms of screen size and resolution making usability difficult.

## Research Method

### Research Design

The purpose of this case study was to explore the views of pre-service music teacher trainees from a teacher training institution in Kuala Lumpur on the usage of mobile devices during and beyond an online music pedagogy class during the Covid-19 pandemic. *As this phenomenon is relatively new and has not been researched thoroughly*, a qualitative method of research aimed at understanding the meaning people attribute to it was used in an exploratory study. Qualitative research draws on methods aimed at recognising "the complexity of everyday life, the nuances of meaning-making in an ever-changing world and the multitude of influences that shape human lived experiences" (DeLyser et al., 2010, p. 6).



This study employed three ways of collecting data, which were an online questionnaire, focus group interviews in three sessions, and documentation in a reflective journal. An online questionnaire is extremely flexible and can be combined effectively with complementary, more intensive forms of qualitative research, such as interviews and focus groups, to provide more in-depth perspectives on social processes and context. An online questionnaire using Google Forms is used to provide insights into social trends, processes, values, attitudes, and interpretations and can be cost effective. Questionnaire surveys conducted online help to minimise printing and distribution costs (Sue & Ritter, 2012). As a start to this research, an online qualitative questionnaire was developed through observation and administered in the first phase to validate the findings of the focus group interviews. Twenty questions were given as a guide to enable the pre-service music teacher trainees to reflect and state their views in a narrative form. This was done because narratives provide the researcher with a way “to present experience holistically in all its complexity and richness” (Bell, 2002, p. 209).

This study also employed the use of focus groups as the purpose of focus groups is to promote self-disclosure among participants in a group by ascertaining their perspectives, feelings, opinions, and thoughts. According to Ludwig (2000), focus group interviews are not intended to help groups or researchers reach decisions, gain consensus or establish how many people hold a particular view, like statistics. In this study, three focus group interviews were carried out in the first phase, with 10 participants per session, to elicit individual responses and collect shared understanding. Semi-structured interviews were conducted online through Google Meet to enable the trainees to reflect and give their opinions. These discussions in groups of 10 each helped the researcher to gain insights and collect views and perspectives towards the usage of mobile devices during and beyond the online classroom setting.

In order to enhance the triangulation of data, the researcher also documented personal thoughts in a reflective journal based on observations of this particular cohort of pre-service music teacher trainees after 15 weeks of online teaching and learning in a music pedagogy course. This was done to draw upon an additional source of data which is relevant to the findings of this study to enhance the triangulation of data. With this knowledge, teacher training institutions with pre-service music teacher trainees could recognise the importance of gaining insights from these trainees after they undertake a music pedagogy course online for one semester and identify how adopting the usage of mobile devices during and beyond a music pedagogy class could enhance the quality of learning amongst them.

## **Sample**

The study sample comprised 30 undergraduate pre-service music teacher trainees who were in the second semester of their second year, which is also the fourth semester of the Bachelor of Teaching programme. This cohort was selected because it was their first experience adopting the usage of mobile devices in a music pedagogy course for 15 weeks.

In the first phase of the study, they answered an online questionnaire in Google Forms which contained open-ended questions on how they felt using mobile devices for their learning. In the second phase, they took part in three focus group discussions on Google Meet, with 10 trainees per session. These sessions were conducted after the 15 weeks of online interaction.



## Research Questions

As a guide, the following questions were posed:

1. How do pre-service music teacher trainees perceive the introduction of mobile devices within and beyond their online classroom setting?
2. What are the perceptions of pre-service music teacher trainees towards this change in learning practices?
3. What are their perceptions on the conditions that support these teaching and learning practices?

## Research Procedure

Before conducting this study, permission was obtained from the Head of the Music Department and the study was explained to the 30 pre-service music teacher trainees in their fourth semester of the Bachelor of Teaching programme. The trainees were informed by the researcher that their names would not be revealed in order to maintain anonymity.

## Findings

Five themes emerged from this study. These themes are as follows:

- availability of current related information;
- collaborative sharing amongst peers and the music lecturer;
- enthusiasm in using mobile devices for learning;
- convenience and usability of different types of devices; and
- creative and innovative ways for learning music pedagogy online.

### Theme 1 – Availability of Current Related Information

Mobile technologies provide easy access to lessons and can improve students' engagement (Begum, 2011) through interaction with their teachers or other students. The information can be about knowledge resources (Liaw et al., 2010) which can be facilitated with mobile technologies. With mobile devices at hand, the pre-service music teacher trainees said they could easily access relevant information on music pedagogy. Furthermore, they were able to access many current and relevant materials on the topics discussed and learned during online classes very efficiently.

A sample activity can be accessing learning materials on the Internet to improve listening skills (Nah et al., 2008), which is relevant to the pre-service music teacher trainees. They stated that they were able to find explanations for the topics learnt during online classes through YouTube videos accessed on their mobile phones and laptops. The trainees also mentioned that they could access and share interesting information which improved their knowledge in a certain topic. This is in line with the findings by Ally et al. (2014) which suggested that students could access information which they could take back to school and



apply to their courses. There were also positive comments on the availability of current related information from the respondents. For example:

- S2 said, *“I was so happy because I found the latest way of teaching movement with rhythm sticks with primary schoolchildren.”*
- S18 said, *“I managed to find a YouTube video with more information on ways to teach warming up vocal exercises in singing and shared it with my friends.”*

## **Theme 2 – Collaborative Sharing Amongst Peers and the Music Lecturer**

Mobile devices have the capability to capture real-time information for music education. Integrating connectivity and collaboration during class activities using index videos has helped pre-service music teacher trainees to gain information and study at their own pace.

Communication and interaction with other learners can be facilitated through technology (Stanley, 2013) such as mobile phones. According to the pre-service music teacher trainees, they were able to collaborate with peers on topics for their online tutorial presentations. In addition, they were able to communicate with their lecturer through WhatsApp and Telegram on their mobile phones to discuss certain topics. Communication between teachers and students helps enhance learning efficiency because it supports teacher-learner and learner-learner communication and collaboration (Fazreena & Hewagamage, 2011; Kim, 2006, cited in Park et.al, 2012; Deriquito & Domingo, 2012).

Mobile devices such as mobile phones allow learners to experience individual and collaborative learning (Kukulska-Hulme, 2005). The respondents stated that through mobile devices, collaborative communication within and outside the online classroom between peers and the music lecturer could take place through the sharing of resources at their fingertips. In this study, 85.7% of the respondents strongly agreed that mobile learning will improve communication between students and the teacher. Furthermore, pedagogical activities given for individual learning could be used to access learning materials at their own pace, which saves meeting time as the respondents were able to collaborate from a distance and exchange information without personal attendance. This is useful during group discussions after online classes at home while performing the tasks given to them for presentation during tutorial sessions. For example:

- S23 said, *“My friends and I WhatsApp each other and discuss tutorial questions which are challenging.”*
- S19 said, *“I have learnt a lot from chatting with my friends via WhatsApp”. We share ideas all the time.”*



### Theme 3 – Enthusiasm in Using Mobile Devices for Learning

One of the advantages of using different types of mobile devices is that it enables students to access information about the topics being learned very quickly during and after classes. From the data obtained, 88.8% of the respondents said that they were motivated by the use of mobile devices during and after their online classes. Most of them enjoyed having discussions through Facebook, Instagram, and Whatsapp on their mobile phones and laptops.

For example,

- S3 said, *“I like attending the online pedagogy class because I can read handouts uploaded by my lecturer before class using my iPad.”*

However, around 11.2% mentioned limitations whereby some of their peers did not focus on learning during online classes using their mobile devices but browsed on their mobile phones instead. Some respondents also admitted to responding to their lecturers only when they received reminders and announcements through WhatsApp.

This scenario is a concern as distraction and detraction from formal lectures could jeopardise their understanding of the content of the music pedagogy course. Also, using different devices during online classroom interactions could discourage face-to-face interaction. For example,

- S10 said, *“My friend did not turn on his video during online class and did not even know when our lecturer asked him a question – Hmm.”*
- S5 said, *“Some of our group members only answer reminders on the WhatsApp group with Yes Ma’am or Okay or Noted.”*

### Theme 4 – Convenience and Usability of Different Types of Devices

Mobile devices such as mobile phones have great potential in supporting students in learning. They offer much flexibility in terms of time and place and allow for mobility within and beyond the classroom. This enables students to read articles online with the purpose of completing a task. The pre-service music teacher trainees were able to read articles using their mobile phones, laptops, and iPads which they carried along with them. Besides accessing web resources, they were also able to record lectures or presentations by their peers during online classes and view them in their own time and location. Some feedback from them include the following:

- S3 said, *“I prefer using my mobile phone during online classes and after classes as this gadget travels with me everywhere.”*
- S11 said, *“I still use my laptop during and after online classes because I can see and understand better.”*



## Theme 5 – Creative and Innovative Ways for Learning Music Pedagogy Online

Synthesised findings from the online questionnaire and focus group interviews revealed many pedagogical advantages of using mobile devices in terms of creative and innovative ways for learning. The pre-service music teacher trainees revealed about their engagement with content using mobile devices.

From topics of discussion during lectures and tutorials online, they explored the usage of various devices to find current materials on music pedagogy. They had the opportunity to experience digital gallery walks when accessing information through web resources linked to QR codes, which is in line with research by Husbye and Elsener (2013) which stated that mobile devices should be provided to pre-service teachers to ensure digital equity.

In terms of using mobile devices, the pre-service music teacher trainees stated that they were able to create and innovate their presentations by using various apps to add animation, sounds, and images in their presentations for online tutorial sessions. This built their knowledge on how to be more creative and innovative when learning something new, thus moving from traditional slide presentation to more creative ways. Below is some relevant feedback obtained from the respondents:

- S2 stated, *“It has been really wonderful experiencing new ways of preparing my presentation for tutorial sessions.”*
- S12 said, *“I have learned how to use various apps and animation using my mobile phone.”*
- S5 says, *“I like the idea of using QR codes as web resources, It has taught me something new.”*

## Discussion

From the findings of this study gathered from 30 pre-service music teacher trainees, it is notable that this group is in favour of using mobile devices during and beyond their music pedagogy class. A survey done by Thomas et al. (2013) found that 79 teachers supported the use of mobile devices in the classroom. However, the positive findings of this study were obtained from pre-service music teacher trainees at a teacher training institution in Kuala Lumpur only. Furthermore, another survey conducted with 38 Malaysian in-service teachers found that the majority of the teachers did not consider mobile devices as learning and teaching tools in their schools (Ismail et al., 2013). Music lecturers also need to investigate further how the usage of mobile devices can cater to the needs of pre-service music teacher trainees and how using mobile devices during and after online classes can make learning more fun and interesting.

The findings of this study also reveal that current pre-service music teacher trainees prefer using mobile phones (87.8%) and laptops (12.2%) in and out of the classroom. This finding corroborates previous research which states that mobile phones (e.g., smartphones, cell phones) were the most common mobile devices used in teacher education contexts (42.5%), followed by tablets e.g., iPads (17.5%), PDAs (17.5%), iPods (10%), and laptops (12.5%) (Baran, 2014).





Studies that investigated the use of mobile devices in teacher education contexts reported mainly positive contributions to the outcomes investigated. Mobile devices were found to have potential for helping pre-service teachers understand and develop in various fields of study. The five themes which emerged from this study clearly state that using mobile devices has brought about availability of current related information, collaborative sharing amongst peers and the music lecturer, enthusiasm in using mobile devices for learning, convenience and usability of different types of devices, and creative and innovative ways for learning music pedagogy online. As stated by Kearney and Maher (2013), mobile learning has advantages in supporting learning in the 21st century.

## Conclusion

This study has revealed insights underlying the adoption of mobile devices amongst music teacher trainees during and beyond an online music pedagogy class. The findings state that mobile devices increase task efficiency as their use allows pre-service music teacher trainees to multitask and squeeze reading time into many formal and informal situations. Using various devices has also enabled them to access current resources online rather than looking for print-based information. The pre-service music teacher trainees could easily carry their devices regardless of time and distance during these trying times of the Covid-19 pandemic.

This study on the adoption of mobile devices has shed light on how lectures and tutorials ought to be conducted from a naturalistic perspective whereby teacher educators need to show interest in integrating mobile technologies into teacher education contexts in order to enhance education in the 21st century.

Mobile devices have the advantage of connecting pre-service teachers with their colleagues, enhancing professional learning through collaboration, and facilitating mentoring processes (Cushing, 2011; Husbye & Elsener, 2013; Kearney & Maher, 2013). In conclusion, mobile devices should be adopted and used by teacher educators to tap the potential of their trainees. These devices enhance mobility in classrooms, be it in an online or a physical setting. Fundamentally changing the way classrooms are organised within teacher education programmes is an important component in meeting the demands of 21st century education.

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## Design and Implementation of Instructional Message Design for Online Learning in Postgraduate Programmes at Open University Malaysia

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### Abstract

*Open University Malaysia (OUM) has offered blended and online learning for almost 19 years since it was established in 2001. The long journey of providing the two modes of education has matured in offering online learning to learners. The learning process in an online learning environment is complicated for online learners due to the lengthy learning structure. Long learning structures affect online learners in terms of performing many tasks. A proper instructional strategy will make a meaningful learning structure with a significant task. The learning resources' design and development are considered part of the back-end process before the learning process. Some resources might not work due to a lack of pedagogical input during the design process. Message design with proper pedagogical strategies can be part of the activity in lesson design that contribute the information required by the learner to perform specific tasks. In performing the task, the learner tends to interact aggressively through the medium. The learner's cognitive ability for the learning resources is among the issues that need to be resolved. This study intends to determine an essential indicator in designing an interactive online learning prototype (IOLP). The development of an IOLP is based on the message design logic by Hullman (2004) and Petterson (2012). The task in IOLP is designed based on an adaptive learning approach. This study reports on the effects of the components in IOLP synthesised from Hullman (2004) and Petterson (2012) that are translated into the learning process embedded into appropriate pedagogical input. The analytic learning data from the Moodle-based Learning Management System report is used to measure the learner's cognitive ability on IOLP. The findings show that learners with more effort in performing the tasks laid out in IOLP will gain the highest score compared to those with less effort.*

**Keywords:** *Message Design, Interactive Online Learning Prototype (IOLP), Pedagogy for Message Design*



## Introduction

The learning process in an online learning environment is complicated for online learners due to the long and wide learning structure. An elongated learning structure will create many tasks to be performed by the learners. This situation leads to poor time management by online learners. A proper instructional strategy will result in a meaningful learning structure with a significant task.

Message design can be part of lesson design because it contributes the information required by the interpreter to perform specific tasks. In performing the tasks, learners tend to interact aggressively through the medium. The tasks can be organised into message design products through words, visuals, and forms, which are the main components of message design.

Regarding interaction or communication in message design products, Pettersson (2012) states that an originator, like an author, a designer, an illustrator or a painter, may want to tell somebody something. He or she has an “intended message” and one or more mental images to communicate. By creating a number of physical outlines or sketches, the originator can explain and demonstrate these mental images.

Communication barriers occur in message design products, primarily in computer-based education (CBE) learning packages. Most authors of CBE materials have not been exposed to the concepts of learning or instructional theory. David and Michael (1980) reported that review and computer-based instruction consistently identifies poorly designed, ineffective programs and packages.

Instructional resources should play a role in reducing the tasks performed by learners. These resources should also consider students' learning time (SLT) so that their understanding improves after they undergo the whole learning structure. The instructional resources, which include tasks, should also be packaged. The tasks should be minimal and flexible so as to reduce the procedures and activities required in digesting the content.

Kumar (2015) wrote that in the e-learning industry, *“time management is a difficult task for e-learners, as online courses require a lot of time and intensive work. Furthermore, whereas most adults prefer web-based learning programs for their place and time flexibility, they rarely have the time to take the courses due to their various everyday commitments”*. Therefore, the amount of information in the online resources to be carried out by the learners in an online learning environment should be significant to support the *reuse of learning objects in a new instructional context* (Mohan, 2004).

The quality of instructional message design relies on the design of the production process. Lack of application of the principles of learning and proper instructional design may lead to a defective product. David and Michael (1980) stated that the existence of instructional message design would not guarantee the production of quality CBE materials, and that the lack of exposure to principles of learning and instructional design can no longer be used as a general excuse for poor examples.

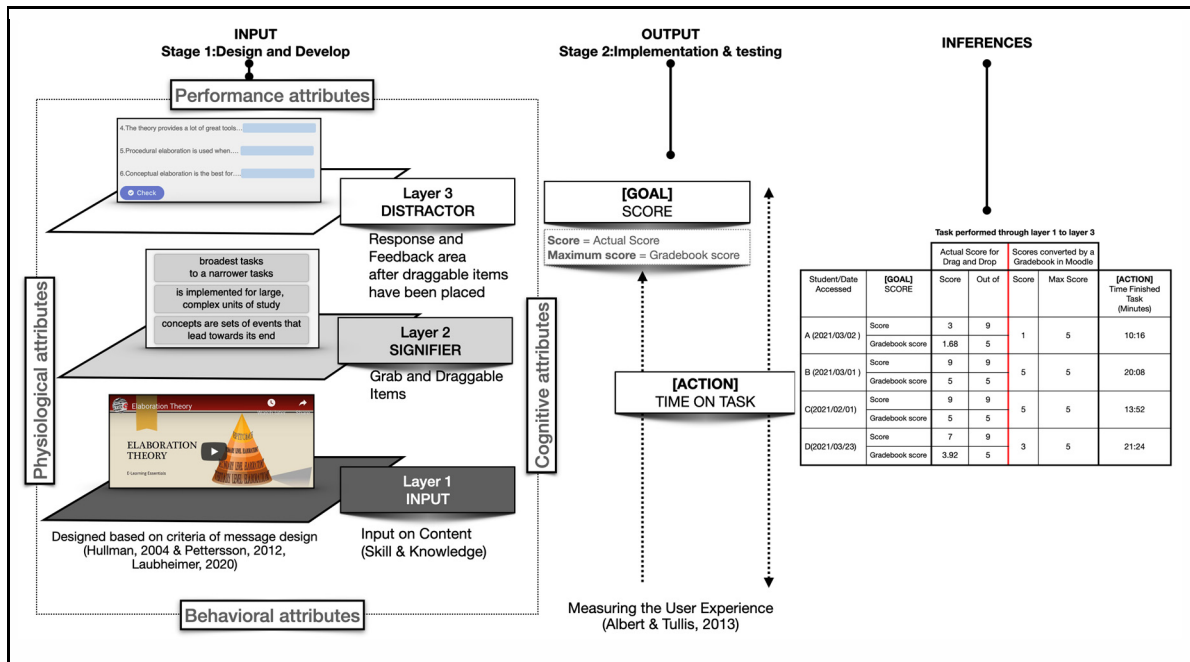
The new instructional context in this study refers to the compilation of or additional resources added to existing resources to reinforce learning. The Interactive Online Learning Prototype (IOLP) design includes layers of activities that are in line with the skill and knowledge provided in the existing resources.



IOLP is another attempt to observe the impact design of Drag and Drop activity on the learner's ACTION to achieve their learning GOAL. Figure 1 below shows the conceptual framework of the design of IOLP. The development of IOLP, which focuses on Drag and Drop activity, comprises three components. Each component functions as a TASK to be performed by learners. The learners need to go through the resource in Layer 1 and then complete Layer 2 (to react and respond to the items in SIGNIFIER and DISTRACTOR) to gain a SCORE.

**Figure 1**

*IOLP Conceptual Framework*



## Research Objectives

The study's objective is to observe and examine learners' behaviour on the interactive online learning prototype (IOLP). The content is packaged and organised in the H5P plugin hosted in myINSPIRE, the Moodle learning management system at Open University Malaysia (OUM). The open educational resources (OER) content is remixed in interactive content, H5P, through the following content types: 1) drag the words and 2) mark the words.

The interactive content design is based on message design logic by Hulman (2004), which includes GOALS and ACTIONS by the creator and recipient. The content in the IOLP is analysed based on an adaptive learning approach. The IOLP is then tested on OUM postgraduate learners to observe their achievements (GOALS) and the time taken to achieve their goals (ACTIONS).

The design of the IOLP may impact the learning process of the postgraduate online learners in terms of their performance in achieving the specific learning objectives of certain topics. The findings may also provide an instructional designer with an indicator for an online interactive activity that can serve as part of the formative assessment for online learning.

## Research Questions

1. What is the level of achievement (GOAL) within the learner's action time on task in IOLP?
2. To what extent is the learner's ability to achieve the maximum score within their time on task in IOLP?
3. What are the effects of drag and drop (drag the words) on the learner's score and time on the learner's task?

## Literature Review

### Message Design Defined

Several definitions related to the study are used to determine the scope of the study. In conveying the message from input to the signifiers and distractors in IOLP, one of the common factors that affect both input and the signifiers and distractors are the creator mental model and recipient mental model. The creator who designs the IOLP sets up the content knowledge through tasks and activities while the learners, as the recipients, perform the tasks and gain the rewards. In this case, Petterson (2012, p. 94) summarised a definition of message design as *"the message is information content conveyed from a sender to a receiver in a single context on one occasion"*.

In context of teaching and learning, the term "message design" is very closely related to the formulation of instructional strategy in presenting the content to the learners. Seels (1996, p. 691) defined message design as planning for the physical form of the presentation part of an instructional strategy and the symbolic form in which a message is to be stored in memory.

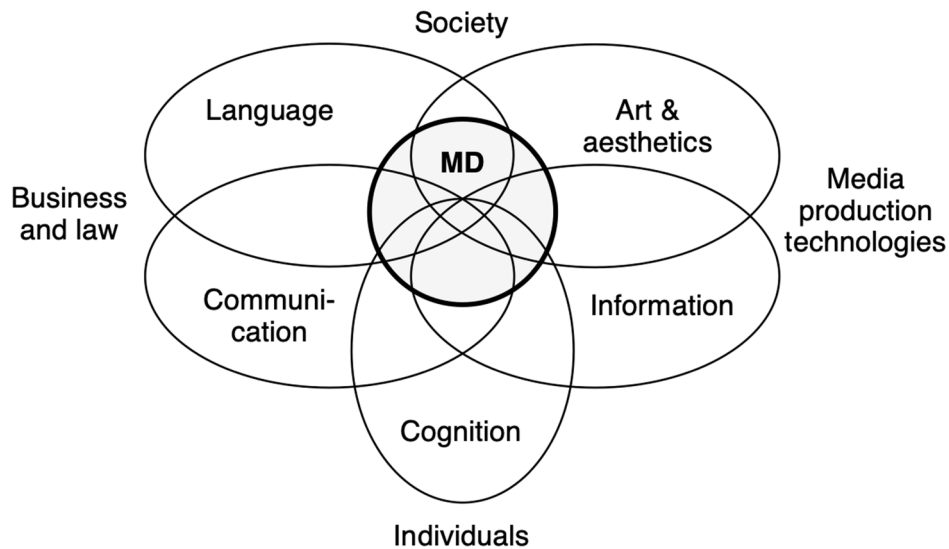
### Message Design Model

Figure 2 shows the components of message design by Pettersson (2012, p. 94) who stated that *the main components in message design are words, visuals, and forms. These main components may be used in many different ways to design, produce, transmit, and interpret messages. Depending on the different objectives of messages, we can see five different groups comprising: 1) graphic design, 2) information design, 3) instruction design, 4) mass design, and 5) persuasion design.* Concerning the design process and teaching and learning, generally, the components contribute to the design aspects. On the whole, the components may give insight to the developer in determining the criteria of the product's design.



**Figure 2**

*Message Design (MD) is Interdisciplinary and Encompasses Influences and Facts from Many Established Disciplines (Pettersson, 2012, p. 95)*



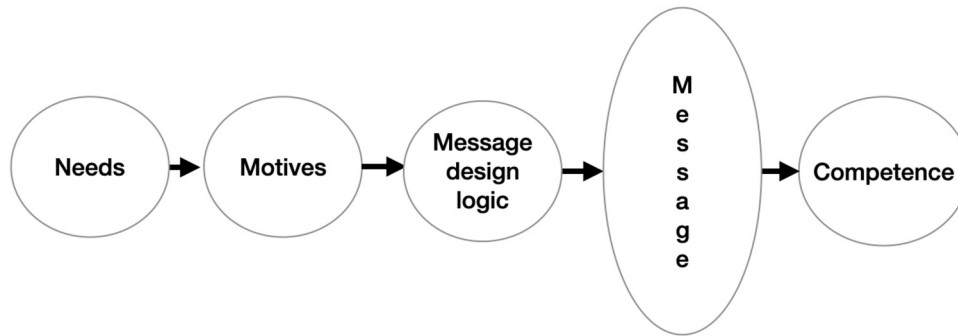
In the context of this study, instructional message design intends to observe the component of the message design logic in the IOLP. The number of signifiers and distractors in IOLP will affect the organisation of tasks, hence, allowing us to determine the competency level of the learner. To achieve the objectives, the design of the IOLP should include the goals and needs of the communication to the learner.

### Message Design Logic

Hullman (2004) supported Spitzberg and Cupach (1984) and Rubin (1990) who stated that goals are designed as means to an end. The end is **motive** fulfillment, which is represented by **competence** (see Figure 3). Competence comprised both effectiveness and appropriateness (Rubin, 1990; Spitzberg & Cupach, 1984). **Effectiveness** refers to the extent to which communication accomplishes its goal, while appropriateness refers to how the communication fulfils others' expectations about what is suitable communication for the situation.

**Figure 3**

*Motives Model with Message Design Logic as Goal Step (Hullman, 2004 p. 210)*



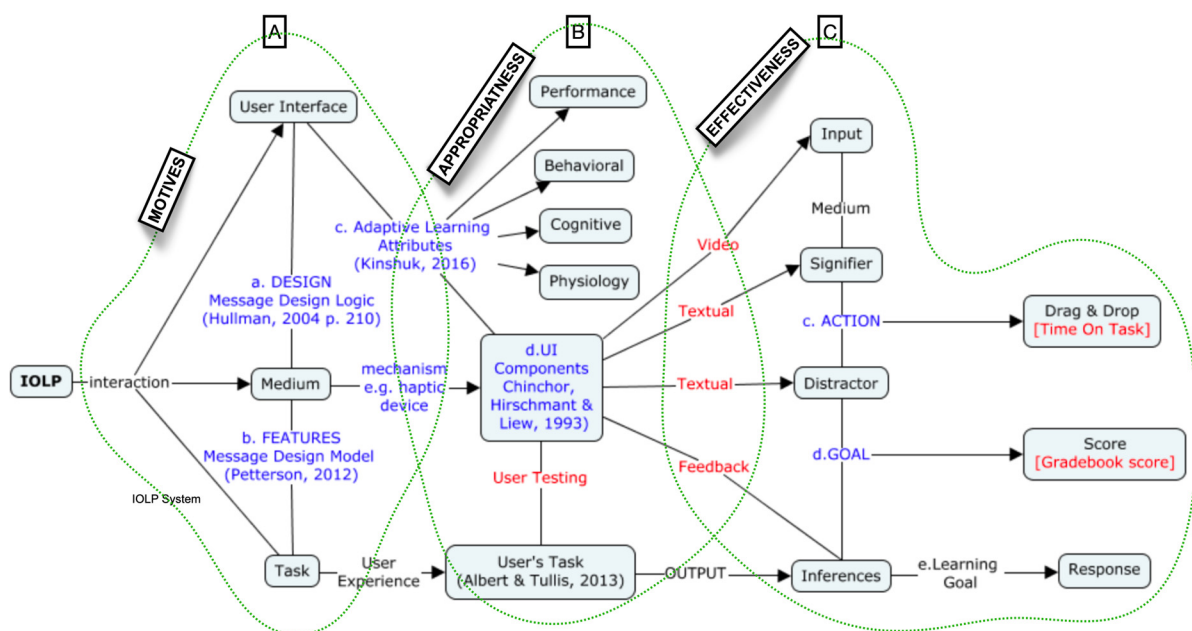
**IOLP Design Principle**

The design of IOLP should be made coherent from each section between three main components in the IOLP system. Beyer and Holtzblatt (1998, p. 296) stated that when the system work model is coherent, it keeps the user’s work coherent; when it fragments, it is the user’s work that is disrupted.

For IOLP, message design logic seems to be one of the profound components embedded in the IOLP system. Figure 4 shows the components of the IOLP system. It comprises three main components: A, B, and C, which embed the message design logic (Hulman, 2004), including motives, appropriateness, and effectiveness. Component A comprises three central systems that work for hands in hands, the user interfaces, the medium, and the task. Component B reflects the operation by the learner on the user interface, the medium to fulfil the task. Meanwhile, Component C demonstrates the suitability of communication in accomplishing its goal.

**Figure 4**

*IOLP System*







## Instructional Message Design and Adaptive Learning

The online learning environment reinforces the connection between the learner and the content through learner-learner or learner-teacher interaction. Providing content online enables the learner to be more autonomous. According to Wang and Shen (2012, p. 563), in formal learning environments, the convenience provided by mobile technologies strengthens the link between the learner and the content which, in behaviourism terms, is described as “stimulus and response.”

The complexity of interactive online learning relies on the organisation and number of tasks that may impact the learner’s cognitive load. The simplification of tasks can be made considering the three main components, i.e., motives, appropriateness, and effectiveness on message design, as illustrated in Figure 4. The input, signifiers, and distractors as the UI components through the drag and drop application enable learners to reduce user tasks, for example, typing. They can focus on thinking rather than spending time “typing” the answer. Van Merriënboer (1997) in Van Gog et. al. (2010, p. 312) stated that given the high cognitive load imposed by such tasks, they should be offered in such a way that learners are not cognitively overloaded by their complexity. That is, learners should be given the opportunity to practise simplified but increasingly complex versions of authentic whole tasks.

Once the link is made clear between learner and content, an appropriate instructional message design such as IOLP will give more options to the learner to create a learning path and be more independent. This situation will lead to the application of an adaptive and personalised learning environment. Kinshuk (2016, p. 43) stated that such an environment strives to support the learning process of students by understanding their competency in the subject matter and their personal ability to learn. One of the important characteristics that adaptive and personalised learning environments take into account is the cognitive abilities of students.

The assimilation of an adaptive and personalised learning environment may affect the IOLP system in terms of the user interface design (UID), which will affect the user’s task. The task can be clearly defined through adaptive learning attributes, as illustrated in Table 1.

**Table 1**

*Adaptive Learning Attributes (Kinshuk, 2016, p. 10)*

Attributes	Descriptions
Performance attributes	These attributes are related to the students’ competency in the subject matter, such as the level of the student’s current understanding of the domain content, his/her experiences within the domain, and competency in domain-related skills
Behavioral attributes	These include various characteristics related to the students’ personal behaviours, such as the preferences of the student, familiarity with the exploration process, and familiarity with various types of multimedia objects.
Cognitive attributes	These attributes are related to the students’ cognitive load capacity. They require understanding of the students’ cognitive abilities.
Physiological attributes	These attributes are related to the student’s physical state. They can be analysed by measuring various physical parameters.

## Research Method

### Introduction

This study was based on the design and development of a message design system called the IOLP, proposed by Pettersson (2012) and Hullman (2004), and the adaptive learning attributes proposed by Kinshuk (2016). The IOLP test is based on Albert and Tullis (2013).

The study involves two stages. Stage one consists of the design of the IOLP by organising OER content in the open-source authoring tool, H5P. Stage two consists of testing whereby six students enrolled in the Master of Instructional Design and Technology programme at OUM are required to perform the tasks in the IOLP.

### Functions and Features of Message Design in Context of IOLP

The user interface design (UID) of the IOLP is based on the design provided in H5P which followed the main principles by Chinchor et al., (1993) as follows:

- Functional principles: This group includes six principles: 1) defining the problem, 2) providing structure, 3) providing clarity, 4) providing simplicity, 5) providing emphasis, and 6) providing unity.
- Administrative principles: This group includes four principles: 1) information access, 2) information costs, 3) information ethics, and 4) securing quality.

### Figure 5

TASK 2.1: Behaviourism, Cognitivism, Constructivism and Learning and Instruction

Elaboration Theory

ELABORATION THEORY

INPUT

E-Learning Essentials

Watch on YouTube

Inside Elaboration Theory. Drag the words into the correct boxes

1. Elaboration theory views instruction as a thought
2. How did the elaboration theory organize instruction?
3. In Elaboration Theory
4. The theory provides a lot of great tools...
5. Procedural elaboration is used when....
6. Conceptual elaboration is the best for....

Check

broadest tasks to a narrower tasks

is implemented for large, complex units of study

concepts are sets of events that

SIGNIFIER

changing of instruction into different layers of instruction

to ensure learners engagement

science lessons



## Nature of Drag and Drop System

Generally, the nature of any type of message design should consider the following properties:

1. Aesthetic principles which include harmony and aesthetic proportion.
2. Expressive design logic reflects reactivity: A person responds to a prior message instead of focusing on goals relevant to the situation (Hullman, 2004, p. 209).
3. Cognitive principles which include facilitating attention, perception, processing, and memory (Petterson, 2012).

These three properties will enable the user to perform the task effectively by responding explicitly to the items in the signifier and gain a result of the execution of the functions.

*A “signifier” is some sort of indicator, some signal in the physical or social world that can be interpreted meaningfully (jnd.org, 2018). A drag-and-drop signifier has to signal two functions – (1) that the item is “grabbable” and (2) what dragging it somewhere will accomplish (moving or resizing) (Laubheimer, 2020). Clear signifiers and clear feedback at all stages of the interaction make drag and drop discoverable and easy to use (Laubheimer, 2020).*

The application enables the user to organise the signifier in terms of user interface design (UID) in the drag and drop system. However, in an application such as H5P, the signifier and distractor are fixed.

## Findings

Figure 6 shows the number of signifiers and distractors and the range of time for input in UID provided in Tasks 2.1 and 3.1. User interface design elements in Task 2.1 have YouTube video (input) with a presentation time of 2.58 minutes followed by nine signifiers and distractors as drag and drop elements. In comparison, Task 3.1 has YouTube video (input) with a presentation time of 4.40 minutes followed by six signifiers and distractors as drag and drop features.

**Figure 6**

*Numbers of Signifiers and Distractors and Range of Time for Input in UID for Tasks 2.1 and 3.1*

User Interface	Input (YouTube Video)	Signifier	Distractor
Task 2.1	 <p>Presentation: 2.58 min</p>	9	9
Task 3.1	 <p>Presentation: 4.40 min</p>	6	6

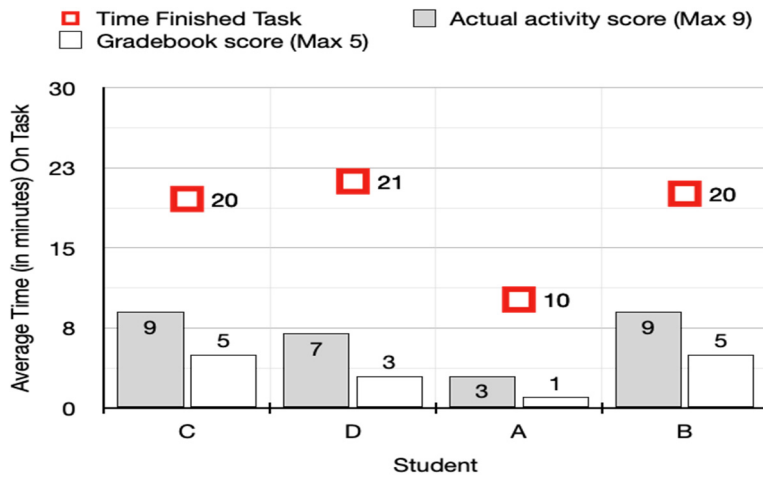
**Research Question 1. What is the level of achievement (GOAL) within the learners' action time on task in IOLP?**

Figure 7 shows the learner's performance on the task laid out in Figure 8. For user interface (UI) Task 2.1, two students, student C (sC, score 5, time on task = 20 min) and student B (sB score 5, time on task = 20 min), achieved the highest score of 5 out of 9. Both students completed the task at the same time. Student D achieved a score of 3 out of 7 with 21 minutes on time on task. Even though the achievement score is 3 out of 7, student D has shown effort in performing the task with 21 minutes on the task. Meanwhile, student A achieved a score of 1 out of 3 with 10 minutes on task, which shows less effort in performing the task.



**Figure 7**

*TASK 2.1 – Behaviourism, Cognitivism, Constructivism and Learning and Instruction*



**Figure 8**

*User Interface (UI) TASK 2.1: Behaviourism, Cognitivism, Constructivism and Learning and Instruction*



Video Source: LearningDctr. (Jun 17, 2010). Behaviorism, Cognitivism, Constructivism & Learning and Instructional Theory [Video]. Website host. URL <https://youtu.be/0YOqgXjynd0>

Drag the words into the correct boxes

1. Behaviorism views the mind
2. In behaviorism learning occurred when..
3. In behaviorism, repetition and reinforcement
4. Cognitivism
5. In cognitivism learning occurred..
6. Constructivism views the mind as a
7. According to constructivism learning is..
8. Descriptive theory
9. Prescriptive theory

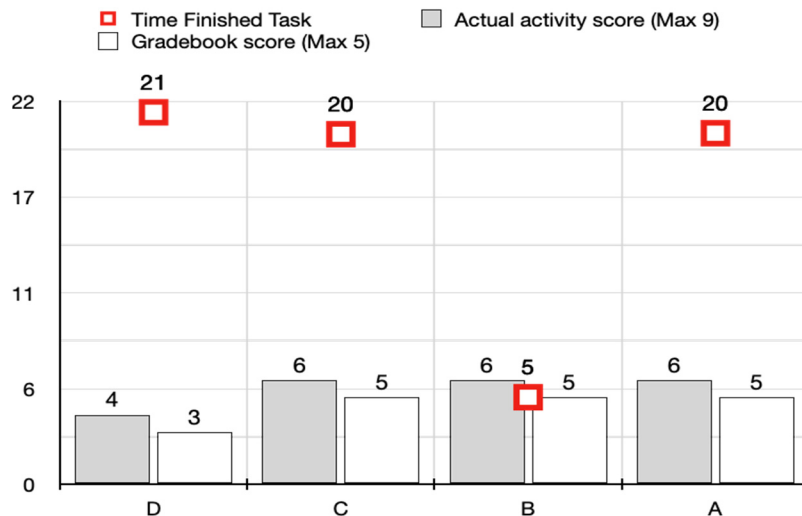
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Figure 9 shows the learner’s performance on the task laid out in Figure 10. For user interface activity 3.1, Students A, B, and C achieved the highest scores, 5 out of 6. Students A and C achieved 20 minutes on task while Student B achieved only 5 minutes. Student D achieved a score of 3 out of 4 with 21 minutes on the task.

The findings show students who achieved the highest scores performed the task in 20 minutes. However, there is a tendency for the students to perform better; for example, the student with the highest score completed the task in 5 minutes. On the other hand, one student with the lowest score of 3 out of 4 spent 21 minutes on the task.

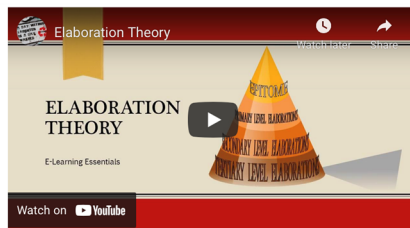
**Figure 9**

*ACTIVITY 3.1: Elaboration Theory by Reigeluth*



**Figure 10**

*User Interface ACTIVITY 3.1: Elaboration Theory by Reigeluth*



All about teaching and learning!. (May 22, 2016). Elaboration Theory [Video]. Website host. URL <https://youtu.be/MXBYiICV5SA>

Inside Elaboration Theory. Drag the words into the correct boxes

1. Elaboration theory views instruction as a thought
2. How did the elaboration theory organize instruction?
3. In Elaboration Theory, planning phase...
4. The theory provides a lot of great tools...
5. Procedural elaboration is used when...
6. Conceptual elaboration is the best for...

- to ensure learners engagement
- science lessons
- is implemented for large, complex units of study
- broadest tasks to a narrower tasks
- concepts are sets of events that lead towards its end
- chunking of information into different layers of instruction



**Research Question 2. To what extent is the learner’s ability to achieve the maximum score within the time on task in IOLP?**

Table 2 shows the effects of response on the signifier to the distractors after performing the task within the time on task in Task 2.1. In Figure 10, the green signifier on distractors represents the correct response, while the red signifier on distractors represents an incorrect response. Students B (sB) and C (sC), who gained the highest scores of 5 out of 5 with 20 minutes on task, show a high thinking ability in understanding the contents presented in the video (as input). In contrast, student D (sD), with 21 minutes on task, still lacks understanding of the content of the video (input), with only seven correct signifiers on the distractors. Student A (sA) who spent only 10 minutes on a task shows two correct responses for the signifier on the distractors.

**Table 2**

*Distribution of Scores on Goal and Action for Task 2.1*

User	GOAL		Time on Task: ACTION
	Score	Max Score	Finished (Minutes)
sC	5	5	2021/04/12 – 19:58
sD	3	5	2021/03/23 – 21:24
sA	1	5	2021/03/02 – 10:16
sB	5	5	2021/03/01 – 20:08

**Figure 11**

*TASK 2.1: Behaviourism, Cognitivism, Constructivism and Learning and Instruction*

Table 3 and Figure 11 show the effects of response on the signifier to the distractors after performing the task within the time on task in Activity 3.1. The findings show that Students A (sA), B (sB), and C (sC) have demonstrated their abilities in providing a correct response on the signifier to the distractors. However, amazingly, Student B (sB) managed to complete the task in 5 minutes and achieve the highest score, compared to Students A and C. Meanwhile, Student D (sD), could respond to four correct signifiers on the distractors in 21 minutes on the task.

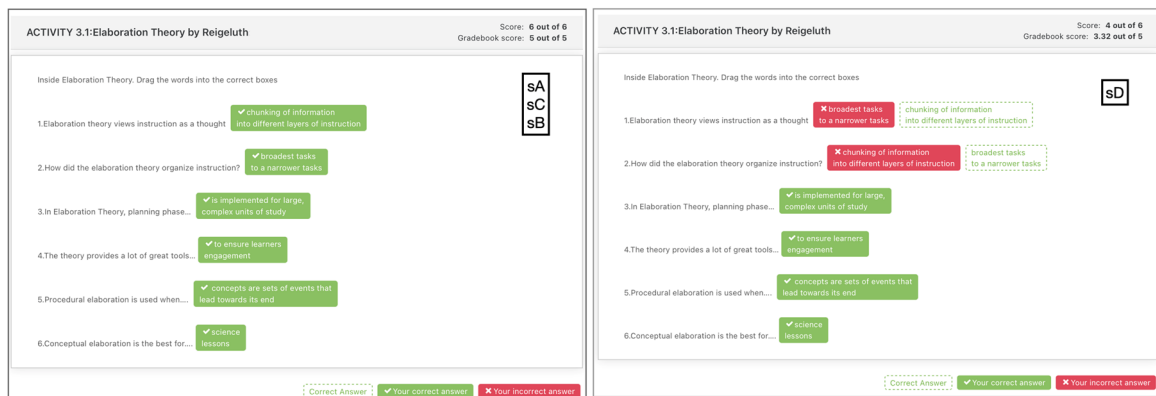
**Table 3**

*Distribution of Scores on Goal and Action for Task 3.1*

User	GOAL		Time on Task: ACTION
	Score	Max Score	Finished (Minutes)
sA	5	5	2021/04/12 – 20:11
sC	5	5	2021/03/26 – 20:17
sD	3	5	2021/03/23 – 21:37
sB	5	5	2021/02/14 – 05:01

**Figure 12**

*ACTIVITY 3.1: Elaboration Theory by Reigeluth*



**Research Question 3. What are the effects of drag and drop (Drag the words) on the learner’s score (Goal) and time on the learners’ task (Action)?**

Time on task is simply the time elapsed between the start and end of a task, usually expressed in minutes and seconds. Logistically, time on task can be measured in many different ways (Albert & Tullis, 2013, p. 75). Ux Collective (n.d.) stated the approach of drag and dropped as the following:

- Drop targets are areas that visually indicate where elements can be dropped.
- Natural movement drag and drop is when other elements move naturally out of the dragged elements.





The UID for drag and drop is set up based on three essential components: input, signifiers, and distractors. Students need to go through the input (video) and digest the information before dragging the signifier on the right distractors. The *start task* (Albert & Tullis, 2013) that portray *natural movement drag and drop* (Ux Collective, n.d.) represent **Goal**. Table 4 shows the distribution of scores on goal and action for Tasks 2.1. and 3.1. The findings show two UID representing two scenarios to fit in the ideas on the *end task* (Albert & Tullis, 2013) that describe the *drop target* (Ux Collective, n.d.) representing action. The two scenarios are built to determine the effects of drag and drop on the learners' goal and action.

**Table 4**

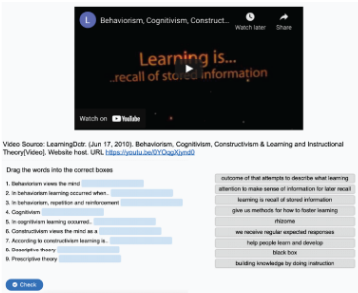
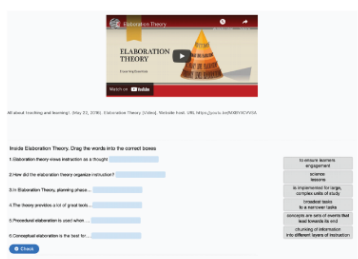
*Distribution of Scores on Goal and Action for Tasks 2.1 and 3.1*

	GOAL			Time on Task: ACTION
	User	Score	Max Score	Finished (Minutes)
Scenario 1 Task 2.1	sC	5	5	19.58
	sD	3	5	21.24
	sA	1	5	10.16
	sB	5	5	20.08
	Average	3.5		17.77
Scenario 2 Task 3.1	sA	5	5	20.11
	sC	5	5	20.17
	sD	3	5	21.37
	sB	5	5	5.01
	Average	4.5		16.67

Table 5 shows the Average Mean (M) Goal and Action for Task 2.1 (Scenario 1) and Task 3.1 (Scenario 2). The results are discussed in Table 6.

**Table 5**

Average Mean (M) on Goal and Action for Task 2.1 (Scenario 1) and Task 3.1 (Scenario 2)

Scenario	Criteria for Measurement	Goal and Time on Task (Albert & Tullis, 2013)	Result
<b>Scenario 1</b>			
	<p>Start Task (Albert &amp; Tullis, 2013) Natural movement drag and drop (Ux Collective, n.d.)</p>	<p><b>Goal</b></p>	<p>(M = 3.5)</p>
		<p><b>Time on task: ACTION</b></p>	<p>(M = 17.77)</p>
<b>Scenario 2</b>			
	<p>End Task (Albert &amp; Tullis, 2013) Drop targets (Ux Collective, n.d.)</p>	<p><b>Goal</b></p>	<p>(M = 4.5)</p>
		<p><b>Time on task: ACTION</b></p>	<p>(M = 16.67)</p>

Inference is based on **Score** (GOAL) and **Finished** (Time on Task – **ACTION**) as discussed in Table 6.

**Table 6**

Result on Goal and Action Based on the Input, Signifiers, and Distractors

User Interface	Input (YouTube Video)	Signifier	Distractor	Results
Task 2.1	Presentation: 2.58 min	9	9	1. More signifiers and distractors will affect the time on task of the learners.
Task 3.1	Presentation: 4.40 min	6	6	2. The learners will perform better with more range of time of learning in input with fewer signifiers and distractors (for drag and drop activities)



## Discussion

The findings yield three important factors that need to be considered in designing the IOLP:

1. The findings show that students with the highest scores (sB and sC) have demonstrated their efforts in performing the task. The student with the lower score (sD) also has shown effort in completing the task. Therefore, the student with less effort in performing the task would not be able to get a good score. The findings are in line with applying adaptive learning attributes in the user interface design that affect the user's task (Kinshuk, 2016).
2. The findings show that students will perform better if they are willing to spend more time going through the input (video) before explicitly reacting to the signifier on the distractors. Some students with high thinking skills may perform better in a shorter time. However, they also need more time to complete the task.
3. The findings show the learners scored lower ( $M = 3.5$ ) and took a longer time in performing the task in scenario 1, which contained nine signifiers and distractors and 2.58 minutes of YouTube video as input. The learners scored better ( $M = 4.5$ ) and took less time in performing the task in scenario 2, which contained nine signifiers and distractors and 4.40 minutes of YouTube video as input. This shows the importance of the three main components, i.e., motives, appropriateness, and effectiveness of message design logic in the IOLP system which will reduce the cognitive overload, as stated by Van Merriënboer (1997) in Van Gog et al. (2010).

## Conclusion

Based on the message design model and logic, the study examined the learner's behaviour on an IOLP. The application of the message design model and logic in the IOLP was translated into tasks with three components: input, signifiers, and distractors. The tasks were then measured through the user's task (ACTION) to observe their GOAL. The design and development of the IOLP was based on the message design model by Pettersson (2012) and Hullman (2004) and the adaptive learning attributes by Kinshuk (2016). The IOLP test was based on Albert and Tullis (2013). The findings will benefit postgraduate online learners in building better understanding of certain concepts without the help of their lecturer. Even without a lecturer, the student who put in more effort in performing a task in the input gained the highest score, compared to learners who made less effort. Adapting the ideas in the design process leads to creating an IOLP system that will also benefit instructional designers in designing self-instructional materials for online learning. The findings will also help instructional designers to explore interactive online learning packages, specifically drag-and-drop applications. This is a small study on conducting user testing on the IOLP for online learning. More analysis is needed on a large sample of respondents on the effects of the content type in H5P on the learner's performance and learning time.



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**SUB-THEME:**  
New Norms and Emotional  
Well-Being





## **A Case Study: Issues, Challenges and Coping Strategies of Student-Teachers During the COVID-19 Pandemic**

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### **Abstract**

*This study explores the issues, challenges and student-teachers' coping strategies of teaching in a classroom setting during this challenging time of the Covid-19 pandemic in a new instructional setting of online classes that replace the face-to-face classroom interaction. Purposeful sampling was employed in studying 24 student-teachers' reflective journals through content analysis. The findings showed that most student-teachers were positive and able to cope with the issues if enough time were given to them. Based on the themes emerging from the text analysis, class management and class organisation were not the main issue. However, other main issues such as Internet accessibility and full cooperation from the students were more challenging and the actual learning engagement for the receiving end appears to be compromised due to some teachers who were inadequately trained for online instruction.*

**Keywords:** *Practicum, Student-Teachers, Coping Strategies, Issues in Teaching and Learning*

## Introduction

Article 26 of the Universal Declaration of Human Rights states that, “Everyone has the right to education.” As we move toward realising this declaration, teachers need to be well-trained and qualified to provide quality education to contribute to national progress. The teaching career is considered professionally certified if teachers go through formal practicum training in any accredited teaching institution. A teaching practicum course comprises both theoretical and practical aspects (Qazi *et al.* 2012). A student-teacher or pre-service teacher needs to carry out the teaching practicum as a requirement to complete the practicum course in his/her respective higher education institution. A teaching practicum provides student-teachers an opportunity to apply educational philosophies, theories, approaches, and strategies into the actual classroom setting. Thus, these practices will give student-teachers hands-on experiences for effective teaching delivery in schools (Johnson *et al.* 2017).

However, due to the COVID-19 pandemic, a new norm of teaching delivery has emerged. Almost all educational institutions have been instructed to close to curb the spread of the disease and its influence in teaching and learning environment is inevitable. This scenario has brought about a sudden shift from the face-to-face classroom to online learning, which has necessitated adjustments by teachers and students (Chandra, 2020). Thus, the subsequent discussion will look at OUM student-teachers’ observation in their reflective journals in online learning, the challenges they faced in online learning, and coping strategies used to overcome problems during the pandemic.

### Student-Teachers’ Practicum at Open University Malaysia (OUM)

The teaching practicum is an important component in teacher training in educational programmes. Other terms used for teaching practicum include practice teaching, field experience, apprenticeship, practical experience, and internship (Gebhard, 2009). The main purpose of the teaching practicum is to allow student-teachers to apply their theoretical knowledge into practice in a real school setting (Rosinah *et al.*, 2019). In addition, student-teachers are supervised by co-teachers at schools and a supervisor from OUM during their practicum. To perform well in the practicum is one of the determinants of the success of an education programme offered by higher education institutions (Haigh *et al.*, 2013).

Schön (1987) believes that teaching practice is an important process in problem-solving in its own right. Based on this idea, practitioners are expected to solve the problems or issues that they face during lessons by applying theories and teaching models that they have learned. Through proper supervision by co-teachers or supervisors, student-teachers can assimilate and accommodate teaching practices and manage problems encountered. Some of the problems faced by student-teachers during the practicum include classroom management, time management, mixed-ability classes, and difficulties in using technology (Köksal, 2019). However, his findings were based on face-to-face student-teachers.





## Reflective Journal Practices

The student-teachers' ability to reflect is very important for their teaching development. Student-teachers can reflect and build on this skill so that they can discuss and share their teaching experiences (Freeman, 2011). Thus, through a reflective process, student-teachers can identify problems concerning teaching techniques and approaches as well as accept their responsibility in teaching and learning. Shulman (1991) termed reflection in education as, "reviewing, reconstructing, re-enacting, and critically analyzing one's own and the class' performance, and grounding explanations in evidence" (p. 15). Post-practicum teachers increase their awareness of teaching and learning through reflective practices to understand the phenomena observed and make decisions based on their experiences (Rodgers, 2002).

Research has shown that reflective practices improve teaching through reflective thought (Risko *et al.*, 2002). As indicated by Habib (2017), possible advantages of reflective practices include the following: (i) it changes the way we do our work for the better, (ii) it provides opportunity to refocus and continue good practices, (iii) it challenges practices that are taken for granted and provide room for improvement, and (v) it helps to develop emotional intelligence especially when it involves previous feelings as part of reflection. In addition, Chi (2010) suggests the view that reflective practices encourage autonomy in learning and provide means for sharing anxieties concerning classroom experiences. Further, the reflective practice is considered a self-assessment tool to evaluate educational philosophy and teaching approach (Hume, 2009).

Interestingly, Sileo *et al.* (1998) have identified several types of journal writing. These include: (i) diary entries: reflecting on sharing experiences, methods used, values, assumptions, and belief systems; (ii) notebook entries: reflecting on course content; (iii) dialogue entries: reflection on how to communicate thinking with facilitator; (iv) integrate entries: reflecting on generating knowledge to support or contradict ideas; and (v) evaluative entries: reflecting on self-assess and analyse thoughts and actions. On the other hand, Lee (2008) classified journal writing into four types of journals that include (i) dialogue journals, which is related to interaction of responses between teacher and student journals; (ii) response journals, which engage students' personal reactions on educational activities; (iii) teaching journals, which engage students' thoughts and reactions on teaching; and (iv) collaborative or interactive journals, which document the interactions between groups of students.

Journal entries may enable teaching staff to maintain an active dialogue with their students (Rodgers, 2002) and provide them with insight into how well practitioners reflect on their experiences (Bean & Stevens, 2002). Furthermore, teachers develop awareness on the relationships between theory and practice, and at the same time systematically reflect on growth and actions within the classroom setting (Taggart & Wilson, 2005).

Reflective journals have been used as a research technique to acquire evidence of learning theories such as constructivism (Lindroth, 2015). Moore's findings (2003) have shown that while pre-service teachers understood the value of the learning educational theory, their focus shifts from theory to issues of time management, classroom management, and lesson planning. Results also reveal missed opportunities for mentor-teachers and university supervisors to create reflective responses to classroom experiences to link theory to practice. Moore stated opportunities to "examine the theoretical constructs behind the pedagogical decisions made by the pre-service teachers were often overlooked in lieu of procedural concerns" (p. 40).



Thus, based on the information given above, it can be concluded that reflective practice has several reasons such as to focus on performance improvement, reflect on learning as it is happening and past experiences, review multiple perspectives on a particular subject or setting, identify alternatives for the best answers, promote learning and self-evaluation, and goal-setting to bring about change.

## Online Learning

Embedded in the models of reconstructionism and humanism, online learning is mainly based on connectivism (Jung, 2019) and its attempts to minimise problems to provide equal opportunities for lifelong learners (Gaskell, 2015). E-learning is the use of the Internet beyond the classroom wall and developing materials (Korkmaz & Toraman, 2020). In e-learning, the instructional process, learning engagement, innovativeness and flexibility can be observed. E-learning is coined as the learning experiences in synchronous or asynchronous environments using different tools (e.g., mobile phones, laptops, etc) with Internet access. Student learning can take place ubiquitously (Singh & Thurman, 2019) even though it is with its own limitations.

Early during the pandemic, several institutions began developing portals or online tools that included a variety of resources and teaching strategies meant to help schools make the rapid change from onsite to offsite instruction. Obviously, this change has led to student-teachers having to adapt to online delivery. COVID-19 has led practitioners to find ways to embark on new pedagogical approaches, content delivery, engagement activities, and assessment (Pelletier *et al.*, 2021) showcasing practices teachers in schools.

## COVID-19 Challenges and Consequences in Online Learning

The term “quality” as it relates to digital teaching and learning has often been highlighted (Pelletier *et al.*, 2021). The COVID-19 pandemic has served as the focal point to discuss the quality of teaching delivery and this will be a challenge for student-teachers who must make adjustments during this unprecedented time. Online instruction at this time needs to combine quality online digital learning, which is quite well accepted (Al-Kumaim *et al.*, 2021) by practitioners due to the closure of schools. As a result, many schools have gradually changed focus to quality online learning to ensure that delivery is based on a student-centred approach, learning outcomes is achieved, delivery is accessible to learners, and teaching delivery is effective.

Schools provide students with social activities and interactions. If educational activities via online learning is not planned and delivered well during this pandemic, then there is the possibility that students will miss social interaction-based activities necessary to mould them into healthy young adults, especially underprivileged students, who are affected by school closures. This setback should be addressed tactfully if COVID-19 persists and relevant initiatives should be taken to ensure e-learning delivery is carried out effectively. Even though the time frame for school suspension will be short-lived, it may cause psychological distress and depression at various levels (McCarthy, 2020).



With regards to the above scenario, this study explores the issues, challenges, and student-teachers' coping strategies for teaching in a classroom setting during the COVID-19 pandemic via an e-learning setting of online classes through their weekly reflective journals, while also addressing the following research questions:

- i. What observations do student-teachers make during the practicum based on the format given?
- ii. What are the challenges faced by in-service preschool teachers teaching online?
- iii. How do student-teachers overcome the challenges in relation to teaching and learning online?

### **Method**

The key purpose of this study was to explore student-teachers' observations on teaching and learning processes during the practicum, challenges faced while teaching online, and how they overcame the challenges encountered in relation to teaching and learning.

### **Design**

This study employed a qualitative study using content analysis through student-teachers' practicum reflective journals. It focused on phenomenological research designs that investigate the feelings, perceptions, judgments, and beliefs of the participants about their experiences (Patton, 2002). Considering the scope of the study, a qualitative phenomenological research design was employed to gain a more holistic and complete picture of the teaching practicum experienced by prospective student-teachers in Mode 1 (student-teachers with more than one year's experience).

### **Setting**

During the COVID-19 pandemic, teachers were faced with hybrid learning. The introduction of online learning delivery during the Movement Control Order (MCO) in Malaysia was inevitable due to the closure of teaching institutions to curb the spread of the viral infection. Consequently, this unexpected change compelled OUM student-teachers to conduct the practicum through online teaching from their homes. In addition, to complete their teaching practicum, OUM student-teachers were required to prepare an e-portfolio that focuses on three areas, which include school infrastructure, curriculum, teaching and learning and journal reflection. Further, student-teachers were required to perform daily, and weekly reflection stipulated in the HPGD4606 Practicum Guideline used at OUM. Prior to that, practicum student-teachers needed to take eight courses to complete the Postgraduate Diploma in Teaching (PGDT) programme. Upon completing the practicum, student-teachers would graduate and gain recognition as qualified trained teachers from OUM.



## Participants

A total of 24 female student-teachers' weekly reflective journals were collected based on convenient sampling. They enrolled in the PGDT programme for the May 2020 – May 2021 academic year. These weekly reflective journals were analysed and measurement for reliability was carried out for theme consistency between the two. All these student-teachers are in Mode 1 practicum, which means they have more than one year of teaching experience in schools. In the phenomenological research design, identifying the most appropriate and accessible participant group is crucial as the focus of the study is the participants' experiences and what they say about them.

## Data Collection

Data collected were based on student-teachers' weekly reflective journals. The practicum lasted for four weeks for Mode 1 student-teachers. Student-teachers were briefed on how to write reflective journal through a Google Meet session to help them with the reflective journal in the first concurrent three meetings with their practicum. Student-teachers were given a template and examples on how to write their weekly reflective journal, which can be found in the OUM HPGD4606 Practicum Study Guide. The reflective journal was adapted from Wright & Hughes's (2017) reflective journal guide, which includes: observation, evaluation, short-term and long-term action-based teaching and learning, school, students and co-teachers, and problems faced. Further, they were encouraged to observe the methods they used in teaching, classroom management, school, students, and the co-teachers, as well as the challenges met. Student-teachers completed their reflective journals in the e-portfolio upon after their four weeks' practicum stint in their respective schools was completed and submitted their work via a link provided by OUM. Researchers compiled all the weekly journals and carried out content analysis.

## Validity and Reliability

The codes and the themes were re-analysed by the second researcher to provide the "intercoder agreement" suggested by Creswell (2014). After determining the similarities and differences, an agreement was reached, and the validity of the research was ensured through the formula suggested by Miles & Huberman (1994). The consistency between encoders was calculated using the formula (reliability = number of consensus / number of compromises + no compromise) proposed by Miles & Huberman (1994) to determine the reliability of consistency between the encoders.

## Data Analysis

The reflective journals were analysed manually and read twice. This analysis was carried out through thematic content analysis, which refers to a process of working with raw data to identify and interpret key ideas or themes (Mathews & Ross 2010). The data from each participant's weekly reflective journals was observed as a whole process congruent to the themes. These codes were used to create general themes in accordance with the research questions. In the demonstration of data analysis, the researchers used pseudonyms instead of the respondents' actual names.



## Results

In this section, the findings of the research based on the student-teachers' reflective journals were discussed separately based on the research questions of this study. A total of 24 female student-teachers' weekly reflective journal were reviewed twice and analysed. The results section will thereon use the term '**Respondent or R#**', which actually refers to the subject of this study, i.e., the student-teachers.

### Research Question 1: What Observations do Student-Teachers Make Base on the Practicum Format Given?

Based on the weekly reflective journal, three main themes were observed to answer the first research question in relation to teaching and learning process. The **THREE** main thematic categories observed include planning (six codes), implementation (25 codes), and evaluation (seven codes). It seems that the student-teachers' observations were more focused and reflected more on lesson implementation, followed by evaluation and planning. The full summary of the themes observed is shown in Table 1.

**Table 1**

*Themes and Sub-themes for Student-Teachers' Observation*

Themes	Sub-themes
Teaching and learning process:	<ul style="list-style-type: none"> <li>• Planning effective lessons</li> <li>• Planning systematic lessons</li> </ul>
Planning	<ul style="list-style-type: none"> <li>• Preparing learning materials</li> <li>• Planning fun and focused lessons</li> <li>• Planning creative lessons</li> <li>• Planning lessons in sequence (easy to complex)</li> </ul>
Implementation	<ul style="list-style-type: none"> <li>• Logistic behind the screen (students' attendance)</li> <li>• Keeping track of students' posting</li> <li>• Giving assignment</li> <li>• Giving meaningful feedback</li> <li>• Open communication</li> <li>• Student-centred</li> <li>• Provide reinforcement</li> <li>• Lesson modification</li> <li>• Approachable lessons</li> <li>• Good communication</li> <li>• Techniques in questioning (HOTs)</li> <li>• Use of instructional strategies</li> <li>• Patience</li> <li>• Problem-solving approach</li> </ul>

- Commitment in teaching and learning
  - Consolidating ideas
  - Challenging students' minds
  - Clear instructions
  - Group work
  - Sparks student interest
  - Differentiated learning/instruction
  - Professionalism in class
  - Familiarisation with students
  - Using authentic information
  - Encourage imagination
- 

**Evaluation**

- Reading students' feedback
  - Reinforce students' understanding
  - Positive reinforcement
  - Students' work process evidenced
  - Provide a grade system with students' participation in online learning
  - Peer group assessment
- 

**Theme 1:** Student-teachers' practicum observation on lesson planning.

Respondents were concerned about preparing a good lesson plan so that students' engagement could be ensured. For example, R1 said that:

*"I planned to do a Flipgrid assignment where students would introduce themselves, say some of their favourite things, and explain how they keep themselves well. It seemed like a great idea that was simple and easy enough to do for all of them in Year 8 and I've done similar assignments with those in Years 3-5 in the past with ease."*

**Theme 2:** Student-teachers' practicum observation on lesson implementation.

Respondents were concerned about differentiated learning when implementing their lesson. They believed that good structure in implementation will help students complete their assignment in time. For example, R7 said:

*"I need to plan the lesson for the mixed-ability students in Years 7, 8 and 9. For those in Year 10, 11 and 13, I will need to provide a good structure for them to recognise their strength in art and drill their skills in the technical part. I will also need to ensure they are respecting the deadline for submitting the coursework as all the students' coursework will be packed and sent to the United Kingdom for CIE examiners to check and grade before April 2021."*



### Theme 3: Student-teachers' practicum observation on evaluation.

Respondents were of the view that getting students' timely response will promote student learning. Thus, in order to help with good evaluation, they provide good feedback, allow students to make mistakes and give rewards. For example, R5 said that:

*"Ms. Alice has shared a document via Google sheet on what the students did well, what they should practise in the future, how to improve, and responses from the students. This document via Google sheet will help the dialogue between students and teachers, respond to an assessment that helps student attainment, help students learn from their mistakes and repeat them less often, as learning from mistakes promotes lifelong learning and can be useful in judging the effectiveness of a lesson. Once students can participate in this learning process, they will be rewarded with stars or house points. I will be applying this into my subject as this will definitely makes me to be more organised in checking the students' ability..."*

### **Research Question 2: What are the Challenges Faced by In-Service Preschool Teachers Teaching Online?**

Based on the content analysis, the weekly reflective journal has identified **FIVE** themes to answer the second research question. The three main themes are differentiated learning (two codes), teaching approaches (one code), students' learning motivation (three codes), content delivery (six codes), and teaching behind the screen (three codes) in relation to challenges faced by respondents in teaching online. The full summary of the themes observed is shown in Table 2.

**Table 2**

*Themes and Sub-themes for Students-Teachers' Challenges Faced Teaching Online*

Themes	Code
Differentiated learning	<ul style="list-style-type: none"> <li>• Encouraging deep learning</li> <li>• Different levels of language proficiency among students</li> </ul>
Teaching approaches	<ul style="list-style-type: none"> <li>• Uncertainty using hybrid learning model</li> </ul>
Students' learning motivation	<ul style="list-style-type: none"> <li>• Getting students to take ownership of their own learning through hybrid learning</li> <li>• Maintaining students' full learning engagement or attention</li> </ul>
Content delivery	<ul style="list-style-type: none"> <li>• Providing good structure for differentiated learning</li> <li>• Finishing topics using hybrid learning</li> <li>• Gauging sufficient content for each lesson</li> <li>• Inability to control speech rate in delivery</li> <li>• Pacing lessons delivered</li> <li>• Time management in hybrid learning/ "clone learning"</li> </ul>
Teaching behind the screen	<ul style="list-style-type: none"> <li>• Uncertainty about conducive learning at home</li> <li>• Uncertainty about what is learning "behind the screen"</li> <li>• Controlling space, equipment, time, environment at home</li> </ul>



Theme 1: Challenges experienced by student-teachers' in relation to classroom differentiated learning.

According to their reflections, one of the challenges experienced by the student-teachers was dealing with differentiated learning. For example, R4 explained it in the following:

*“As a teacher, I need to focus on students who show less participation and are so quiet in the class. Through my observation, some students would not want to speak or respond to the teacher, but they are more comfortable using the chat box. I need to make those students feel more confident in sharing their ideas, answers and opinions with the rest of the class.”*

Theme 2: Challenges experienced by student-teachers' in relation to teaching approaches.

Respondents believed it is important to relate content delivered with students' experiences. In addition, they were convinced that this will promote authentic learning. For example, R22 said that:

*“Whilst students found it challenging to remember all the structures of the eye, trying the blind spot exercise and pupil reflex activity made their knowledge more real. This is something to keep in mind when planning lessons or set inductions. Try as much as possible to relate what is being taught with the students' daily life.”*

Theme 3: Challenges experienced by student-teachers' in relation to students' learning motivation

Respondents felt that to consistently motivate students' learning and to keep them on their toes during learning was not easy. For example, R13 said that:

*“Lessons became a little bit dull as they progressed. Even though the teacher puts in a lot of thought in preparing a lesson for students to enjoy learning, not all students feel the same way.”*

Theme 4: Challenges experienced by student-teachers' in relation to content delivery.

Respondents agreed that completing different units in their lesson with a large number of students was difficult. In addition, keeping track of the new postings they received from students were a big challenge too. For example, R1 said that:

*“The biggest challenge for Virtual P.E. has to be the logistics behind it all. I teach over 200 students (Secondary and Primary Schools), which turns out to be 10 different sections. Between creating new curriculum, keeping track of posting new assignments, giving meaningful feedback, and keeping an open communication with families, this has been extremely tough to manage.”*





**Theme 5:** Challenges experienced by student-teachers' in relation to teaching behind the screen.

Respondents were concern that students were more passive “on the other side” of the screen in online learning. For example, R14 said that:

*“As this is the second week of online learning, I noticed students become passive during the class discussion especially Year 11 students.”*

### **Research Question 3: How do Student-Teachers Overcome the Challenges in Relation to Teaching and Learning Online?**

The third research question was exploring student-teachers' ways of managing the challenges or issues in online teaching and learning. The **THREE** main thematic categories were observed in the weekly reflective journal. The thematic categories identified include practicing hybrid routine (19 codes), getting back up support (seven codes) and practicing professionalism (seven codes) were observed. Table 3 shows the full summary of the themes and codes related to how student-teachers overcome challenges in online learning.

**Table 3**

*Ways Student-Teachers Overcome Challenges in Online Teaching*

Themes	Code
Practicing hybrid classroom routine	<ul style="list-style-type: none"> <li>• Set new expectations</li> <li>• Give rewards to students for their achievement in classroom</li> <li>• Controlling noisy atmosphere during hybrid lesson/manage interruptions</li> <li>• Give clear instructions</li> <li>• Provide rules before online lessons</li> <li>• Revisit lessons or lesson plans/ strategies/ techniques</li> <li>• Ensure students' full cooperation</li> <li>• Provide time for students' activity or thinking</li> <li>• Use real image for clear understanding</li> <li>• Relate students previous experience</li> <li>• Probe students with challenging questions</li> <li>• Attentive to students' questions</li> <li>• Teacher facilitates learning</li> <li>• Lessons should be prepared in advance</li> <li>• Relating lesson to students' real life</li> <li>• Create stimulating discussion</li> <li>• Intersperse lessons with activity</li> <li>• Allow students to express their ideas</li> <li>• Improvement through reflection</li> </ul>



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Getting back up support	<ul style="list-style-type: none"><li>• Communicating with parents to complete students' tasks</li><li>• Observation activity among teachers</li><li>• Commitment from teachers, students, and family.</li><li>• Team teaching approach</li><li>• Use "master" students to lead the class discussion</li><li>• Encourage cooperative or collaborate work</li><li>• Encourage students' learning</li></ul>
Practicing professionalism	<ul style="list-style-type: none"><li>• Time management</li><li>• Adapting to hybrid learning environment</li><li>• Ensure smooth transition of lesson</li><li>• Teacher need to be competent and knowledgeable</li><li>• Teacher has a positive mind-set</li><li>• Plan and test lesson if it works</li><li>• Teacher shows positive vibe in classroom</li></ul>

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Theme 1: Ensuring the adaptation to hybrid learning classroom routine

Respondents' views revolved around being positive about adapting online teaching delivery because it was much easier. For example, R1 said that:

*"My department has always had a combination of online learning as well as application in the gym. This has made our transition to virtual learning much easier. I also anticipate our transition to the hybrid approach fairly smooth as well. I loved my virtual meetings with my students. I will absolutely continue to do that when I return to in-person teaching. I also love the use of Flipgrid for students to submit evidence of learning."*

Theme 2: Providing good backup support

Respondents thought that obtaining support from friends, parents and other staff helps in promoting learning. For example, R12 said that:

*"Small group discussions shall be arranged for higher- and lower-ability learners to work collaboratively. I should let the students to explain the comprehension before allowing them to answer the questions."*

Theme 3: Maintaining good teaching professionalism

Respondents indicated that clear instruction in teaching delivery is important based on students' ability. For example, R13 said that:

*"With clear and simple instructions, students will adapt faster. Keep it simple and it will be easy to understand."*



## Discussion

### Learning Through Observation

Reflective journaling is part of self-evaluation and an important learning post-lesson process to improve student-teachers' practices. This study entails a cognitive apprenticeship theory that emphasises the importance of the process to master a skill for an apprentice (Skagen 2004). The development of apprenticeship theory originates from constructivist approaches in learning. In addition, this study was also consolidated by connectivism (Siemens, 2005), which advocates that connections and the way information flows that result in knowledge existing beyond the individual. Siemens (2005) also argues that "connectivism presents a model of learning that acknowledges the tectonic shifts in society where learning is no longer an internal, individualistic activity... Learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a database)."

The analysis of this study shows student-teachers are highly aware of the importance of planning, implementation and evaluation in teaching and learning as indicated by Köksal (2019). Reflection on planning, implementation and evaluation is part of the teachers' workload, in which these three processes in teaching overlap. Even though student-teachers define their practicum knowledge as a means to improve at their job, they deal with the daily challenges of teaching and seek to refine their professional practice. During the planning of their lessons, student-teachers are involved with thinking and writing in detail, which demands the production of effective teaching. However, there is tendency for student-teachers to incorporate their socio-cultural experiences in the pedagogical setting. Despite the observation made, student-teachers seem to accumulate self-confidence teaching in an online classroom with diverse settings and student backgrounds.

### Challenges Faced in Online Learning

Based on the themes that have emerged in this study, it seems that challenges faced by student-teachers were basically focused on differentiated learning, teaching approaches, motivating students to learn, content delivery, and the difficulty teaching behind the screen. These findings were indicated by Köksal's (2019) findings.

The findings of this study seem to show that more than half of the student-teachers considered their students a major factor for the teachers' success in online learning. Many student-teachers shared positive observation of student behaviour, such as "attentive, well-behaved, good engagement" and many others. Teachers shared encouraging and positive experiences with their students throughout the teaching process.

However, some negative behaviour among the students was also observed, such as "chatty, not paying attention, asking too many questions, easily distracted" and others. Interestingly, these teachers are not weighed down by such negativity. Instead, they soldiered on with valid and authentic solutions. In fact, all of the teachers could find ways to view the minor setbacks simply as challenges. The teachers used different teaching method to suit the students' behaviour, like introducing games and fun activities/homework to promote good behaviour. Teachers also allocate good timing, during which students could discuss and talk during the lesson. This approach is in line with discussions by Kebritchi *et al.* (2017) and Zhuo Wang *et al.* (2021), who promoted the notion that it is important for instructors (teachers) to recognise and support the nature of learners' online participation. Online listening is a form of active learning in which learners should be engaged with the content, own thoughts and reflection (Hrastinski, 2009).

From the data analysis, it was also found that only several teachers highlighted issues on class management. These issues include time management of online lesson, organisation of online activities and managing students online. It is quite difficult to control the students online due to the presence of the technology barrier. As students are mostly located in their own homes, the environment is not very conducive for promoting a classroom environment.

As it is, we know that behaviour at home is different from behaviour in a formal academic setting. There are many disruptions at home, such as interruptions from siblings or pets, traffic noise, especially if the location is near roads or highways, postal or delivery services, and many others. It is quite impossible for a teacher on one end to control the students' behaviour on the other end, unless it is achieved with the help of parents or patrons in the house. An important factor that teachers can consider to help students is learner readiness as proposed by Hung *et al.* (2010), who elaborated that to assist better learning in an online class, the teacher should look at several dimensions like self-directed learning, motivation for learning, computer and Internet self-efficacy, online communication self-efficacy, and learner control. Hence, learners who are highly motivated to learn at their own pace would probably enjoy online learning more than those who have less efficacy or motivation.

In addition, the data also showed that teachers are well aware of students' capabilities and proficiency in class and use this knowledge to plan, re-plan and modify lessons accordingly. The majority of teachers believe in changing the timing, activities and teaching style to adapt to issues regarding class management. Current discussions in teaching and learning are very focused on technology and multimedia. From the data collected, few teachers and students have had some issues related to technology. The issues include familiarity, limited knowledge and interruptions related to Wi-Fi signals, and online platform functions. From the data, teachers confessed that although it is very interesting to use new and interactive application or games, the success rate might not be as positive as expected due to students' unfamiliarity with them. As a result, teachers should be able to find different applications or games to promote the same understanding or achieve the learning objective(s). The teachers in this study seem to show good digital literacy skills and awareness, which is a good addition to assist students' learning. Nonetheless, it is essential to enhance the knowledge and implementation of digital learning among the students too, not just the teachers (Hassan *et al.*, 2020).

### **Coping Strategies in Online Learning**

One way of coping with challenges faced in online teaching is employing authentic online lesson delivery to allow student-teachers to improve on their teaching deliveries. Moreover, student-teachers' lessons are very much influenced by their own psychological and philosophical beliefs too. Thus, from this perspective they were able to consolidate their understanding on the teaching and learning.

Student-teachers' reflective journals reported that obtaining students' feedback seems to help them improve on their teaching techniques and strategies and find ways to better motivate students. In addition, they were able to plan effective lessons and students successfully enabled to be more interested in the lesson. In order to further improve, student-teachers could improve their teaching delivery through the perspective of the Bandura learning theory.



Collaborating with senior teachers, building confidence as a teacher, developing tolerance and patience towards students, and having awareness of teachers' roles in the classroom act as an eye-opening experience for improvement and provides empathy and motivation towards each other in facing the challenges in the classroom. In the narratives of student-teachers, they can develop their own professional identity through good time management, adapting online learning delivery, ensuring smooth transition of lesson, becoming competent and knowledgeable, having a positive mind-set, revisiting lesson for improvement, and providing a positive vibe in classroom. Finally, it should be stated that student-teachers are aware that teaching as a profession requires more than being an expert in a particular subject matter. In addition, patience towards students' attitudes is a self-rewarding experience that promotes student-teachers' positive feelings and attitudes in online teaching.

### **Conclusion**

In conclusion, this case study has discussed reflective practices by student-teachers on their observation, challenges faced and coping strategies in online teaching during COVID-19. Student-teachers' observations focused mainly on lesson implementation, while challenges faced mainly revolved around the "unknown behind the screen." In developing coping strategies during this challenging time, student-teachers need a friendly, supportive online environment to allow them to deal with the difficulties of good Internet access. One future prediction is that as student-teachers become more computer-savvy, it will also be the time to become more effective and embrace hybrid or "clone" learning. Online teaching is not an option anymore. It is necessary and teachers must be ready in order to deliver quality instruction be it face-to-face or via e-learning. Reflective practices provide student-teachers with opportunities to connect theory with practice and enable them to strive professionally and ultimately, translate this into student learning.

The findings of this study have implications on practicum processes in relation to pedagogical approaches. Professionalism and refining knowledge through reflective thinking encourage student-teachers to provide well-executed lessons delivery. It can be concluded that student-teachers were very positive towards online teaching learning and could manage their anxieties well using online learning as they received a substantial online exposure. Since this study used a qualitative approach, the findings cannot be generalised. Nevertheless, the main focus of the study was to engage an in-depth understanding of teaching and learning, specifically on the reflective practice of student-teachers rather than a generalisation of the results. Thus, based on this study, it can be concluded that the adoption of online learning is imperative and will be a norm for many years to come. Teachers will need to continuously and creatively work on how to improve online teaching and learning.



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## **Sustainability in Open Distance Learning (ODL) Education: Canvassing the Right Market Segmentation and Effective Advertising Strategy**

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### **Abstract**

*This paper addresses the perceptions that lead prospective learners' to favour the right market segmentation and effective advertising messages in Open Distance Learning (ODL) advertisements. A descriptive study was conducted among the prospective ODL learners in Malaysia between January to March 2021. A self-administered questionnaire was utilised to gather data from 314 respondents throughout that period. Analysis of this study was conducted using SPSS Version 22 and SMART-PLS Version 3.2 to examine the reliability and validity of the questionnaire, thus, determining the significance of every independent variable and dependent variable in this research. The result obtained reveal that majority of the respondents give prominence to accessibility than substantiality between the ODL institution and market segment. On the other hand, the respondents place significance on the element of reminder and persuasive messages that received their attention towards the ODL institutions. The standardised path coefficients showed that accessibility, reminder and persuasive types of messages are the significant predictors of sustainability of ODL institutions whereby substantiality has been perceived by the respondents as not significant. Therefore, it is noteworthy to develop creative advertisements with emotional attachment in order to attract the audience's attention and fit in the context of their opinions and beliefs. As a whole, the results from this study help the ODL institutions to be more focused in designing their advertising messages as well as understanding market needs. The findings have strong implications to both academic and the ODL institutions particularly in the aspect of institutional sustainability focusing on the effective market segmentation and the right strategy of advertising messages.*



**Keywords:** *Accessibility, Market Segmentation, Open Distance Learning, Sustainability*

## Introduction

The recent development of tertiary education business indicates the importance of effective implementation of marketing strategy (Bao, 2020). Open Distance Learning (ODL) has gained momentum in the past two decades due to the remarkable global growth and expansion of the higher education sector (Faridi & Ouseph, 2014; Kalman, 2017; Latchem, 2018). Higher Education Providers (HEPs) that provide ODL education have aggressively sought to gain competitiveness through the development of their capabilities and resources, especially with the increasing competition from the traditional and other ODL institutions which are also aiming for business sustainability (Blaschke, 2012; Park, 2011). ODL institutions are continuously searching for more practical ideas to create and maintain sustainability through strategic competitive advantage. These effort are done by leveraging available resources in the existing ODL environment such as institutional reputation, technological advances, e-learning modules and learning centres (Latchem, 2018; Munira & Fadzil, 2008; Richter & McPherson, 2012).

The Covid-19 pandemic has witnessed the rising trend that favours ODL in becoming the new learning platform (Bao, 2020; Favale et al., 2020). Here, the urgent imperative to 'move online has moved the learning process beyond the existing physical classroom environment that brings to life learning experiences in and outside the classroom. ODL offers numerous benefits such as a personalised lifelong learning programme, valuable social networking, time and cost saving for both institutions and students. In fact, many conventional HEPs have advised their students to sign up for online courses in the effort to initiate a new learning culture (QS Rankings, 2020). In fact, the number of online programmes is also showing an increasing trend ranging from certificate to PhD level and the choices of programme depend on the interests of the prospective students. This trend also includes an increasing number of programmes that received accreditation from the regulatory bodies. Therefore, creativity is very important for universities to promote their programmes to the public.

The decision to promote ODL programmes must be well thought out by the university. This is because the budget spent on advertising must bring in satisfactory return. Therefore, several decisions must be put into consideration on the aspects of the strength of the selected media channel, words of messages utilised as well as the target selection of target market segment. This is to ensure satisfactory responds from the target market. The choice of media and type of messages must also take into account its exclusivity (Oh, 2013). This is to portray a good image of the ODL institution and its programmes. Creative messages will add value to the advertisement and change the users' perception. However, as the business environment is becoming more competitive, more companies are developing a closer harmony between the advertisement and what the consumer wants to know.

To date, there are limited studies linking different types of advertising messages and market segmentation focusing on the intention of working adults to pursue their studies as ODL students (Bao, 2020; Favale et al., 2020). Generally, any type of business organisation will identify the appropriate market segment and decide which one to serve. Regardless of the type of market segmentation used by the organisation, the primary goal is to create a marketing advertising programme that fits the context of a particular segment (Kotler & Armstrong, 2018).



There are several methods that can be adopted in developing market segment (Grover et al., 2011). Initially, a business organisation will determine which segment to serve and how substantial the size is. Some business organisation will combine more than one variable to obtain a clearer and well-defined target group. However, not all the segmentation schemes are useful (Kotler & Armstrong, 2018). In order to make it useful, a business organisation must focus on the criteria of effective market segmentation such as substantiality and accessibility (Donovan & Henley, 2012; Lamb et al., 2011). This is to boost students' intake hence contributing towards the sustainability of the business.

From another perspective, ODL institutions are also searching for the best type of messages to attract the prospective learners' attention. Among the important strategies is that the institution will start by identifying the motives of the target market. The way the prospective learners perceive ODL institutions' advertisement is different from the consumer products and service advertisements. Some prefer reminder advertising messages while others consider persuasive messages as a better choice. In fact, the prospective learners are the ones who decide which types of messages that will influence them to enrol in a particular programme.

In the case of OUM, the management of the university has perceived that marketing is an effective technique in raising awareness of its 40 academic programmes. Until now, the existing marketing strategy has managed to bring in 26,000 active learners in the system but the numbers are fluctuating every year. However, the management believed that there must be a strong mechanism in the aspects of market segmentation and promotional strategy in the effort to sustain a more consistent and satisfactory figure.

Based on the existing literatures, is it true that substantiality and accessibility are effective market segmentation? Or is it right to claim that reminder and persuasive type of messages are preferred by the prospective ODL learners? Therefore, it is timely to identify the prospective learners' preferred types of advertisement messages and a more effective way to segment the market which in the end brings more students to the business. Information obtained from this study may provide a better and more useful understanding about the future marketing strategies for ODL institutions.

## Research Objectives

Based on the background of the study, the researchers have identified three objectives to be achieved. The objectives are as follows:

- RO1: To assess the effect of substantiality, accessibility, reminder and persuasive type of messages in marketing communication programmes towards the sustainability of ODL institutions.
- RO2: To examine the most effective market segmentation criteria to be focused by the ODL institutions in their marketing communication programmes to ensure the sustainability of ODL institutions.
- RO3: To examine the most preferred type of messages to be adopted by the ODL institutions in their marketing communication programmes to ensure the sustainability of ODL institutions.

## Literature Review

### Sustainability of ODL Education

The increasing need of individuals to have access to higher education is of profound importance to achieve sustainability of ODL institutions in the future. Higher education has its own responsibility to promote the knowledge-based population that will bring the socio-economic mobility, hence uplift the society. The number of higher education institution engaged in sustainable development elements such as technology-enabled teaching and learning, technology-based research, engagement with the market segment and developing more ODL programmes is increasing every year (Husaini & Jusoh, 2017). Therefore, several indicators have been developed to provide a clear view on the current overall progress towards sustainability (Lozano et al., 2013).

Providing opportunities of education to as many people as possible is among the ultimate focus of the higher educational provider to remain sustainable. Open Distance Learning (ODL) is a viable platform for education and lifelong learning opportunities that are relevant for working individuals and the mass society for nation development. With that channel, many people will have greater opportunity to improve their employability and income. Therefore, it is very important for the higher educational institutions to play a prominent role to monitor and assess at least three aspects in evaluating its ODL sustainability: the quality of the programme, understanding the market segment, and creative marketing communication (Parsons & Shelton, 2019; Salvioni et al., 2017).

The number of learners enrolled in the system becomes the factor to be emphasised in an effort for the ODL programmes to be made easily available and reachable to all walks of life. As mentioned earlier, accessibility of the prospective learners to the programme marketing communication is also an important aspect to focus on in order to integrate sustainability in all actions of the ODL institutions. Existing literatures have found that the ability to sustain in a business has become an important factor to increase the market share of ODL institutions upon democratising the education for many people (Goni et al., 2017; Roos & Guenther, 2020; Shrivastava, 2020).

### Understanding Effective Market Segmentation for ODL Institutions

Market segmentation is about knowing your customers, giving them exactly what they want or may want, building strong affiliations with channel affiliates and co-marketing partners and communicating via highly targeted promotional media such as event sponsorship, interactive web sites, personalised emails, trade magazines (Lamb et al., 2011). In other words, it is a technical way of truly understanding the customer.

ODL institutions require a different approach when segmenting their prospective learners. The university market has been characterised by three main segments namely, matured students, high school leavers and recently, international students in which each segment would consider different factors when choosing the university (Constantinides & Stagno, 2011). Nevertheless, these three main segments although typical to a university, the feasibility of marketing segmentation should mean something and must indicate the relevance of the programmes being marketed (Angulo et al., 2010). A number of authors have suggested four requirements for effective segmentation such as substantiality, identifiability and measurability, accessibility and responsiveness (Lamb et al., 2011). These four parameters will be explained further in the following sections.



## **Substantiality of the Market and its Effect on the Sustainability of an ODL Institution**

Substantiality refers to the segment that must be sufficiently large and profitable to be economically viable for an organisation (Kotler & Armstrong, 2018). It typifies that a segment should be the largest possible homogenous group worth going after with a tailored programme. A segment should also be large enough to warrant developing and maintaining a special marketing mix (Lamb et al., 2011). Substantiality is a common way to direct the value of segmenting opportunity and thus achieving the organisation's objective. Previous studies have found that substantiality needs to address the organisation's objectives clearly as this will eliminate the probability of designing ineffective and inefficient targeting through potential segmentation (Pires & Stanton, 2000). Additionally, the organisation's top management should be actively involved in the market segmentation process from the beginning. Previous studies have shown a positive and significant effect between substantiality and the sustainability of a business organisation (Donovan & Henley, 2012; Pires & Stanton, 2011). Hence, this study suggests the following hypothesis:

H1: There is a positive and significant relationship between substantiality of the market and the sustainability of ODL institutions.

## **Accessibility of the Market and its Effect on the Sustainability of an ODL Institution**

Accessibility is the degree to which a segment can be effectively reached and served (Kotler & Armstrong, 2018). It largely rests upon the ability of an organisation to direct its marketing effort at a particular segment. Media coverage, distribution and the influence of behavioural factors, all requires evaluation. It is also important to choose a media mix that will reach the target segment both economically and efficiently. Similarly, the distribution network chosen must be effective in reaching sub-segment. The firm must be able to reach members of targeted segments with customised marketing mix (Lamb et al., 2011). The main concern in accessibility relates on the optimisation of the budget at hand and reaching out the differentiated and mass targeted audience. However, previous studies have shown a positive and significant relationship of accessibility and the sustainability of a business organisation (Angulo et al., 2010; Matz et al., 2017). Therefore, this study proposes the following hypothesis:

H2: There is a positive and significant relationship between accessibility of the market and the sustainability of ODL institutions.

## **Understanding Effective Advertising Messages for ODL Institutions**

Advertising messages can be classified according to whether the aim is to persuade or remind the targeted audience about products or services. A right advertising message plays an important role in raising the consumers' awareness, building a favourable attitude, hence establishing long-term relationships.

## **Persuasive Advertising Message and its Effect on the Sustainability of an ODL Institution**

Persuasive is the act of making a person do or believe something by giving him a good reason to do it. The objective of persuasive advertising message is to build the consumers' liking, conviction, and preference (Tutaj & van Reijmersdal, 2012). Persuasive advertising may also convince the consumers of a certain belief that leads to a particular behavioural action such as purchasing a product or service. Persuasive advertising uses various techniques to appeal to the logical and emotional sides of the decision-making process. Not

all consumers are strictly rational and purely emotional in their purchasing decisions. There is always room for both objective facts and creativity when it comes to influencing the consumers' beliefs and behaviour (Matz et al., 2017).

There are persuasive advertising messages that use comparative advertising as a strategy. The advertisement will make an explicit comparison of the attributes of close competitors (Shareef et al., 2019). Previous studies have found that the persuasive advertising message works best when it stimulates the consumers' cognitive and affective process especially when they try to understand the advertisement in a detailed and analytical mode (Fleck et al., 2012; Lu et al., 2019). In the meantime, some advertisers use the authority figure and emotional tactic to attract the attention of the targeted market segment. Previous studies have shown a positive relationship between the persuasive advertisements and consumers' perception on the sustainability of ODL institutions (Constantinides & Stagno, 2011; Fleck et al., 2012; Lu et al., 2019). Hence, in the context of this study, it can be hypothesised that:

H3: Persuasive advertising messages have a positive and significant relationship with the sustainability of ODL institution.

### **Reminder Advertising Message and its Effect on the Sustainability of an ODL Institution**

Fundamentally, this type of advertising message focuses on stimulating consumers' intention to re-purchase products or services (Kotler & Armstrong, 2018). Reminder advertising is used by primarily by established brands or in a follow-up to a more extensive advertising campaign in order to remind the consumer about the product or service, or to introduce new life or new theme into existing campaigns (Lamb et al., 2011).

Reminder advertising messages also serve to enhance the top-of-the-mind awareness of the brand and to reinforce the key messages of the brand value and the recent offerings. The strategy applied in this type of advertising is by mentioning the name of the product and testimonials of existing customers. The messages will be repeated many times to keep the targeted consumers' interested in, and aware of, a well-established product that is most likely at the maturity stage or the end of the product life cycle (Verma, 2009). Previous studies have shown a significant effect of the reminder advertisements and consumers' perception on the sustainability of a business organisation (Constantinides & Stagno, 2011; Fleck et al., 2012). Therefore, it can be hypothesised that:

H4: Reminder advertising messages have a positive and significant relationship with the sustainability of ODL institution.

## **Research Method**

This research focuses on the analyses that are relevant to achieve the three objectives mentioned in the earlier part of this paper. Self-administered questionnaires were distributed to 350 prospective ODL learners in Malaysia. The convenience sampling technique was adopted as the method of collecting the data because this approach is convenient, accessible to the researchers, and require low budget. Data were collected from January to March 2021. A total of 314 valid responses were obtained for this study and the percentage of response is 89.71 percent.



The measured items were adapted and modified from past studies related to market segmentation, effective advertising messages, and institutional sustainability. The respondents' background comprises of age, gender, education level, and occupation. The measured items developed are based on the variables such as substantiality, accessibility, persuasive and reminder advertising messages for ODL institutions. Data obtained from the questionnaire were analysed using SPSS Version 22.0 to examine the respondents' profile and their perception on the market segmentation, effective advertising messages, and institutional sustainability. SMARTPLS was used to examine the target endogenous variable variance, inner model path coefficient sizes, outer model loadings, indicator reliability, internal consistency, convergent validity, discriminant validity, and the structural path significance in bootstrapping.

## Findings

A thorough analysis was conducted to understand the prospective ODL learners' view on the effective market segmentation, advertising messages and sustainability. The results are as follows:

**Table 1**

*Demographical Characteristics of the Respondents*

Demographic Characteristics	Frequency	Percentage
<b>Generational Cohort (n = 314)</b>		
Below 25 years old (Gen Z)	74	23.57
26 – 40 years old (Gen Y)	104	33.12
41 – 55 years old (Gen X)	90	28.66
56 – 76 years old (Baby Boomers)	46	14.65
<b>Educational Level (n = 314)</b>		
LCE/SRP/PMR	18	5.73
MCE/SPM	38	12.10
HSC/STPM	23	7.32
Certificate	21	6.69
Diploma	38	12.10
Bachelor Degree	104	33.12
Masters	61	19.43
PhD	11	3.50
<b>Occupation (n = 314)</b>		
Private Sector	129	41.08
Public Sector	122	35.85
Self-Employed	63	20.06

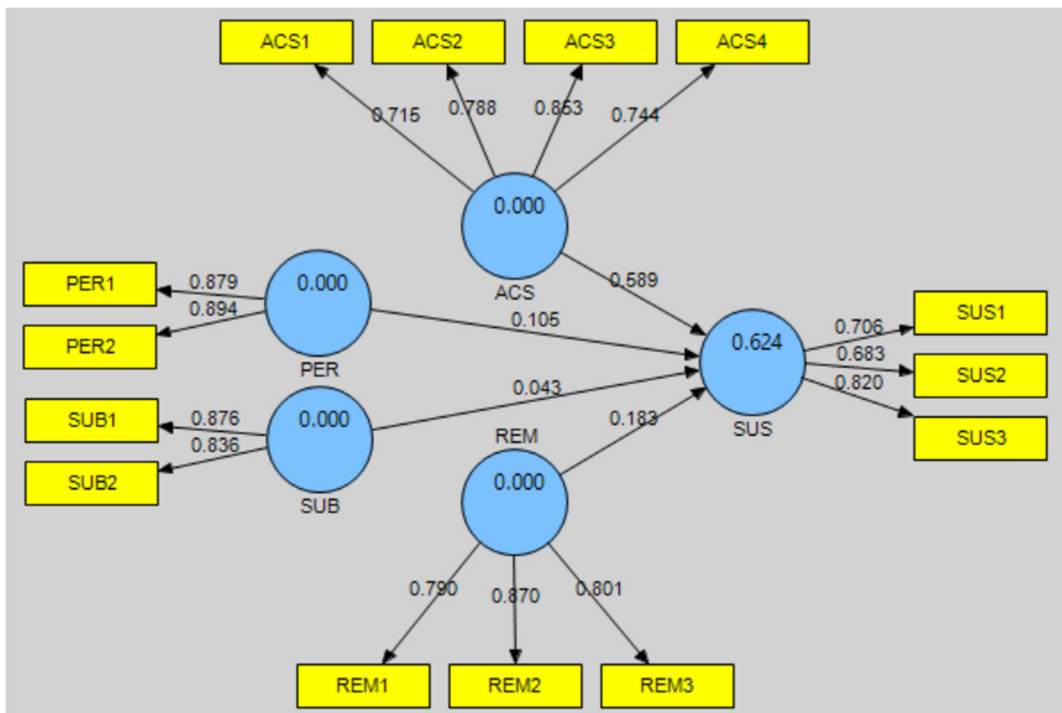
As can be seen in Table 1, the number of respondents who work in the public sector is as high as of those who work in the private sector. With the increasing number of civil servants in Malaysia, this statistic is common. Meanwhile, an easy access to education has made many people have an equal opportunity to obtain a higher degree. This research discovered a good trend where a total of 68.15 percent of the respondents have tertiary

education. The remaining 31.85 percent still have an opportunity to pursue their tertiary education through Open Distance Learning (ODL) based on the Accreditation of Prior Experiential Learning (APEL) admission.

Majority of the respondents are Gen Y between 41–55 years old (33.12 percent). For Open University Malaysia (OUM), it is notable that the high percentage of Gen X (41–55 years old) and Gen Z (Below 25 years old) offer a good opportunity for institutional sustainability.

**Figure 1**

*SMARTPLS Reflective Model for the Effective Market Segmentation, Preferred Advertising Messages and Sustainability of ODL Institution*



Note: ACS – Accessibility, PER – Persuasive, SUB – Substantiality, REM – Reminder, SUS – Sustainability

Figure 1 indicates that the coefficient of determination,  $R^2$  is 0.624 for SUS endogenous latent variable. This means that the four latent variables (ACS, PER, SUB, and REM) moderately explain the variance in SUS (62.4%). The inner model path coefficient suggests that SUB has the strongest effect on ACS (0.589), followed by REM (0.183), and PER (0.105). However, the hypothesised path relationship between SUB and SUS is below than 0.1. The standardised path coefficients for ACS, PER, and REM are above than 0.1 and statistically significant. However, the standardised path coefficient for SUB is not statistically significant ( $0.043 < 0.1$ ). Hence, it can be concluded that ACS, PER, and REM directly predict the SUS.



**Table 2***Results Summary for the Reflective Outer Model*

Latent Variable	Indicators	Outer Loadings	Indicator Loadings	Composite Reliability	AVE
ACS	ACS1	0.7155	0.5119	0.8583	0.6034
	ACS2	0.7880	0.6209		
	ACS3	0.8525	0.7268		
	ACS4	0.7442	0.5538		
PER	PER1	0.8785	0.7718	0.8798	0.7855
	PER2	0.8939	0.7991		
REM	REM1	0.7897	0.6236	0.8608	0.6738
	REM2	0.8698	0.7566		
	REM3	0.8007	0.6411		
SUB	SUB1	0.8763	0.7680	0.8462	0.7336
	SUB2	0.8361	0.7449		
SUS	SUS1	0.7065	0.4991	0.7819	0.5461
	SUS2	0.6828	0.4662		
	SUS3	0.8204	0.6731		

Table 2 indicates that all Composite Reliability are greater than 0.70. This means that the measured items have the Internal Reliability consistency. As for the Convergent Reliability, all Average Variance Extracted (AVE) are higher than 0.50 (Hair et al., 2014).

**Table 3***Discriminant Validity*

Indicators	AVE	Square Root
ACS	0.6034	0.7768
PER	0.7855	0.8863
REM	0.6738	0.8209
SUB	0.7336	0.8565
SUS	0.5461	0.7390

**Table 4**

*Fornell-Larcker Criterion Analysis for Discriminant Validity*

	ACS	PER	REM	SUB	SUS
ACS	0.7768				
PER	0.4642	0.8863			
REM	0.5698	0.5155	0.8209		
SUB	0.4273	0.4151	0.3215	0.8565	
SUS	0.7203	0.4906	0.5863	0.3967	0.7390

Table 3 and 4 shows that the “square root” of AVE of each latent variable are greater than the correlations among the latent variables. This also indicates the measure of constructs are not highly related each other (Hair et al., 2014).

**Table 5**

*Checking the Significance Level of the Inner Model Using Bootstrapping*

Path	T-Statistics
ACS → SUS	8.0745
PER → SUS	2.6695
REM → SUS	3.9853
SUB → SUS	1.1116

Table 5 indicates that the ACS → SUS, PER → SUS, and REM → SUS T-Statistics are greater than 1.96. However, SUB → SUS T-Statistics is less than 1.96. Therefore, except SUB, all variables have shown an evidence of a significant relationship. This is consistent with the earlier assessment of the reflective PLS-SEM model.

**Table 6**

*A Summary of the Hypothesis Testing*

Hypothesis	Statement	Results
H1	There is a positive and significant relationship between substantiality of the market and the sustainability of ODL institutions.	Not Supported
H2	There is a positive and significant relationship between accessibility of the market and the sustainability of ODL institutions.	Supported
H3	Persuasive advertising messages have a positive and significant relationship with the sustainability of ODL institution.	Supported
H4	Reminder advertising messages have a positive and significant relationship with the sustainability of ODL institution.	Supported



Table 6 portrays the summary of the hypothesis testing. It was found that H2, H3, and H4 are supported while there is insufficient evidence to support H1. This is perhaps due to the reason that the prospective learners perceived that in order to be effective, the marketing communication must be able to reach the segment. Market that is too substantial will create problems associated with reachability. Therefore, an Integrated Marketing Communication must be properly planned to standardise the message across the media channels. The ODL institutions must ensure that the market segment must be effectively reached and served. In the meantime, effective advertising messages must be formulated to remind the market segment followed by persuading them to pursue their studies at ODL institution. The findings are consistent with the previous studies conducted by Angulo et al. (2010), Constantinides et al. (2011), and Fleck et al. (2012), Hence, all research objectives in this study are successfully achieved.

## Conclusion

The growing concern about marketing communication strategies has made ODL institution to consider effective market segmentation and the right type of advertising messages to promote the university and its programmes to the right market. This is to ensure the sustainability of the business. The results of this study portray a unique perspective of the Malaysian prospective learners towards market segmentation strategies and advertising messages in the media channels. An empirical investigation has confirmed that the majority of prospective learners perceived that accessibility between ODL institution and the market segment is very important. In the meantime, ODL advertisements must incorporate the element of reminder and emotional connection to persuade the prospective learners in the future. This is in tandem with the research findings which also discovered that majority of the Malaysian people would love to appreciate the advertising messages that are consistent with their opinion and belief.

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## Enhancing Motivation among Online Distance Learning Students during the Covid-19 Pandemic in Malaysia

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### Abstract

*The study was undertaken to assess the essential peer influence and tutor performance as key drivers in students' motivation with the role of self-efficacy as a mediator in online distance learning higher education institutions in Malaysia during the Covid-19 pandemic. For data collection, the previously developed scales of peer influence, tutor performance, self-efficacy, and motivation in the context of online distance learning higher education institutions in Malaysia were distributed among the students in online distance learning higher education institutions. In total, 231 completed surveys were collected from the respondents and 12 outliers were detected through data screening using the Mahalanobis distance technique in SPSS, which left 219 clean data samples ready for analysis. The results from data analysis have shown that peer influence has no significant direct relationship with motivation but has significant indirect relationship with motivation, with self-efficacy as a mediator. Tutor performance has a significant direct relationship with motivation and also a significant indirect relationship with motivation, with self-efficacy as a mediator. Moreover, the implications of the findings were discussed, and future directions were recommended.*

**Keywords:** *Peer Influence, Tutor Performance, Self-Efficacy, Motivation, Online Distance Learning, Covid-19 Pandemic*



## Introduction

From the time when it was first declared a global pandemic back in March 2020, COVID-19 has had disturbing effects in different aspects of life, including education. Businesses and universities around the world have had to close down completely (Hirsch, 2020) and switching to online classes has been one of the efforts to keep contagion away from nearby communities and academic areas.

While online learning has become the new way to acquire knowledge, students and lecturers are facing some distinctive problems and challenges in their online courses which they need to overcome. To be highly motivated in participating in online classes and go through studying in an environment different from the conventional classroom environment can be very challenging. As a result, motivation plays a very important role in ensuring the online students will effectively gain the knowledge in their registered courses.

According to Pujals (1986), motivation is the force in an individual which is noticeable by the feelings and reactions that emerge to attain goals. The root word of motivation is “motive” and it signifies an inner force that pushes people forward or in doing something to attain some desired results or purpose. This has been supported by Smith (2012), who suggested that motivation is a very crucial factor that ensures the success or failure in students’ studying process. Motivation plays a very important role in ensuring students’ performance in their studies. A high level of study will lead to high academic performance (Kusurkar et al., 2013). Highly motivated students will be inclined to put more effort into their study and will eventually perform better (Gottfried et al., 2013). Malaysia is one of the countries that have implemented the Movement Control Order (MCO) in the region of Southeast Asia (Khor et al., 2020).

Various studies have found that the MCO has affected online distance learning (ODL) students in their studies. Many ODL students are familiar with the mode of delivery but cannot communicate or meet physically with their lecturers during the MCO. This has created a problem for the students and leads to low motivation and confidence for them to continue their studies (Almaiah et al., 2020). These states of affairs expose some hurdles to ODL students due to their inability to catch up in their studies and therefore they become unable to perform as they expect. Students may perhaps be prepared to undertake their study during the MCO; however, they may be hindered by the incompetency in technologies, lack of facilities, and their technical readiness may not be up to the mark (Allam et al., 2020; Chung et al., 2020; Noraini et al., 2020). Besides, many students are affected by noise pollution, such as interruption from people around them especially their family members (Sun et al., 2020). At the same time, there is a tendency for some students to use easy access to the Internet to deceive and plagiarise (Gonzalez et al., 2020; Kearns, 2012; Nizam et al., 2020; Timmis et al., 2016).

These circumstances will prompt negative implications of fear of failure, and also cause low self-esteem if they remain unaddressed, which will eventually cause their learning motivation to decline. Also, the ODL students’ self-efficacy will play a very important role in determining their motivation level, which will lead to their desired performance (Zahir et al., 2018). In view of the above, this study aims to assess the influence of tutor performance, peer influence and employer support on self-efficacy, and the influence of self-efficacy on student motivation.





## Literature Review

Motivation is one of the most basic elements for academic achievement. It constitutes both the internal and external factors that fuel aspiration and forces an individual to be constantly passionate and devoted to the role, task, or subject, or to make an endeavour to achieve the objective. Dornyei (2001) suggested that motivation describes why people are determined to do a certain thing, how eager they are to achieve it, and the duration in which they are willing to take action. Higher education students with a strong motivation will be more enthusiastic, self-driven, challenging, and feel pleasure in their studies. Extrinsically motivated students will push themselves to complete their assignments, feel obliged to learn, and place minimum effort to attain maximum appreciation. Students with intrinsic motivation have the tendency to use strategies that need more effort and permit them to deeply process the information. According to Condry and Chambers (1978), when students are faced with varied academic tasks, intrinsically directed students tend to use more logical information and have the strategies to make decisions than those who are extrinsically motivated. Intrinsically motivated students have an inclination to favour tasks that are moderately difficult. In comparison, students with extrinsic motivation tend to take up less challenging tasks. According to Lepper (1988), the latter is less likely to place maximum effort in order to achieve the maximum reward. Brophy (1986) suggested that to ensure the students are intrinsically motivated, students should be openly praised for what they have achieved academically.

According to Armstrong (2010), an individual's performance depends on the attitude of that person. Performance in relation to attitude means that individual activity is directed towards the organisation's task. Mundarti (2007) stated that performance is an employee's success to complete the task. Performances, on the other hand, are things completed by the employees. The performance of online tutors is influenced by various factors such as ability, support, workstation, and organisational support (Mundarti, 2007). A study conducted by Ratih et al., (2017) on 392 lectures in Bandung found that a lecturer's performance has a positive and significant influence on motivation in higher education institutions. Online tutors' ability to perform during the online class is very important to ensure the class will be able to improve student interest and focus to follow what will be taught and discussed by the tutor. According to Zahir et al., (2018), employees, especially in higher education institutions, must demonstrate high performance when conducting online tutorials because in addition to attracting the students to participate in the online tutorial, their performance will also motivate the students to engage actively during the online session.

Students tend to feel that they are in the right place, understood, and receive concern from their peers when they start communicating with each other, obtaining support, and sharing learning experiences. Their active and frequent interaction with their peers will lead to a feeling of comfort and allow the students to achieve their needs in their study (Ciani et al., 2010; Furrer & Skinner, 2003; Martin & Dowson, 2009). Peer interaction that adds to the way students behave during their study is also crucial for self-development. Even though they may not behave in the same way as their lecturers do, their peers will make contextual affordances available to support their academic competency (Wentzel, 2009b). Interaction with classmates will lead to students initiating communication, shaping academic competencies, and developing academic target and behavioural values (Parr, 2002; Wentzel, 2009b). Olalekan (2016) suggested that in general, students' peer group has quite a strong influence on the students. Ahmad Khan et al., (2020) in their study on work productivity during the Covid-19 pandemic work-from-home arrangement in Malaysia found that peer influence has a positive and significant influence on the motivation.

Many studies have explained educational and environmental elements including self-esteem and confidence (Komarraju, 2014), hope (Gautam & Passi, 2014), coping styles (Fried & Chapman, 2012), the level of quality of learning programmes, teaching and learning, and learning environment as having an impact on students' level of interest, which could eventually improve their motivation (Taylor, 2014). The student's self-determination and possession of an internal locus of control will elevate their level of motivation (DePasque & Tricomi, 2015). According to Bernacki et al., (2015), self-efficacy is the result of motivation, and if students are unable to overcome the problem, self-efficacy may diminish, and they may become discouraged in their learning and fail to attain academic success. Ghaleb et al., (2015) suggested that positive and successful experiences derived from internal factors can increase efficacy while creating success due to external elements, and failure can lead to students feeling of lack of competency. According to Alei et al., (2012), students with learning difficulties have lower self-efficacy levels and less motivation for progress due to lower expectations. Both motivation for progress and self-efficacy push students forward to maximise their potential. In addition, disability has been reported to potentially reduce performance in achieving learning objectives and adversely affect academic performance (Alaei et al., 2012).

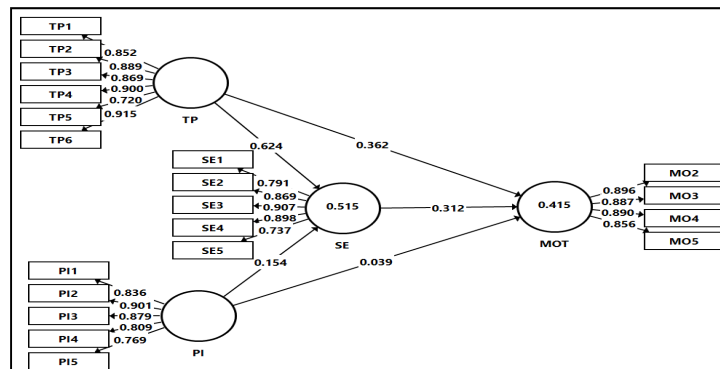
Given the above conceptual development, the following research hypotheses were proposed:

- There is a relationship between peer influence and motivation among online distance learning students during the Covid-19 pandemic in Malaysia;
- There is a relationship between peer influence and self-efficacy among online distance learning students during the Covid-19 pandemic in Malaysia;
- There is a relationship between self-efficacy and motivation among online distance learning students during the Covid-19 pandemic in Malaysia;
- There is a relationship between tutor performance and motivation among online distance learning students during the Covid-19 pandemic in Malaysia;
- There is a relationship between tutor performance and self-efficacy among online distance learning students during the Covid-19 pandemic in Malaysia;
- There is a mediating effect of self-efficacy on the relationship between peer influence and motivation among online distance learning students during the Covid-19 pandemic in Malaysia; and
- There is a mediating effect of self-efficacy on the relationship between tutor performance and motivation among online distance learning students during the Covid-19 pandemic in Malaysia.



Figure 1

Research Model



## Methodology

### Approach, Design & Software

The research model of this study consisted of tutor performance, peer influence, self-efficacy, and motivation. The proposed research model consisted of four latent variables and 22 observed variables. The model comprised an independent variable for tutor performance, which consisted of seven measurement items, and another independent variable for peer influence, which consisted of five measurement items. The mediator of self-efficacy consisted of five measurement items and the dependent variable of motivation consisted of five measurement items. All the four variables measurement items were constructed in the online distance learning context in Malaysia. This study employed a quantitative research approach using primary data. All the 22 measurements that stood for their construct were assessed by adopting a Likert scale ranging from 'strongly disagree' to 'strongly agree'. This was to allow for most of the response rate and quality and reduce the "frustration level" of the respondents (Babakus & Boller, 1992; Sachdev & Verma, 2004). Before the main analysis, the data were screened and cleaned using SPSS 18. The partial least squares-structural equation modelling (PLS-SEM) was adopted as the main approach (Hair et al., 2017) in evaluating the data. The SmartPLS 3 software (Ringle et al., 2015) was used for data analysis.

### Sample

This study was aimed at online distance learning students in Malaysia. Online distance learning students who made up the sample of this study included students who were studying at diploma, bachelor's degree, master's, and doctoral levels. Three ODL institutions' students in Open University Malaysia, Wawasan Open University, and Asia e-University were randomly selected to be involved in data collection. Online questionnaires were e-mailed to 321 students from these three ODL institutions in Malaysia. A total of 231 students (response rate = 72%) responded to the survey. Because this study utilised a variance-based approach for data analysis, and after taking into account that no specific standard for the minimum acceptable response rate in performing the online survey (Hamilton, 2003), the sample obtained was considered adequate for analysis. Then, the data screening technique suggested by Field (2013) was used. This was followed by the

application of SPSS 18 for reassessment to ensure the absence any outliers that exist in the data. Through this method, 12 outliers were detected and removed before the main analysis. In total, the PLS-SEM algorithm was performed on a sample of 219 respondents.

## Data Analysis

### Common Method Bias

Kock (2015) and Kock & Lynn (2012) suggested the total collinearity test as a wide-ranging method for the corresponding assessment of vertical and horizontal collinearity. The variance inflation factors (VIFs) values greater than 3.3 point out pathological collinearity, and it also signifies the problem of common method bias of the model. Hence, if total collinearity checks VIFs values were lower than 3.3, the model is deemed to cause no common method bias concern. Table 1 demonstrates the total collinearity check VIFs values, which are lower than 3.3 and therefore indicated no issue of common method bias.

**Table 1**

*Full Collinearity*

	MO	TP	PI	SE
MO		1.474	1.477	1.302
TP	1.882		1.755	1.52
PI	1.435	1.335		1.402
SE	1.817	1.662	2.015	

### Reflective Measurement Model Evaluation

Hair et al., (2017) advice for assessing every measurement in the first- and second-order measurement models was implemented. By performing these steps, one item with lower loading was spotted and taken out from the framework. Right after the removal of this measurement item, all the statistical requirements to confirm the reliability and validity of the proposed model were achieved. The item factor loadings are depicted in Figure 1. Table 2 summarises the proposed model's values for Cronbach's alpha and composite reliability, together with the convergent validity evaluation. These evaluations ascertained there was no issue in validating internal consistency. Additionally, all the Average Variance Extracted (AVE) values were greater than 0.5, suggesting the presence of convergent validity (Hair et al., 2017) for each variable in the research framework. Discriminant validity was also measured by calculating the Heterotrait-Monotrait (HTMT) ratio, which was a recommended criterion for appraising discriminant validity in Variance-Based Structural Equation Modelling (VB-SEM; (Henseler et al., 2015). Table 3 shows the HTMT ratio figures of the variables with the original sample and 95% confidence intervals (two-tailed), signifying the discriminant validity confirmation on HTMT 0.85 and that the upper level of the Bias-Corrected and Accelerated bootstrap confidence intervals were less than one.

**Table 2***Construct Reliability & Validity*

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
PI	0.896 (0.868, 0.918)	0.923 (0.892, 0.952)	0.923 (0.903, 0.939)	0.706 (0.651, 0.754)
MO	0.905 (0.867, 0.930)	0.910 (0.868, 0.933)	0.933 (0.909, 0.950)	0.778 (0.715, 0.826)
SE	0.896 (0.861, 0.923)	0.907 (0.868, 0.932)	0.924 (0.901, 0.942)	0.710 (0.647, 0.766)
TP	0.928 (0.910, 0.941)	0.933 (0.916, 0.944)	0.944 (0.931, 0.954)	0.739 (0.693, 0.775)

Note: Confidence interval computed based on percentile bootstrapping test with 10000 sub-samples and at 5% confidence level.

**Table 3***Heterotrait-Monotrait Ratio*

	PI	MO	SE
PI			
MO	0.405 (0.282, 0.518)		
SE	0.52 (0.388, 0.626)	0.649 (0.497, 0.771)	
TP	0.564 (0.429, 0.678)	0.646 (0.532, 0.741)	0.753 (0.658, 0.832)

Note: A two-tail percentile bootstrap test at 5% confidence interval (2.5%, 97.5%) with 10,000 sub-samples were performed.

**Structural Model**

The guiding principle of Hair et al., (2017) was used to estimate the structural model in this study and determine the significance of path coefficients. Table 4 shows the results of hypotheses testing. *H1* proposed there is a positive relationship between peer influence and motivation, and the statistical analysis result showed that there was a positive but not significant influence of peer influence on motivation ( $\beta = 0.039$ ,  $t = 0.845$ ,  $p = 0.398$ ); therefore, *H1* was not supported. The statistical result of *H2* demonstrated there was a significant and positive relationship between peer influence and self-efficacy ( $\beta = 0.154$ ,  $t = 3.371$ ,  $p = 0.001$ ), therefore *H2* was supported. *H3* also proved that self-efficacy had a positive and significant influence on motivation ( $\beta = 0.312$ ,  $t = 3.223$ ,  $p = 0.001$ ); as a result, *H3* was also supported. The *H4* result also proved to be positive and significant for the relationship between tutor performance and motivation ( $\beta = 0.362$ ,  $t = 4.609$ ,  $p = 0.000$ ); thus, *H4* was also supported. The *H5* result also showed that there was a positive and significant relationship between tutor performance and self-efficacy ( $\beta = 0.624$ ,  $t = 13.121$ ,  $p = 0.000$ ); therefore, *H5* was also supported. For the mediating effect relationship analysis, *H6* showed that self-efficacy had a significant mediating effect on the relationship between peer influence and motivation (Total indirect effect = 0.048,  $t = 2.234$ ,  $p = 0.026$ , LLCI = 0.015, ULCI = 0.102); hence *H6* was supported. Lastly, *H7* was found to be supported as self-efficacy was proven to have a significant mediating effect on the relationship between tutor performance and motivation (Total indirect effect = 0.194,  $t = 3.197$ ,  $p = 0.001$ , LLCI = 0.066, ULCI = 0.305).

**Table 4**

*Hypotheses Testing Results*

	Beta	T Statistics	P Values	LLCI 2.5%	ULCI 97.5%	Decision
<i>H<sub>1</sub>: PI -&gt; MO</i>	0.039	0.845	0.398	-0.050	0.128	<i>Not Supported</i>
<i>H<sub>2</sub>: PI -&gt; SE</i>	0.154	3.371	0.001	0.067	0.244	<i>Supported</i>
<i>H<sub>3</sub>: SE -&gt; MO</i>	0.312	3.223	0.001	0.130	0.481	<i>Supported</i>
<i>H<sub>4</sub>: TP -&gt; MO</i>	0.362	4.609	0.000	0.218	0.522	<i>Supported</i>
<i>H<sub>5</sub>: TP -&gt; SE</i>	0.624	13.121	0.000	0.522	0.711	<i>Supported</i>
<i>H<sub>6</sub>: PI -&gt; SE -&gt; MO</i>	0.048	2.234	0.026	0.015	0.102	<i>Supported</i>
<i>H<sub>7</sub>: TP -&gt; SE -&gt; MO</i>	0.194	3.197	0.001	0.066	0.305	<i>Supported</i>

**Discussion**

The study aimed to evaluate the influence of peer influence and tutor performance on ODL students' motivation with self-efficacy as a mediator during the Covid-19 pandemic in Malaysia. From the results of the statistical analysis, it was found that peer influence has not directly affected students' motivation. However, with the introduction of self-efficacy as a mediator, peer influence was found to have an indirect effect on students' motivation during the Covid-19 pandemic. This shows that the role of self-efficacy as a mediator in the relationship between peer influence and students' motivation is very important. During this Covid-19 pandemic, students need to have self-belief in their competence, and ability to face and overcome the challenges in their study. With self-efficacy as a mediator, peer influence would have an effective influence on the students' motivation. When compared against students with a low level of self-efficacy, students with a high level of self-efficacy set higher goals, use more effective self-regulatory techniques, monitor their work more effectively, and tackle more difficult tasks. Students need to develop strong self-efficacy while at the same time increase their interaction with peers, which would lead to a higher motivation level in their study. Students of various ages have demonstrated the positive relationship between effectiveness and flexibility in academic performance due to higher levels of achievement and learning. It has been found that students with high self-confidence and efficacy worked more often, lasted longer, and achieved higher levels than students with low self-confidence and self-efficacy. Students with high levels of self-efficacy can set challenging goals, strive to achieve them, and use a variety of techniques to achieve them. Students need to communicate with other students and interact in class. By interacting with their peers, the students can share the problems they face in their studies and get the necessary support from their peers when needed. Students must be encouraged to get involved in group studies and interacting in them; this could motivate them to perform better in class. Peer interaction must not only take place during class, but also after class, especially in e-learning platforms or forums. Students can ensure more effective learning with peer discussion and assistance. ODL institutions must be able to provide activities that can promote peer interaction at the university or online. There are a series of motivational mechanisms by which peers can influence each other. These focus on the premise that motivation has an interesting function and can direct behaviour. Friendships can be thought of as relationships that can provide exhilarating preparations, such as emotional support, warmth, security, participation, and autonomous support. Keep in mind that the mechanism for motivation is more than just moving. Simply having friends is to excite the students and guide their



actions. Such a primary energy supply can also provide a primary source for influencing the mechanisms of all other peer types. If the selected peer has refreshing motivational skills, experimental simulations with randomly assigned peers can accurately estimate the actual amount of impact that can occur. Know that you may not be able to do this. Peer relationships can also support autonomy, as students choose their own partners. Thus, this can give students space to be themselves and facilitate the exploration and experimentation of possible academic identities from relationships with cultural peers. The results arising from the above data analysis clearly show that self-efficacy significantly mediates the relationship between peer influence and student motivation during the Covid-19 pandemic ( $\beta = 0.048$ ,  $t = 2.234$ ,  $p = 0.026$ ,  $LLCI = 0.015$   $ULCI = 0.102$ ).

From the above statistical analysis, it is also very clear that tutor performance must be given greater emphasis to ensure and to maintain the students' motivational level. Tutors play a crucial role when conducting face-to-face or online classes. Tutors need to be efficient and effective during class. Their behaviour is a way for them to communicate and interact with students at a higher education institution. Tutors with a high performance in teaching will have a great impact on the students and affect their motivation to learn the subjects they are enrolled in. Tutors must believe that students are motivated to learn when they attend classes with tutors who demonstrate good performance. This suggests that students will be highly motivated to study if the tutors' performance is always at a high level when conducting the class. This has been proven in the above data analysis, in which the relationship between tutors' performance and students' self-efficacy is positively and significantly related ( $\beta = 0.624$ ,  $t = 13.121$ ,  $p = 0.000$ ). Therefore, ODL institutions must develop a strategy to ensure their academic staff have the required competencies to deal with students during teaching. Tutors' performance will enhance students' self-belief and determination in their study. Furthermore, with the role of self-efficacy as a mediator, the influence of tutors' performance will be strengthened further. Based on the above statistical analysis, self-efficacy significantly mediates the relationship between tutors' performance and students' motivation ( $\beta = 0.194$ ,  $t = 3.197$ ,  $p = 0.026$ ,  $LLCI = 0.066$   $ULCI = 0.305$ ). Therefore, students' self-efficacy must be enhanced further during their study and at the same time, tutors' performance must be strengthened so that the level of the students' motivation can be further elevated to produce better performance in their academic achievement.

## Conclusion

This study aimed to investigate the indirect effect of self-efficacy, peer influence, tutor performance, and motivation among students in Malaysian online distance learning higher education institutions. The statistical analysis results have demonstrated that self-efficacy has significantly mediated the relationships between peer influence and tutor performance with motivation among ODL students during the Covid-19 pandemic in Malaysia. Based on the results, ODL institutions must give greater attention to plans and strategies for beefing up peer influence and tutor performance, and at the same time improve self-efficacy among the ODL students. This will allow the motivation among ODL students to be further strengthened and reinforced to make their learning more effective. This will ultimately allow them to improve academic performance in the courses they are taking. Online distance learning higher education institutions must be proactive in adopting approaches through which peer influence and tutor performance can be made stronger, and also in improving students' self-efficacy by ensuring they can acquire the right attitudes and behaviours. This will allow the students to develop their motivation in online learning. Student motivation is very important in ensuring good performance in their study, therefore ODL institutions must take every step to ensure that the peer influence and tutor performance factors are always at a high level. Online tutors must communicate frequently with students to encourage them in online participation, study in a group, and interact with their peers. Online tutors must be



creative enough to encourage the students to develop the right attitude and behave in the right way towards their study so that that they will feel more at ease and focused in their online learning. Students must also be given the confidence to help and guide their peers to overcome problems in their study. For future studies, it is recommended that other variables such as digital readiness, communication, and family support be used as variables in developing the research framework to better understand student motivation in online distance learning study.

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## The Private Preschool Teachers' Perception of ICT Integration Usefulness in Teaching and Learning During MCO

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### Abstract

*In the 21<sup>st</sup> century, one of the modern pedagogical approaches is integrating information and Communication Technology (ICT) in the early childhood curriculum. The purpose of this study is to investigate the private preschool teachers' perception of integrating ICT and internet usage in teaching and learning during MCO in private preschools. This study employed a quantitative approach, and data collection was gathered through a survey method. A total of 44 private preschool teachers from private preschools located in the Klang Valley were selected through snowball sampling. The survey was done through questionnaires using a 5-point Likert Scale. Quantitative data were analysed through a descriptive method using the Statistical Package for The Social Science (SPSS) software. The study results indicated that young teachers have high perception of ICT integration usefulness, whereas senior teachers need to be given courses that will help them be more confident to handle children learning activities using ICT tools during MCO.*

**Keywords:** *Preschool, Teachers, ICT, Perception, Integration, Internet*

### Introduction

The world was shocked by the novel Covid-19 pandemic that has caused all sectors to become paralysed. The pandemic remains the biggest threat to human health, besides affecting the economy. The field of education is not spared, impacting almost every country in the world (Lekhraj & Liew, 2020). Many universities, schools, and preschools had to close due to the increasing number of Covid-19 cases. The outbreak of the Covid-19 was suddenly thrown to the deep end in deciding to use e-Learning in teaching and learning. The pandemic has forced teachers to use Information and Communication Technology (ICT) as a teaching and learning platform and become the only option left for preschool teachers. Preschool teachers have resorted to e-learning and integrated ICT to deliver



their lessons. With the latest advancement in new communication technologies and the ever-increasing usage in daily life, online learning is seen more and more as the way forward in education that can provide rich, authentic learning that can facilitate children's collaboration (Aldhafeeri & Khan, 2016).

In Malaysia, the Ministry of Education (MoE) is concerned about the quality of the preschool curriculum and has developed a set of guidelines for preschools to incorporate ICT elements in the National Preschool Standard-based Curriculum (NPSC) 2017 as part of the teaching and learning process (MoE, 2017). To facilitate teaching and learning during the MCO period, MOE created guidelines for public teachers to implement teaching and learning processes during the outbreak (Kelvin & Tan, 2020). Some preschool operators took the opportunity to add a new element to early childhood education to stimulate interest and make teaching and learning more enjoyable. Children learn much more through active involvement and construct their knowledge and apply them through physical and mental learning activities (Morrison, 2015). Hence, using ICT to deliver learning materials to children should be an active process, with good interactive instructions, collaborative and cooperative learning, control of the learning process, time availability, and a chance to reflect on the learning materials (Ananga, 2020).

## Literature Review

ICT use continues to rise dramatically due to digital technologies' advancement and internet usage in the preschools' environment (Filzah, 2013). Research showed that many young children are exposed to digital technology as young as three years old (Parette & Blum, 2013). The need for ICT integration in education is crucial, because, with the help of technology, teaching and learning can take place in the school environment and also, even if teachers and students are physically apart (Ghavifekr et al., 2015). The number of young internet users is increasing dramatically (Filzah, 2013). As new technologies become more ubiquitous, it helps people improve the quality of their personal and professional lives. In the 21st century, one of the modern pedagogical approaches is ICT in the early childhood curriculum. Integration is essential and a new trend in early childhood education, particularly when the internet becomes widely available in most developed countries. Therefore, online learning via digital technologies is part of young children's 'multimodal lifeworld'; thus, should be contextualised and capitalised to support teachers, parents, and children about how best to utilise digital and online technologies to develop agentic multimodal practices (Dong & Cao, 2020).

There have been many types of research done by educators, psychologists, and philosophers on how human teach and learn. Charanjit et al., (2020) reported that teachers opt for online platforms such as *Google Classes* to post learning materials such as Google Docs, Sheets, Slides, quizzes, and Portable Document Format (PDF) to Google Drive to collaborate with their students. Even though various techniques and approaches are highlighted to ensure that the teaching and learning process becomes more interesting and efficient (Amiruddin et al., 2014), the concern right now should be the quality of online learning and the difficulties in creating an online learning community with a high degree of social presence and engagement (Khurana, 2016). Most of the children are engaged in online learning to minimise the spread of the virus, so face-to-face learning cannot be conducted (Gayatri, 2020). However, school children were affected by Movement Control Order (MCO) including those without easy access to the internet. Dong and Cao (2020) reported that the implementation of online learning during the Covid 19 pandemic has been problematic and posed challenges for the family. As a student participating in a home-learning programme, online learning was confusing and difficult to adjust to as we had not been prepared through simulations or practices beforehand. Students reported that the home-learning programs

more stressful than regular classrooms. Gayatri (2020) in her study reported that the implementation of home learning has challenged families with young children concerning self-regulation.

Various factors prevent teachers from integrating ICT in their teaching and learning, such as the lack of knowledge on handling new technology, lack of technical funds and support from the school, and lack of professional training (Lateh & Muniandy, 2010). Ertmer and Ottenbreit-Leftwich, 2010, reported that teachers are feeling the pressure with this new pedagogical approach as it increases their workloads and expectations. Another factor that prevents teachers from integrating ICT is a poor internet connection. Tamin and Mohamad (2020) reported that the main issues in implementing online learning were weak internet connection, insufficient technology devices, difficulty in using the system and low motivation to join virtual learning due to lack of interaction between teachers and students. However, the lockdown is not an incentive for teachers to revise their professional experience in the sense of realising the necessity of acquiring the competencies necessary for organising effective distance learning for pre-schoolers (Pavlenko & Pavlenko, 2020). Therefore, it is important to have good communication between parents and teachers to support early childhood online learning during the pandemic (Gayatri, 2020).

## Research Objectives

Specifically, the objective of this study is to determine the preschool teachers' perception of ICT Integration usefulness in teaching and learning during MCO.

## Methodology

This study used a quantitative approach, and data collection was gathered through a survey method. A total of 44 preschool teachers from private preschools located in the Klang Valley were selected through snowball sampling. The survey was done through questionnaires using a 5-point Likert Scale. Quantitative data were analysed through a descriptive method using the Statistical Package for The Social Science (SPSS) software. The data were analysed according to their age group, working experience, and academic qualification.

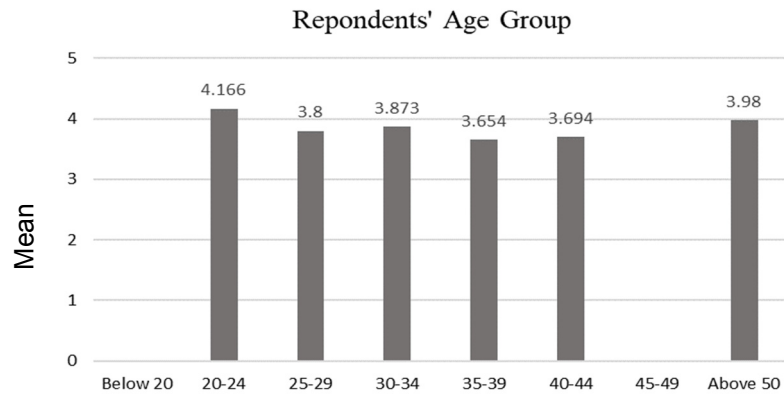
## Findings

### The Preschool Teachers' Perception of ICT Integration Usefulness in Teaching and Learning During MCO According to Age

Figure 1 below showed the teachers' perception of ICT integration usefulness in teaching and learning during MCO according to age. The bar chart illustrated the result based on the mean comparison. The chart showed that teachers aged below 20 and those between 45 and 49 are not being analysed as there is no respondent from these groups. The data showed that the highest mean of 4.166 is from the age group of 20 to 24. This indicates that the teacher from the age group of 20 to 24 has the highest perception of integration usefulness in teaching and learning during MCO. Results show the lowest mean of 3.654 was from the age group of 35 to 39. It showed that the respondents from this age group have the highest lowest perception of usefulness in teaching and learning during MCO.

**Figure 1**

*Teachers' Perception of ICT Integration Usefulness in Teaching and Learning During MCO According to Age*

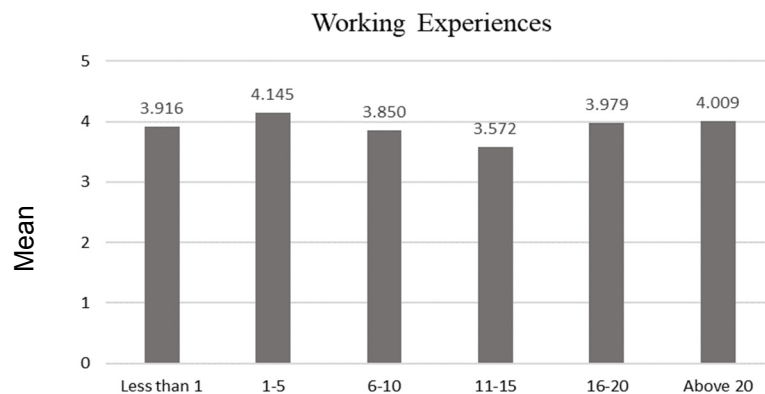


### **Teachers' Perception of ICT Integration Usefulness in Teaching and Learning During MCO According to Working Experience**

Figure 2 below showed the teachers' perception of ICT integration usefulness in teaching and learning during MCO according to working experience. The bar chart illustrated the result based on the mean comparison. The highest mean of 4.145 fell on teachers with working experience between 1 and 5 years. The lowest perception is those who have working experience of between 11 and 15 years. This indicates that teachers who have working experiences of less than 5 years have the highest perception of ICT integration usefulness in teaching and learning during MCO compared to those who have 11 to 15 years of experience in teaching pre-schoolers.

**Figure 2**

*Teachers' Perception of ICT Integration Usefulness in Teaching and Learning During MCO According to Working Experience*

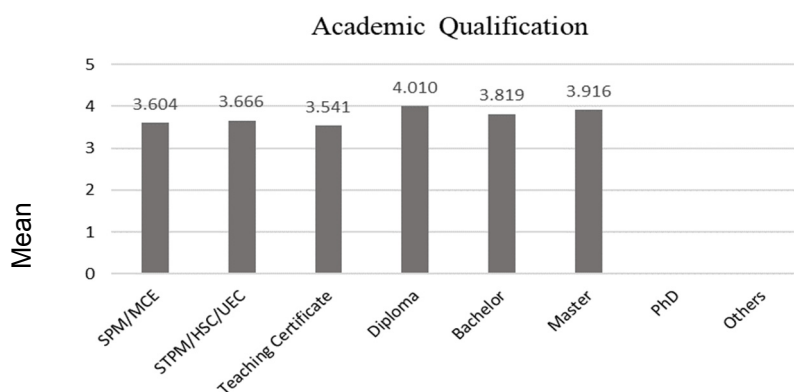


## Teachers' Perception of ICT Integration Usefulness in Teaching and Learning During MCO According to Academic Qualification

Figure 3 below showed the teachers' perception of ICT integration usefulness in teaching and learning during MCO according to an academic qualification. The bar chart illustrated the results based on the mean comparison. The highest mean of 4.01 represents teachers with diploma qualification followed by teachers with bachelor and master qualifications. Meanwhile, the lowest mean of 3.541 falls under teachers who hold certificate qualifications. The results indicate that the diploma holders have the highest perception of ICT integration usefulness in teaching and learning during MCO compared to the certificate holders.

**Figure 3**

*Teachers' Perception of ICT Integration Usefulness in Teaching and Learning During MCO According to Academic Qualification*



## Discussion

The Covid-19 pandemic has resulted in the closure of physical classes. Teachers and students learned through online educational technologies (Kelvin & Tan, 2020). Hence, teachers and students were connected through the internet. Online learning becomes an alternative platform for teachers during MCO. Since then, preschool teachers have started to conduct online classes through Zoom, Microsoft Office, and Google Meet. Online learning through devices such as laptops, computers, tablets, and smartphones with internet access becomes alternative learning (Selvanathan et al., 2020). The results of this study show that young teachers aged between 20 and 24 have the highest perception of ICT integration usefulness in teaching and learning during MCO compared to the teachers who are older. These teachers are considered active ICT users and capable of implementing e-learning during MCO. The respondents were known as generation X or digital natives and ICT is part of their daily lives. Irfan and Mohamad (2015) reported in their study that junior teachers use ICT significantly more frequently than their senior colleagues for teaching and learning, searching educational resources, and creating presentation/delivery materials. Meanwhile, teachers with working experiences of less than 5 years and diploma holders have the highest perception of ICT integration usefulness in teaching and learning during MCO compared to those who have between 11- and 15-years' experience in teaching pre-schoolers and those who hold other certificates. Although most of the preschool teachers participated in this study praised the usefulness in teaching and learning during MCO, teachers with less than 5 years of work experience and those with diploma qualification are considered young teachers and some children require attention from young and energetic





teachers to keep them busy during online learning. According to Davoud (2015), ICT is experienced as an object for entertaining young children and keeping them busy. In fact, Filzah (2013) reported that the number of young internet users is increasing dramatically.

Now it is time for preschools institutions to consider integrating the online learning approach to allow for distance and remote learning. Some serious social distancing during Covid 19 pandemic becomes the children's priority. The preschool teachers need to enhance their capabilities in using current teaching pedagogy by integrating ICT in teaching and learning. They need to understand the Developmentally Appropriate Practices (DAP) when integrating ICT in the curriculum. Most importantly, senior teachers must learn to use the Internet as a learning platform and have confidence in using ICT as a teaching tool. According to Irfan and Mohamad (2015), senior teachers should be encouraged to use ICT in their teaching and learning activities more frequently so that they will not be left behind in terms of ICT skills. The lack of training in ICT has led to teachers not knowing how to implement ICT into their practices (Dong & Cao, 2020). Taking part in the ICT training tailored for teachers will help teachers gain concrete ways to use ICT in online distance learning.

### **Conclusion**

In conclusion, this study has provided important information on teachers' perception of ICT integration during MCO. The study results indicated that teachers have a high perception of ICT integration usefulness in teaching and learning during MCO. The study results would help teachers, principals, and preschool operators understand the importance of teachers' perception of implementing ICT and weaknesses that need to be addressed before embarking on any ICT integration in the future. Learning can be more effective in several ways and online learning is the best option for teaching and learning during MCO. Preschool teachers, regardless of their age, work experience and academic qualification must start to learn innovative online teaching strategies to engage children in learning. Interactive online learning will be able to facilitate children's active participation and engagement even though they are at home. If the views of the respondents are representative of the wider samples, then the finding suggests that senior teachers need to be given courses that will enhance their confidence in handling children's learning activities using ICT tools. Hence, it is important to train senior and experienced teachers in ICT integration and the online mode of learning. Enforced change in pedagogy after Covid19 pandemic and at the same time, taking into consideration the children's needs, initiatives and abilities are needed to cater to current needs in learning. Change is all about moving the whole system and take daily actions that build capacity and ownership (Fullan, 2007). Willingness to learn and change attitudes towards a new method of learning will help improve teachers' professionalism. According to Pavlenko and Pavlenko (2020), it is also important to examine teachers' attitude to the distance format for assessing the prospects of distance learning for pre-schoolers if the lockdown recurs in future.



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## **Examining the Personality Factor and the Relationship with Selection of Counselling Theory among Counsellors in Selangor**

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### **Abstract**

*Theories are crucial for counsellors in helping them build relationships with clients, and to help clients conceptualise, identify, and solve their issues and problems. Currently, there are more than 400 types of theories that seek to understand human problems through various perspectives. As not all of these theories are suitable in all contexts, it is of utmost importance for counsellors to be able to choose the most appropriate ones that they are comfortable with. The purpose of this paper is to examine the personality factor that contributes to the selection of theoretical orientation among the counsellors in Selangor. This quantitative study was conducted on a hundred and twenty-two ( $n = 122$ ) registered counsellors in Selangor by using the Big Five Inventory as a questionnaire instrument to examine the personality of respondents. Descriptive statistics and reliability analysis were used in the data analysis. According to the Pearson's  $r$  statistical correlation used, there were significant correlations between most of the personality factors in the Big Five Inventory and the eight counselling theoretical orientations. This study also gives implications to other researchers to explore the use of inventory that is more suitable for demographics in Malaysia in particular, besides exposing the trend of theoretical orientation by the counsellors.*

**Keywords:** *Counselling, Theoretical Orientation, Counselling Theory, Registered Counsellor*



## **Introduction**

The application and development of counselling theory is an important issue that needs to be addressed by counsellors (Zakaria Mohamad, 2010), and especially for novice counsellors (Spruill and Benshoff, 2000). Since the beginning of learning about the world of counselling, existing counsellors need to also understand that in essence, they operate based on counselling theory (Zakaria et. al., 2011a, Corey, 2013; Melati et. al., 2009). Thus, if counsellors do not have a systematic basic theory, counsellors will lose strength, consistency in their training, and the necessary unity (Zakaria et. al., 2011a). Therefore, understanding the theory and applying the theory is paramount important for counsellors in providing the best counselling services (Skovholt and Ronnestad, 1992).

To ensure that counselling sessions can be conducted effectively, the application of theory in the counselling process is an important step that must be taken. Theory is a professional scheme of counsellors that may assist in client's issues (Aina et. al., 2013; Murdock et. al., 1998). Therefore, in examining at issues related to the client's problem, obviously a counsellor should have a certain theory in his intervention in order to provide support to the client (Zakaria et. al., 2011a). It is also a development and self-training of the counsellor where later the counsellor will have a specific theory that can be used in his or her counselling intervention process (Burwell-Pender, 2009).

Researchers have selected eight theories that are often used, especially in Malaysia. These theories are Psychoanalysis Therapy, Adlerian Therapy, Rational Emotional Behaviour Therapy (REBT), Cognitive Behaviour Therapy (CBT), Reality Therapy, Existential Therapy, Person-Client Centered Therapy (PCC) and Gestalt Therapy. The selection of these eight counselling theories also takes into account the emphasis on learning these theories in Malaysia, especially in universities that use textbooks that discuss the theories (Corey, 2013).

There are several factors contributing to the selection of counselling theory by counsellors. Therefore, there is a need to understand the practice of counselling among Registered Counsellors in Malaysia as a whole. Thus, this study will examine the influence of personality factors in contributing to the selection of counsellor theory, especially for counsellors in Selangor.

## **Problem Statement**

Developments in learning about counselling studies especially in Malaysia are still at an early stage (Ramizah, 2016; Melati et. al., 2009; Ng & Steven, 2001). The training given to counselling students is seen to be more focused on the techniques of the counselling process. This indicates that less emphasis is given to the theoretical aspects of counselling and this has been discussed since early 2000, where findings from several studies indicate that counsellors will make their own theoretical orientation choices based on what they know in previous counselling technique classes.

Most universities in Malaysia allocate and offer 3 credit hours for counselling theory subjects in their curriculum; especially in Master studies. Compared to counselling training received at universities in the United States, counselling theory subjects are given 4 credit hours performed intensively (Zakaria Mohamad, 2010; Zakaria et. al., 2011a). The allocation of only 3 credit hours, especially for counselling theory subjects, is to some extent still unable to emphasise the theoretical aspects which then contribute to the lack of theoretical understanding among counsellors (Lembaga Kaunselor Malaysia, 2000).

Although an estimated 400 counselling theories have been developed (Corsini and Wedding, 2005), there are still problems in determining which counselling theory is more appropriate for the client. Studies have been conducted and there are still no findings that some theories are more appropriate than others (Zakaria et. al., 2011b). Therefore, the main factors that determine the appropriateness of the theory used by counsellors in Malaysia are seen to be greatly influenced by family orientation, religious upbringing and local culture. This is further reinforced by the sentiment that if a theory is developed by the west, counsellors will be hesitant to choose an existing theory and eventually the consolidation and understanding in counselling theory becomes weak. Therefore, this study provides an opportunity to identify the relationship of factors to the selection of counselling theory, in particular personality factors among counsellors in Malaysia.

## **Research Objectives**

The objective of this study is to identify the relationship or personality factors that may influence counsellors in Selangor in choosing their counselling theoretical orientation. The researcher also intended to develop the understanding of the relationship from the Big Five Inventory dimensions with the choice of theoretical orientation of the counsellors.

## **Literature Review**

In using certain counselling theories such as Person Centered Therapy, Reality Therapy, or Gestalt Therapy, there are certain ways and strategies in providing interventions to help solve the root cause of the client's problems. Each theory used is also able to contribute to the counsellor's understanding of the client's emotions, cognitive and behaviour in the situation he or she is experiencing (Aina et. al., 2013). However, universities in Malaysia are seen to place less emphasis on the theoretical part of counselling (Zakaria Mohamad, 2010; Zakaria et. al., 2011a; Zakaria Mohamad & Asyraf Rahman, 2011) and this can cause the practice of understanding the theory of counselling to be quite fragile among counsellors. Therefore, the researcher suggested that emphasis should be given to ensure that counsellors are prepared in the selection of counselling theories that they can practice in future counselling sessions.

It is interesting to explore the factors influencing counsellors theoretical orientation choices. Previous researchers such as Ogunfowora and Drapeau (2008), Vasco and Dryden (1994), Beutler and McNabb (1981), Lazarus and Launier (1978), and Cummings and Lucchese (1978) have suggested that external variables such as supervision by lecturers, training received, economic factors and clinical experience have influenced the choice of theoretical orientation. However, this study only focuses on the diversity of factors influencing the selection of counselling theory. Therefore, this is one of the reasons why future studies need to be done in order to conduct research in detail on the theoretical orientation selection factors.

The selection of counselling theory is closely related to the development of counsellors in providing counselling services. Thus, in discussing the issue of counsellor development, one should also consider these developments in relation to the theoretical orientation and interpersonal behaviour of counsellors. Guest and Beutler (1998) state that a comprehensive study needs to be done on the effects of supervision on the development of psychotherapy and counsellors as a whole. Murdock et. al., (1998) studies have referred to the three stage Integrated Development Model of counsellor development identified by Stoltenberg and Delworth (1987) where counsellors' dependence on supervisors is extremely high at the first stage.



In Zakaria et. al., (2011a), the researchers conducted a study to identify the theoretical choice among the Muslim counsellors in Malaysia where it was found that the factors contributing to counselling theoretical choice were personality, lecturer and supervisor influenced, background of the family, religion, self-philosophy and the counsellor's support to the theory that he chooses. This study clearly shows that personality is one of the main factors to the theoretical orientation of the counsellors, in addition to other factors that can be variables to future studies.

In a study conducted by Zakaria et. al., (2010) on selection factors and the role of counselling theory for counsellors in Kuala Lumpur, the findings show that personality factors are found to be one of the contributors to the selection of counselling theory by counsellors. The researchers also explained that theory is important for producing a therapeutic counselling process, in which the respondents realised that counselling theory plays an important role in the counselling process. Further to that however, the respondents faced difficulties in explaining how counselling theory helped them especially in counselling sessions. However, a generalisation could not be carried out because the study was conducted in a case study approach.

Referring to the findings from this past study, the researcher was able to draw a preliminary conclusion that the findings did not show parallelism in the main factors of the selection of theoretical orientation especially to novice counsellors. Even so, many studies show that personality plays a major role in contributing as a major factor in the selection of theory by counsellors. Therefore, this study is expected to help contribute towards the understanding of identifying the factors that contribute to the selection of counselling theory, especially among Registered Counsellors in Malaysia.

## **Research Methodology**

### **Instrument**

A review of literature revealed no specific instrument designed to measure the factors that may contribute to the choice of theoretical orientation. The use of various inventories to examine the personality factors as one of the factors to the selection of theoretical orientation led to the selection of the Big Five Inventory as the instrument used by the researcher for the purpose of this study.

For a start, respondents were given a survey question that contained two parts. In Part A, the researcher requires the respondent to answer some demographic questions related to their personal and professional information. The questions asked for the basic demographic information such as age, gender, the counsellors' primary counselling orientation and their years of service as a Registered Counsellor. The descriptive information was needed to enable the researcher to observe and identify the factors that may influence the variables for this study.

The counsellor's personality was assessed by using the Big Five Inventor, a taxonomy of personality set out based on a lexical approach, which collects words or phrases used in the individual's daily life, to reflect the individual's characteristics with other individuals. This Big Five Inventory questions were provided in Part B of the survey question. Various countries have conducted ongoing research that has led to the development of the growing Big Five Inventory personality taxonomy. This 44-item inventory developed by John (1990) measures individuals on the Big Five Factors (dimensions) of personality, which are then

subdivided into aspects of personality. For the purpose of this research, items in the Big Five Inventory were evaluated on a five-point scale ranging from 1 = “strongly disagree” to 5 = “strongly agree”, in which each item was also arranged randomly.

The used of Big Five Inventory is to capture the relationship between counsellor personality and choice of counselling theory, where the researcher relates the characteristics of an effective counsellor in terms of attitude and self-worth found in each dimension in this inventory. The definitions of each dimension in the Big Five Inventory are: i) Extraversion – an orientation of one’s interest and energies toward the outer world of people and things rather than the inner world of subjective experience which is characterised by positive effect and sociability. It refers to an energetic approach to the social and material world and takes into consideration traits such as sociability, activity, assertiveness and positive emotionality; ii) Agreeableness – the tendency to act in a cooperative and unselfish manner. It symbolises pro-social and communal orientation and takes into account traits such as altruism, tender-mindedness, trust and modesty; iii) Conscientiousness – the tendency to be organised, responsible and hardworking. It illustrates the control of the moving desire task and goal directed behaviour such as thinking before acting, following norms and rules, and planning; iv) Neuroticism – a “chronic level” of emotional instability and proneness to psychological distress. It defines the negative emotionality such as anxious, nervous, sad and tense; and v) Openness to experience – the tendency to be open to new aesthetic cultural or intellectual experiences.

### Data Collection and Analysis

This study was conducted using a quantitative approach method. At the initial stage, the researcher had obtained data on the number of Registered Counsellors in Selangor. A breakdown according to the pattern of work organisation was also conducted to see the main work groups in the selection of respondents. Then, the research instrument was sent to each respondent via their electronic mail address (e-mail) where all respondents were given one (1) month to answer the questions from the instruments provided. They were also instructed to reply to their answers via email to the researcher once they were finished. Descriptive data analysis was also used to obtain demographic profiles of respondents. Data analysis using percentage and mean was also used using SPSS version 22 software.

### Findings

The findings shall refer to the objective of identifying the relationship between personality and theoretical orientation, formulated to examine whether the personality variable was a factor in the selection of theoretical orientation by the counsellors in Selangor. The results relevant to this are presented in Table 1 below. These results of the analysis indicated that there was a significant relationship between the personality and the theoretical orientation.

Referring to Table 1 below, using Pearson’s *r* statistical correlation, there were significant correlations between most of the personality factors and the theoretical orientations. The findings clearly indicated that the Agreeableness dimension has positive significant correlation with all eight theories mentioned in this study, where the highest correlation was with Adlerian theory ( $r = .598, p = .001$ ) and the lowest was with Cognitive Behaviour Therapy (CBT) theory ( $r = .205, p = .015$ ). Extraversion dimension also showed a good positive significant correlation with all eight theories, where the highest correlation was with Gestalt theory ( $r = .396, p = .000$ ) and lowest correlation was with Cognitive Behaviour Therapy (CBT) theory ( $r = .219, p = .015$ ).





The personality dimension of Conscientiousness also showed significant positive correlation with all eight counselling theories, with the highest being Adlerian theory ( $r = .431, p = .000$ ). However, it was presented that this personality dimension was non-significant negative correlation with Existential theory ( $r = -.044, p = .628$ ). Similarly, for the personality dimension of Neuroticism, where only with Cognitive Behaviour Therapy (CBT) theory, does it have non-significant negative correlation ( $r = -.028, p = .757$ ), while the highest significant positive correlation was with Adlerian theory ( $r = .531, p = .000$ ).

For personality dimension Openness, statistical correlation showed that there was a positive significant correlation with Psychoanalytic theory ( $r = .250, p = .005$ ), Reality theory ( $r = .231, p = .010$ ) and Cognitive Behaviour Therapy (CBT) theory. ( $r = .222, p = .014$ ). However, the Openness personality dimension found a non-significant positive correlation with Adlerian theory ( $r = .153, p = .093$ ) and Rational Behavioural Emotive Theory (REBT) ( $r = .152, p = .096$ ). Personality dimension Openness also had non-significant negative correlation with Existential theory ( $r = -.113, p = .216$ ), Person-Centered (PCC) theory ( $r = -.161, p = .077$ ) and Gestalt Theory ( $r = -.112, p = .218$ ).

**Table 1**

*Correlations of Personality Factor and Theoretical Orientations*

Personality	Theories							
	Psyc.	Adlerian	REBT	CBT	Reality	Exist.	PCC	Gestalt
Extraversion	.385** .000	.287** .001	.394** .000	.219* .015	.227* .012	.269** .003	.280** .002	.396** .000
Agreeableness	.558** .000	.598** .000	.500** .000	.205* .023	.398** .000	.364** .000	.452** .000	.520** .000
Conscientiousness	.291** .001	.431** .000	.165 .069	.272** .002	.142 .119	-.044 .628	.207* .022	.309** .001
Neuroticism	.443** .000	.531** .000	.206* .023	-.028 .757	.183* .044	.237** .009	.429** .000	.518** .000
Openness	.250** .005	.153 .093	.152 .096	.222* .014	.231* .010	-.113 .216	-.161 .077	-.112 .218

\* Correlation is significant at the 0.05 level (2-tailed)

\*\* Correlation is significant at the 0.01 level (2-tailed)

Psyc. = Psychoanalytic, REBT = Rational Emotive Behaviour Therapy, CBT = Cognitive Behaviour Therapy, Exist. = Existential, PCC = Person-Client Centered

## Discussions

Murdoch et al. al., (1998) explained that personality can be described through the interaction of individual characteristics with others. This can be explained when a counsellor will choose a theory based on the suitability of the theory with his or her own personality. The influence of personality has been identified as one of the most frequently cited factors and significant variables in determining the influence of counsellors in making their theoretical choices (Aina et. al., 2013; Fitzpatrick et. al., 2010; Bitar et. al., 2007). Factors of theoretical suitability with counsellor personality are relevant from the findings of a study conducted by Petko et. al., (2016); Zakaria et. al., (2011a); and Arthur (2001), in which the researcher found that there are counsellors who choose their preferred theoretical orientation that suits their own character or personality.

This study brings a new perspective in determining the dimensions of the Big Five Inventory as well as the selection of counselling theory by counsellors. This can clearly be seen when there are differences in current research findings with previous studies conducted by Ogunfowora and Drapeau (2008), where the researchers in a later study discussed findings from Scandell, Wlazelek and Scandell (1997) who reported that counsellors prefer Person-Centered Theory, Gestalt theory and Existential theory in orientation are positively correlated with the dimension of Openness in which they described as preferring novel experience, intellectually curious, high in imaginative terms and having a broad interest. A study by Ogunfowora and Drapeau (2008) also found that counsellors and psychotherapists who chose Cognitive Behavior Theory (CBT) and Rational Emotive Behavior Theory (REBT) correlated with the Loyalty dimension.

However, in this study, the findings of personality and choice orientation theory showed that there was no significant relationship with People Centered theory (PPC), Gestalt theory and Existential theory with Openness and correlation dimensions were also negative. The findings by this researcher give the impression that aspects in the Openness dimensions of fantasy, aesthetics, feelings, actions, ideas and values are not addressed by counsellors who choose to apply the three stated theories. In contrast, counsellors who choose these theories do not tend to be imaginative, do not experience emotions intensively, and like changes in their lives but dislike problem-solving situations.

The researchers also presumed, with reference to the Big Five Inventory aspect, that counsellors who had a high level of Neuroticism, were seen to be unable to provide good counselling services to clients. This is because these theory oriented counsellors will face problems if they have to do longer and difficult sessions to focus on the purpose of treatment with the client. In addition to this discussion, there are also researchers who have found that cognitive behavioural therapists are less flexible, have limited acceptance of their own feelings and are more neurotic (Boswell, et. Al., 2009). Thus, for the current research, the findings from the correlation analysis indicate that and it is proven that counsellors who choose cognitive behavioural therapy have low scores on the Neuroticism dimension ( $r = .028$ ,  $p = .757$ ).

The researcher also argues that the relationship between personality and theoretical orientation among counsellors in Selangor is not relevant to some literature reviews, if referred to Arthur (2001) and Poznanski and McLennan (2003). Pearson correlation analysis that has been performed shows that there is a positive relationship between the dimensions of consciousness and psychoanalytic orientation ( $r = .291$ ,  $p = .001$ ). In a study conducted by Arthur (2001), researchers explained that psychoanalytic orientation counsellors or therapists strongly avoid mistakes and take risks. This statement further clarifies aspects of the Big Five Inventory that make it clear that avoiding unnecessary risk is a hallmark of the awareness dimension. Therefore, the findings of this study clearly show that the personality



of the counsellor is one of the main factors in the selection of his counselling theory. However, further studies could be conducted in the future to assess the willingness of counsellors to provide long term counselling services using the Big Five Inventory and also to assess their personalities with respect to their therapeutic work with clients.

## **Conclusions**

The process of developing a personal theory of counselling begins during student practicum and internship and will continue throughout their professional careers (Spruill and Benschoff, 2000). By having a variety of theory orientation options, counsellors will have a guide to produce good therapeutic counselling sessions (Zakaria et. al., 2011a). The current research highlights personality factor as a factor that can influence theory choice among counsellors serving in Selangor. Future studies are expected to examine several other factors which include family background, religion, life philosophy, life experience, choice of lecturer, training received at university, orientation and economics of peers, where these factors were believed to be contributing factors to the theoretical orientation of counsellors in past studies.

Counselling is a process of helping clients where a counsellor is supposed to know himself in terms of his self-worth, attitude, his counselling skills, counselling knowledge and current issues. Self-worth is very important as it shows confidence in the ability of the counsellor to act. For example, in having a self-personality that is capable of being open to any change, a counsellor will show his or her willingness to listen to any issues brought up by the client without punishing. This is also very necessary in the self-development of counsellors where the characteristic of certain counselling theories requires a different personality approach. Therefore, when the counsellor is able to connect his or her personality with the requirements of the counselling theory itself, then the counselling process will be more successful.

The researcher also agreed that the use of the Big Five Inventory greatly contributed to personality research on selection theory by counsellors. The use of the Big Five Inventory can also help understand the counsellor's experience in addressing his or her problems regarding the appropriateness of counselling theory. Be aware that counselling is a rewarding process in which the counsellor will provide assistance to his client and the counsellor himself should be in a better position than the client. Therefore, before embarking on a mission to help others, a counsellor should know about himself first in terms of self-esteem, attitude, personality, counselling skills, knowledge of counselling and current issues and his understanding of it (Nor Amni Yusoff, 2016).

This study clearly shows that the selection of counselling theory among counsellors, especially in Selangor is influenced by one of them is the personality factor. However, because this study only studied a small number of respondents ( $n = 122$ ), generalisations to all counsellors were unlikely. Therefore, the researcher suggests that surveys or case studies that take into account the population of registered counsellors, triangulation data collection and data analysis involving descriptive statistical techniques are recommended for future research.

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## **Decision Making and Self-Efficacy in Choosing Renal Replacement Therapy (RRT) Option among Chronic Kidney Disease Patients**

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### **Abstract**

*The patient diagnosed with Chronic Kidney Disease is increasing tremendously. There are 5 stages of CKD progression and patient diagnosed with CKD stages 4 and 5 needs to make decision on choosing the Renal Replacement Therapy (RRT) option as a lifelong treatment. The RRT comprises of renal transplant, CAPD (Continuous Ambulatory Peritoneal Dialysis) and Haemodialysis treatment. Decision-making and self-efficacy may play a role in choosing these options. The impact of Covid-19 pandemic may have an impact on the decision making and self-efficacy of CKD patients. The aim of this research is to study the decision making among Chronic Kidney Disease (CKD) patients in choosing Renal Replacement Therapy (RRT) option. This is a quantitative research study. The sampling method applied is stratified sampling, whereby patients are selected based on selected criteria. It is a prospective study that includes stages 4 &5 CKD patients during Nephrology Clinic review. Data on demographic, clinical, and number of visits will be evaluated. A total of 500 CKD patients will be screened and a total of 200 (100 male and 100 female) CKD patients will be administrated with Shared Decision Making-Q-9 (SDM-Q-9) and Chronic Disease Self-Efficacy scales (CDESES) questionnaire. The quantitative data of the findings will be analysed using SPSS through p-value and correlation. The significance of these study is to assist CKD patients in the decision making process, reduce delayed decision making leads to hospital administration, increase communication skills between health care worker and CKD patient, develop mutual respect and understanding between CKD patients. CKD patients can identify level of*



*self-efficacy towards their illness, reduce number of regular visit and timing to nephrology clinic, reduce the cost of medical treatment, improve patients' economy level, and increases family unity and support and assisting health care provider in designing effective treatment for the patients.*

**Keywords:** *Chronic Kidney disease (CKD), Renal Replacement Therapy (RRT), Continuous Ambulatory Peritoneal Dialysis (CAPD), Haemodialysis, Decision Making, Self-efficacy*

## Introduction

The prevalence of chronic kidney disease (CKD) among Malaysians is worrying. There are many factors that lead to chronic kidney disease (CKD), one of it is prolonged diabetes and hypertension. These patients progressively lose their kidney function until dialysis is required. In fact, these patients may have higher mortality risk if they are not treated. Apart from that, they may also experience a life changing impact on quality of life and functional status. There are five stages of chronic kidney disease, and the last stage is termed as End Stage Renal Disease (ESRD) (Haddad et. al., 2019). During initial stages of 1 to 3, patient kidney function will eventually deteriorate, but when it enters to stage 4 and 5, the kidney's total function is gone and patient requires renal replacement therapy (RRT), as a choice of long-term treatment. Renal Replacement Therapy can be defined as choices of treatment for End Stage Renal Disease (ESRD), which comprises of Kidney transplantation, PD (Peritoneal Dialysis), and Haemodialysis (Smyth, 2012). At these stage patients will need to choose any of the three treatment option as their long-term therapy treatment.

Kidney transplantation or renal transplantation involves a kidney organ transplant for a patient with end-stage renal disease (ESRD). Peritoneal dialysis (PD) refers to a dialysis technique that uses the patient's own body tissues inside the abdominal cavity as a filter while haemodialysis refers to dialysis of purifying through patient's blood (Haddad et. al., 2019). Choosing the choices that represent may impact patient cognitive process as well. The process of cognitive process, which includes decision-making, is very essential in choosing the best option among the patient. The transition from Chronic Kidney Disease (CKD) to renal replacement therapy (RRT) is a stressful event for the patients (Bezerra CIL, et. al., 2018). The RRT decision-making process is very challenging as the nephrologists need to provide education and support in helping patients with dialysis modality, which reflects the patient's personal values and lifestyle (Bezerra CIL, et. al., 2018). In fact, there are no studies on treatment decision-making in ESKD conducted (Boateng et. al., 2018). The factors that can influence patient's decision-making are impact of peers on decision making by patients and carers, the problematic timing of information presented, and the desire by patients to maintain the status quo (Morton et. al., 2010). Four main factors (personal, financial, healthcare system, and support network) were also identified to have an influence on CKD (Chronic Kidney Disease) patient decision-making as well (Boateng et. al., 2018). In the current Covid-19 pandemic, the decision making can be enhanced through many factors as well which may impact on the decision making process of patients choosing the RRT options. During this pandemic, chronic patients may experience inadequate ongoing care due to their chronic condition. The pandemic has strained the health care system resources and adversely affected the clinical decision making among health care workers and patients (Laupacis, 2020).

Self-efficacy was a term introduced by Albert Bandura whereby it's one's belief in their own ability to successfully perform an activity and achieve the expected outcomes (Ebrahimi et. al., 2018). It is also considered an important concept in the assessment and improvement of chronic conditions (self-management, quality of life, behavioral modification, hopefulness, lifestyle modification, physical and mental health, and disease presentation (Mohamadinejad et. al., 2015). This is because there are factors influencing self-efficacy of chronic patients, such as age, low education level, financial distress, single status, caregiver burnout, co-morbidities, increasing body mass index (BMI), illness perception, and disease severity (Shakya, 2018). In another study, self-efficacy factors influence the level of knowledge and how patient manage them self (Milo, 2017). In the current global situation where the pandemic may eventually impact the self-efficacy of chronic disease patients as well. Their belief system may also have an impact on their decision making process as well. The pandemic has impacted the self-efficacy and preventive behaviours which correlate with mental health, and these eventually affect in the factors of gender, age, and type of chronic disease that a patient experiences (Yildirim & Guler, 2020).

The decision making involves cognitive process while patient's action or behaviour on what they have decided, and self-efficacy involve cognitive as well in the internal processes. In fact, the decision-making processes have been shown to have a link in the self-efficacy of an individual (Bahari, 2019).

### **Problem Statement**

In Malaysia, a population-based study in 2011 reported that 9.1% of Malaysians were found to have Chronic Kidney Disease (Ismail et. al., 2019). Looking at the global prevalence, it is reported that the percentage is 11% and 13% (Hill et. al., 2016). The breakdown of the stages OF CKD contributes stage 1, 4.16%; stage 2, 2.0%; stage 3, 2.26%; stage 4, 0.24%; and stage 5, 0.36% (Hill et. al., 2016). When looking at the statistic RRT options, Haemodialysis (HD) with the prevalence of 1059 patients per million population (pmp) in 2016 followed by peritoneal dialysis (PD) (127 patients pmp) and renal transplantation (RT) (59 patients pmp) (Ismail et. al., 2019). The requirement on the need to choose the RRT option is very challenging based on the number. When zooming on the prevalence, the incidence of Chronic Kidney Disease (CKD) patients requiring follow up in Hospital Ipoh from year 2017 (968) to 2018 (1126), the data indicated that a patient who is currently undergoing follow up treatment for Chronic Kidney Disease would eventually end up in End Stage Renal Disease. This number will eventually increase and impact the health care setting and a guided patient needs to establish a good treatment option. Choosing RRT might be a dilemma for both patients and nephrologists since different options of RRT are available for CKD patients (Bezerra CIL, et. al., 2018). Assisting patient in deciding the best option is very challenging for nephrologists and healthcare workers during this period of Covid-19 global pandemic. Understanding and evaluating patient decision making process is important as it can assist the nephrologists to plan further treatment and assist patient with the selected treatment option as the impact of Covid-19 may influence the decision making process. When these patients delay or if they are undecided what treatment option to choose, it will eventually affect their quality of life and eventually, increases the mortality rate. Apart from the pandemic, the mortality rate can increase if an effective strategies are not taken. Current evidence suggested that early RRT option will reduce mortality and provide better renal recovery (Zarbock, 2016). The dilemma that may impact this group will be the factors that lead to a better decision-making. Even with the impact of Covid-19, factors that can influence better decision making need to be evaluated. Patient's own belief system in choosing the treatment option may eventually contribute to better outcome in terms of the quality of treatment. Assisting and guiding these patients in choosing the best option is essential as it can contribute to the well being and quality of life of the CKD patients.





## **Research Objectives**

The general objective of this study is to study the decision-making among Chronic Kidney Disease (CKD) patients in choosing Renal Replacement Therapy (RRT). The specific objectives of the quantitative study are to explore factors that contribute to decision making of CKD patients in choosing RRT options and to identify the association between self-efficacy with decision-making process. The research questions and hypotheses in this research are as follows:

- a) What are the factors that contribute to decision making of CKD patients in choosing RRT options?
- b) How self-efficacy influences decision making of patient in choosing RRT options
  - Hypothesis 1: There is a relationship between self-efficacy, social support and decision making
  - Hypothesis 2: There are factors that contribute to decision making of RRT options?
  - Hypothesis 3: There is a difference in decision making between age and gender
  - Hypothesis 4: There is a difference in decision making between gender and education level
  - Hypothesis 5: There is a difference in self-efficacy between age and gender
  - Hypothesis 6: There is a difference in self-efficacy between gender and education level

## **Literature Review**

Chronic kidney disease (CKD) is a disease where the kidneys are damaged and can't filter blood the way it should be. The risk factors in developing kidney disease are diabetes, high blood pressure, heart disease, and a family history of kidney failure (Fadem, 2018). Chronic kidney disease (CKD) can be categorised to 5 stages of kidney damage, with mild damage in Stage 1 to complete kidney failure in Stage 5. The stages of kidney disease refer to how well the kidney filter waste and extra fluid from the blood. The measure of how the kidney filters waste from the blood, the eGFR (Estimated Glomerular Filtration Rate), is a blood test done to measure it (AKF, 2019). A person with Stage 5 CKD has end stage renal disease (ESRD) with a GFR of 15 ml/min or less (Fadem, 2018). This will be the end stage where the kidney completely fails to work. At this stage, kidney transplant or dialysis is required (AKF, 2019). Apparently, the patient needs to decide and proceed with the renal replacement therapy option. Renal replacement therapy (RRT) is a therapy that replaces the normal blood-filtering function of the kidneys. Basically, RRT used to improve the balance through removing waste, unwanted solutes and water through a semi permeable membrane (Cooper, 2017). Renal replacement therapy includes kidney transplant, haemodialysis, and peritoneal dialysis which are various ways of filtration of blood (Fadem, 2018).

Decision making is a process where an individual is required to select one option from several available alternatives. In general, decision making involves the individual determination of the risks and benefits related to the options, knowledge of the risk, ability to retrieve information from memory and also the ability to hold it in the mind while comparing with other options (Xu, Abshire, & Han, 2015). Decision making process among patients diagnosed with CKD. In a study indicated that medical decision making is influenced by the patient's diagnosis, cognitive functioning, and functional abilities and skills, with sensitivity to the person's race, ethnicity, and past experiences (Gross, 2016). Decision making can be a collaborative process between two individuals or group of members. Shared decision making (SDM) is a term to describe the collaborative process involving, at a minimum, the patient and the clinician finding the optimal treatment option for a patient (Subramaniam et. al., 2018).

When making a decision, it actually differs from one individual to another where different individual may have different factors that affect their decision making. There are many factors that can be discussed that contribute to the decision making of an individual. In the general population, a study that was conducted on behavioral finance, it is documented that factors leading to investors decision making are psychological factors (cognitive and emotional) and demographic factors (Al-Alawi, 2017). In discussing about chronic patients, the factors that influence their decision making are, knowledge, values, experiences, awareness, personality, socio demographic, psychological factor, communication, and internal belief. Decision making is an important task that an individual needs to act as it will guide in solving a problem as well. In the past, there were few studies which discussed the impact of decision making and delayed decision making. In a study done in a clinical setting, crucial decision making is a pathway to the trade-offs in treatment strategies, if it is delayed the impact may cause the lack of congruence among clinicians about the desired options, and also the documented workflow and communication barriers that may prevent clinicians and patients from achieving good decision making (Nichols, 2018).

In order to understand in depth on decision-making style, patient's self-efficacy need to be evaluated and how it impact patient's decision making process. Self-efficacy is the belief that we have in our own abilities, specifically our ability to meet the challenges ahead of us and complete a task successfully (Akhtar, 2008). There are many research being done on the study of self-efficacy. In a spiritual well being of an individual, self-efficacy plays a mediator in their mindfulness for the purpose of well-being (Ruiz, 2018). In order to understand the concept of self-efficacy, understanding the factors that contribute to this is essential to gauge the individual self-efficacy level. In general, understanding experiences do not play a vital role in influencing the self-efficacy level. In special education teachers, it is found that there was no correlation between experience and self-efficacy and professional development of those teachers (Sciarretto, 2019). In comparing self-efficacy in health setting, patient who have been diagnosed with chronic illness, may eventually affect the self-efficacy during illness process. Self-efficacy among CKD can support the behavior and eventually can assist patient in making a good decision-making (Sorait, 2018). In a study among 200 haemodialysis patients, a correlation study was done to determine the relationship between social support, self-efficacy and health promoting behaviour. Self-efficacy was significantly associated with social support, in other words, social support is an important element that contributes to self-efficacy in chronic patients (Kiajamali et. al, 2017).



## Research Method

This is an applied research type and its quantitative study mode method. Quantitative method is practical in health setting as it can assess the decision-making and self-efficacy among chronic kidney disease patients. Besides, the questionnaire used is proven to be reliable and valid that will give a sense of involvement and partnership.

The stratified sampling selection process is the ideal technique to determine the generalisability of the survey finding. For the sample of this study, the selected sample was chronic kidney disease patients. The sample size will be taken based on the Krejcie & Morgan table (Krejcie & Morgan, 1970). The total number of sample size needed based on the formula of sample size, will be a total of 277 samples whereby the overall population size is 1000. Hence, in this study, a total of 500 patients will be selected to participate in the study from the 1000 population size. In order to follow this step, a total number of 500 CKD patients will be screened and selected to answer the Shared Decision making (SDM-Q-9) and Chronic Disease Self-Efficacy scales (CDSSES) questionnaires, and out of this, 200 patients will be answering the questionnaire and will be selected for data analysis. There are certain criteria that will be set in order to choose a good sample for the research study. The initial 200 patients (100 Male, 100 Female) will be screened from the 500 sample using inclusion and exclusion criteria. Inclusion criteria will be age limit (18-75 years) to ensure the informed consent at legal age, patients who are diagnosed with stage 4 and 5 of chronic kidney disease and patients following under Nephrology follow up more than three times in a year. The exclusion criteria will be patient with serious intellectual impairment, age less than 18 and more than 75 years old, patient defaulted clinic follow up 3 times in a year and patients who are diagnosed with stage 1, 2 and 3 CKD.

### Instrument

#### *Survey Tool Quantitative – Shared Decision Making (SDM-Q-9) and Chronic Disease Self-Efficacy Scales (CDSSES)*

In the measuring the decision making among CKD patients, the nine-item Shared Decision Making questionnaire (SDM-Q-9) will be used in this research. It is considered one of the most frequently applied instruments for assessing patient's involvement in the medical decision making. It was developed in 2009 and has since been translated to 20 languages (Rencz et. al., 2019). Each closed questions represent by statement featuring various aspect of SDM, rated by 6 Likert scale rating. The psychometric testing shows 93% completion rate for all items and the difficulty ranged from 3.52 to 4.34 on scale from 0 to 5 and the scale internal consistency shows ( $\alpha = .88$ ) hence this version was tested in U.S and confirmed as having a high internal consistency level (Doherr et. al., 2017).

In assessing self-efficacy level among CKD patients, the Chronic Disease Self-Efficacy scales (CDSSES) questionnaire will be used. It was obtained by adapting the original form of the Chronic Diseases Self-Efficacy Scale (CDSSES) to Turkish. The scale developed by Lorig et. al. (1996) in America was composed of 6 questions and ten sub dimensions. The CDSSES scale were examined in data with aggregated from 6 studies which include 2,866 patients with various chronic illnesses, the internal consistency was high throughout the 6 research study (Cronbach's  $\alpha$  0.87–0.91), and moderate correlations obtained with SEMCD scores (Riechm et. al., 2016). In another study, the Cronbach's  $\alpha$  values of the scale was 0.95 and the total score correlation between the items were 0.55–0.96 (Ceyhan & Unsal, 2017).

## **Pilot Study**

In order to evaluate the reliability and validity of the questionnaire before given to patients, a pilot study was conducted. Generally, there are two types of questionnaire distributed to patients. A total number of 20 patients were selected to answer the question based on the designed criteria. The patients will be excluded from the initial study data collection so as to avoid any bias in data collection and interpretation. The initial pilot study was conducted in Nephrology Clinic on July 22<sup>nd</sup> and 23<sup>rd</sup> 2020 whereby a total of 10 patients were selected on 22<sup>nd</sup> of July 2020, and the remaining 10 patients on the 23<sup>rd</sup> of July 2020. Generally, the two types of question are in English and Malay language. The patients successfully answered all the questions, and it was analysed using SPSS software. The descriptive characteristics of the sample study are computed and both questionnaires are tested based on the distribution of each item, items difficulty, factor analysis and the internal consistency.

The SDM-Q-9 questionnaire, which has 9 questions shows the internal consistency 0.953 hence it is more than 0.9 range, where else the CDSES questionnaire internal reliability shows that each items question shows alpha value of 0.885 for 6 number of items questions. This shows the internal reliability is overall good hence in this study it still can be applied for further analysis using larger sample population. KMO value for sampling adequacy for SDM-Q-9 questionnaire shows a value of 0.632, where else for CDSES questionnaire the value is 0.615 hence it shows the sampling adequate to be applied in this population.

Prior to commencement of this study, approvals will be obtained from the CRC (Clinical Research Centre Ministry of Health, the Head of Department and institution.

## **Significance of the Study**

Decision making in choosing the best option for Renal Replacement Therapy (RRT) may eventually gives a great impact in preparing patient to undergo lifelong treatment. Apart from that, delay in decision-making may impact the patients due to various complications. By identifying these factors of decision-making and self-efficacy, health care workers can help assist and guide patients to improve their quality of life with the type of treatment chosen. Chronic Kidney Disease patient can identify their level of self-efficacy of their illness, and this may impact their own internal belief and strength besides enhancing their motivational level. With faster decision-making process, the RRT option it will help reduce the waiting time of patients who regularly have followed up visits in one year at the Nephrology clinic. Early decision making will also reduce the cost of medical treatment as a result of patient hospitalisation arising from various complication due to delayed decision making. With proper planning and intervention, patients may be able to continue working to support themselves despite the illness they are facing.



## Discussion and Recommendations

Patient decision making in selecting the option for Renal Replacement Therapy (RRT) is very important in nephrology field. During the Covid-19 pandemic, there might be an impact on the decision making of patients in choosing the RRT options. This is due to the many factors that can influence the decision making among these CKD patients, which include knowledge, values, experiences, awareness, personality, socio-demographic, psychological factor, communication, and internal belief. Patient's own belief and abilities which are known as self-efficacy may contribute to the decision making of choosing the RRT option. Factors that contribute to the self-efficacy of an individual include social support, self-efficacy and health promoting behaviour. There are certain aspects of decision making in RRT option among CKD patients that need some attention in future research when using psycho education approach that will enhance the decision-making process.

## Conclusion

The overall article discusses about the decision-making and self-efficacy among Chronic Kidney Disease patients in choosing Renal Replacement Therapy (RRT) option. Limitation in this study is the sampling of patients who are randomly selected, and this can affect the sampling size. Apart from the long waiting time for patients to meet the nephrologists, this may lead to patients not cooperating to answer the questionnaire besides the patients' health conditions that may impact the data collection. Also, the pandemic is limiting the number of patients visiting the Nephrology clinic and this may affect the sampling size.

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## Performance Levels and Perspective of Graduate Learners' on Fully Online Learning During Covid-19 Pandemic: The OUM Experience

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### Abstract

*Open University Malaysia (OUM) is a leading open and distance learning institution in Malaysia that offers its programs in blended mode. The blended mode of learning comprises self-managed learning, face-to-face tutorials, and online forum. Through its learning platform, named 'myINSPIRE', OUM has successfully offered some of its programmes fully online. The outbreak COVID-19 in early 2020 has pushed OUM to offer all its programmes fully online, including programmes for graduates. Measures were taken to improve teaching and learning support online. Part of the efforts included having weekly e-lessons and e-tutorials, as well as online exams. Learners have been exposed to new learning experiences where they faced many challenges. This study is conducted with the aim to investigate how these changes have affected learners' performance and their perspective towards fully online learning. A total of 143 post graduate learners enrolled in OUM under the Cluster of Applied Sciences participated in this study. The readiness for change model used in the study is based on Technology Acceptance Model (TAM). The model applies perceived usefulness and perceived ease of use to measure user acceptance of technology. The findings indicate that overall, the graduate learners have an acceptable level of readiness for change and are able to adapt and continue learning online despite facing some issues and challenges. It was found that the performance of the learners pre- and post- lockdown seemed to be comparable. Nevertheless, there is a need to find ways to improve and better tailor the online learning environment for our adult learners so as to make their fully online learning experience more rewarding.*

**Keywords:** *Open and Distance Learning, Online Learning, Innovative Pedagogy, Graduate Learners, New Norms*





## **Introduction**

The COVID-19 pandemic has a tremendous impact on the lives of all human beings across the world. It has caused disruptions to the lives of people and caused daily activities to come to a standstill in many parts of the world. The global impact of COVID-19 pandemic is multifaceted and is clearly manifested in almost all sectors, particularly the health, economic and education sectors. The pandemic has forced global shutdown of several activities, including educational activities, and this has resulted in tremendous crisis-response migration of universities with online learning serving as the educational platform. Almost all countries have implemented schools and universities closures and most of universities have enforced localised closures (UNESCO, 2020). In view of this situation, the Government of Malaysia has declared a Movement Control Order (MCO), including an order of closure of all educational institutions since 18 March 2020 due to the pandemic. The nationwide lockdown was imposed in order to control and reduce the number of people infected with the virus. The lockdown has brought about various challenges in the 1 day-to-day activities in the country and the higher education sector is no exception. All academic and non-academic activities of all universities were disrupted to a great extent.

Open University Malaysia (OUM), the premier Open and Distance Learning (ODL) university in the country, was no exception resulting it to temporarily postpone all its teaching-learning activities, including assessments and examinations and graduation. This is also true for all higher education institutions that have been forced to close and continue to conduct their teaching and learning online. With the movement control order, the face-to-face tutorials had to be cancelled. To allow teaching and learning to continue, several adjustments had to be made in the delivery of content and assessment of learners. Among the changes were the switch to online tutorials to replace the biweekly face-to-face sessions, incorporating weekly online e-lessons, and also having final exams online. OUM has since continued to offer all its graduate courses fully online.

The purpose of this study is to look at the perspectives and acceptance of learners towards fully online delivery at OUM and to find out the challenges that they faced. The academic results of the learners prior to MCO will be compared to the results of the learners during this fully online delivery. This is to support the findings of the perspectives of graduate learners and compare their performance levels before and after the switch to fully online mode.

## **Literature Review**

Open University Malaysia is the first open university in the country that adopted a blended learning approach since its inception. This approach is commonly used by open and distance learning higher education institutions and according to Melton et al., (2009), it has been found to be helpful in increasing retention rates. Since day one, OUM's mission was to widen access to quality education and to provide lifelong learning opportunities by leveraging technology, adopting flexible modes of learning, and providing a conducive and engaging learning environment at a competitive and affordable cost.

**Figure 1**

*OUM Blended Learning Mode*

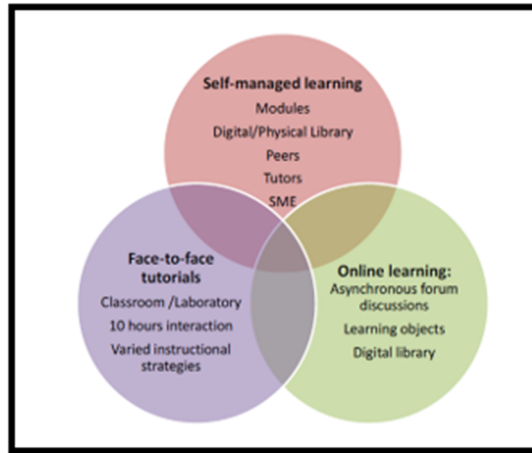


Figure 1 shows the blended mode at OUM that promotes self-managed learning supported by face-to-face instruction and online learning. Face-to-face tutorials were held bi-weekly at OUM learning centres throughout the country. Learners have the opportunity to physically meet their tutors and have discussions on the course and assessment related matters.

**Figure 2**

*OUM Support for Online Learning*

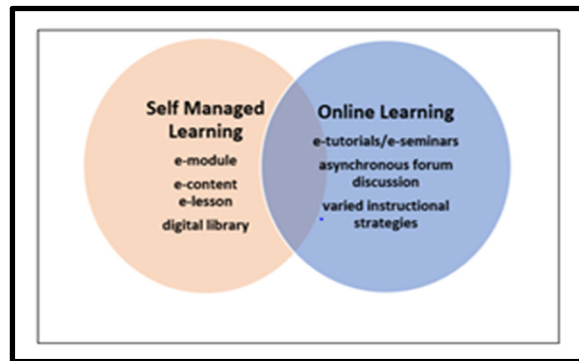


Figure 2 above shows the support for online learning at OUM. Through the use of OUM's learning management system, myINSPIRE, learners can participate in asynchronous forum discussions with their respective e-tutors and peers. Learners can access downloadable e-modules, i-lectures, e-content and also access the digital library. In 2019, OUM began introducing e-lessons in some of the courses. The objective of this weekly e-lesson is to enrich learners' learning by referring to related open educational resources (OER) videos, followed by discussion questions, and self-check quizzes pre- and post e-lesson. In 2020, OUM launched its official mobile app, myOUM, which allows instant access to the latest announcements. Also, learners are able to get information on their courses, assessment, assignment, lecture/tutorial timetable and exam timetable.



With the MCO announced by the government, OUM made the decision to implement fully online learning for all academic programmes offered by the university. With the move, all courses were required to have e-lessons and e-tutorials. e-Tutorials are one hour online tutorial sessions conducted via Google Meet to substitute the face-to-face tutorials used in the blended learning mode. Each e-tutorial session is recorded by the e-tutor to be shared with all the learners in the course. Learners have the flexibility of accessing and viewing the recorded sessions at any time, in case they were unable to attend the live sessions.

In recent times, research on students' perceptions and their expectations from e-learning has been conducted by several researchers (Armstrong, 2011, Biswas et al., 2020). The "National Center for Education Statistics" has reported the growing requirement of e-learning due to its increased acceptance recently. Several studies indicate that most of the students enrolled in online courses are satisfied with the mode of learning. However, studies also reveal that perceptions of learners are affected by a host of factors (Shrestha et al., 2019, Salloum et al., 2019, Pérez-Pérez et al., 2020). Age, gender, prior knowledge of computer literacy and individual learning styles are some factors that are vital predictors of technology acceptance by students. There exists ample literature which discusses the theories of "technology acceptance" to study students' perception (Al Kurdi et al., 2020).

There have also been recent studies that highlight the issues and challenges faced by university students (Mohd Yusuf & Ahmad, 2020, Nassr et al., 2020; Amir et al., 2020; Al-Rasheed, 2021) who have to take classes online. The common obstacles and challenges faced include accessibility, unstable internet connections, time management, technical difficulties, online content, and virtual learning environments. However, these studies involved undergraduate students.

Choong (2020) in her paper discussed assessment hurdles especially for examinations, as it is a major part of tertiary education. These examinations were usually held in examination halls or rooms, but due to COVID-19 pandemic restrictions, students are not allowed to attend. Universities cannot defer these examinations, offering online assessments instead. This method has its own problems as students are prone to cheating when they are not monitored in person.

El Said (2021) looked into the performance of business students at a university in Egypt and compared pre and post pandemic grades of students; where the first group completed the course via face-to-face and the second completed the same course through fully online mode. The study also looked into student satisfaction with the university's distance education portal used during COVID-19 lockdown. The study found no significant difference between the two groups. Despite the changes and challenges with online education, the students' grades were not affected.

Higher education institutions faced many challenges during the COVID-19 pandemic, in their teaching and learning activities as well as conducting assessments remotely. Several main challenges were identified as academic dishonesty, infrastructure, coverage of learning outcomes, and commitment of students to submit assessments (Guangul et al., 2020).

Studies on graduate students' performance and perspectives towards online learning during the lockdown due to COVID-19 are limited and this study attempted to do as such.

## Research Objectives

The objectives of this study are two-fold: 1) to investigate the perspectives of graduate learners towards the switch to fully online; and 2) to compare the performance level of graduate learners before and after the switch to fully online mode. The study seeks to answer the following related questions:

- What are the tensions, frustrations, misinterpretations, and confusions faced by the learners while engaged in their courses during the period of COVID lockdown (fully online delivery)?
- How is the performance of the learners prior to the period of COVID outbreak (blended mode) compared to their performance during the period of COVID lockdown (fully online delivery)?

## Research Method

In order to investigate the perspectives of OUM graduate learners on fully online learning, we used a quantitative approach. Data was collected using a questionnaire to gather information on the levels of readiness and perception of the learners. To further understand the data collected, the data was categorised under five categories: perceived personal competence, perceived usefulness, perceived ease of use, computer self-efficacy, and organisational commitment. To look at performance, data on learner performance was obtained for the semesters prior to the lockdown and after the lockdown; specifically, for the six semesters before the switch to fully online learning and three semesters after the switch. All of the masters' programmes at OUM are for a duration of two years.

## Sampling Procedures and Participants

The target population of this research was graduate learners from the Cluster of Applied Sciences at OUM. The sample size of this study is 143 respondents from 6 different graduate programmes within the cluster: Master of Facility Management (MFM), Master of Information Technology (MIT), Master of Nursing (MN), Master of Occupational Safety and Health Risk Management (MOSHRM), Master of Quality Management (MQM), and Master of Project Management (MPM). All of the programmes have received full accreditation from MQA. This study used a purposive sampling method to select the targeted respondents which are the graduate learners from the Cluster.

## Research Model

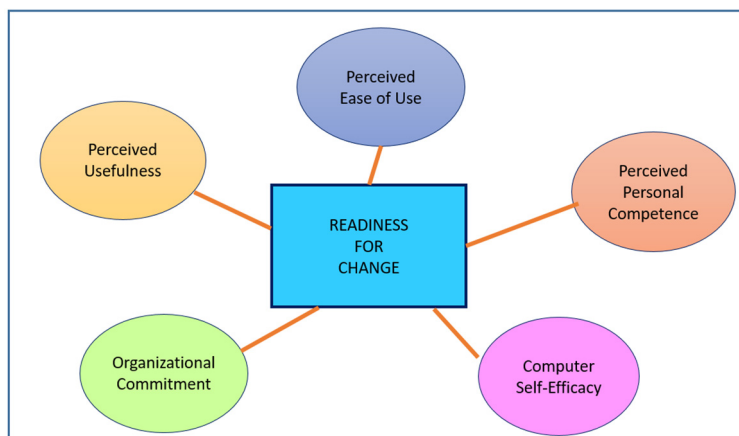
The first part of the study used a model based on the Readiness for Change Model by Kwahk and Lee (2008) which is based on the technology acceptance model (TAM) (Davis, 1989). TAM uses technology acceptance based on psychological factors. According to the TAM model, Perceived Usefulness (PU) and Perceived Ease of Use (PEU) are two essential factors that affect user's acceptance of any type of technology. Kwahk and Lee have added two additional factors for the readiness for change: perceived personal competence and organisational commitment. Several multidisciplinary studies have used TAM as a grounding framework, especially for course management systems usage and satisfaction with online learning (Arbaugh, 2010). Maheshwari (2021) has also explored student perceived enjoyment (satisfaction) which affects their online learning, using ICT infrastructure and internet speed and access.



The model used in this study includes the following factors for the readiness of change: perceived personal competence, perceived usefulness, perceived ease of use, computer self-efficacy, and organisational commitment; as shown in Figure 3.

**Figure 3**

*Research Model*



## Questionnaire

The instrument of this survey included items that were divided into seven (7) sections: Current State of Readiness, Learning Management System, Course Content, e-Tutorials, Online e-Tutors, Student Support Service and Fully Online Courses. Out of the 686 online surveys distributed, about 143 (20.8%) responded to the survey.

The sections were tagged based on the following categories (see Table 1):

**Table 1**

*Categories for Questionnaire Sections*

Categories	Sections
Computer Self-efficacy	Learning Management System (LMS)
Perceived Ease of Use	Course Content
Perceived Usefulness	Fully online courses
Perceived Personal Competence	e-Tutorials
Organisational Commitment	Online e-Tutor and Student Support Services
Readiness for Change	Current State of Readiness

For the second part of the study, data on the performance of the learners were obtained from OUM Assessment and Examination Department (AED). The results of learners for equivalent semesters during the normal semester (Blended mode) and the 'lockdown' semesters (Fully online mode) were analysed and compared.

## Findings

Out of the 143 who responded, 30.77% were learners enrolled in the MOSHRM programme, 23.78% in MQM, 20.28% in MPM, 12.59% in MIT, 9.09% in MN and 3.50 % in MFM. Furthermore, 46.15% of the respondents were female learners, and 53.85% were male learners. 47.55% of the respondents were in their first year of their programme, while 52.45% were in their final year. Only 6.9% of the respondents were in their final semester.

### Findings on Current State of Readiness

We tried to look into readiness for change by focusing on positive attitudes towards items that would reflect learners' readiness as an online learner. Learners were asked to rate on: having reliable connection for accessibility; their willingness to put in time for their online course and how well they are able to manage their time; their willingness to use online tools and the university learning management system; whether they were equipped for video conferencing; and how comfortable they were being online and surfing the Internet.

Out of the 143 respondents, 80.4% agreed or strongly agreed that they were good at managing their time. 3.4% rated otherwise. 94.4% agreed or strongly agreed on their willingness to use online tools and the university LMS, myINSPIRE. Only one learner strongly disagreed on the matter. Meanwhile 86.7% of the respondents agreed or strongly agreed that they were equipped for video conferencing with their tutors and course mates. With respect to having reliable connection, 80.4% agreed or strongly agreed, while 6.9% rated otherwise. In addition, 95.1% agreed or strongly agreed that they were comfortable surfing online.

### Findings on Learning Management System (LMS)

To be able to engage online, learners at OUM must access and use OUM's learning management system, myINSPIRE. Learners were asked to rate on the following: ease of access to and within myINSPIRE; user-friendliness of the system; and ease of communication with their tutor and coursemates via the discussion forums. This allowed us to look at the self-efficacy of our learners in their use of computers and the LMS. The data showed that 77.62% of the learners agree or strongly agree that OUM myINSPIRE is user-friendly and 81.8% of the learners agree or strongly agree on easy navigation. OUM myINSPIRE is Moodle based and is equipped to support fully online learning. Learners must be able to use the platform for their learning. A study done by Kasim and Khalid (2016) points out the critical factor that impacts learner satisfaction is LMS features that meet learners' needs and facilitates its use. They emphasised the systematic and interactive elements in the LMS which, supported by its flexibility and learner-centeredness, are able to promote more meaningful learning experiences for learners.

### Findings on Course Content

Being technology savvy is an added advantage since learners who are technologically inclined will find that they could easily look for learning materials and follow the e-learning content provided. Thus, this feeling of ease will benefit and give a positive impact when the learners interact with the content, e-tutors and peers in the online learning platform. In relation to course content, items to be rated were on online modules/e-books, videos and e-lessons. Initially, OUM introduced e-Lessons in some courses prior to the pandemic. With the switch to fully online, e-lessons were quickly developed for all the courses in all programmes offered by OUM. Each course would have 10 e-lessons that come with a series of videos (OERs), followed by discussion questions to be discussed in the forum discussion



area, and two sets of online quizzes (pre and post) for learners to do self-checks. Thus, it would be meaningful to find out if the learners found the new e-lessons useful. 82.5% of the learners agreed or strongly agreed that the e-lessons were useful to them while 4.89% of the learners did not agree or strongly disagreed that the e-lessons were useful. The rest remained neutral.

### **Findings on e-Tutorials**

OUM learners have always been online learners from day one, where self-managed learning was conducted via the online forums with study materials obtained from the digital library. They have a remarkably high level of perceived competence in their online learning, and as graduate students who have been working longer, they use their time well during the e-tutorials to gain knowledge and other functional skills.

When the pandemic hit and all face-to-face tutorials were cancelled, OUM introduced e-tutorials. This allows for virtual face-to-face interaction between tutors and learners. The one-hour weekly e-tutorials are scheduled by the e-tutors and conducted via Google Meet. The live sessions are recorded and made available to the learners. Learners who are unable to join the e-tutorials during the scheduled time can access and view the recorded sessions at their own time. Respondents were asked to rate on the following: scheduling of the e-tutorials and their ability to attend the e-tutorials; the length of the e-tutorials; the number of e-tutorials held; the helpfulness of the e-tutors; and whether they felt the e-tutorials gave added value to their online courses. It is important to know whether the learners felt that the e-tutorials were helpful and added value to their courses since the e-tutorials were meant to replace the face-to-face tutorials in blended mode. Based on the data collected, 67.13% (96) of the respondents either agreed or strongly agreed that they didn't have problems attending the e-tutorials scheduled for their courses and 11.88% (17) indicated otherwise. It was encouraging to see that 86.7% of the learners agreed or strongly agreed that the e-tutorials added value to their courses.

### **Findings on Online e-Tutors**

Prior to the switch to fully online mode, tutors were appointed to conduct bi-weekly face-to-face tutorials. Online tutors, known as e-tutors at OUM, were appointed to continue providing support to the learners online in the absence of the face-to-face tutorials. With the switch to fully online, only e-tutors were appointed to guide and provide support to the learners. Respondents were asked to rate on whether they felt the e-tutors were qualified (and knowledgeable, helpful, provided sufficient feedback and guidance, prompt at responding to questions and forum discussions, provided supplemental handouts, created a climate of trust and openness, and maintained professionalism in the virtual classroom). Online forum discussions are based on delayed responses. e-Tutors are expected to be responsive and respond to learners within reasonable time. About 88.11% (126) agreed or strongly agreed that their e-tutors were helpful and 82.51% (118) of the respondents agreed or strongly agreed that the e-tutors were prompt at responding to questions and forum discussions. Only 3.49% (5) disagreed or strongly disagreed on the matter.

## Findings on Student Support Services

Student support services at OUM have always been online even before the lockdown. It is important that the services continue to be made available to the learners via online. Respondents were asked to rate on the following: ease of submitting queries or complaints, getting technical support, getting advice in planning courses, getting additional tutoring support, getting counselling services, getting support from OUM Alumni learners, as well as support from Learning Centre staff. 79% of the respondents agreed or strongly agreed that they could easily get technical support; 57% agreed or strongly agreed that they could get additional tutoring support for their courses; 75.5% agreed or strongly agreed that the learning centre staff were reachable and available for support; 81.1% agreed or strongly agreed that they could easily submit a query or complaint to OUM; and only 35.6% of the learners agreed or strongly agreed that they are in touch with OUM Alumni for support.

## Findings on Fully Online Courses

A system that is used as an online learning platform must be useful and easy to use. One measures how much the use of technology influences the user's intention to use the system through perceived usefulness. In the questionnaire, respondents rated on items related to their overall experience with online courses at OUM which included how good they felt about taking fully online courses, their preference of having face-to-face courses over fully online courses, and whether they felt they could successfully complete their programme through fully online mode.

From the total of 143 respondents, 95.1% (136) of the total agreed or strongly agreed that their overall experience online at OUM was good. Only 2.79% (4) disagreed or strongly disagreed that their overall experience was good and the rest remained neutral. At the same time, 87.4% respondents agreed or strongly agreed that they felt good about taking online courses and 83.9% agreed or strongly agreed that they did not mind taking online courses. While 83.91% agreed or strongly agreed that they could successfully complete their programme with fully online courses, only 23.07% disagreed or strongly disagreed that they prefer to have their courses face-to-face.

## Findings on Issues with fully online learning

Included in the questionnaire was a section for respondents to note if they faced any issues with fully online learning and to give suggestions to improve their fully online learning experience. Although 38.8% of 139 respondents who provided input said that they did not have issues with fully online learning, 5.03% indicated having issues with internet connection and experienced technical issues (mainly during e-tutorials) and 10.07% noted issues with tutors (not responding fast enough, not providing more relevant notes, not conducting e-tutorials on time, cancelling scheduled e-tutorials). In addition, there were remarks on having a tight schedule and time conflict and not being able to attend e-tutorials.

## Findings on the Performance of Learners (Blended Mode) Compared to Their Performance for Fully Online Delivery

Figure 4 below shows the performance of learners in four different courses, where the examinations were held every semester from January 2018 until September 2020. The semesters from January 2018 to Sept 2019 (6 semesters) are performance of the learners prior to the period of COVID outbreak (blended mode) and the semesters from January 2020 to September 2020 show their performance during the period of COVID lockdown (fully online delivery). This data clearly shows that there is a huge difference between pre-COVID





and post-COVID learner performance. There are many factors that contribute towards these changes in performance such as: examinations are offered as online take home papers, thus giving learners ample time to answer the questions in their own environment, as well as learners adapting to the fully online mode of learning. Learners are also given additional support in their studies: e-lessons and recorded online tutorials.

**Figure 4**

*Performance of Learners Prior to COVID-19 Compared to Their Performance during COVID-19 Lockdown*

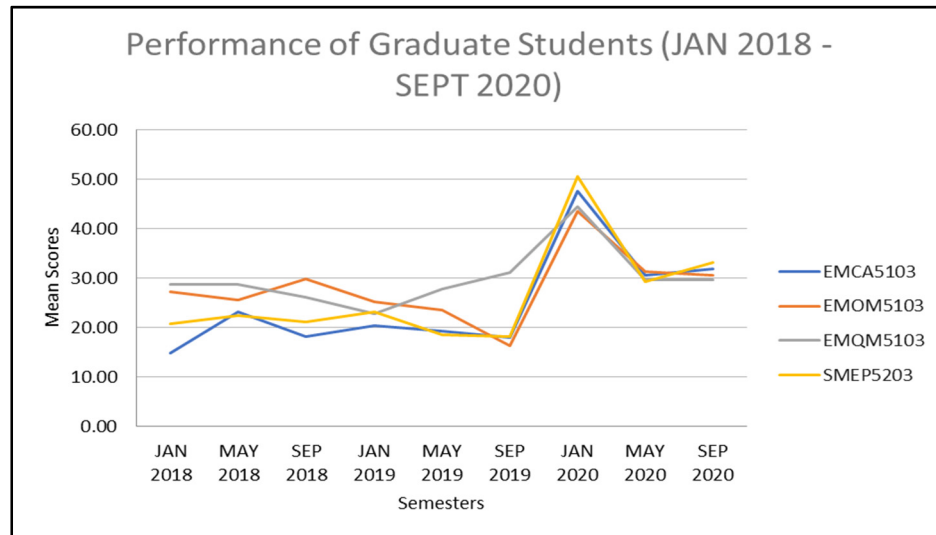
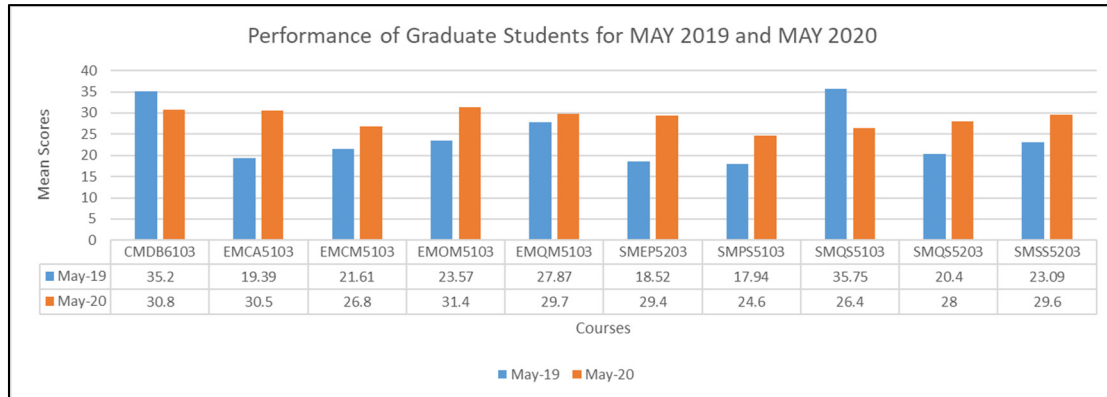


Figure 5 shows the average performance of the graduate learners for May Semester 2019 and May Semester 2020. With the exception of two of the courses shown, the average for May 2020 was slightly higher than that of May 2019. One of the courses, Advanced Database Systems: CMDB6203, is a technical course where it needs the learners to draw Entity Relationship Diagrams and do normalisation apart from writing SQL statements using the mySQL software. It can be deduced that the learners may not have the technical knowledge to do these tasks for their assignments on their own without guidance from their facilitators in a face-to-face seminar session. Similarly, for the Quality Standards and Systems course (SMQS5103), there is a marked decrease in the performance of the learners post COVID-19. This could be due to among others, the fact that the learners from the 2019 January intake were learners that had good working experience in the quality field and excelled in this fundamental course during their second semester.

**Figure 5**

*Performance of Graduate Learners for May 2019 and May 2020*



### Discussion

When the lockdown was imposed on 18 March 2020, learners were in the middle of their semester (January Semester 2020) and were due to sit for their final examination in April 2020. All classes were cancelled for 2 weeks, and final examinations were also postponed for 2 weeks. The university had to quickly adapt to the current situation and change all “sit-down examinations” to an online examination. Two types of online examinations were implemented: one is a “take home essay examination” and the other is “online MCQ examination”. Questions that were originally set for a sit-down examination were modified and used for the new online examinations. The results obtained by the learners after sitting for the online examinations for the first time appeared to be quite good, and we observed a spike in the graph as shown in Figure 4. The average for January semester 2020 was well above 45 (out of a total of 60), in all four courses.

By May Semester 2020 and September Semester 2020, OUM lecturers have had the opportunity to relook at the format and level of difficulty of the exam questions and improve on them. In doing so, the results of the learners turned out to be more comparable to what they achieved prior to the lockdown with a slight improvement to the results in May and September 2019.

The findings on readiness for change seem to indicate that the learners are fairly ready and able to adapt to the new mode of teaching and learning, in spite of some of the challenges faced. The issues and challenges highlighted included having problems with slow or no internet connection, technical problems, unable to manage time, unable to attend e-tutorial sessions, cancellation of e-tutorials, lack of interaction in e-tutorials, slow responses and feedback from e-tutors, lack of resources from e-tutors, and personal preference for having face-to-face sessions.

A high percentage of the learners indicated that they felt good about taking online courses and felt they could successfully complete their programme. More than ninety-five percent felt they had a good overall online learning experience at OUM. This is in line with the results of a university wide survey done by OUM in May 2020 which reported favourable responses by learners towards online learning. Sixty-eight percent of the 18,305 respondents agreed or strongly agreed they were satisfied with the online learning mode at OUM. Despite the high averages and favourable responses for online learning, the numbers that show otherwise cannot be ignored. Efforts must be made to further improve learners’ online learning experience at OUM.



Several of the issues stated by the learners were related to online tutors / facilitators. This calls for better preparation of the e-tutors for the fully online environment. Although some OUM tutors have been exposed to online facilitation, they may still be experiencing issues and challenges in conducting fully online courses. They may also face problems related to slow internet connection as well as technical problems, and these may affect their ability to run the e-tutorials smoothly and manage the online discussion forums efficiently. The e-tutors must also understand their role as a facilitator for a fully online course which requires more commitment as compared to when the courses were offered in blended mode.

## Conclusion

The study aimed at looking into the perspectives of OUM graduate learners towards the switch to fully online learning and the performance levels of graduate learners before and after the switch to fully online. The performance of the learners before and after the switch to online examinations were comparable from the second round of examinations onwards. This suggests that there is not much difference in the performance of the learners, and based on the data, the learners performed slightly better with online exams. This could be attributed to the fact that the examinations were given in two formats, online and take home exams where learners had one day to complete the exams and submit online.

The results and findings show and suggest that OUM graduate learners enrolled under the Cluster of Applied Sciences in general have a good level of readiness for change and are able to adapt and continue learning in the fully online learning environment. At the same time, efforts must be made to improve their online learning experience and make it better. Martin and Bollinger (2018) have stressed the importance of learner engagement in online learning for their enhanced motivation, improved performance and success, and increased satisfaction as online learners. There have to be plans to increase student engagement in all areas: learner-to-learner interaction, learner-to-instructor interaction, and learner-to-content interaction; as identified by Moore (1993). These areas are in line with the three dimensions highlighted in the Community of Inquiry (COI) framework (Garrison et al., 1999): social presence, teaching presence, and cognitive presence. OUM is currently making plans to increase student engagement by initiating more online activities. These new efforts may include structured group discussions to encourage peer learning (learner-to-learner interaction) and also learner reflections which will provide more opportunities for learner-instructor interaction as well as instructor intervention with the purpose of increasing retention. In doing so, it is hoped that the learners will have a more rewarding experience learning fully online.

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## Promoting Well-being and Flexibility through Effective Implementation of Micro-credentials in Open and Distance Learning Institutions

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### Abstract

*Access to education is still a worldwide problem due to various inequalities. The effects of the COVID-19 pandemic have caused rapid changes and distress to our daily lives, causing grief and anxiety. The problem arising from this is that many people may not have the financial capacity to continue studying at higher education institutions and further investigations are needed to provide some solutions. Micro-credentials (MC) are a flexible learning pathway involving the certification of learning of a smaller set of courses, which is designed to provide learners with competencies in a niche area of study. The main purpose of this study is to offer an analysis on effective implementation of MC that can promote well-being and increase flexibility in higher education, in line with the Accreditation of Prior Experiential Learning (APEL) mechanism in Malaysia. A 25-item survey instrument was developed based on literature review and guidelines provided by the Malaysian Qualifications Agency (MQA). In the data collection procedure, a total of 106 usable replies were obtained from ODL tutors using convenience sampling. Most of the respondents were between 31-50 years old (56%) and employed for wages (70%). The Cronbach's Alpha was 0.89 and the Kurtosis was 0.98, thus indicating reliability and normality in the measurement scale. A ranking analysis was performed to observe the top mean scores and it was found that the MC offered should be taken from MQA-accredited courses (mean = 4.61), implemented in ODL institutions (mean = 4.60), with affordable fees (mean = 4.48), using information and technology in teaching and learning (mean = 4.48) and allowing for flexibility in planning of studies (mean = 4.46). Various parties should explore MC in the education system because it can be an equilibrating factor in national capacity building.*

**Keywords:** *Flexible Learning Pathways, Micro-credential, Open and Distance Learning (ODL), Pandemic*



## Introduction

### Challenges Faced from Pandemic Crisis

The effects of the COVID-19 epidemic have caused enormous and rapid changes to our daily lives, causing frustration, sorrow, anxiety, fatigue, and sadness. According to Asia-Pacific Employment and Social Outlook 2020, navigating the crisis towards a human-centred future of work estimates, the economic backlash of the COVID-19 pandemic smeared out about 81 million occupations in 2020. Overall, working hours in Asia and the Pacific reduced by about 15.2% in the second quarter and by 10.7% in the third quarter of 2020, relative to pre-crisis levels. The impact can be pervasive and destructive to individual lives, families, societies, and nations. People may find themselves in survival mode, in which they look for resources to function at school, workplace and organisations. Consequently, many at the workplace must reconstruct their professional identity and make life adjustments arising from this pandemic. There is a huge need for education institutions to provide a strong and flexible support system so that the masses can return to a state of equilibrium and help them learn new skills and be physically active for the purpose of achieving good emotional well-being. Along this line, there is hope that universities recognise a more agile and flexible approach to enable adult learners to swiftly adapt and change in difficult times that may lie ahead. Thus, the Malaysian Qualifications Agency (MQA) has introduced mechanisms such as the Accreditation of Prior Experiential Learning (APEL) that enables individuals who have work experience but lack formal academic qualifications to pursue studies at higher education institutions. APEL is the recognition of learning that has been acquired through life and work experiences. These experiences may be formal, informal, or non-formal, and the work may be paid or unpaid. Going one step ahead in 2020, MQA also introduced MC, which will be discussed further in this paper.

### MC as a Flexible Learning Pathway

Flexible learning is a training pathway that allows learners to learn whenever, wherever, and in whatever way they wish. Learners can use their own flexible learning methods and complete courses at their own pace and in their own time. Currently, the Malaysian education system also allows APEL, through which candidates can gain admission and credit award using their experiential learning as a basis. In addition, the primary means of acquiring credentials in Malaysia thus far has been via macro-credentials (Diploma, Bachelor's degree, Master's degree and Doctorate) in a very formal structure. In contrast, MC is a certification for assessed learning of a single course or a set of courses, which are intended to provide learners with knowledge, skills, values, and competencies in a narrow area of study and/or practice as stated by MQA (2020). One of the greatest justifications for offering MC is that they provide access for people from the workforce to have a wide choice for enrolling in courses that can improve their careers. Thus, open access for all courses in all programmes can be one of the features in their implementation. In the current education landscape, part-time ODL institutions are suited to implement MC via flexible design and delivery. In supporting education institutions' development of MC, the following are basic principles in developing a reliable MC system: 1) Outcome-based, 2) Personalised, 3) On-demand/Industry-driven, 4) Secure and Shareable, and 5) Transparent. Learners can use MC for upskilling and reskilling themselves. Moreover, they will be able to provide greater value and demonstrate a specific degree of competence, thus making them more appealing to their employers (Sani, 2019). In support of the lifelong learning framework and to survive in such a disruptive environment, adults, workers, and graduates must be agile enough to reskill and upskill to stay on, if not, ahead of the curve (MQA, 2020).

Besides eliminating the need to make a significant outlay for an extensive training programme, using micro-credentialling can create and deliver programmes that better meet the unique skill requirements of team members, in addition to avoiding the need to make a significant investment in an extensive academic programme (DeakinCo, 2017). MC offer a more dynamic, competitive, demand-driven, shorter, modular, and less expensive alternative to the traditional degree (MQA, 2020). Courses can be academic, skill-based, or even leisure-focused for different people (i.e., personalised). Ultimately, learners can choose to stack their credits and translate it to an academic degree if they wish to, if they can follow the requirements specified in the guidelines provided by MQA (2020).

## Research Objectives and Significance

The Open Entry Admission System in was introduced in Malaysia in 2006. This system was one of the first efforts in paving the way for a greater number of people to pursue lifelong learning. The main aim here is to focus on development of human capital and this paper will contribute to this initiative by achieving two research objectives:

- To analyse the features of effective implementation of MC in ODL institutions.
- To provide recommendations for ODL institutions to ensure effective implementation of MC in view of promoting flexibility and well-being.

This paper will mainly benefit the strategic planners of education institutions who are interested in implementing MC as part of their future strategy. The planning unit, registrar, academic faculties as well as APEL Centre can create synergy to make MC workable. Some insights can be obtained from this paper since empirical evidence will be subsequently furnished via quantitative analysis. Secondly, this work can also benefit policymakers who are actively involved in developing procedures and standard operating procedures from time to time.

## Research Methodology

This investigation mainly employs a quantitative design to analyse and discuss the issues mentioned in the research objectives. Items measuring the constructs were largely derived from literature review and guidelines provided by MQA (2020). The sample comprised 106 tutors from ODL institutions in Malaysia. All details of the respondents are provided in Table 1. Although the convenience sampling design was utilised, the quality of data was enhanced by giving the respondents personalised attention during this pandemic. A telephone interview data collection method, done by a research assistant, was used to obtain data for this research. A structured survey questionnaire technique using a five-point Likert Scale ranging from '1' (strongly disagree) to '5' (strongly agree) was adopted. To avoid judgment error and deny the presence of bias, the data was preliminarily subjected to normality and reliability tests. For a normal distribution to take place, Kurtosis should be between 0 and 3 (Lei & Lomax, 2005), whereas skewness must be between -2 to +2 (Weinberg & Abramowitz, 2002). The measures for reliability in this study for the construct (i.e., 25 statements on MC) yielded 0.89, which is far above 0.70 as suggested by Nunnally (1978), thus indicating internal consistency for the measurement. On the other hand, the index for skewness is -0.73, whereas Kurtosis is 0.98, signifying normality in the measurement.





## Data Analysis and Findings

The implementation of MC may reduce the frustration, sorrow, anxiety, and sadness of those who are under social and economic stress. This is because MC open the door to enhancing self-esteem via education. As discussed earlier in the literature, working adults need to upskill and reskill in order to provide greater value in the workplace and remain appealing to their employers. Thus, the mean analysis is conducted to analyse the features of effective implementation of MC in ODL institutions. The scores are ranked accordingly based on the perception of academics surveyed. This fulfils the first objective of this paper.

**Table 1**

*Demographic Profile of Respondents*

Items	Data	Frequency	%
Age	26-30 years old	2	1.9
	31-45 years old	36	34.0
	46-50 years old	23	21.7
	51-55 years old	17	16.0
	56 years and above	28	26.4
Gender	Male	74	69.8
	Female	32	30.2
Employment	Employed for wages	74	69.8
	Self employed	10	9.4
	Retired	22	20.8
Management Level	Low level management	10	9.4
	Middle level management	65	61.3
	Top level management	31	29.2

In a nutshell, Table 1 summarises the demographic information of the respondents of this survey. A majority of the respondents were between 31-45 years of age (34%) as well as above 56 years old (28%). Most of the respondents were males, employed for wages and belong in the middle level management bracket of their organisations. Table 2 discloses the mean findings in this paper. A ranking analysis was performed to observe the top mean scores (perception of tutors) and it was found that the MC offered should be taken from MQA-accredited courses (mean = 4.61), implemented in ODL institutions (mean = 4.60), with affordable fees (mean = 4.48), using information and technology in teaching and learning (mean = 4.48) and allowing for flexibility in planning of studies (mean = 4.46) are considered the top features for effective MC operationalisation.



**Table 2**

*Mean Analysis*

Item	Rank	Features of Effective Micro-credential Implementation	Mean
B23	1	Should have accreditation from MQA	4.61
B24	2	Open and distance learning (ODL) institutions can implement it well	4.60
B22	3	Affordable fees	4.48
B20	4	Information technology is to be used in teaching and learning	4.48
B16	5	More flexibility in planning the studies	4.46
B12	6	Transparency must be ensured when issuing digital badges	4.43
B7	7	Efficient and reliable management system	4.42
B17	8	Should be linked to practical learning experiences / APEL	4.41
B15	9	Less bureaucracy in admission is needed	4.41
B9	10	Courses should be skill-based focused	4.39
B5	11	Updated self-instructional materials to be available	4.39
B19	12	Award of credits to be given for achievement	4.38
B14	13	Qualification statement must be issued showing details of achievement	4.38
B4	14	Quality is integrated into the system	4.37
B25	15	Branding initiatives to be performed in view of creating awareness	4.36
B2	16	Personalised to the needs of learners	4.36
B18	17	Assessment should be based on work samples rather than written tests	4.34
B11	18	Security is ascertained when issuing digital badges	4.33
B21	19	Traditional teaching methods still to be used in teaching and learning	4.31
B3	20	Content is industry driven	4.30
B6	21	Open access for all courses in all programmes	4.25
B13	22	No expiry date for digital badges	4.23
B8	23	Courses should be academic-focused	4.10
B1	24	Implemented based on course learning outcomes	4.02
B10	25	Courses should be leisure-focused	3.83



## **Recommendations for Implementation**

Based on what has been established in the analysis, some recommendations can be given in this paper to those who desires to implement MC (achievement of second research objective).

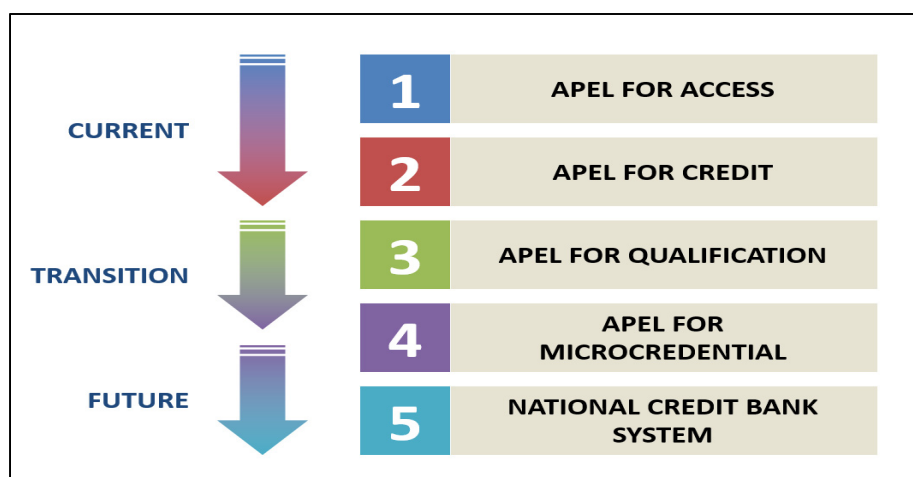
1. Institutions should provide MC courses that meet the needs of learners from a variety of demographic, academic, and experiential backgrounds to meet current market needs. MC courses that are offered should preferably be from MQA-accredited programmes. This is to preserve the quality in the offerings.
2. Proper capitalisation on technological tools must take place in the teaching and learning process of MC. For example, there is a need for the existence of a good learning management system (LMS) and strong digital library with many resources. The syllabus/self-instructional materials must be integrated into the system for easy accessibility. Also, learners must understand the importance of having a good Internet plan to make MC workable in an ODL environment.
3. The planning unit of universities must work towards determining a fair amount of fees while at the same time, take care not to compromise the quality of the delivery. In the spirit of ensuring democratisation of education and simultaneously catering for people who are interested to reskill themselves during this pandemic, the fees for MC must be lower than normal course fees. This is one of the perceptions of the tutors who responded to the survey and has been shown empirically.
4. MC offerings are fit for ODL institutions because a majority of the learners are working adults who are independent and have internal motivation. Moreover, ODL institutions support the idea of lifelong learning (reducing the barriers to education).
5. To ensure a successful implementation of MC, a candidate may not have to go through the normal or APEL admission requirement for the time being, which means there is less bureaucracy in the admission process (i.e., requirements of credits from tertiary education, first diploma, age requirement, years of experience, ability to pass APEL assessment, etc). Perhaps the institution can just impose criteria in basic writing, reading and information technology skills should they deem these necessary. Moreover, a candidate should be also given the flexibility to plan his/her study journey.
6. Institutions must be able to issue a digital badge or Malaysian Micro-credential statement as prescribed by MQA guidelines (2021). Information such as name, course learning outcomes, delivery method, mode of study, assessment strategy, learner results, stamping date and so on can be declared in this statement. This is so that there will be leniency in facilitating credit transfer exercise if the MC is to be translated into an academic degree in future.
7. Institutions must demonstrate financial capability so that there will be an efficient and reliable management system. In other words, there must be proper capacity building for tutors, support system for learners, ample facilities provided and infrastructure ready for any institution to implement MC. This can be achieved with support from the strategic level. It is suggested that a strategic paper is prepared at the preliminary stage with some details clarified before the operationalisation of MC as a way to build confidence in the eyes of stakeholders.

## The Future of Flexible Learning

Under the flexible learning pathway umbrella, there is APEL for access (APEL.A) and APEL for credit (APEL.C), which have already been realised successfully in Malaysia. Moving forward, experiential learning would also be recognised for award of qualification of academic award under APEL.Q. Along this line, there will be much recognition of formal, informal, and non-formal learning and MC will play a significant role in their integration with the APEL system with the view of providing more people with access to education. Therefore, it is recommended that institutions with the APEL license can be given an advantage to aggressively implement MC during this pandemic to stay relevant as displayed in Figure 1 of this paper. The typical role of an APEL Centre is to: 1) Contribute towards flexible learning brand enhancement; 2) Implement processes efficiently and effectively; 3) Develop the capacity of assessors through relevant training; 4) Enhance the assessment instruments used in recognising prior learning and 5) Conduct research on flexible learning. Secondly, in terms of programme management, there must be a good integration between cross-departmental functions to ensure that the entire institution can move towards the same vision and goal set by the organisation.

**Figure 1**

*Flexible Learning Pathways*



Emotional well-being means having good self-esteem during this pandemic, being able to feel happy, confident, and also actively take part in everyday activities, including learning and working. Therefore, the post-COVID-19 scenario would demand a creative and innovative approach to designing and implementing strategies for flexible learning pathways in Malaysia to ensure people are coping well. In light of this, there is a need for ODL institutions to contribute towards upskilling the people who are affected by the pandemic, but the implementation of MC must be done effectively using the right features, as suggested in this paper. This study can be replicated using different analytical methods. Perhaps, the qualitative content analysis can be reported by interviewing successful MC candidates in future to understand their efforts and results. The findings can be related to policies on recognition of prior learning to enrich knowledge in this area. Various parties should explore the potential of MC because it can provide an equilibrating factor in national capacity building.



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## Undergraduate Learners' Perspective of Fully Online Learning During Covid-19 Pandemic: The OUM Experience

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### Abstract

*Open University Malaysia (OUM) is a leading open and distance learning institution in Malaysia. Before the pandemic, a majority of the programmes at OUM were offered in blended mode. The blended mode of learning comprises self-managed learning, face-to-face tutorials and online forum discussions. In recent years, OUM has made the move towards offering programmes fully online. However, the emergence of COVID-19 Pandemic in the early part of 2020 has pushed OUM to offer all its programmes fully online. The change from blended mode to fully online came as a challenge to all. The switch to fully online was implemented during mid-semester at following the enforcement of the movement control order. For the learners, this presents new learning experiences, especially to those who have never been engaged in fully online learning. Literature has shown that learners face several physical and psychological challenges with online learning. This study aimed at looking into the perspectives of undergraduate learners towards fully online learning due to the lockdown by using a readiness for change model. The model was adapted from the Technology Acceptance Model (TAM) which uses technology acceptance based on psychological factors. A total of 495 learners who enrolled in OUM under the Cluster of Applied Sciences participated in this study. As anticipated, the learners expressed having some challenges in the switch from blended learning to fully online learning. The findings show that in spite of these issues and challenges, the learners generally possess the readiness for change and are agreeable to the switch to fully online learning.*

**Keywords:** *Open and Distance Learning, Online Learning, Innovative Pedagogy, Undergraduate Learners, New Norms*



## Introduction

The Covid-19 Pandemic has resulted in the disruptions of normal life and practices around the globe. Malaysia is no exception, with high cases of infection around the country. In March 2020, the government imposed a country wide lockdown, and this forced the closure of schools and higher education institutions. Face-to-face classes could not be held. For Open University Malaysia (OUM), the lockdown came just a few weeks before the final exams. There were still face-to-face tutorial sessions that have yet to be held. All tutorials had to be cancelled. Final examinations were normally administered at OUM learning centres around the country. With the movement control order, the exams could not be held at the centres. OUM had to make the switch to delivering the courses fully online for the rest of the semester as well as conducting the final exams online. Although OUM had already embarked on fully online with a few programmes, it was still a challenge to get the rest of the programmes ready. All the changes had to be done within just a few weeks.

Since its establishment, OUM has offered all its courses in blended mode. OUM serves working adults, hence the blended mode of learning provides the flexibility needed by learners to pursue their respective programmes of study. Dangwai (2017) describes blended learning as a teaching and learning process that incorporates direct and indirect instruction, collaborative teaching and individualised computer assisted learning. Blended learning includes face-to-face instruction and ICT supported teaching. OUM's blended learning model allows for self-managed learning that is supported by face-to-face tutorials and online learning through its learning management system. Learners are exposed to both worlds of face-to-face and virtual learning. In OUM, face-to-face tutorials are held bi-weekly at the 37 learning centres located nationwide. During the face-to-face tutorials, learners get to meet their peers and tutors. The tutors use the time with the learners to focus on areas of the module that need more attention. Learners also get the chance to ask questions related to their assignment and exams. In between the face-to-face tutorials, learners at OUM are able to continue their learning via OUM's learning management system, myINSPIRE. The classes are accessible 24 hours a day and learners can interact with the e-tutors and their coursemates through the online forum. With the movement control order, face-to-face tutorials are no longer allowed. Therefore, learners can no longer attend tutorials and meet with their tutors and coursemates. In the attempt to make up for the absence of face-to-face in class tutorials, OUM initiated the use of e-lessons and e-tutorials, in addition to the online forum. The e-lessons would provide topical activities online, while the e-tutorials would be done once a week via Google Meet.

By offering courses in blended mode since its inception in 2001, OUM has long exposed its learners to the online environment via the use of its own learning management system, myINSPIRE. Learners are encouraged to log into myINSPIRE to access the course content and to have online discussions with their e-tutor and peers. Some learners opt not to participate in the forum discussions and prefer to wait till their face-to-face tutorial sessions to ask questions and communicate with their tutors. Although the learners have had a feel for the online learning environment via myINSPIRE, they have not been fully online learners where 100% of their learning happens online through their interaction with the course content and asynchronous communication with their tutors and course mates. There is concern that learners may not feel comfortable with the delayed responses in the online forum. Some learners may also be hesitant to ask questions in the forum. In addition, there may be learners who may be struggling with accessibility and technical issues. Hence, they may not be able to gain fully from the online learning environment. They may even have problems while sitting for final exams online. Conceivably, there are other issues faced by the learners that we are not aware of. On the other side of the coin, similar problems are faced by the tutors, who despite being exposed to the online environment, have not conducted fully online courses.

The study therefore aimed to look into the perspectives of learners based on their experiences with fully online learning since the shutdown due to the pandemic. The focus will be on first, second- and third-year undergraduate learners enrolled in the various undergraduate programmes offered by the Cluster of Applied Sciences at OUM.

### **Research Objectives**

There are two objectives to the study: 1) to investigate the perspectives of OUM undergraduate learners on fully online learning; and 2) to suggest ways to improve teaching and learning support online. The study used two main determinants: readiness and perception levels (on the learning management system, course content, e-tutorials, online facilitators, learner support services and fully online courses).

### **Literature Review**

The pandemic has created concern as it has interrupted the education process worldwide. Schools and educational institutions have had to either close or make the move to go online. Although not many, there are some recent studies that have emerged and reported findings in the areas related to learner learning during the pandemic and learners' perspectives towards online learning. Nassr et al. (2020) reported on the difficulties faced by learners throughout the country due to the first lockdown imposed in early 2020. Some of the issues highlighted include accessibility and unstable internet connections, time management, suitability of environment, technical difficulties, and issues with virtual learning environments. Diab & Elgahsh (2020) reported on the obstacles faced by nursing students in Egypt and how it affected their attitude towards e-learning. The study showed common obstacles faced in e-learning related to infrastructure and technology, technical and management support, and curriculum content, among others.

Gujarena et al. (2021) highlighted the challenges faced by education institutions in Africa during the pandemic which include technological, pedagogical and social challenges. The discussion points out accessibility as one of the issues faced by students. Furthermore, poor internet connectivity and infrastructure, and lack of digital skills contributed to the difficulties. In addition, pedagogical issues arise from lack of training in teaching methods that would be suitable for distance learning. In another study, Abbasi et al. (2020) reported students' perceptions towards e-learning during the lockdown. The research was conducted on students enrolled in a dentistry and medical college in Pakistan. Based on the data gathered, a high percentage of the respondents had negative perceptions on e-learning and preferred face-to-face instruction.

Amir et al. (2020) looked at the perspectives of students enrolled in an undergraduate dental study programme in Indonesia. The study highlighted the challenges faced by the students which included external factors such as unstable internet connection, financial burden for internet quota; as well as internal factors such as time management and difficulty in focusing on learning online for long periods of time. A study by Mohd Yusuf and Ahmad (2020) on the challenges faced by lecturers and students in an online learning environment in a private higher learning institution in Malaysia also stated that students are less focused during the teaching and learning via online. On the other hand, a study conducted at a Vietnamese university by Maheswari (2021) on the factors affecting students' online learning during the Covid-19 pandemic, found that institutional support and perceived satisfaction affects student's learning online.





Due to the nature of the problem and the objective of this paper which is to investigate the perspectives of OUM undergraduate learners on fully online learning, the research by Kwahk and Lee (2008) was found to be most useful, where the readiness for change showed a direct and indirect effect on the intention to use a particular system. This was corroborated by the research done by Maheswari (2021).

## **Research Method**

For this study, to investigate the perspectives of OUM undergraduate learners on fully online learning, we have used a quantitative approach, where data is collected using a questionnaire. From this data, we will gather information on the levels of readiness and perception of the learners. To further understand the data collected, the data was categorised under five categories: perceived personal competence, perceived usefulness, perceived ease of use, computer self-efficacy, and organisational commitment.

### **Sampling Procedures and Participants**

The target population of this research was the undergraduate learners of Cluster of Applied Sciences in OUM. The sample size of this study is 495 respondents from 7 different undergraduate academic programmes in the cluster. The seven undergraduate programmes are Bachelor of Nursing Science with Honours (BNS), Bachelor of Medical and Health Sciences with Honours (BMHS), Bachelor of Occupational Safety and Health with Honours (BOSH), Bachelor of Manufacturing Management with Honours (BMMG), Bachelor of Information Technology with Honours (BIT), Bachelor of Project and Facility Management with Honours (BPFM) and Bachelor of Digital Media Design with Honours (BDMD). All of the programmes have received full accreditation from the Malaysian Qualifications Agency (MQA) and three of them are recognised by professional bodies.

According to Krejcie and Morgan (1970), the maximum number of sample size for large population is 384. Therefore, the sample size of this study is sufficient to represent the population. This study used a purposive sampling method to select the targeted respondents which are the undergraduate learners from the cluster in OUM.

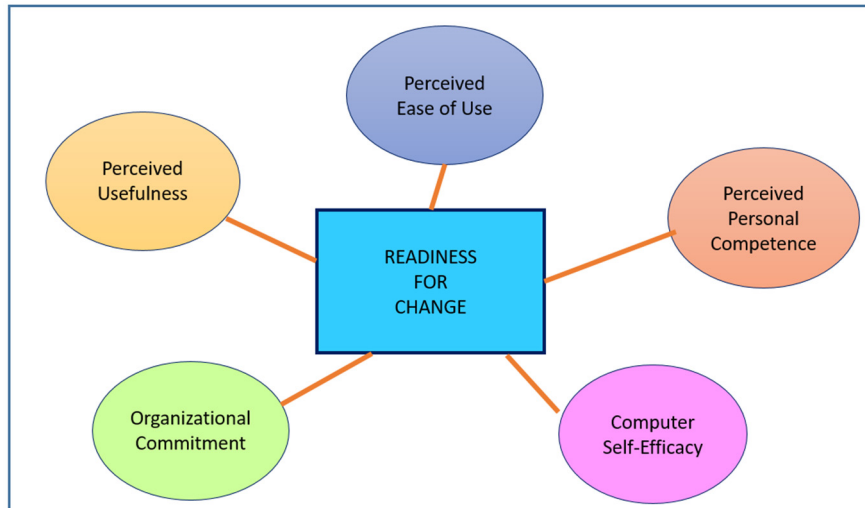
### **Research Model**

The model used in this study is based on the Readiness for Change Model by Kwahk and Lee (2008). This model is based on the technology acceptance model (TAM) (Davis, 1989) which uses technology acceptance based on psychological factors. According to the TAM model, there are two essential factors that affect the user's acceptance of any type of technology, which is Perceived Usefulness (PU) and Perceived Ease of Use (PEU). In their paper, Kwahk and Lee have added two additional factors for the readiness for change which are perceived personal competence and organisational commitment. Arbaugh (2010) states that several multi-disciplinary studies have used TAM as a grounding framework, especially for course management systems usage and satisfaction with online learning. Maheshwari (2021) has also explored learner perceived enjoyment (satisfaction) which affects their online learning, using ICT infrastructure and internet speed and access.

In our model, we have used five factors: perceived personal competence, perceived usefulness, perceived ease of use, computer self-efficacy, and organisational commitment; as shown in Figure 1.

**Figure 1**

*Research Model*



The sections in the questionnaire were grouped as follows (see Table 1):

**Table 1**

*Categories for Questionnaire Sections*

Categories	Sections
Computer Self-efficacy	Learning Management System (LMS)
Perceived Ease of Use	Course Content
Perceived Usefulness	Fully online courses
Perceived Personal Competence	e-Tutorials
Organisational Commitment	Online e-Tutor and Student Support Services
Readiness for Change	Current State of Readiness

**Questionnaire**

The questionnaire developed for the study gathered demographic data as well as learner ratings on items related to readiness and perception levels established in the research model. The instrument of this survey was divided into seven (7) sections: Current State of Readiness, Learning Management System, Course Content, e-Tutorials, Online e-Tutors, Student Support Service and Fully Online Courses. For the data collection, out of the 4500 online surveys distributed, 495 (11%) responded to the survey. Respondents gave their ratings (strongly disagree to strongly agree) for items in each of the seven dimensions.



## Findings

Out of the 495, the largest group of respondents were learners enrolled in the Bachelor of Nursing Science with Honours (BNS) programme (31%), followed by Bachelor of Occupational Safety and Health Management with Honours (BOSHM) (21%), Bachelor of Information Technology (BIT) (17%), and Bachelor of Medical and Health Sciences with Honours (BMHS) (14%). The rest of the respondents were from Bachelor of Manufacturing Management with Honours (BMMG) and Bachelor of Science in Project and Facility Management with Honours (BPFM).

54.7% of the respondents were male learners while 45.3% were female. 38.3% of the respondents were first year learners, 36.7% of the learners were second year learners, and 25% were third year learners.

### Findings on Current State of Readiness

We explored readiness for change to fully online learning by asking questions which focus mainly on positive attitudes. With respect to the current state of readiness, respondents were asked to rate on items that would reflect their readiness as an online learner. This included having reliable connection for accessibility; their willingness to put in time for their online course and how well they are able to manage their time; their willingness to use online tools and the university learning management system, myINSPIRE; whether they were equipped for video conferencing; and how comfortable they were being online and surfing the internet. Naji et al. (2020) reported that there are four factors that had an impact on the learners' level of readiness including initial preparedness and motivation for online learning, self-efficacy beliefs about online learning, self-directed online learning and support for online learning. From the survey, it is observed that 64.04% of the learners either agreed or strongly agreed that they were good at organising their time, and 68.08% of the learners agreed or strongly agreed that they were good at keeping deadlines. In terms of having reliable connections and having the tools to do video conferencing, the percentage of learners who agreed or strongly agreed were 74.54% and 77.57% respectively. At the same time, 53.13% of the learners either agreed or strongly agreed that they were willing to spend 10-20 hours per week for their online courses.

The responses to the items in this section seem to indicate that the learners' readiness was fair. Prior to the pandemic, learners have been going through their courses in blended mode, hence they have had to be partially prepared for online learning. Callo and Yazon (2020) reported that familiarity and capability regarding online learning, preparation of the online learning experience, device and connectivity, self-efficacy and prior experience with technology significantly influenced the readiness of the undergraduate learners for fully online learning mode.

### Findings on Learning Management System (LMS)

It is imperative that the online learners at OUM are able to access OUM's learning management system, myINSPIRE, and use the platform for their learning. Respondents were asked to rate on ease of access to and within myINSPIRE, user-friendliness of the system, and ease of communication with their tutors and coursemates via the discussion forums. In this way, we were able to look at the self-efficacy of our learners in their use of computers and the learning platform. Our data showed that 74% of the learners are in agreement that myINSPIRE is user-friendly, 77% of the learners agreed that they can easily navigate myINSPIRE, 80% of them responded that they can find their course easily in myINSPIRE. OUM myINSPIRE was customised from Moodle which is a well-known and proven open

source LMS. It is equipped with various facilities to support online learning among OUM learners. Our findings coincide with the study by Kasim and Khalid (2016), the critical factor that impacts on learner satisfaction is that the features available in an LMS meet their needs and facilitate its use. They also discussed that an information management system provides systematic and interactive elements that can easily be managed in the LMS and supported by its flexibility and student-centeredness, and it is thus able to provide more meaningful learning experiences for learners.

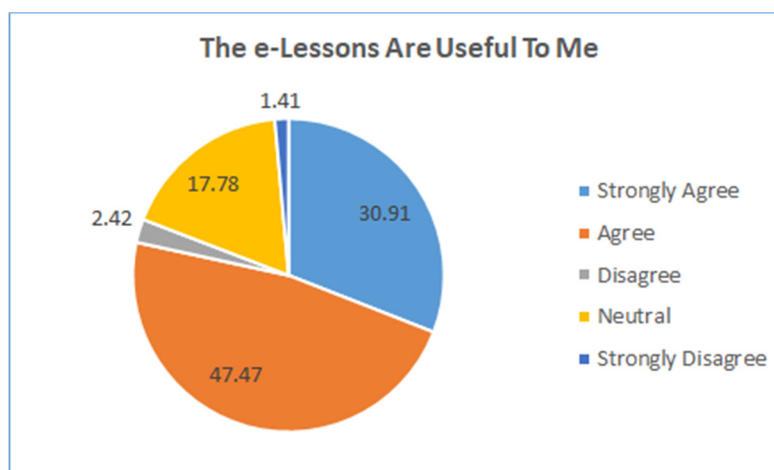
### Findings on Course Content

When learners are technology savvy, they will likely see the e-learning content provided to them as easy to use. This perceived ease of use will have a positive impact on learners' interactions with the course content in the online learning platform. For course content, respondents were asked to rate on items related to online modules/e-books, videos and e-lessons. e-Lessons were introduced in some courses prior to the pandemic. With the MCO, e-lessons were quickly made available to all courses in all active programmes. A total of 10 e-lessons were developed for each course. Each e-lesson comes with a series of videos (OERs), followed by discussion questions to be discussed in the online forum, and two sets of online quizzes (pre and post) for learners to do self-checks. It would be meaningful to find out if the learners found the new e-lessons useful. As shown in the chart below (Figure 2), 78.38% (388) of the learners agree or strongly agree that the e-lessons were useful to them. Only 3.84% (19) of the learners did not agree or strongly disagreed that the e-lessons were useful. 17.78% (88) of the learners remained neutral.

Further breakdown of the data showed that 82.2% of the 191 first-year learners in the study agreed or strongly agreed that the e-lessons were useful. Meanwhile 78.14% of 182 second year learners and 79.34% of 121 third year learners rated similarly. 2.09% of first year learners rated disagree or strongly disagree. For second- and third- year learners, the percentage who disagreed or strongly disagreed came up to 2.20% and 4.13% respectively.

**Figure 2**

*Data for Responses on "The e-Lessons are Useful to Me" (in %)*





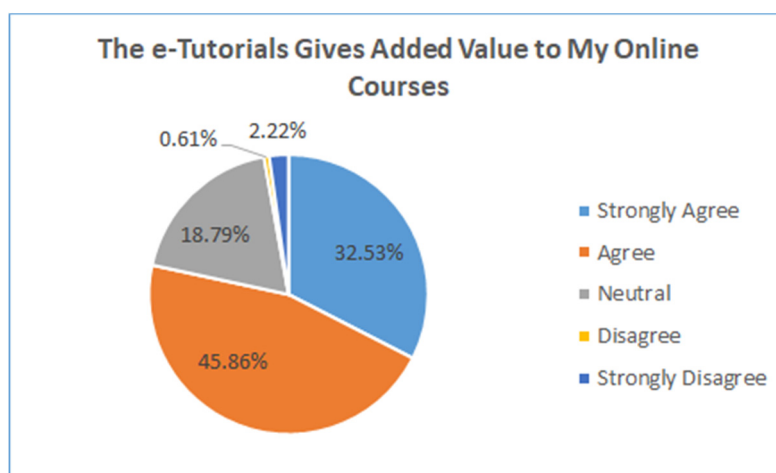
## Findings on e-Tutorials

Learners at OUM have a high level of perceived competence towards online learning, and this comes with self-confidence and belief that they will be able to perform well by attending the e-tutorials. Since in-class face-to-face tutorials were no longer allowed, OUM introduced e-tutorials to provide face-to-face interaction between tutors and learners virtually. The e-tutorials are conducted via Google Meet. e-Tutorials are scheduled weekly for a maximum of 10 times throughout the semester, each set for an hour long. The e-tutor is responsible for setting up the schedule, and also for recording each e-tutorial session. The recorded sessions are made available and accessible to the learners enrolled in the course. This allows learners who are unable to attend the e-tutorials to go through the sessions at their own time. Respondents were asked to rate the scheduling of the e-tutorials and their ability to attend the e-tutorials; the length of the e-tutorials; the number of e-tutorials held; the helpfulness of the e-tutors; and whether they felt the e-tutorials gave added value to their online courses. As the e-tutorials were meant to be a substitute for the face-to-face component in blended mode, it is important to know whether the learners felt that the e-tutorials were helpful and added value to their courses.

In terms of attending the e-tutorials, 51.7% of the respondents either agreed or strongly agreed that they didn't have problems attending the e-tutorials scheduled for their courses. 13.7% indicated that they had problems with attending the e-tutorials. 32.6% rated as being neutral. As to whether they felt the e-tutorials gave added value to their courses, as shown in the chart (Figure 3), more than half of the respondents, 78.38% (388), either agreed or strongly agreed on it. Meanwhile 2.8% (14) of the learners felt differently.

**Figure 3**

*Data on "The e-Tutorials Gives Added Value to My Online Courses"*



## Findings on Online e-Tutors

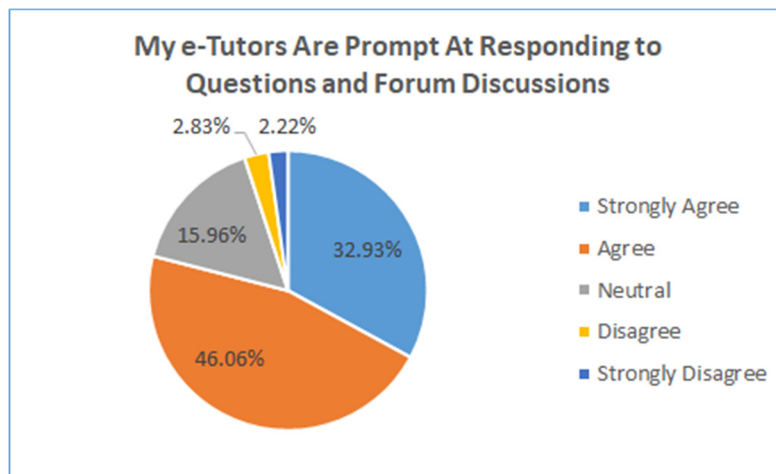
In the blended mode, OUM appoints tutors to conduct the face-to-face tutorials that are scheduled bi-weekly. For the rest of the time, OUM appoints online tutors, known as e-tutors, to provide support to the learners online via OUM's LMS myINSPIRE. e-Tutors will manage the discussion forums and continue to guide the learners in the absence of the face-to-face tutor. With the switch to fully online, the responsibility for guiding the learners falls solely on the e-tutors. The e-tutors will be the only point of reference for the learners. It is therefore important to know how the learners feel about the e-tutors that they have. Respondents were asked to rate on several different aspects related to the e-tutors. Among them, whether they

felt the e-tutors were qualified and knowledgeable, helpful, provided sufficient feedback and guidance, prompt at responding to questions and forum discussions, provided supplemental handouts, created a climate of trust and openness, and maintained professionalism in the virtual classroom.

In online discussion forums, feedback and responses are delayed. It is however imperative that e-tutors be responsive and try to respond to learners' questions within a reasonable time. Figure 4 below shows the data on responses to whether the e-tutors were prompt at responding to questions and forum discussions. 78.99% (391) of the responses were favourable and agreeable to the e-tutors being prompt. At the same time, 5.05% (25) of the respondents disagreed or strongly disagreed that their e-tutors were prompt at responding to their questions and forum discussions.

**Figure 4**

Data on "My e-Tutors are Prompt at Responding to Questions and Forum Discussions" (in %)



e-Tutors are also expected to be helpful and provide sufficient feedback and guidance as they are the only ones providing support to learners since the switch to fully online mode. In relation to this, 82.6% (409) respondents agreed or strongly agreed that their e-tutors were helpful; and 79.5% (394) indicated they agreed or strongly agreed that their e-tutors provided sufficient feedback and guidance.

### Findings on Student Support Services

OUM has always provided student support services online even prior to the MCO. With the shutdown, it was imperative that learners received continued support online. Respondents were asked to rate items related to learner support services which included the ease of submitting queries or complaints, getting technical support, getting advice in planning courses, getting additional tutoring support, getting counseling services, getting support from OUM Alumni learners, as well as support from Learning Centre staff. From the total number of responses, 69.09% of the respondents agreed or strongly agreed that they could easily get technical support; 61.61% agreed or strongly agreed that they could get additional tutoring support for their courses; 71.91% agreed or strongly agreed that the learning centre staff were reachable and available for support; and 74.14% agreed or strongly agreed that they could easily submit a query or complaint to OUM. Meanwhile only 43.03% of the learners agreed or strongly agreed that they are in touch with OUM Alumni for support.



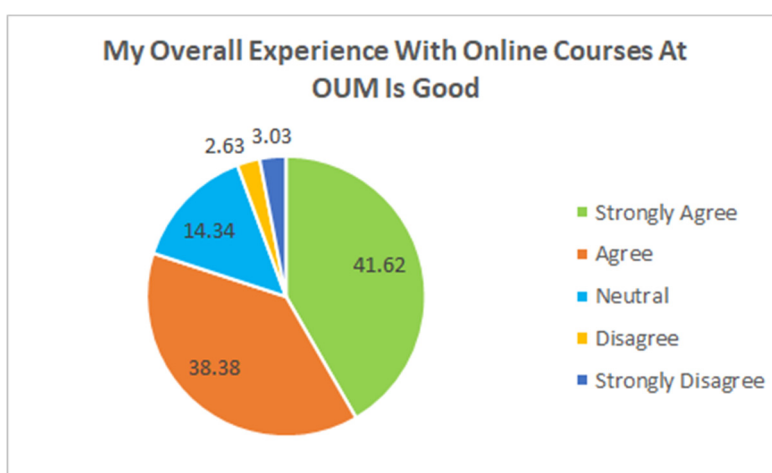
## Findings on Fully Online Courses

A system, when used, must be useful and also easy to learn. In this example, the system was the online learning platform for the fully online courses. Perceived usefulness is a measure of how much the use of technology influences the user's intention to use the system. Respondents were asked to rate on items related to their overall experience with online courses at OUM, how good they felt about taking fully online courses, their preference of having face-to-face courses over fully online courses, and whether they felt they could successfully complete their program with fully online courses.

Eighty percent (396) of the total respondents agreed or strongly agreed that their overall experience online at OUM was good. 5.66% (28) rated otherwise, and the remaining stood on neutral grounds (see Figure 5). Almost similarly, 80.20% (397) respondents agreed or strongly agreed that they felt good about taking online courses. 5.45% (27) disagreed or strongly disagreed that they felt good about taking courses online. The rest remained neutral.

**Figure 5**

Data on "My Overall Experience with Online Courses at OUM is Good"



With respect to whether the learners felt they would rather have their courses face-to-face compared to fully online, 41.21% (204) rated agree or strongly agree, 20.61% (102) rated disagree or strongly disagree, and 38.18% (189) were neutral. 79.19% (392) of the respondents agreed or strongly agreed that they will successfully complete their programme with fully online courses. Only 6.06% (30) disagreed or strongly disagreed and 14.75% (73) were neutral on the matter.

## Findings on Issues with Fully Online Learning

Respondents were also asked to provide any issues that they had with fully online learning and to give suggestions to improve their full online learning experience. 41.4% of the responses received indicated that learners did not have any issues with fully online learning. 3.8% indicated having issues with internet connection while 2.5% experienced technical issues (unable to log in, unable to access e-tutorial recordings/videos, unable to use OUM apps, lack technical skills). In addition, 6.6% indicated issues related to time management and scheduling (conflict with work schedule) and 1% had issues with time differences (from being abroad), About 2.2% expressed issues with tutors (slow response and feedback, lack of support, not helpful) and 1% had issues with course content and



course assignments. 1.5% stated having other issues related to administration, fees and also health issues. Furthermore 1% of the respondents indicated they felt their courses were difficult without face-to-face sessions.

## Discussion

The unexpected emergence of the Covid-19 Pandemic led to changes in the delivery of education. For Open University Malaysia (OUM), using online mode of delivery is not new as the University has progressively moved forward with online courses as well as a few fully online programmes before the pandemic started. The challenge for OUM was to get all the courses in all the programmes changed to fully online within a very short time period. The change involved adding weekly e-Tutorials via Google Meet as a substitute for the face-to-face tutorial sessions. In addition, weekly e-lessons were developed for learners for every course offered. In hall sit-in exams were also pushed online. We sought to find out how comfortable learners were with the changes and the switch to fully online learning at OUM; and if there are areas for improvement to allow for a more meaningful and rewarding learning experience.

The findings show that the majority of the learners are in a fair state of readiness for change, with an average of more than 60% being in agreement to all the items included in the section. OUM learners have been exposed to online learning through blended learning mode and therefore are already partially equipped and ready for moving to fully online learning. On the use of OUM's LMS myINSPIRE, the responses were mostly positive, with an average of more than 70% of the learners agreeing to the ease of use and navigation and user-friendliness of the system. Again, OUM's learning management system is not new and learners have been using myINSPIRE to access their courses even prior to the change to fully online learning.

Course content is the section tied to perceived ease of use, and the findings show that a high percentage of learners felt the new e-lessons introduced in all the courses since the switch were useful and helpful to them. The percentages were similarly high irrespective of the year the learners were in. Even so, there were learners who felt otherwise. One reason could be that the learners did not have time to go through the e-lessons hence did not use them in their learning, or there is a chance that perhaps the learners were not aware of how the e-lessons should be used or unaware that they needed to go through the e-lessons.

As for the section on e-Tutorials, which is tied to perceived personal competence, only about half of the learners who responded had no issues attending the e-tutorials. There is an indication that maybe learners couldn't attend due to conflicting schedules, having to work, or even perhaps experiencing bad connections during the scheduled times for the e-tutorials. A high percentage of the learners did however feel that the e-tutorials added value to their courses. Since the e-tutorials were recorded, even if the learners couldn't attend the live sessions, they were still able to access and view the recorded sessions. As for those who disagreed or strongly disagreed on the matter, this could be due to the fact that they did not attend the e-tutorials and did not access the recorded sessions; or the e-tutorials were not conducted in a way that helped the learners further understand the content or subject matter.





At OUM strong organisational commitment to online learning has always been in the forefront. OUM works together with the e-tutors and learner support services to provide wholesome learning experiences to the learners. This can be seen from the positive responses by the respondents on these two sections. A high percentage of learners felt that they were getting the support they needed from their online tutors and learner support services. Even though the numbers are encouraging, it still remains a concern that there are learners who disagreed or strongly disagreed with the support given by their online tutors. It may be the case that there are online tutors who are conceivably struggling or facing difficulties tending to their learners, and also not fully understanding how their role has changed with the change from blended learning to fully online learning. There is also indication that there is a lack of support from OUM Alumni. This could be due to the COVID-19 lockdown, where the learners and Alumni cannot be present at the various learning centres for physical discussions. There are other channels for the learners to seek help from the seniors and OUM alumni, however, learners may not be aware of those channels.

With respect to fully online learning, 80% of the respondents indicated that their overall online learning experience at OUM was good and felt good about taking online classes. Furthermore, more than 70% of the learners felt that they could successfully complete their programmes by taking fully online courses. Yet a high number of learners were indecisive as to whether they preferred face-to-face to fully online and remained neutral on the matter. This seems to indicate that there may still be some doubt or lack of confidence in the learners towards fully online learning.

The responses from learners on issues with online learning seem to confirm that some learners at OUM do face some issues and challenges with fully online learning. The issues are mainly related to time management and scheduling. The majority of OUM learners are working adults, and have to juggle between work and study and family. This may contribute to the issue of time management and scheduling. Other issues mentioned relate to issues with tutors, course content, course assignment, administration and fees, as well as, technical issues. These issues are in line and similar to the issues highlighted in the study done by Amir et al. (2020).

The results and findings point to areas for improvement in order to provide for a more rewarding online learning experience. First and foremost, with the absence of face-to-face classes, it must be stressed to the tutors that they should play a bigger role in online facilitation. As online tutors, they need to understand how the virtual learning environment works and be able to facilitate the learning, guide and motivate learners. More training should be provided for tutors to become better online facilitators. Not all of the tutors are fully equipped to be online facilitators. Although some were exposed to facilitating online learning when the courses were conducted in blended mode, many were only face-to-face tutors prior to the switch to fully online learning. The tutors themselves may be facing some issues and challenges with facilitating online. In addition, training should be provided on how to conduct the e-tutorials so that learners will find attending the e-tutorials engaging and rewarding for them.

To increase cognitive presence online, it may be worthwhile to find ways to include more content that is engaging for the learners. Additional resources should be made available to support fully online learning. And it is important that learners be made aware of all resources available online for their use.

## Conclusion

The results and findings of the study support and confirm that despite having some issues and challenges, the majority of undergraduate learners at OUM (under the Cluster of Applied Sciences) are in a fair state of readiness to adapt to the change from blended learning to fully online learning. The sudden lockdown due to the pandemic interrupted the norm of teaching and learning, propelling OUM and all higher educational institutions to embrace the new norm. This study did not put any focus on learner performance. It would be interesting to see how and if the performance of the learners were affected by the change. Meanwhile, more effort will have to be put into improving all sections in order to give the learners the best overall online learning experience.

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## Emotional Stability, Resilience, and Online Learning Skills among First Year Undergraduates during the COVID-19 Pandemic

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### Abstract

*The main objective of the study was to investigate the relationships between emotional stability, resilience, and online learning skills among first year undergraduate students during the COVID-19 pandemic. A total of 159 new undergraduate students enrolled in a public university in the east coast of Malaysia participated in the study. They were selected based on a purposive sampling technique and completed two sets of instruments, the Learner Personality Profile and Online Learning Skill, which consisted of 60 items and 30 items, respectively. Both instruments were measured based on a five-point Likert scale. The Learner Personality Profile scales comprised the following responses: (1) never, (2) rarely, (3) sometimes, (4) very often, and (5) always, while the Online Learning Skill scales comprised the following responses: (1) strongly disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, and (5) strongly agree. The findings of the study showed that female students' scores for level of resilience (mean = 3.90) were higher than male students' scores (mean = 3.61) based on a three-level range of mean scores (low = 1.00 to 2.33, average = 2.34 to 3.67, and high = 3.68 to 5.00). Female students' scores for level of online study skills (mean = 3.90) were also reported to be higher than male students' scores (mean = 3.61). However, both male and female students reported low scores for emotional stability (mean = 2.20 and mean = 2.19 respectively). The correlation analyses showed a significant relationship between online study skills and emotional stability, and between resilience and emotional stability. However, the study found that the resilience variable did not act as a mediating factor in the relationship between online study skills and emotional stability based on the multiple-regression analysis.*

**Keywords:** *Online Learning, Study Skill, Resilience, Emotional Stability, Personality, COVID-19 pandemic*



## Introduction

The COVID-19 pandemic around the world is currently in its second year since the outbreak was first discovered in Wuhan, China, in December 2019. The virus has spread so quickly that it prompted the World Health Organisation to declare the COVID-19 a pandemic on 30 January 2020. Since then, it had affected all aspects of the human life around the globe, including education. Schools, colleges, and universities throughout the world have had to halt face-to-face academic activities temporarily in order to break the chain of the COVID-19 infection. Nobody expected the pandemic would hit the world so seriously and compelled various new norms in society. Wearing a mask and maintaining physical distance in public have become mandatory and there is a 'new normal' in other aspects of human life as well.

Without doubt, the COVID-19 pandemic has influenced university teaching and learning around the world. Universities around the world have not been exempted from the new norms. This unprecedented situation resulted in a paradigm shift for learning institutions and brought about the practice of new norms in higher education settings. Universities had to drastically change their teaching and learning approaches and activities due to the viral outbreak. Previously, mandatory classroom attendance had to be replaced with fully online lectures. Due to health and safety reasons, universities across the globe, including in Malaysia, were left with no option but to switch from the traditional mode of teaching and learning to a new mode. This is the first time in the history of Malaysian academia that students who obtained places in public and private universities were barred from registering physically on campus. Orientation programmes and academic registration for new and senior students were conducted fully online from their respective homes.

Online teaching and learning suddenly became the new approach of university teaching and learning around the globe by offering a flexible way for the transmission of knowledge. According to Mohd Sufli *et al.* (2018), online teaching enabled lecturers to share teaching content with students through diverse means, such as online slide presentations, forums, and video presentations. Students were no longer required to be physically present on campus to attend lectures and seminars, work in laboratories, and present or submit their academic work. During the pandemic, lecturers are expected to deliver lectures from their homes.

There seems to be no definite answer or clear prediction as to when the COVID-19 pandemic which has affected higher education systems around the world for close to two years now will end. What is clear is that the crisis has accelerated the importance of acquiring high-speed Internet connection and providing the infrastructure for online teaching and learning. Universities need to ensure that the process of online teaching and learning would not be halted or disrupted during this 'new normal' of teaching and learning. On the other hand, students also want to ensure that the teaching and learning activity will not be interrupted. They expect the university to provide the facilities needed for their online learning activities and quick access to learning materials. It is important for the university to find ways to ensure that educational equity in the context of online learning during the pandemic and beyond can be provided to all students.

The drastic shift from the traditional mode of learning to the online mode has affected Malaysian university students as well. Studies reported that those newly enrolled undergraduate students had mixed reactions when they had to switch from conventional university learning of face-to-face lectures to fully online learning. While some students had a positive attitude and views towards online learning, there were others who struggled with the change (Che Ahmad Azlan *et al.*, 2020; Gurbuz, 2014; Sad *et al.*, 2014). Studies reported that many new undergraduate students were struggling in their first few months and could not adapt well to the new teaching and learning approaches (Ngampornchai & Adams, 2016; Safwana Nur Widad *et al.*, 2020).

Kunjukunju *et al.* (2020) reported that many students felt pressured when they could not afford high-specification smartphones, laptops, or computers for their online learning classes. They became even more demotivated and stressful when they could not access online classes due to poor Internet connection at home (Ahmed & Reddy, 2020; Clark & Mayer, 2016; Moore & Kearsley, 2005). Students reported that they need proper coaching and guidance from their lecturers on how to effectively use the online system. According to Zuhail (2017), online tutors and lecturers must be skilful in order to make online classes effective. Cater *et al.* (2012) reported that students who lacked computer skills tended to experience higher levels of stress than those with good computer skills. They became more stressed and emotionally disturbed and lacked resilience if they had no one to turn to when they faced difficulties in studying online (Albritton, 2003; Holcomb *et al.*, 2004; Irizarry, 2002; Kemp, 2002; Sarker *et al.*, 2020; Wang & Newlin, 2000).

## Literature Review

Online learning is not new in the higher education system. This method has been widely used by higher education institutions around the world that have been offering the online mode of learning to learners. However, since the outbreak of the COVID-19 pandemic, the online mode of learning has gained popularity around the world not only in universities, but the whole spectrum of the education system. With the uncertainty of the current situation, the online approach is expected to be the main approach in teaching and learning for many years to come.

Prior to the pandemic, the conventional approach of face-to-face learning was the mainstream way of learning in the school and tertiary systems (Ana *et al.*, 2020). The sudden transition in the mode of learning from the traditional approach to an online mode took many students, parents, and educators by surprise. It was beyond their expectations that the switching of teaching and learning activities to online learning would happen so quickly. For some students, the switching to the online mode of learning and teaching has indirectly affected their readiness, emotional stability, and resilience. Sandybayev (2020) reported numerous studies on the stress and emotional instability that the switch has caused among students. These students reported having trouble adjusting to the new way of learning and feeling stressed. Thomas (2012), and Amantha and Al-Samarraie (2019) reported that emotional stability was an important factor that could influence the success rate of students who have to adapt to a new method of learning and would later lead to some other emotional issues like stress.



In order to use an online learning system, students must master the skill of using a computer or other smart gadgets (Mohd Nurfikri & Teng, 2020; Chung *et al.*, 2020). A study conducted in Cameroon found that two-thirds of new undergraduate students surveyed were unfamiliar with online learning and 17% of them did not own a computer. Overall, the majority of students in African universities only used word processing and email, and engaged in web surfing. As a result, Chinaza and Ke (2019) found that they lacked computer literacy and experienced online learning anxiety.

Emotional stability could be related to the ability to master computer skills in order to undertake online learning. This stability could be affected by IT phobia (fear of technology) caused by low computer literacy and conservatism. A study conducted by Sandybayev (2020) reported that 70% of respondents comprising first-year students experienced serious stress in online learning. Their stress level decreased when they rose to seniority in their studies. A majority of third-year students found e-learning useful and of significant beneficial. They proposed that higher education institutions create technology awareness, motivate learners, and help them change their behaviour to reduce stress and IT phobia (Holcomb *et al.*, 2004; Bhuasiri *et al.*, 2012).

Online learning can be enjoyable for those who have adapted to it. Resilience is a contributing factor in helping students enjoy online learning and an engine for learning as described by Paris and Turner (1994). Motivated students are likely to take on challenges and are willing to learn new things that could lead to academic success (Ryan & Deci, 2000; Sandybayev, 2020). According to Bekele (2020) and Shahzad *et al.* (2020), there is a reciprocal relationship between learning and resilience, which has been researched countless times for the traditional education setting. Studies by Al-Rahmi *et al.* (2018) and Tinto (1975) indicate that lack of resilience contributes to higher dropout rates. Dropout rates are higher in online education settings than traditional settings, which suggests that resilience is one of the main factors in online learning (Hartnett, 2016; Palanisamy & Balogun, 2017; Safiyeh, 2015). Studies conducted by Safiyeh (2015) and Serebryakova *et al.* (2016) concluded that motivated students are more likely to succeed in online learning.

It was found that students could perform better academically outside the traditional classroom setting when the online delivery is as effective as face-to-face teaching (Harandi, 2015). Universities could motivate their students by integrating technology into their teaching system and providing solutions for all concerns related to online learning (Carter *et al.*, 2012). Deci and Flaste (1996) reported that online learners could also be inspired by the performance of their peers during online learning activities (Shroff *et al.*, 2008; Wang & Newlin, 2000).

In order to maintain the emotional stability and resilience of students, specifically first-year undergraduates, their online learning skills need to be enhanced so that the learning activities could be conducted smoothly and without interruption. Therefore, online instructors like lecturers and tutors should be fluent with technology and have good communication skills to motivate students and help them go through online learning with less stress (Easton, 2003; Schunk *et al.*, 2014). Without adequate technological skills, the learning process could be disrupted, which may impact students' access to learning materials and cause academic distress.

According to Easton (2003), new undergraduate students should be provided with skills enhancement classes so that they can become fluent in the relevant technology prior to online learning. Subsequently, students' confidence will increase, and this will contribute to improvement that will lead to better performance during online learning activities. They need to be familiar with a variety of online learning tools such as email, social media, live

class interaction, and feedback provision. In addition, it is important for the university to conduct continuous assessments and provide feedback on students' online skills and their emotional state during the online learning activities (Darabi *et al.*, 2006).

### Research Objectives

This study examined the relationship between emotional stability, resilience, and online study skills among first-year undergraduate students from a public university in the east coast of Malaysia who were involved in online learning during the COVID-19 pandemic. The study intended to seek a better understanding on the first-year undergraduate students' levels of emotional stability, resilience, and online study skills during online learning. Three main objectives of the study were formulated as follows:

- i. To measure the level of emotional stability, resilience, and online study skills among first-year undergraduate students.
- ii. To measure the relationship between the emotional stability, resilience, and online study skills of the undergraduate students.
- iii. To measure the mediating effects of resilience on the online study skills and emotional stability among the undergraduate students.

### Research Method

Data were collected through online surveys. Two sets of online questionnaires, i.e., Online Learning Skill and Learner Personality Profile, were distributed via Google Forms to the respondents through the instant messaging application, WhatsApp. Respondents were given one week to answer the two questionnaires. The returned questionnaires were then analysed using the SPSS version 24 software.

A total of 159 full-time new undergraduate students who were doing their online studying from their homes participated in this study. They were enrolled in the September 2020 semester and were in the fourth week of their first semester when they participated in the study. They were chosen through the purposive sampling method whereby the researcher chose a specific batch of first year undergraduate students in the counselling programme. These students were originally from all the 14 states in Malaysia. Table 1 provides the gender breakdown of the respondents. Of the 159 respondents, 135 were females (85%) while 24 were males (15%).

**Table 1**

*Gender of Respondents*

Gender	n	%
Male	24	15
Female	135	85





The questionnaire used in this study comprised two sets of instruments. The first instrument, the Learner Personality Profile, measured nine personality traits. It contained 60 items measured on a five-point Likert scale: (1) never, (2) rarely, (3) sometimes, (4) very often, and (5) always. For the purpose of this study, only two out of the nine traits were chosen i.e., resilience and emotional stability (Table 2). The second instrument, Online Learning Skill, measured three constructs. It contained 30 items measured on a five-point Likert scale: (1) strongly disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, and (5) strongly agree. The Cronbach's alpha reliability values for both instruments were reported at 0.93 and 0.95, respectively. In the Online Learning Skill instrument, only the study skill construct was selected for the study. Table 2 below lists the three constructs under the Online Learning Skill instrument and nine constructs under the Learner Personality Profile.

**Table 2**

*Instruments and Constructs Chosen in the Study*

Instrument	Online Learning Skill	Learner Personality Profile
	<b>Study Skill*</b>	<b>Resilience*</b>
	Literacy Skill	<b>Emotional Stability*</b>
	Living Skill	Extraversion
Construct		Intrinsic
		Adaptability
		Accountability
		Self-Directed
		Cross-Cultural
		Resilience

Table 2 summarises the two instruments (Online Learning Skill and Learner Personality Profile) and three constructs chosen in the study (study skill, resilience, and emotional skill) which are highlighted in bold.

## Findings

This section reports the findings of the study based on the three research objectives mentioned earlier.

### Study Skills

Table 3 summarises the respondents' learning skills. The assessment of learning skills included three constructs, which are study, literacy, and life skills. Respondents were required to indicate their level of learning skills frequency in the questionnaire. They reported this frequency on a five-point Likert scale: (1) strongly disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, and (5) strongly agree. In this research, only the study skill construct was studied.

**Table 3**

*Mean Scores of Respondents' Study Skills Based on Gender*

Learning Skills	Gender	n	Mean Score	Standard Deviation	Level
Study Skills	Male	24	3.61	.665	Average
	Female	135	3.88	.421	High
Literacy Skills	Male	24	3.64	.599	Average
	Female	135	3.82	.483	High
Life Skills	Male	24	3.65	.459	Average
	Female	135	3.94	.475	High

Table 3 summarises the mean scores of respondents' study skills based on gender. The mean score on the study skill construct was 3.61 for male students and 3.88 for female students. In summary, the female students had a higher level of study skills than the male students.

**Range of Mean Scores**

The interpretation of the mean score was adapted from Landell (2013) on the three levels of frequency (low, average, high) of learning skills as shown in Table 4 below.

**Table 4**

*Interpretation of Mean Score*

Range of Mean Score	Frequency
1.00 – 2.33	Low
2.34 – 3.67	Average
3.68 – 5.00	High

**Study Skills Mean Scores of Male and Female Students**

**Table 5**

*Comparison of Mean Scores between Male and Female Students*

Learning Skills Constructs	Gender	Mean	t	df	Sig. (2-tailed)	Results
Study Skills	Male	3.61	-2.597	157	.010*	Significant difference
	Female	3.88				

\*Significance at level 0.01



Table 5 presents a summary of the *t*-test on the study skill constructs of the male and female students' mean scores. The independent-samples *t*-test showed a significant difference in the study skill construct, whereby  $t(157) = -2.597$ ,  $p = 0.10$ , two-tailed. In summary, female students reported a higher level of learning skills than male students.

### Personality Constructs of Respondents

Table 6 summarises the respondents' levels of resilience and emotional stability. These two constructs were chosen from a total of nine personality constructs altogether. The other seven personality constructs were not reported in the study. These constructs were openness, self-effectiveness, adaptability, accountability, self-direction, cross-culture, and motivation. The respondents were asked to indicate their level of personality frequency in the questionnaire. They indicated this frequency based on a five-point Likert scale: (1) never, (2) rarely, (3) sometimes, (4) very often, (5) always.

**Table 6**

*Personality Construct of Respondents*

Personality Constructs	Gender	n	Mean	Std. Deviation	Level
Resilience	Male	24	3.077	.4148	Average
	Female	135	3.375	.4171	Average
Emotional Stability	Male	24	2.196	.7257	Low
	Female	135	2.186	.8961	Low

Based on the participants' responses, the data were analysed and the mean score of each personality construct is shown in Table 6. It presents the summary of means for the personality constructs by comparing the mean score of the male and female students. It was evident that the resilience and emotional stability constructs reported average and low mean scores. The mean scores for the two constructs were between 2.186 and 3.375. The standard deviations for both constructs were relatively similar for both male and female students. On average, female students reported a higher mean score than male students on the resilience construct (mean = 3.375).

**Table 7**

*Comparison between the Mean Scores of Male and Female Students on Resilience and Emotional Stability Constructs*

Personality Constructs	Gender	t	df	Sig. (2-tailed)	Results
Resilience	Male	1.141	157	.256	No significant difference
	Female				
Emotional Stability	Male	.054	157	.957	No significant difference
	Female				

\*Significance at level 0.01

Table 7 presents a summary of the *t*-test for the personality constructs by comparing the mean scores of the male and female students. An independent-samples *t*-test was conducted to evaluate the hypothesis that there was no significant difference in the resilience and emotional stability constructs between the male and female students. The test was significant for resilience  $t(157) = -3.233, p = .001$ .

### Correlation between Learning Skills and Personality

**Table 8**

*Correlation between Learning Skills and Personality Constructs*

Constructs	1	2	3	4	5
Learning Skills	-				
Study Skills	0.84*	-			
Personality	0.50*	0.36*	0.42*	0.57*	-
Resilience	0.46**	0.35**	0.37**	0.52**	0.86**
Emotional Stability	-0.32*	-0.30*	-0.25*	-0.24*	0.13

\*Significance at level 0.01

Table 8 presents a summary of correlation between learning skills and two personality constructs (resilience and emotional stability). The correlation between learning skills and personality scores was found to be statistically significant,  $r(157) = .50, p < .01$ , two-tailed. The results suggest that students who scored high in learning skills tend to rate themselves as having the study skills. With the exception of emotional stability, the results generally suggest that students who scored high on the personality construct tend to rate themselves as motivated.

### Resilience as a Mediation Effect between Study Skills and Emotional Stability

Figure 1 illustrates the conceptual mediation model to investigate whether or not the resilience variable has an effect on the relationship between study skills and emotional stability. Resilience and study skills acted as the dependent variables while emotional stability acted as the independent variable. A multiple regression analysis conducted reported a negative result ( $p = 0.783$ ) whereby the resilience construct did not have an effect on the relationship between study skills and emotional stability. Therefore, it could be concluded that resilience is not a mediating factor in the relationship between study skills and emotional stability.

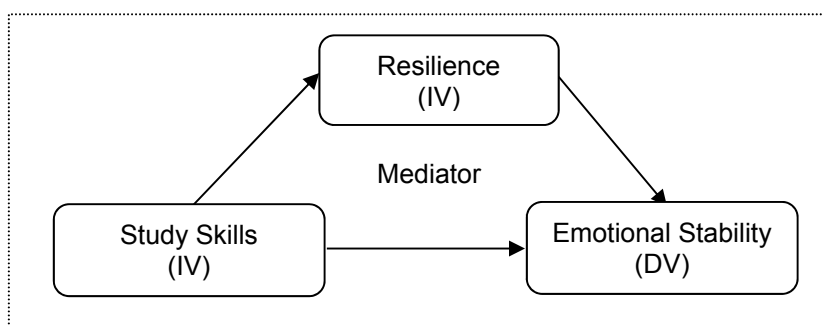
**Figure 1***Conceptual Mediation Model*

Table 9 reports the result analysis using multiple regression to investigate whether the resilience construct could be a mediating factor towards the relationship between study skills and emotional stability. The result  $p = .783$  showed that there was no interaction between the resilience construct and study skills that would affect emotional stability.

**Table 9***Multiple Regression Analysis*

Emotional Stability	Coefficient	t	p	R <sup>2</sup>	Adjusted R <sup>2</sup>	F
Model with mediation effect						
Constant	5.06	1.18	.240	0.10	0.08	5.61
Study Skill	-0.92	-0.82	.413			
Resilience	-0.15	-0.12	.909			
Interaction	0.09	0.28	<b>.783</b>			

## Discussion

This timely study answered three research questions. The study found that female students were more motivated and Internet savvy than male students in undertaking online learning. However, both male and female students reported experiencing some emotional issues during their online study at home during the COVID-19 pandemic. It could be due to several reasons, such as stress, fatigue, lack of focus, low self-confidence, and incompetence in studying online. Other similar studies reported that the learning situation at home, Internet connectivity, tutor-student relationship, readiness of the subject matter, content, technical infrastructure that support online learning, and students' personality had direct correlation to students' emotional wellbeing (Ahmed & Reddy, 2020; Minghat *et al.*, 2020).



The study reported a significant relationship between resilience and emotional stability, and online study skill and level of emotional stability. Female students reported a higher level of resilience than male students in studying online at home. However, both male and female students reported a low level of emotional stability during online learning. Despite the significant relationship reported between resilience and emotional stability among male and female students, resilience was not a mediating factor which contributed towards the relationship between online study skill and emotional stability among first-year undergraduates.

Five recommendations are highlighted in this study. Firstly, the university needs to facilitate and provide active engagement with students during online learning. Secondly, the university needs to look into students' readiness to engage in the online learning mode. The study reported that new students had some issues with online study skills since many of them were not ready for online learning when the COVID-19 pandemic began. Thirdly, university counsellors must provide counselling, guidance, and intervention programmes for students who experience emotional turmoil during online learning at home. Students could seek guidance and counselling if they experience symptoms of stress or depression. Fourth, the university's centre of student learning could provide a more student-friendly learning system, especially for those who lack online study skills. Finally, online instructors or tutors could facilitate a better online learning experience for new students. The university needs to ensure that its online tutors are well-trained in using the online learning system and possess a high level of online teaching and learning competency. Apart from technological knowledge, they need to be student-friendly and demonstrate good communication and coaching skills. The implementation of these five recommendations by the university will be timely and provide more student-centric online teaching and learning activities for new undergraduate students who undertake online learning from home.

## Conclusion

The study revealed interesting findings about the current state of online study skill, resilience level, and emotional stability of undergraduate students who were involved in online learning at home during the COVID-19 pandemic. Even though the resilience variable did not affect the students' state of emotional wellbeing and did not mediate the relationship between online study skills and emotional wellbeing during online learning, it showed that both male and female students experienced low levels of resilience when it came to online learning. It would be valuable for the university to further investigate the level of emotional stability, resilience, and online study skills of undergraduate students from other programmes who had also been involved in online study during the pandemic as it would provide a holistic view on the current state of undergraduate students' levels of emotional stability, online study skills and resilience. In conclusion, the findings of the current study have added to the body of knowledge in the areas of counselling, educational psychology, and higher education.



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## Working from Home Support during the COVID-19 Pandemic in Malaysia

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### Abstract

*In the past year, most organisations have adjusted to a new environment after the COVID-19 pandemic hit. This includes the public and private sectors which choose the work from home approach that is appropriate to the situation. Employees moved from working in an office building to a makeshift home office, while audio and video conference calls replaced face-to-face meetings. Although at first regarded as temporary measures in response to the threat of the pandemic, working from home is now part of the 'new normal' in most organisations. As most organisations are rethinking the future of work and the workplace, companies should consider a working environment in which employees can have the flexibility to work arrangements once the COVID-19 pandemic has passed. However, adjusting to the new normal poses significant challenges. Support from the employers is therefore vital to ensure awareness of new possibilities in reviving the need to explore alternative work arrangements. This paper studies the support provided by employers in Malaysia during movement control order (MCO 1.0, MCO 2.0, and MCO 3.0) from three perspectives, namely, technical and equipment support, policy support, and emotional support. The discussion of this paper would provide insights into the areas that require improvement in enhancing work culture in the new normal.*

**Keywords:** COVID-19 Pandemic, Movement Control Order (MCO), New Normal, Work from Home

### Introduction

The recent COVID-19 pandemic that swept the world has seen the 'new normal' being embraced in various aspects of life, including lifestyle, working environment, teaching, and learning. Many companies have their employees working from home while educational institutions including schools and higher education institutions had to close due to the COVID-19 pandemic. Across the world, governments have not only developed policies but also established measures in response to COVID-19 pandemic. In Malaysia, to enhance the Ministry of Health efforts in keeping the spread of COVID-19 under control, a movement control order was implemented on March 18, 2020. The first movement control order (MCO 1.0) which was until May 3, 2020, was aimed at controlling the movement of people into or out of an area. The movement control order enforced was significant as it would help to control the spread of the infectious disease in Malaysia. However, due to the sharp rise in

the number of daily cases in most states in the country, the second movement control order (MCO 2.0) was imposed on January 13, 2021 until March 3, 2021. Again, due to the alarming trend of the daily cases in April 2021, the third movement control order (MCO 3.0) was imposed to the whole country from May 12, 2021 until June 28, 2021. This MCO 3.0 which involved two phases of the 14-day total lockdown across the country is regarded as an immediate measure to flatten the COVID-19 curve following a sharp rise in the number of daily cases. The imposition of stricter rules during the lockdown is vital in order to curb the rapid spread of COVID-19 and break the chain of infection. In fact, the duration of MCO 3.0 might be extended with the imposition of stricter lockdown measures if the spread of COVID-19 shows no signs of slowing down in the country. The movement control order has triggered an important side effect which is the practice of work from home (WFH). Due to the current situation in Malaysia, WFH has become a new norm for employees in both public and private sectors. Although WFH culture during the pandemic is perceived as able to increase employee productivity while promoting work-life balance, there are challenges of working from home. Thus, the support from employers is vital in order to maintain productivity and a healthy working environment.

### Work from Home Challenges

Working from home has presented challenges for Malaysian employers as they need to balance between managing staff and ensuring the life balance for their employees. According to a survey conducted by KPMG in Malaysia from 7 April to 19 May 2020, out of 3,022 respondents, 64% faced challenges while working from home, with the top three concerns being network issues (61%), communication barriers (14%), and lack of technology readiness (10%). However, the positive response increases as much as 21% when the companies implement clear WFH policies and provided frequent updates. In addition, good network connectivity and speed, better information technology infrastructure, and having clear WFH guidelines are among the top factors that would improve the WFH experience (KPMG, 2020). The report by KPMG (2020) showed that there is a direct correlation between productivity levels and the capacity or capability of communication platforms and the readiness of individuals to adopt technology. Importantly, this indicates that using alternative communication channels and supporting employees in various ways by technical assistance could improve the productivity levels.

Table 1 shows the percentage of respondents (out of 3,022 respondents) and reduction in productivity for the top three WFH challenges reported by KPMG (2020).

**Table 1**

*The Top Three WFH Challenges*

Top 3 WFH Challenges	% of Respondents	Reduction in Productivity
Network issues	61%	9%
Communication barriers	14%	23%
Lack of technology readiness	10%	24%

*Source: KPMG (2020)*



The survey by KPMG also indicated that respondents who leveraged on collaboration tools such as Skype and Microsoft Teams as their main mode of communication during the movement control order with highest productivity levels (77%) compared to other modes of communication (such as email and social media applications). However, only 50% of respondents have utilised these tools while working from home. Importantly, the implications of the survey results emphasise the needs for organisations to provide their employees with the right tools. In this regard, a strong workforce productivity can be achieved if organisations are willing to invest in effective communications platforms and train employees to adopt new technologies (KPMG, 2020).

Other WFH challenges include having a work-life balance, the ability to detach from work after working hours, emotional support of being alone in handling pressing matters at hand, and managing personal and office matters at the same time. Although these challenges are relevant only to some, the consideration of the issues is relevant as nature of work operations vary from one industry to another.

## Teaching and Learning

Education is one of the industries that is affected by the COVID-19 pandemic. Both learners and educators are significantly affected by the unprecedented change in the teaching and learning environment. Isolation measures which include social distancing, mandatory quarantines and closure of higher education institutions have resulted in learners and educators being confined in their homes and learning in isolation. In coping with the challenges of the COVID-19 pandemic, the mode of teaching and learning has changed from face-to-face to fully online, either synchronous or asynchronous or both. These approaches not only provide a new learning experience but also allow a direct interaction between learners and lecturers or instructors during online classes. The use of online learning tools such as video conference can benefit in several ways including content sharing, recording, engagement, interaction and collaboration. Importantly, online learning not only provide new set of learning skills but also promote independent learning and life-long learning concept (Dhawan, 2020).

Despite the many perks of online learning for many, however, it may not be true for certain group of learners such as the disabled, underprivileged, and marginalised students who have limitations in terms of resources and the accessibility to online learning (The Regional Risk Communication and Community Engagement (RCCE) Working Group, 2020). The inability to access and involve in online learning would widen the gap of disparity and increase the dropout rate among learners. Strong commitment and discipline are traits that are needed in online learning especially for vulnerable and academically weak students who need interaction and engagement in learning to strengthen their social skills (UNESCO IESALC, 2020). With regard to online teaching, instructors might face difficulties in preparing materials for online classes, which can be a rather time-consuming process with new interface design for online learning. The sudden shift from physical to virtual classrooms has required educators to grasp information technology at a faster pace. The use of digital platforms and learning tools in the online learning environment has made it stressful for instructors as they are required to cope with new technological advances. The current environment of teaching in isolation and remotely, has made it even more difficult to solve technical problems during virtual classrooms. However, online learning has taken the only source of education amidst COVID-19 pandemic (Chandra, 2021). Thus, to help learners and educators overcome the unexpected crisis, education institutions should be supportive in various ways including technical assistance and selection of digital learning tools.



## Technical and Equipment Support

Despite the many perks of online learning, there are several additional needs for online learning to take place smoothly such as, the Internet access. About 52% of students in Sabah, Malaysia, do not have the access to the internet due to inadequate infrastructures (Berita Harian, 2020). Weak online learning infrastructures such as weak and limited access to the internet, the need for a laptop, desktop, tablet, handphone, printer, scanner, etc. can pose an additional challenge for this marginalised group in the country. All these restraints made learning harder than usual for many (Lee, 2020). The additional need for the equipment could be a financial burden to many especially when there is relatively higher unemployment rate during the COVID-19 crisis.

Employees working in the higher education institutions may also experience similar problems. Apart from internet access, they may need technical support and access to relevant equipment including laptops, desktops, printers, and scanners for work to be done at home. There is a need for proper record of all the equipment needed during WFH, where they can be loaned by employees for use at home and returned once operation is back to usual. Hence, employers' support is vital in the new norm of working environment to ensure a practical and effective work flow. It would be a *win-win* scenario should the employers provide technical and equipment support during this challenging time.

## Policy Support

WFH is a growing trend in today's work environment. In most countries including Malaysia, due to the COVID-19 pandemic, most of the employees WFH. During the pandemic, WFH proves to be the best option in balancing the health and safety of employees. However, the WFH policies must be put in place, keeping in mind the practicality for both employers and employees. WFH is somehow an agreement between the employers and employees where all expectations and responsibilities remain status quo. Essentially, employees are to understand what is required and expected of them when working from home.

With the WFH policies in place, which to some employers is a new and evolving situation, prioritising employee wellbeing and offering flexible work arrangements should be a priority. There is a need for employers to understand the challenges faced by their employees as WFH policies may require the employees to remain at home and able to be contacted at any time during work hours. Many are struggling with family matters at home during the pandemic. Children are learning from home too and they may need adults to help them with their online school work. With multiple struggles in the days of the MCO at home, it is not easy for the employees to manage their schedules and distractions. In this situation, it is important to have communication regarding the new work process to ensure work maintains a steady flow and stress levels remain low. Thus, a clear communication is significantly needed for greater cooperation and coordination across the various departments, units and the management.



Additional stress for the employees is the expected working time during WFH as it may differ from the regular office hours. Receiving emails and calls at the wee hours and during weekend may affect one's emotions, and in turn, affect the ability to respond rationally. This may pose as an additional stress to the employees, which can weaken employees motivation. Hence, the current situation faced by most employees provides unique insight into how well working from home works, and may play an important role in future WFH policies. Importantly, the WFH policies should foster better work-life balance to ensure a healthy and productive working environment (Poulose and Sudarsan, 2014; Vya and Butakhieo, 2021).

## Emotional Support

Domestic violence has increased during MCO in Malaysia. Malaysia recorded a total of 1,986 domestic violence cases during the MCO from March 18 to August 20, 2020 (The Star, 2020). The COVID-19 pandemic is impacting negatively on the country's mental health, with a higher number of suicides cases. The Health Ministry also reported that it received some 2,500 phone calls and more than 1,000 WhatsApp messages between March 28 and April 12, during the early days of the MCO, on its Psychological First Aid hotline. The rising number of calls asking for help could be due to the sudden adjustments in the daily life. The imposition of MCO has led to an experience of stress due to low physical activity and spending most of the time at home which could result in distress, violence and mental health problems. People are feeling insecure of the future particularly in terms of employment, education, and financial. The movement control was imposed with the aim of protecting Malaysians from a contagious and potentially fatal virus that can be transmitted easily, nevertheless, these restrictions can put people at risk of deteriorating mental health such as depression, etc. The restrictions of MCO may worsen the loneliness by those who are living alone or in rural areas. All these could lead to depression and affect the mental health of many regardless of age, gender, employability as both employed WFH and unemployed can be equally stressed. However, after Malaysia began easing its controls and reopening non-essential sectors in May 2020, the number of distress calls to Befrienders related to the pandemic began to drop.

COVID-19 pandemic has the potential to become a global mental health crisis facing many countries. Nevertheless, the gradual return to normalcy may be another challenge as there are much uncertainty in the future as the economic recovery needs time to recover and the increase of overall stress is anticipated. Employers therefore can provide counselling, seminars or talks on the related issues to communicate relevant developments to employees. Each department could organise virtual engagement or discussion sessions with its staff to talk about current issues on a regular basis. This indirectly could connect the staff within the department with each other despite being far from each other, hence the saying, "Far yet near". It is important that employers should be using any and all channels to keep their employees updated. This is particularly relevant as remote work is now part of the new working norm.

## Conclusion

WFH is a growing trend in today's work environment particularly during the COVID-19 crisis. For most organisations, the requirement to switch to working from home was unexpected. The concern when switching to working fully remotely is not only about ensuring effective workflow but also about maintaining employee productivity. In this regard, it is important to have proper job training and upskilling programmes if WFH practice is to be a feasible option. Furthermore, the opinion of the employees is that WFH is essential to consider. This is particularly relevant as the WFH practice will possibly be visible post-pandemic as a flexible option. In finding a balance between employers and employees in the WFH environment, better guidelines and policies from employers should be in place to make WFH feasible. Areas that need consideration include support and guidance into adapting to remote online work. The support from employers and peers from the technical, policy and emotional aspects are equally important to maintain a healthy and productive working environment during these difficult times.

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## **A Case Study: Perception, Challenges and Strategies in Online Teaching and Learning among Private In-Service Preschool Teachers**

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### **Abstract**

*The Covid-19 pandemic has caused a tremendous change in the new norm of lifestyle to individuals, business organisations, and industries. Education is also no exception during the pandemic when the delivery mode of teaching and learning has changed from face-to-face with physical learners' attendance to online learning. At the tertiary level, universities or colleges practice online learning, and so does the preschool level. Private in-service preschool teachers are not ready for this sudden situation as they are not familiar with it. This paper attempts to answer three research questions, i.e. (i) what is the perception of online learning among private in-service preschool teachers? (ii) what are the underlying challenges that private in-service preschool teachers face towards online teaching and learning? (iii) to what extent private in-service preschool teachers strategise their readiness towards online teaching and learning? This study applied the qualitative methodology approach as a case study. The data collection technique was through in-depth interviews with nine (n=9) private in-service preschool teachers who were the key informants teaching in three different locations: Section 13 Shah Alam, Saujana Utama, and Puncak Alam. The data was analysed by themes narratively and descriptively. This sample was for purposive sampling only. The teachers under study believe that the traditional way of face-to-face is better than online learning because there is a human touch and more personalised. Online learning is still new to teachers, so they have difficulty making their online teaching and learning effective. The teachers should be exposed to online learning pedagogy so that they are well*



*prepared and ready. Online learning is not suitable for young children because of their attention span, disruptions, and lack of parents' cooperation. The teachers need a lot of time to prepare their lessons. More than often, they are stressed. All the issues in online learning and their anxiousness have led to anxiety attacks. If this situation persists, it may affect teachers' emotional well-being. This study is significant to teachers, private preschool operators, and parents that eventually would lead to emotional well-being among private in-service preschool teachers.*

**Keywords:** *Private, In-Service, Preschool Teachers, Online, Teaching and Learning.*

## Introduction

The advent of information and communication technologies (ICT) has changed the global education landscape, and this was further accelerated by the outbreak Covid-19 since 2020. The Covid-19 pandemic has caused a tremendous change in the new norm of lifestyle to individuals, business organisations, and industries. Education is also no exception during the pandemic where the delivery mode of teaching and learning has changed from a traditional way of face-to-face with physical learners' attendance to online learning.

Online learning is a subset of distance education and embraces a wide set of technology applications and learning processes including, computer-based learning, web-based learning, virtual classrooms, and digital collaborations (Urdan & Weggen, 2000). In a comparative study, Dabbagh and NannaRitland (2005) examined the differences between traditional and online learning environments and argued that traditional learning environments are bound by location and presence of instructor and student, presented in real time, controlled by an instructor and are linear in teaching methods.

Teaching preschool children in traditional learning environments is already a very challenging task, and it has become even more challenging and stressful when the private in-service preschool teachers have to conduct their classes online abruptly without any training or exposure due to the Covid-19 pandemic. The private in-service preschool teachers need to be ready to teach online to ensure their survival and relevancy especially during the pandemic.

Parents who sent their children to private preschool educational centres expect their children to be able to follow online lessons well, but that is not always the case. This study attempts to answer the following three-fold research questions, (i) what is the perception of online learning among private in-service preschool teachers? (ii) what are the underlying challenges that private in-service preschool teachers face towards online teaching and learning? (iii) to what extent private in-service preschool teachers strategise their readiness towards online teaching and learning?

This study is significant as an eye opener to stakeholders like preschool teachers, preschool owners and parents as the digital era has changed teaching and learning as early as preschool level, from the traditional way of face-to-face to online learning. Preschool teachers need to be creative and innovative to ensure their teaching and learning are interesting.

## Literature Review

Nurul Laili and Muhammad Nashir (2021) look into higher education students' perceptions of online learning during the covid-19 epidemic, as well as the supportive elements and limits. Because the material offered may not be grasped by all students and it is still a new experience for students and lecturers, 86 percent (n = 89) students stated that Intensive English online class was less effective. because the content offered may not be comprehended by all students, and since fully online learning is still a new experience for faculty members. Students found it challenging to practise conversations in pairs or groups online, as opposed to in a real-life setting with full expression and activity, as Intensive English places a greater emphasis on conversational practice. Barely seeing the mobile phone/laptop screen was uninteresting for some students, they were not enthused about following the online lesson. 91% of students chose face-to-face learning over online learning, while 9% needed blended learning (combination between face-to-face and online learning).

Students can attend lectures from anywhere without having to travel to campus, which is one of the advantages of online learning. This is in line with (Alchamdani et al., 2020), who noted that the introduction of online learning is a new experience that provides flexibility and ease in studying without having to go to school. As long as they have a good internet connection, students can attend lectures whenever and wherever they wish. Students are not required to come to school on a regular basis in line with official advice not to congregate in large groups in order to break the chain of virus infection.

Dabbagh and NannaRitland (2005) compared traditional and online learning environments and concluded that traditional learning environments are (a) constrained by the location and presence of the instructor and student, (b) presented in real time, (c) controlled by an instructor, and (d) linear in their teaching methods. Online teaching and learning contexts are unconstrained and dynamic, driven by higher information and communication technology, asynchronous communication, and real-time information. Online learning environments include diverse range of pedagogical practices and are often characterised by active learning student-centred pedagogical techniques (Baker, 2003; Browne, 2005).

Blended courses combine face-to-face learning experiences with web-based learning experiences (Curran, 2004; Garrison & Kanuka, 2004). Blended learning incorporates a wide array of learning environments and approaches to teaching and learning such as, asynchronous learning networks, web enhanced teaching platforms, and digital online learning tools. They also claim that creating and designing blended courses is an iterative process with five major stages: course content design, course development, course implementation, course evaluation, and course revision. Evidence from research suggests the need for an establishment of a creative balance between pedagogy and technology that will support faculty to design, deliver, and support course design and content (Olapiriyakul & Scher, 2006).

Nelson and Thompson (2005) cited faculty time, rewards, workload, lack of administrative support, cost, course quality, student contact, and equipment concerns as barriers to online teaching practices. The researchers suggested that program leaders are kept informed of the technology issues; courses integrate more collaboration between trainers and learners; training provided to faculty to overcome negative dispositions; leaders attempt to incorporate the need for distance education courses in institutions' missions, and that a reconsideration of tenure and promotion decisions should be assessed in trying to support faculty workloads.



Surveys conducted by Brogden and Couros (2002), Grosse, (2004), and Lorenzetti, (2004) suggest that the time and effort demands to develop online courses and to learn new technologies are also issues that are causing frustrations among faculty members. Additionally, some faculty members may be reluctant to conduct online teaching because they are concerned that those courses may require more time for advanced planning (Matsom, 2006). Besides, faculty members may be hesitant about this change due to loss of autonomy and control of the curriculum, lack of technical training and support, and lack of release time for planning.

In order to achieve a smooth transition from traditional pedagogy to active online learning pedagogies, faculty members may need to alter their teaching styles used within their “traditional classroom,” and embrace new skills to effectively reach the distant learners (Colaric, & Taymans, 2004; Grosse, 2004; Johnson, 2008; Kurzweil & Marcellas, 2008; Maguire, 2005; Nelson & Thompson, 2005; Panda & Mishra, 2007). Further, a critical component of online learning experiences is for faculty to provide ongoing and meaningful communication. It is the responsibility of the faculty members to create a strong learning community among class members (Jones et al., 2008; Wegmann & McCauley, 2008).

The benefits and drawbacks of distance education have been researched by various individuals. Wheatley & Greer (1995) saw the primary benefit of distance education as saving travel time, given that students do not have to travel to campus for their studies. With Web-based courses, the tutor also does not have to travel and can work from home. Another benefit is that learners can work on the class according to their own schedules. It was found that teaching costs may be reduced in two ways: first, because different campuses can utilise the same facilitator as a resource for a telecourse, and second, with some Web-based courses an instructor can handle a larger number of students, ultimately reducing the overhead costs of faculty (Wheatley & Greer, 1995).

Further, in fields where information is constantly shifting, the use of distance learning allows professionals the ability to remain current without travelling long distances to do so (Bisciglia & MonkTurner, 2002). There are also some shortcomings to this type of education. Baker (1986) suggested that students may have problems comprehending course information that is technical, quantitative or scientifically oriented. Also, course expectations are often not clear, and because of the physical separation between the facilitator and learner, problems may be difficult to resolve. Unlike the traditional classroom, distance education does not allow instructors to modify lecture plans on the basis of moment-to-moment feedback from learners, which may affect how a student experiences the distance learning environment (Kahl & Cropley, 1986). It is also possible that the limited interaction between students and instructors impacts the overall learning experience. However, it is difficult to measure what a learner learns in a classroom from the interaction and discussions that occur.

## Research Objectives

The research objectives of this study are three-fold as mentioned below.

- i. To analyse the perception of online learning among private in-service preschool teachers.
- ii. To evaluate the underlying challenges that private in-service preschool teachers face towards online teaching and learning.
- iii. To assess to what extent private in-service preschool teachers strategise their readiness towards online teaching and learning.

## Methodology

This study employed a qualitative approach, and it is a case study of which the collection data tool was via online forum with three different private preschools in Saujana Utama, Puncak Alam, and Section 13 Shah Alam. The online forum was conducted for about an hour on average for each session. The online was recorded, transcribed, and analysed by themes. The sample was for purposive sampling. Therefore, the findings of this study do not represent the whole population of private in-service preschool teachers.

The key informants in this study were nine ( $n = 9$ ) female private in-service preschool teachers. These key informants are currently teaching in three different locations; three ( $n = 3$ , 33.3%) in Section 13 Shah Alam, two ( $n = 2$ , 22.2%) in Puncak Alam, and the rest ( $n = 4$ , 44.4%) in Saujana Utama. Only three ( $n = 3$ , 33.3%) of them are married. Their age group is above 31 years old. The rest ( $n = 6$ , 66.7%) are single, their age group is below 23 years old and they are relatively young.

In terms of the field of study, the majority of them ( $n = 7$ , 77.7%) qualify as educationists with four ( $n = 4$ ) in Early Childhood Education (ECE), two ( $n = 2$ ) in Teaching English as a Second Language (TESL), and one ( $n = 1$ ) in Education (ED). The rest ( $n = 2$ ) have an academic qualification in Business Studies (BS) and Information Technology (IT).

In relation to the level of education, 66.7% ( $n = 6$ ) are diploma holders, 22.2% ( $n = 2$ ) are degree holders while 11.1% ( $n = 1$ ) have a certificate. 33.3% ( $n = 3$ ) of the key informants have more than 10 years of teaching experience while the majority (66.7%,  $n = 6$ ) have less than 2 years of teaching experience. Table 1 is the summary of the profiles of the key informants.

**Table 1***Summary of Profile*

Key Informant	Name (Not real)	Location	Marital Status	Age	Qualification	Level of Education	Years of Teaching
KI1	Mira	SU	Single	23	TESL	Degree	Below 2 years
KI2	Orked	SU	Single	22	BS	Diploma	Below 2 years
KI3	Bunga	SU	Single	22	ECE	Diploma	Below 2 years
KI4	Zaza	Sec 13	Married	36	ECE	Diploma	Above 10 years
KI5	Kak Mar	Sec 13	Married	53	ED	Certificate	Above 10 years
KI6	Sinar Suria	Sec 13	Married	45	IT	Degree	Above 10 years
KI7	Lily	SU	Single	22	TESL	Diploma	Below 2 years
KI8	Alia	PA	Single	22	ECE	Diploma	Below 2 years
KI9	Shira	PA	Single	22	ECE	Certificate	Below 2 years

Note: SU (Saujana Utama), PA (Puncak Alam), Sec 13 (Section 13 Shah Alam)

## Findings and Discussion

The data were analysed by themes as follows.

### Perception of Online Learning

The majority (n = 7) of key informants mentioned that they did not have experience teaching online to young children before the Covid-19 pandemic. Due to the pandemic, these teachers had to conduct online classes without any referral from anyone. They also expressed their concern that the children might not understand the lesson well. According to Sinar Suria (KI6),

“... I am worried that my students might not understand my lesson because they could not see me physically. Even during the face-to-face teaching session before the Covid-19, it was hard to get response from the children. It is even more difficult when it comes to online teaching. It is more of a one-way communication and what is more when I have to do online teaching.”

Another significant point to be highlighted is the expression of Kak Mar (KI5) who stated,

“... My first experience with online teaching is, of course, it was without any referral. I'm worried about my young children's acceptance of the new learning method. I am in charge of a reading session, and I provided each student a 30 to 45 minutes slot. The reaction and acceptance of each student were subjective. Those who can read well were very focused. For those who were at a lower level, it was hard to grab their attention.”

The use of video call is not appropriate for those in the lower level when it involves reading. Teaching science subject online is a waste of time if there is no proper preparation. Pre-schoolers need hands-on method. It is still the best approach for them.

Alia (KI8) also had the same notion and she felt that teaching online was not effective because some children need the real materials to be shown in front of them physically. Besides, she added there were some problems such as the internet connection and gadgets used.

All of the key informants felt that the management should offer training on online teaching to teachers. According to Orked (KI2), training would help teachers to get exposure to online teaching. Therefore, they would be well prepared. Bunga (KI3) agreed with Orked (KI2) and said that training attributes to the effectiveness of online teaching as teachers are exposed to steps and tips for appropriate online teaching. In general, they concluded that online learning needed a high level of patience among teachers.

### Online Learning Challenges

The challenges of online learning can be divided into three parts, i.e. pre-online learning, while online learning, and post online learning.

i. 'Pre-Online Learning Challenges'

The challenges that the key informants faced 'pre-online learning' were technical problems such as blurred camera, internet connectivity, unavailable wifi, and human factors. In terms of human factors, Zaza (KI4) quoted, "...It is hard to seek cooperation from some parents. They pampered their children too much. In the end, you know, the online learning could not be conducted on time". Kak Mar (KI5) added that "...the challenges of the children's adaptation to a new norm or situation. The time management for teachers and parents to prepare for online learning".

ii. 'While Online Learning Challenges'

The challenge that the key informants faced 'while online learning' was online class control. There was too much distraction from the children's side. Some students were reluctant to listen or focus while they were on camera. Besides, some students were not well prepared mentally and reticent when they rejected to be taught online. Shira (KI9) said that,

"...some of my students did not focus on the lesson, and they would be more interested in looking around their surroundings only. Some parents did not bother to monitor their children during online learning, and therefore teachers had difficulty to control the class".

Many distractions from the environment such as disturbance from siblings, noise, some children kept asking for their parent's help and requested to eat or drink while classes are ongoing. I am sure that they did not gain any knowledge on that day when there was a lot of distraction.

iii. 'Post-Online Learning'

The challenges of 'post-online learning' that the key informants faced vary. First, the submission of homework. According to Lily (K7), she did not get cooperation from the children to complete the tasks given during the online learning classes. Mira (KI1), Orked (KI2), Bunga (KI5) also faced the same challenges.





Second, Sinar Suria highlighted that there was no output after she had delivered her online learning. That made her frustrated. She added that most parents did not push their children to the maximum during online learning. Alia (K18) supported her by saying, "...some children did not get the knowledge they were supposed to. And..it is quite sad, actually!".

Third, Kak Mar suffered mental and emotional stress when she said, "...it is mentally and emotionally draining because I am not sure if I have done enough or if I have taught children correctly".

Having highlighted the above challenges, the key informants have concluded that their greatest challenge was as follows:

- Parents did not co-operate to help their children focused on camera. That led to the ineffectiveness of teaching and learning for the children.
- Parents did not control the environment at the home well, which distracted other children.
- Online learning needs a lot of preparation from teachers, and basically, it has affected the emotional well-being of teachers.
- Parents have high expectations from the teachers.
- The disruption in internet connection and some other technical problems deprived the teachers of conducting online learning efficiently.

### **Readiness Strategies for Online Learning**

In this section, the analysis is divided three-fold, which are level of readiness, online learning technology, and improvement strategies for online learning.

#### **i. Level of Readiness**

All key informants declared that they were not quite ready when their principals or preschool owners briefed them about the changes in teaching and learning mode of delivery before the MCO (Movement Control Order) was implemented. Mira (K11) quoted, "...at first I was not ready. I had an anxiety attack when I worried too much. I continued teaching online, although I was not comfortable. After a couple of times teaching online, I gained my confidence level, motivated and looked forward to teaching my children". The anxiety of conducting online classes also affected Zaza (K14), who mentioned, "...technically I was prepared, but mentally it was not 100% ready. I was anxious, and actually, it affected my health. I feel that I need to learn a lot about online learning to make my job easier in the future."

Sinar Suria (K16) took proactive action by registering herself for an online learning course. It was because that she was worried about her teaching and learning. Besides, she did not know what to expect in online learning. Another two key informants (Orked and Mira) responded that they made sure they were ready, although there were some loopholes in their delivery.

As for Orked (KI2), she said that she was always early 10 minutes before class started, reminded the parents about the class timetable through WhatsApp application and so forth, while Mira (KI1) mentioned that she created simple and exciting teaching materials/aids to show to the children through a video camera. This method might help attract the children to colourful and exciting teaching materials/aids.

ii. Online Learning Technology

There are a few popular online platforms that the key informant used as tools for online learning. They used all or a combination of google meet, you tube and video call (one to one session for reading). According to Alia (KI8),

“...I used the google meet platform which it is convenient and handy. Besides, google meet is appropriate and user friendly to both parties – teachers and students. Besides, in this google meet application, I am able to present my own power point slides on the screen. This kind of technology enables students to focus in front of the camera as compared to physical book in hands.”

iii. Improvement Strategies for Online Learning

The key informants tried their level best to improvise their online teaching delivery, but they lack the know-how. Mira (KI1) narrated that her strategy was planning the lessons carefully. She hoped that the teaching and learning would be effective and attractive. Orked (KI2), Bunga (K3), and Sinar Suria (KI6) used the same strategy. As for Shira (KI9), she mentioned,

“...the strategy that I used was to ask other teachers. They are more experienced as to how to teach online. So, they would advise me what I should and should not do. I took their advice and implemented the suggestions. Besides, of course, I made sure that my teaching aid or teaching materials were attractive to the students.”

Kak Mar (KI5) would ask her colleagues about their experience and online reading methods practised in other countries. Sinar Suria (KI6) mentioned that “...my strategy was to use simple sentences so that the children could understand. I put myself in their situation. By doing so, I would be able to understand what they did not understand and what they do”. Zaza (K4), on the other hand, got the tips for better effective online learning from you tube. She used the tips during her online class, so it worked well.

## Conclusion

The teachers under study believe that the traditional way of face-to-face is better than online learning. Online learning is still new to teachers, so they have difficulty making their online teaching and learning effective. The teachers expect to be given exposure to online learning pedagogy so that they are well prepared and ready. Online learning is not suitable for young children because of their short attention span, disruptions, and lack of parents' cooperation. The teachers need a lot of time to prepare their lessons. More often, they are stressed. All the issues pertaining to online learning and their anxiousness have led to anxiety attacks. If this situation persists, it may affect teachers' emotional well-being. This study is significant to teachers, private preschool operators, and parents which will eventually lead to emotional well-being among private in-service preschool teachers.



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