TRANSFORMING THE TEACHING-LEARNING PROCESS DURING THE PANDEMIC

Edited By

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Forward

It is an honor for me to provide this forward for the book titled "Transforming the Teaching-Learning Process during the Pandemic", edited by Prof. MMDR Deegahawature and Dr. EACP Karunarathne. This is the latest publication of the Staff Development Center (SDC) of the Wayamba University of Sri Lanka (WUSL). I appreciate the effort of the Staff Development Center to strengthen the higher education sector by going beyond its traditional role.

The Covid-19 pandemic influenced and changed almost all aspects of human life. The effect of the pandemic on higher education compelled the higher educational institutions (HIEs) to explore unconventional and novel approaches to meet the educational goals and objectives. The HIEs across the world shifted to distance/ remote, online, and blended teaching and learning as a response to the pandemic. In this exercise, transforming the teaching-learning process into an online and distance learning platform and promoting student engagement became an integral need. Educators have introduced and adopted various innovative approaches to meet this need.

Making a commendable attempt to review and assess those novel and innovative approaches, this book presents eleven interesting chapters under three sections. Promoting learner engagement is one of the integral issues in any situation. Thus, focusing on learner engagement, the first section presents possible approaches to promote learner engagement and motivation. This section focuses on strategies for promoting learners' motivation, enhancing learners' interests through lesson management and delivery, the role of social media in online education, and thriving online learning through mindfulness. We witnessed that the pandemic made it compulsory to change the traditional teaching-learning methods so that HIEs could effectively meet education goals. In this exercise, one of the popular methods adopted by HIEs was the online platform. Considering its popularity, the second section has been devoted to discussing different perspectives of the online teaching-learning process. It covers several important areas such as the effective use of online teaching-learning, using it in engineering technology education, and transforming the teaching-learning process into an online platform. The third section presents several concerns of academia related to the teaching-learning process during and after the pandemic. This section provides insight into higher education in the post-pandemic era, digitalization of education, effective practices in distance education, and the dilemma of virtual education and winning them. I believe the contents of the chapters would certainly help academia improve

the effectiveness of the higher education sector, especially during the present pandemic.

I take this opportunity to congratulate the SDC for its commendable involvement in uplifting the standards and competencies of all categories of staff at WUSL and other higher educational institutions, thereby contributing to the advancement of the higher education sector in the country. Importantly, the work of this nature would add immense value to academia and strengthen the education sector thus, I appreciate the SDC. Also, I congratulate the editors and the authors of the chapters for their commitment, dedication, and interest in bringing this book out. Finally, I wish the SDC, editors, and authors very good luck in their future endeavors to serve academia.

Prof. RMUSK Rathnayake
The Vice-Chancellor
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Belihuloya
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20th June 2022

Preface

Due to the pandemic, all the parties engaged in higher education had to find alternative ways to carry out their core processes. It was a critical challenge since the transformation was taken up without prior practice and knowledge. The sudden transformation of the teaching-learning process into a technological platform creates many difficulties all over the globe, especially in the absence of a physical education environment. Though there were some experiences of facing fundamental learning environment changes, higher education institutes didn't get sufficient time to implement pre-defined procedures and to address the needs of the hour. Thereby it became a novel experience for all the parties engaged, and they had to learn themselves through trial and error.

With the aim of providing inputs to institutional development and the policymakers, this book presents the chapters written on enhancing learner engagement with the experiences gained by engaging with the teaching-learning process transformation in higher education due to the pandemic. The book presents eleven chapters under three themes.

Due to the pandemic, the direct teacher-student interaction and the live classroom environment were heavily affected. With the imposing of social distance guidelines, educational institutes worldwide abruptly switch to online teaching and learning platforms. Though the technology provides some facilitation, there were some limitations since these platforms were new to many stakeholders. Though the online approach solved the problem of content delivery and course completion, the maintaining motivation and engagement of students have become an issue that has not been adequately addressed. Thereby, maintaining the liveliness should be an utmost priority when conducting sessions, and the interaction between both ends is essential to maintain the interest. Thus, the first section has been devoted to presenting several concepts to uplift student engagement with the change of education mode. Since the platforms are novel to all parties, making the students comfortable with teaching-learning and enhancing their interest in this new learning method is vital. Chapter one discusses the possible ways of creating an effective learning environment that cultivates higher cognitive levels and improves the performance of students by motivating them to engage with the online teaching and learning process. A planned approach is essential to stimulate learners in a volatile environment. Chapter two presents the models for online lesson management and delivery. Importantly, the chapter argues that both effective online lesson management and delivery help enhance learners' interest. As social media platforms have become a fad, exploring the possibility of using them for effective online education is timely. Chapter three deliberates on how social

media can be utilized in online education. This chapter shares some examples of using social media in online education. As per the findings in psychology and neurology, mindfulness has been recognized as an effective tool to foster learners' engagement. Chapter four explains how mindfulness is applicable in higher education settings and several strategies to cultivate mindfulness.

As a continuation of the first section, the second section summarizes the teaching-learning process transformation to the online platform. The teaching and learning process has drastically changed with the usage of online education tools. With this transformation, not only the learners' engagement but also the role of the teacher becomes critical in virtual classrooms. Despite conducting the lectures verbally, many other practices could be incorporated when designing and delivering the lesson. Moreover, teachers are required to be more flexible and technical with the flexibility generated through online learning platforms. Thereby, reconsideration of the role of teachers is necessary as they have to play a different and unique role on online platforms. Further, this section presents how the online platform help in both the teaching-learning process by converting into a more innovative student-centered environment. Identifying the resources available for online teaching-learning, chapter five presents problems of online education and possible solutions. Adopting an online platform may not be equally effective across disciplines. Considering the uniqueness of engineering-technology education, chapter six elaborates on how online education is applicable in the engineering-technology discipline. Chapter seven provides an overview of the evolution of online education and the role of education entities in promoting the use of online teaching-learning in higher education.

Expanding the discussion, the third section deliberates the overview of the effectiveness of teaching-learning practices in the distance learning environment during a pandemic. While presenting some inevitable issues that undermine the effectiveness of teaching-learning practices particularly, this section highlights the possible applications and benefits of distance education. Though there were many discussions on blended learning, limited implementations were reported in the past. However, due to the pandemic, many institutes had to rapidly move into distance learning modes and got an opportunity to experience the distance education environment. These experiences can be transformed into an effective combination of different modes of delivery to advance the education system. Thereby, this section proceeds with discussions on how digitalization in education helps implement a blended learning environment to increase its effectiveness. While summarizing the effect of the pandemic on higher education chapter eight focuses on the higher education in post-pandemic. This chapter provides important suggestions to recommence higher education after the pandemic. Transformation to online education created not only the benefits but also the challenges for all those who engage in the teaching-

learning process. Chapter nine presents such benefits and challenges along with the strategies to overcome the challenges. Also, there are several teaching-learning methods that can be adopted to enhance the effectiveness of higher education. Chapter ten presents such effective online teaching-learning strategies. Extending the discussion in the same thread, Chapter eleven also presents several strategies that help strengthen the teaching-learning process.

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20th June 2022

Acknowledgment

It is our duty to extend our appreciation to all those who help us bring this book out. First, we reserve a special thanks to the Vice-Chancellor, Wayamba University of Sri Lanka (WUSL), and other senior academics for their encouragement and continuance guidance. We are greatly indebted to Prof. RMUSK Rathnayake, the Vice-Chancellor of the Sabaragamuwa University of Sri Lanka for his insightful forward. As a senior consultant and expert in academia, his words add immense value to the book. He deserves special thanks for his distinct service in setup higher-standards in staff development in academia. Adding all resource persons of the Staff Development Center (SDC) to the list we extend our thanks to them for their contribution to uplifting the standard of young academic staff thereby enabling them to come up with novel ideas and practices to advance the higher education sector.

There are many pillars behind the success of this book. We note the support that we received from the members of the SDC including Ms. Maheshi Anupama. Also, we are grateful to Dr. AD Dharmawansa for the cover page design, and Ms. MWAMP Muthukuda for typesetting and compiling the book nicely. Also, we extend our appreciation to the owner-manager and staff of the Warna Printers, Kuliyapitiya. Finally, we extend our gratitude to all authors for their untiring effort to finalize the impactful chapters.

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20th June 2021

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Section 01

Uplift Student Engagement with a Change of Education Mode

CHAPTER 1

Methods to Uplift Student Motivation during the Pandemic

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From Motivation to Synergy

Motivation will stimulate the learning process, guide it along to achieve progress, and sustain the act of learning for the long run. As most things in nature, teaching obeys Newton's third law of motion, in which every action has an equal and opposite reaction. In essence, the effort that the teacher puts in to motivate and keep the students engaged will determine the extent to which the students absorb, involve, and progress through the study program.

During the teaching-learning process, if and when the teacher realizes that students are motivated, engaged, and actively involved, the motivation of the teacher is fueled in return. This mutual understanding and the cycle of trust between the teacher and the learner is essential to keep both parties motivated and drive the process forward.

The "Boomerang Principle" is a pragmatic approach that implies that what one gets will be determined by what one gives. When both the parties are motivated and demonstrate a giving attitude, this develops synergy, and the outcome will indeed be something special. Once the mutual admiration and trust between the parties are broken, the teaching and learning process is no longer effective.

The Effect of the Pandemic on Education

The Covid-19 outbreak has, without a doubt, led to the most significant disruption of education in history. Educational institutes worldwide stood up to this challenge by abruptly switching to online methods of teaching and learning. While the online approach solved the problem of content delivery and course completion, the motivation and engagement of students is an ongoing issue that has not been adequately addressed[1].

In a physical classroom setting, the teacher can demonstrate motivation through body language, build rapport with students, and establish an engaging learning atmosphere. On the other hand, the students can demonstrate their motivation through active engagement and questioning. However, the same setting cannot be applied during online delivery. This article will discuss several principles that teaching professionals can adopt to bring up the motivation of students when conducting online teaching.

Strategies to Fuel Student Motivation

Unfortunately, there is no single golden rule to achieve motivation. Each individual is fueled and motivated by different factors. For students, this might be the interest in the subject matter, their competence, perception of usefulness, self-esteem, and even future ambitions. Some students might also be motivated by the approval and actions of others. Therefore, it is crucial to recognise that student motivation is situation or context-specific. Thereby, subject and course-specific strategies have to be put in place by educational institutes to fuel student motivation.

In the open literature, there are multiple strategies proposed to motivate students. While these strategies can be individually applied, there are only a handful of systematic methods to influence motivation in students. One such strategy is the ARCS[2] (Attention, Relevance, Confidence, Satisfaction) model proposed by educational psychologist John Keller. This model defines four major conditions that have to be met for people to become and remain motivated.

a. *Attention* – Attention is not only a requirement for motivation but also a prerequisite for learning. Though getting the student attention is easier, sustaining the attention separates a good teacher from a great teacher.
b. *Relevance* – Students will be motivated if the question "Why do I have to study this?" is answered.
c. *Confidence* – Confident individuals tend to believe that their actions can effectively accomplish goals. The role of the teacher in this context is to form the impression on the student that some form of success is achievable if efforts are exerted.
d. *Satisfaction* – The final step of this strategy is to make the student feel good about their accomplishments. This can be done in the form of rewards or appraisals.

This model was developed in the 1980s and have proven effective for decades. With the global pandemic having a considerable influence on education, conventional teaching and motivational strategies have to be modified while keeping their ultimate goal intact. The following approaches are proposed to comply at different stages of the ARCS model.

1. Motivation from the teacher to students

Motivation fuels more motivation. A teacher who is passionate about the content will likely pass on this positive feeling to the students. When a passionate teacher conducts a lesson, students will notice the positive energy flow and thereby catch the motivation from the teacher.

It is sometimes considered that a teacher who has continuously been teaching the same subject for a few years might lose interest and initial enthusiasm. However, this might not always be the case. Although the teacher is the same, the students are different every year, and therefore the teaching-learning experience will not be the same. In addition, the subject matter will undergo changes with time and a passionate teacher will perform timely updates of the teaching content. This motivation within the teacher will get reflected in the students in a traditional classroom setting and also in the online platform.

During these challenging times, educational institutes must ensure that the teachers are selected carefully such that the allocated content is within the expertise of the teacher. A motivated teacher will innovate and find effective online teaching methods to deliver the content to the students such that the positive energy is felt even through the online platform.

2. Motivation through collaboration

Academic goals such as grades are an apparent motivating factor for students. In addition to academic goals, the competitive learner is motivated through social goals as well. When collaborating with a group of peers, the internal competition creates motivation while enabling social goals to be met[3].

Classroom-based teaching is the ideal platform to foster collaboration. As challenging as it may, facilitators must explore options to enable social interactions during online teaching. Online collaborative tools such as the breakout rooms feature in Zoom, cloud-based services offered by Google, and tools offered by learning management systems such as Moodle can be used effectively to create collaboration among the students.

Students are more likely to engage in a collaborative activity rather than attempt an individual task. This collaboration will create internal competition and indirectly lead to higher motivation levels. Collaborative work also serves as an excellent platform to showcase the multitude of skills that students possess. If a broad range of topics can be incorporated into a single group activity, each student will get the opportunity to contribute in an area that they are well suited in. For example, while one student in a group project applies the mathematical equations, another student can create a demonstration video explaining how the project was carried out. This diversity and the liberty given to the students to perform in an area they are interested in will raise their motivation.

3. Making learning a fun activity

The pandemic has pushed everyone to their homes. Lack of social interactions and not being able to travel freely have resulted in stressful lives. Psychologists claim that global cases of depression are on the rise, which has led to permanent psychological disorders or even to suicide in some cases[1]. Students are highly vulnerable to these psychological factors.

Teachers have a significant role in keeping the students motivated and their spirits high. Luckily, teachers can incorporate fun-filled activities to liven up teaching sessions with the available web and software-based tools. For example, students can be allowed to play a review quiz at the end of a lecture. This quiz can be created in the form of a game using web services such as Quizizz or Kahoot. These online games should be meant for revision purposes rather than assessment. Humour can also be used effectively to spice up the lessons, keep the audience attentive and release the stress.

4. Offer content with value

Once a student identifies the value of a particular topic and how it can be applied in their future areas of interest, motivation is automatically fostered. In a typical classroom setting, the practicality and the application of a topic can be demonstrated through practical sessions. The online approach is not well suited for this. Thereby, teachers have to find alternative methods to foster motivation by facilitating the students to recognize the significance of a particular topic.

One straightforward approach is to start the lesson by mentioning the significance of the topic. This approach is rather conventional and is ineffective with contemporary learners. An alternative approach is to direct the students to read, explore and find the significance and future applications of the topics at hand. This technique can be well utilized in online teaching. In addition to identifying the importance of a particular topic, this approach will trigger the curiosity of the learner. It will direct them towards industries and employers that make use of the concepts taught in class. This will enable students to identify prospective employers, and the goal-oriented students can expand their skills along specialized fields to stand out during the future interviews. At a time of high unemployment, students with more application-based knowledge and an understanding of the underlying theoretical concepts will undoubtedly outperform the general candidates.

5. Self-efficacy to motivate students

Self-belief or self-efficacy is the belief of how well a person can execute an action. An improved self-efficacy will mean that the students themselves visualize success scenarios.

Self-efficacy and, therefore, the self-esteem of students can be achieved by proper and prompt feedback from the teachers. For an attempt made by a student, however slight the progress may be, if the teacher notices the effort and provides constructive feedback promptly, the student will be

motivated to complete the task duly and diligently. Therefore, when planning activities, careful thought must be placed to enable the teacher to evaluate and provide feedback on the progress throughout the progress of the activity rather than just a final evaluation.

Strategies like mid-evaluations and breaking down a large assignment into smaller sections with a discussion at the end of each section are a few possibilities that could be explored to improve the self-efficacy of students. During these evaluations, the teacher should try to focus on the attempt made by an individual student rather than comparing the attempt with that of other students. In that manner, constructive criticism and feedback can be provided if improvements are needed, thereby not demotivating the student.

6. Perceived competence to motivate students

All humans will feel motivated once they accomplish a challenging task. However, the definition of "challenging" may vary from person to person. A challenging problem for an above-average student might be a daunting or even a demotivating factor for a below-average student. On the other hand, if the task is designed with the below-average group in mind, the above-average student group will be left demotivated. Catering for the level of both groups is an overwhelming task even during regular classroom teaching, and the online mode of education adds to this difficulty.

To foster competence within the learners during the pandemic, technology, visual aids, and problem-based assignments can be utilized. These approaches combined with software tools can be used to provide a range of dynamic tasks that will cater to the entire spectrum of student levels[4]. Additional questions can be given in assignments that could be solved for extra credits or marks for students willing to go beyond the ask. These tasks will engage the students and keep them motivated.

7. Make the student's voice heard

Not all students are equally equipped with the tools required for online education. In a developing country like Sri Lanka, and in a higher education system that houses students from all over the country, teachers must realize that there is inequality and thereby, concerns among the students. These concerns, if left unattended, might lead to grievous outcomes.

There must be a proper mechanism for student feedback and to express their concerns. Unlike the traditional feedback which is typically taken at the end of the course, mechanisms and platforms must be established to receive feedback at regular intervals during the course. This feedback must be incorporated into the course design, course delivery, and online aids as much as possible. It is therefore crucial for teachers to be more flexible and adaptive. This will cause the students to feel more welcoming and motivated as they know their voices are taken into consideration.

The Future of Education

The pandemic is going to be with us for a while longer. Instead of fighting the unfightable, we should rethink how we have dealt with problems and move forward with technology while keeping the core values of our traditional practices.

Maintaining student motivation is challenging, even in a conventional classroom context. It has proven to be a greater challenge during online teaching. Policies, strategies, and well thought out planning is necessary at institutional levels to make the required changes and bring in innovations. However, the execution of these plans is done by the teacher. Thereby, it is the prime responsibility of the teacher to implant the seeds of motivation within their learners.

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[1] Malik, I.A., & Derioh, M.M.G. (2021). The Relationship between motivational factors towards students engagement among undergraduate student amid Covid-19 crisis. *International Journal of Academic Research in Business and Social Sciences, 11*(6), 847-855. http://dx.doi.org/10.6007/IJARBSS/v11-i6/10215

[2] Keller, J. (1987). Development and use of the ARCS model of instructional design. *Journal of Instructional Development*, *10*(3), 2-10. https://doi.org/10.1007/BF02905780

[3] DiMenichi, B., & Tricomi, E. (2015). The power of competition: Effects of social motivation on attention, sustained physical effort, and learning. *Frontiers in Psychology*, 6. https://doi.org/10.3389/fpsyg.2015.01282

[4] Iivari, N., Sharma, S., & Ventä-Olkkonen, L. (2020). Digital transformation of everyday life – How COVID-19 pandemic transformed the basic education of the young generation and why information management research should care?. *International Journal of Information Management*, *55*, 102183. https://doi.org/10.1016/j.ijinfomgt.2020.102183

CHAPTER 2

Effective Lesson Management and Delivery to Enhance the Learner Interest in Teaching-Learning Process during Pandemic

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Introduction

The global crisis of Covid-19 has already ruled all countries, making a huge impact, and especially a dramatic loss of human lives including health, food production, economy, and the whole world of work. People from many parts of the world are getting adapted to the consequences of this pandemic in many ways. Now, the people are adapting to the new normalcy situation and some even have brought up discussions on the post-Covid-19 era. Humans as evolutionary creatures on earth have had greater adaptability when compared with other species, in facing challenges since ancient history, nevertheless, this pandemic would be a landmark in history as people are still searching for ways to mitigate this situation in such a way that everyone could witness the victory.

Impact of Pandemic on the Education

Education is one such important sector that was highly affected by this pandemic with no exception, and children and adult students all over the globe have faced many difficulties especially with the absence of the physical education environment. The direct teacher-student interaction and the live classroom environment were heavily absent at this moment. A new term for the education strategies was also introduced as 'Emergency remote education'.[1] In regards to the higher education sector, the public higher education system in Sri Lanka moved to the online teaching-learning system with the emergence of this pandemic. Nearly one and half years have already been passed, and therefore, the lecturers and the students are all now aware of the success points and also drawbacks of this online conduct.

However, students have realized the importance of conducting their studies via the online platform to complete their education on time to pursue their dreams.

Lesson Management

Lesson management is the practice of making a plan on how the particular lesson will be conducted. This may include different techniques, and in the time of this pandemic, the usual practice of conducting the lectures would not be much effective. The importance of effective management of lessons is that the intended learning outcomes should be met at the end of every lecture, and the students should be able to achieve the learning objectives as well. As the physical conduct of lectures is absent, the students may encounter some difficulties, especially in practical experiences.

Despite conducting the lectures verbally, many other practices could be incorporated when designing the lesson and delivering it. Lessons can be divided into several sections considering the delivery mode as well. The other major importance of this practice is to make the students comfortable with learning and the enhancement of their interest in this new method of learning. The whole lesson can be divided into several sections, and conducting the lecture can be included as one thing in the entire process. Several sets of other work can be made associated with many other forms. The supplying of materials can be practiced via the Learning Management Systems (LMSs) or the e-Learning Gateways (eLGs), and activities can be set up in the LMS for the students to go through *viz*. quizzes, puzzles, blank filling, *etc*. It is better to practice those activities offline once they log into the system, so the internet and power failures would not cause problems. These activities can be set up with a few other components included in the lessons. Thereby, the students will learn more new things related to the lesson. This is carried out in the model of flipped classroom method, and if the lecturer wishes to send the lesson materials beforehand of the lecture via LMS, the students can participate in the lecture online with a prior understanding of the lesson and ask for clarifications. Many students find this method effective and found it to be more interactive as well. The students can be assigned mini-projects or case studies in a way that would not be a burden for them, but to assign more independent learning time for them to learn and research. They can present their findings afterward as presentations or in the mode of assignments. Audio and video aids are another way to cover up some sections of the lessons in a student-friendly manner. The interaction of these components in online lesson management is depicted in Figure 1.

Importance of Maintaining Learner Interest

The whole physical classroom has converted to an online platform with robust software such as zoom, and maintaining the liveliness should be

an utmost priority between the lecturer and the students, when conducting the lectures. The interaction between both ends is essential to maintain the interest. Regardless of the lesson or the subject discipline, the learners' interest in participating, interactions with the lecturer and peers, facilitating the opportunity to learn the required lesson output, and maintaining enthusiasm for the education are important areas to consider when delivering the lectures.

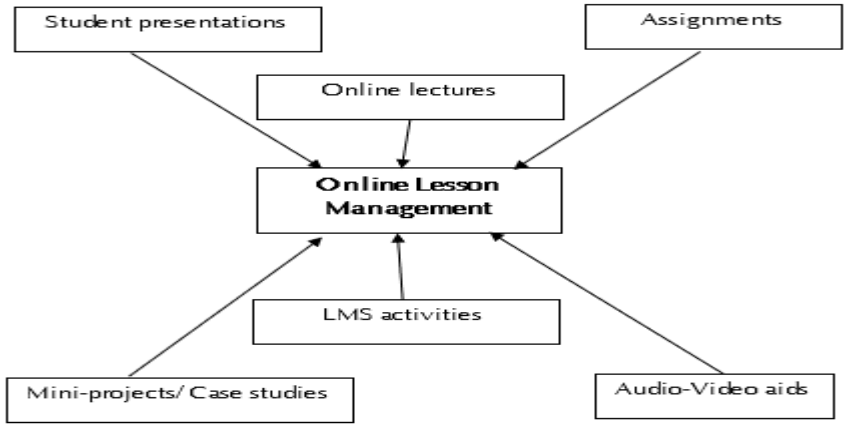

Figure 1: Graphical Representation of Online Lesson Management

Ways to Deliver the Lessons in Online Teaching

This online teaching process during the pandemic has also paved the way for research activities as well. Many researchers all around the globe have conducted research regarding the effectiveness, issues, and way out plans for different case studies in their specific regions of the world. One such research has suggested that to conduct the lectures in a way that the learners' interest is well maintained, specific strategies need to be accomplished by the lecturer. An important strategy is the maintenance of the voice and pitch. It recommends maintaining the vocal functioning with appropriate pauses with intensity variation. It also suggests maintaining more interactions between the two ends to make the students live in the lecture time. Another aspect is allowing the students to have flexible hours for teaching time.[2] A session can be incorporated with less teaching and can integrate audio-visual aids to cover the other sections of the lecture and also, the whole session should be limited to a considerably lesser time in order to prevent the 'online fatigue'. Conducting lectures for many hours will automatically lose the students' consideration towards the lecturer and the lecture.

It is also found that this online teaching has another major advantage over conducting the formative assessments and getting the learners' feedback in a more effective and authentic way with the use of e-teaching facilities.[3]

On the successful completion of effective lesson management, the lecturer can then consider its effective delivery, which Figure 2 shows a graphical representation of the ways and means of it.

Concerns over the Curricula

However, it is to be noted that in a backdrop of paper-based curricula already prepared and conducted for the learners in a direct teaching-learning environment, online teaching sometimes would not mark the most satisfactory state of delivery. As the education system in higher education is in an emergency state, the online conduct may require its uninterrupted continuity until the world comes across solutions for the pandemic, however, educators will have to study more appropriate ways of managing the lessons and their delivery modes in this high time of distance learning methods, especially if this pandemic is to prevail for years to come. The recalibration of curricula, capacity development of the universities and other higher educational institutes upgrading the infrastructure facilities, and a successful strategic plan as a way out of this problem need to be adapted to ensure the effective teaching and learning process.[4]

Therefore, steps should be taken to minimize the issues arising from the conduct which is now undergoing in many organisations, and should focus on introducing new concepts to follow a well-built education system in the long run. Under this scenario, the following suggestions could be made in order to construct such a new system in the new normal.

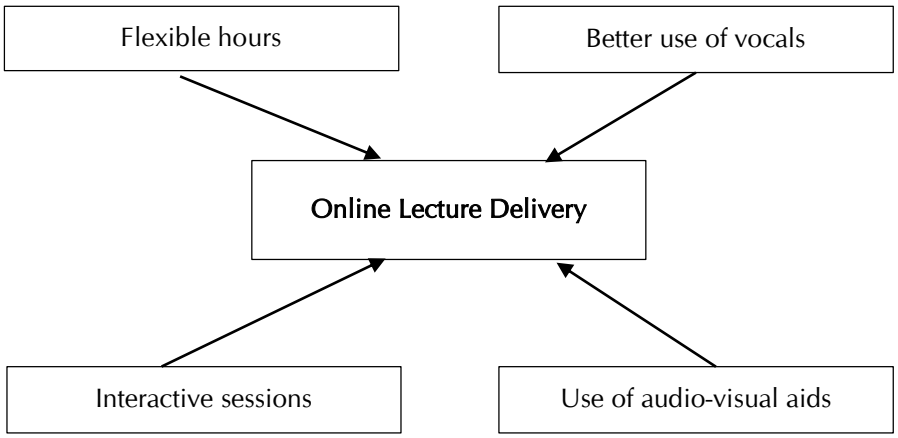

Figure 2: Graphical Representation of Online Lecture Delivery

Curricula Revisions

As the education sector in any country holds one of the topmost priorities of making the nation an educated and advanced community, the whole world needs to pay attention to the uninterrupted continuity of education, especially in this pandemic situation and any disastrous conditions to come. Some countries have converted their educational

activities totally to online and other distance learning modes. However, many developing countries find this method still a new method to reach. The main problem of getting adapted to this system is that the educators cannot fully rely on this platform, as some problems have arisen regarding the conduct of practicals and sometimes it is difficult to cover theoretical aspects as well. This is because the adaptation cannot totally convertible to this platform depending on the direct teacher-student based curricula. The main emphasis should be directed towards the conduct of practicals of the courses, as the exposure to the practical aspects is important for the students. Digital solutions may have to incorporate in this regard which can enhance the interest of students to join those practicals as well. Therefore, it is highly important to discover the ways to revise curricula in a blended learning environment. Blended learning enables educators and students to be comfortable conducting educational activities in a more advanced and efficient way.

Infrastructure Development

The blended teaching-learning environment requires more infrastructure facilities compared to the direct teaching-learning method. Also, this method highly depends on digitalisation. This includes hardware, software, and also utility connections, such as electricity and internet facilities. In the Sri Lankan context, The Lanka Education and Research Network (LEARN) was connected to the university web servers and provided a huge benefit for the continuation of higher education which is still utilised every day. This was then merged for many Moodle-based digital learning management systems as well providing more benefits. For the enhanced performance of this act, the government should consider collaborations with internet service providers, especially regarding the cost of their services, and mainly the network issues that have arisen in many parts of the island with the large sum of use of online facilities for learning and work. The students face many difficulties, especially regarding the hardware, as many join the lectures and other studies-based activities via smartphones. The laptops or desktop computers are not available for many students, and the free access to the computer facilities they had in the university is absent now. The engagement in the online activities for the whole day will make the students bored and sometimes may cause health-related issues as well. Therefore, taking this continuation as a temporary measure to mitigate this problem, more facilities should be allocated mainly for the students to carry out their education without any cause of fear.

Hopefully, the world would come up with solutions for this pandemic, and still, the research is carried out in every sector, including education. The constructive developments suggested by the professionals would provide more advanced options for the continuation of education in a blended learning system. Especially the countries including Sri Lanka should take this as an opportunity to take a massive step forward for

providing the nation high quality, globally accepted education admiring the measures taken for the continuation of higher education so far.

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[1] Wu, S. (2021). How teachers conduct online teaching during the COVID-19 pandemic: A case study of Taiwan. *Frontiers in Education, 6*. https://doi.org/10.3389/feduc.2021.675434

[2] Mahmood, S. (2020). Instructional strategies for online teaching in COVID-19 pandemic. *Human Behavior and Emerging Technologies, (3)*1. https://doi.org/10.1002/hbe2.218

[3] Pokhrel, S., & Chhetri, R. (2021). A literature review on impact of covid-19 pandemic on teaching and learning. *Higher Education for the Future, 8*(1), 133-141. https://doi.org/10.1177/2347631120983481

[4] Dayagbil, F.T., Palompon, D.R., Garcia, L.L., & Olvido, M.M.J. (2021). Teaching and learning continuity amid and beyond the pandemic. *Frontiers in Education, 6*. https://doi.org/10.3389/feduc.2021.678692

CHAPTER 3

Online Education with the Involvement of Social Media Platforms: Is it Possible?

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Background of Online Education

Unlike some other sectors, the higher education sector was already engaged in online activities nearly a decade prior to the pandemic. The ideology of distance education was in practice, and with the improvements in information technology, it was becoming easier and easier. Depending on the availability of resources, various higher educational institutions were seen to offer complete courseware, tutorials, and even lecture notes. High-ranking universities such as MIT were already utilizing the YouTube platform to avail series of lectures to the global community. Further, countries such as India had initiated a similar scheme named NPTEL with the collaboration of several renowned universities. Apart from this, the private organizations were offering free or charged online courses to the interested parties. Most of the currently utilised platforms were derived at least five years ago. The initial release of the Zoom application was in September 2012, while Moodle 1.0 was in August 2002 and Google Classroom was in August 2014.

Even with the growing and improving virtual platforms, the traditional methods of classroom-based teaching and learning were never seen to be obsolete. Replicating the conventional teaching methods was not easier in the online live classrooms and screens. The inability to recreate such an environment that a teacher and a student experience in a physically conducted classroom was seen to be a drawback associated with the virtual platforms. The feedback a particular teacher receives by observing the students' facial expressions was handy to the teacher in delivering the content effectively[1]. This was not available in many virtual platforms, and the ones that offered the facility were limited to either advanced devices or areas with proper internet reception.

Particularly considering a developing country like Sri Lanka, all the students do not have the luxury to acquire these facilities. Furthermore, when considering the process of assessing students, the online platforms were bringing in doubts about their effectiveness due to the possibility of collusion and plagiarism. Summing all these up, the notion of ineffectiveness in virtual platforms was rooted in a majority of teachers and students where conventional physical teaching and learning methods were highly preferred while the interest towards utilizing virtual platforms was the least.

Why Now?

So what gave the current rise in the use of virtual platforms in the higher education sector? Since the outbreak of the Covid-19 Pandemic, the world has been leaning towards virtual platforms. The necessity to minimize physical contact, by all means, has given rise to this leniency where all possible routes are executed with the least hesitancy in comparison to the pre-Covid-19 era. The practices which were believed to be impossible without modern equipment were seen to be carried out with the existing facilities. With 1.5 billion students throughout the world, the spread of the pandemic and frequent lockdowns forced the teachers and the students to adopt online distance learning methods. Already existing virtual platforms were taken into consideration and were utilized effectively. The lectures were conducted using conferencing applications such as Zoom, while virtual classroom platforms such as Moodle and Google Classroom were used to organize classroom activities, lecture note sharing, and assessing. Further social media applications such as WhatsApp were mildly used alongside the above to ease the process of assessing. It is seen that the online platforms are reaching their optimum utilization now. The fact that current versions of the above application are being more refined in comparison to initial versions is not ignored. However, the question arises why now not then? Did we underestimate the capabilities of the then technology? Or were the technological advancements preceding our intellectual capabilities? Or did we carry a certain degree of inertia in diverting towards using them? The answer would be a summation of all the above to certain degrees. A particular study identifies the resistance to change in human beings and highlights that 70% of all organizational initiatives fail[2]. Hence, it is natural to be resistant to a change till we encounter a strong driving force to divert over the pathway from the conventional approaches[3]. As of now, with a growing uncertainty on the ending of the pandemic, we have no choice but to engage in online education. Owing to this driving force, the attitudes of teachers and students were subjected to align with online education, unlike in the pre-Covid era. A study conducted by R. Vijay has shown that the majority of the students accept the current changes made in the teaching methods due to Covid-19. This implies that students and teachers are starting to adapt themselves to the current scenario. Such adaptations may not end with the pandemic but remain even after. Its positive aspects will be

harvested and further refined, enabling them to be used in the future as well. Now, the next question would be to identify where this would be leading the higher education sector. The answer may lie within the lessons learned from the pandemic and the current trends prevailing in human society. The pandemic already questions the ideas on the role we humans play in the world and highlights the requirement of major revisions to assure sustainability. The importance of employing information technology in day-to-day activities is emphasized while virtual platforms flourish. Specifically, in terms of the education sector, researchers suggest that even with the ending of the pandemic current online education methodologies may prevail resulting in a 'hybrid pattern of teaching- learning'[4]. In this regard, it is timely to address the potential and the role of social media applications in such a scenario. Identifying how to employ them alongside applications specifically dedicated to teaching-learning activities would be beneficial.

Role of Social Media

The importance of building a resilient education system was identified in the Incheon Declaration in its commitments for Education in 2030. With the spread of the pandemic, the need for such a scheme was highly evident. Considering the current scenario, online platforms serve as the only means enabling such approaches. Therefore alongside newly immerging platforms, the existing online platforms are adopted to recreate the connection between a teacher and a student. Specifically, with a large number of users and a majority of it being concentrated in the younger categories, the potential of utilizing social media platforms in devising a resilient education system should not be neglected. In such a discussion, the background of social media in recent history should be highlighted first. The popularity of social media is evident from the rising number of annual users. The number which was at 2.86 billion in 2017, rose to 3.6 billion in 2020, and it is expected to reach 4.41 billion in 2025[5]. Adopting such a platform for teaching-learning activities would be easier than developing new platforms. Additionally, their inherent capability to keep the users engaged for extended time periods can be used positively. Further, the fact that they require lesser network reception compared to applications dedicated to online teaching-learning activities should be highlighted. Considering this, if used effectively, social media platforms would be fruitful in easing the teaching-learning process overcoming the current barriers. In previous studies, social media applications were associated with inflicting negative effects on the students' education. A study conducted in 2015 found that the student GPA was seen to be correlated with the time spent on Facebook. It was found that the relationship was inversely proportional, where an increase in time spent on the application led to a lesser GPA. It was further stated that higher time spent on Facebook resulted in students neglecting their duties, gaining lower academic performance alongside deteriorated physical and mental health[6].

Effective Utilization of Social Media

So how are we going to utilize the social media platforms effectively? These platforms are seen to be addictive due to the rewarding nature the users experience with the feedback received from other platform users, specifically peer groups. These dopamine-driven feedback loops keep the users engaged while further motivating them to publish similar content. Since the current younger generation is highly engaged and addicted to such activities, diverting their interest in utilising them in the teaching-learning process would benefit their physical and mental well-being alongside academic growth. It lies within the teacher to use his imagination and intellect to devise effective methods to grasp students' attention into the social media-powered teaching-learning process. If successful, it would serve as part of the social responsibilities handled by the teacher in disengaging the students from the negative aspects of social media.

Examples of Effective Utilization of Social Media

There are specifically three major types of learners, namely visual, auditory, and tactile or kinesthetic. The learners perceive concepts in either of the stated means while one would be preferably the strongest mean. When executing the teaching process, consideration should be given to all types of learners. Specifically, social media platforms may facilitate visual and auditory learners. For instance, a teacher could maintain a blog or a Facebook page where field-related discussions are initiated in a specific subject area. Students can be instructed to actively engage in the discussions while the teacher has the capability to publish relevant visual and auditory aids. Further, students can also be given the opportunity to initiate discussions and share any sources of relevant information they come across. Since it is a social media platform, the possibility of having other renowned personalities engaging in the discussions should be highlighted. Such an engagement would help make the students more enthusiastic and motivated towards the subject. Devising such a scheme would be highly beneficial to the students as it serves as a forum promoting active learning.

Apart from the above, the teacher can publish subject-related problems on the platform where a multitude of students is allowed to provide the solutions. Such an approach will open the student to the real-world scenario enabling them to engage with students from various backgrounds not limited to the classroom but to different schools, regions, etc. Here the opportunity the student gets to work in a diverse environment would be an added advantage. In this forum, the teacher has the ability to name the winners. But the rewarding nature of the feedback given by the social media platforms itself in terms of likes, hearts, and wows would be sufficient to keep the students motivated. Employing such methods would make the interaction between the teacher and the students more interesting, resulting in an enhanced teaching-learning process.

When it comes to assessing the students, a similar approach can be employed. For example, the students can be instructed to maintain a blog, a Facebook page, or a YouTube channel on an assigned topic. The content could be subjected to evaluation at the end of the semester. Further, each student can be assigned to evaluate the content published by peers. While facilitating the teacher in the process of assessing, such a procedure will promote self-learning where the students gather more knowledge than in traditional classroom-based learning.

Likewise, a teacher could devise different methods to promote the teaching-learning process utilizing the full potential of social media platforms. In executing such activities, following a digital timetable would ensure each student is catching up. Moreover, it will impose limitations on the students' excessive engagement in social media platforms. Most of the students are already stuck in the dopamine-driven feedback loops, yielding nothing but virtual satisfaction. Engaging in social media has become a part of their daily routine, and utilizing that time in the social media-powered teaching-learning process may be easier than taking them out of it completely. Eventually, it may facilitate the process of deriving a resilient education system capable of adapting to any changes occurring similar to a pandemic.

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[1] Han, T. (2020). Analysis on the conditions of online teaching methods. *Proceedings of the 2020 - 3rd International Conference on Humanity Education and Social Science, 496*(Ichess), 87-91. https://doi.org/10.2991/assehr.k.201214.472

[2] Langstrand, J., & Elg, M. (2012). Non-human resistance in changes towards lean. *Journal of Organizational Change Management*, *25*(6), 853-866. https://doi.org/10.1108/09534811211280609

[3] Pohl, J. (2010). Challenging computer software frontiers and the human resistance to change. *Intelligent Decision Technologies*, *4*(1), 21-37. https://doi.org/10.3233/IDT-2010-0067

[4] Vijay, R. (2020). *The fate of current online teaching methods adopted during covid 19 pandemic*. *FERCION 2020*, 2–3. https://doi.org/10.13140/RG.2.2.10418.43203

[5] Statista. (2021). *Number of global social network users 2017-2025*. The Statistics Portal. http://www.statista.com/statistics/278414/number-of-worldwide-social-network-users/

[6] Abu-Shanab, E., & Al-Tarawneh, H. (2015). The influence of social networks on high school students' performance. *International Journal of Web-Based Learning and Teaching Technologies*, *10*(2), 49-59. https://doi.org/10.4018/IJWLTT.2015040104

CHAPTER 4

Mindfulness: An Effective Tool to Thrive Online Learning during Pandemic

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Introduction

The technological landscape has widened the boundaries rapidly in the recent decade globally. Many sectors have transformed into technology-oriented systems to maximize functionality and explore new avenues. Similarly, technology has already become an influencer in the current education system. Over the past decade, many countries experimented with online learning platforms to encourage distance learning[1]. However, in 2020, the COVID-19 outbreak triggered globally to embark on online education in tertiary education nationwide. Since then, most educational entities have evolved into online learning platforms to keep academic activities. In this evolution, educators and students encounter many unprecedented challenges. On the other hand, this pandemic created a threat to the livelihood of humankind. Many students have difficulties economically, physically, and mentally.

Concerning conventional teaching methods, students have space to interact with each other, contribute to social and well-being activities, collaborative learning, and industrial opportunities. Moreover, it allows students to obtain significant intangible life advantages that may improve their general and academic well-being, sense of belonging and community, sense of purpose, and sense of identity.

On the contrary, online education limits social events and other well-being activities and only focuses on teaching activities. Sudden adaptation to online education forms a void in student learning patterns. Physical isolation and distance endanger students away from interaction between students and their peers, instructors, administrators, and the university environment. Generally, students with poor mental health and well-being

are highly vulnerable to stress and emotional health problems. Lack of support and interaction leads them to a greater risk of stress and well-being.

Learning based on competition and social influence plays a vital role in developing student knowledge and character. Modern teaching entities collaboratively work with industries to build on a collective set of skills required to perform effectively and efficiently in the job. In light of this, teaching modules are furnished based on these criteria. However, some qualities are hardly achievable in the present online education establishment, and it is noticeable to rethink learning methods. A recent study reported that the most crucial concern influencing students' learning processes at higher education institutions was their social presence. Further, it revealed that students lost motivation and performed poorly using online learning methods whereas the situation improved during in-person lectures.

Free education can be recognized as a significant achievement in the education sector in the modern tech world. Many entities like universities and non-academic support services are provided free access to explore knowledge, offering free counselling services, well-being enhancing activities such as mindfulness practices, student advocacy, and financial assistance. Advertising mediums such as posters, and social events make the student aware of those programs' availability. On the contrary, online education may weaken this awareness among students and end with adverse outcomes. Thereby, it is apparent that the lack of emotional regulation is triggered by pessimistic emotions caused by lockdown, loneliness, social distancing, and isolation. Finally, it undoubtedly will tend to decrease the learning performance.

Modern education always seeks methods for improving learning effectiveness and efficiency. Thus, researchers discovered that emotions influence to a greater degree in enhancing learning performance. Moreover, it explicates those alterations in our ordinary life that can trigger negative emotions that, in the long term, will affect our brains and neuronal networks. In simpler terms, the tendency to affect motivation, anxiety, and stress is inevitable.

The COVID-19 pandemic has flipped humankind's daily routine and drove into effect on mental health. Every family needs to rethink their survival with the continuous government legislation changes such as lockdowns. Every family member loses their regular life, and it is time to re-organize the daily routines to match the current limitations. Teachers have enormous obligations in the educational sector to support pupils by providing tools that enhance learning and obstruct the negative emotions that operate as a threat, blocking cognitive processes. As a result, educational strategies such as prior knowledge activation, motivation, effective school practices, and classroom flipping have proven to be useful for learning. Therefore, promoting and maintaining positive emotional states in students

throughout this pandemic period become the prime goal of teachers and educational entities.

According to scholarly findings in the context of psychology and neurology, it has been suggested that mindfulness facilitates students and lecturers in effectively engaging in the teaching and learning process, as it enhances self-regulation, self-awareness, and regulation of emotions.

Mindfulness

The term 'mindfulness' has been examined and described in literature through a variety of multidisciplinary lenses. One of the broadly accepted definitions of mindfulness has been submitted by Kabat-Zinn: "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmental to the unfolding of experience moment by moment"[2].

The perception of mindfulness is further described as a meditation, a way of living, a method of self-development, a cognitive practice, and/or therapy. However, in its most general sense, mindfulness is associated with training attention (i.e., attention regulation, focus, present-moment awareness, self-awareness) and attitude (i.e., non-judgmental, open, curious, self-compassionate, accepting, equanimous).

Mindfulness in Higher Education

Over the recent years, mindfulness has been used as a therapy, strategy, and philosophy to enhance people's quality of life. In addition, creating a learning environment with mindfulness practices has been proven to promote connected learning that shifts focus away from digital tools, albeit often indispensable, and back to the individuals communicating in their shared space.

According to the authors, mindfulness meditation was a protective factor, buffering the adverse effects of social media exposure on psychological distress in students. Besides, teachers' mindfulness meditation has also had positive effects during the pandemic and significantly improved affective empathy, emotional exhaustion, anxiety, and depression. Today, it is a pressing concern for this emotional well-being, which is also associated with improving learning.

Learning mindfulness may entail some time, depending on the engagement and motivation of everyone. Transformation to online teaching involves changes to those established existing methods. In addition, adaptation to new technological formats makes busy both the teacher and student. On the other hand, maintaining a distant relationship is even more complicated in this application.

Benefits of Mindfulness in Online Education

There are endless benefits to mindfulness specifically for online teaching for both instructors and students: an increased sense of connectivity with others, greater self-awareness of our impact, and a stronger sense of feeling focused and in control of our day.

Communication brings into a different level of effort to online learning. It is the responsibility of both instructors and students to set up a framework for communication channels. Thus, it will avoid future conflicts and enrich self-awareness and connectedness with others in the class. Nevertheless, the mindfulness of participants is also required to achieve the optimal outcome.

Building self-awareness through mindfulness can positively affect the effectiveness and create a sense of empathy and compassion. On the other hand, the self-isolated background may easily distract from the activities. Competition and attention from teachers are challenging to online education. Therefore, teachers should take preventive actions to mitigate such overcomes. Introducing mindfulness and other psychological programs can affect the student's concentration throughout the learning cycle.

Using mindfulness practices allows instructors to create an online presence that builds a respectful environment that nurtures the individual and the group. Moreover, the skills built through mindful practices extend beyond the virtual classroom and into the world positively.

Ultimately, the application of mindfulness programs produces many solutions such as improvements in mental health, physical health, spiritual health, tolerance of stress, emotional stability, education outcomes (learning and teaching), effective communication, relationships, decision making, performance, social behaviors, and minimize errors and accidents.

Cultivating Mindfulness

Universities can introduce mindfulness as an interdisciplinary mini-course module to be followed by every undergraduate during the pandemic. Mindfulness exercises and activities can be conducted for the learners via Learning Management Systems by an expert in mindfulness. In addition, sessions can be arranged to make the learners aware of inculcating mindfulness to reduce stress, improve focus, manage digital technology, and overcome procrastination. When mindfulness is effectively integrated into the core curriculum, it will readily receive and lead to improving mental health, study engagement, self-care behaviours, and quality of life even during high-stress periods like exam time[3].

Students can be encouraged to practice mindfulness and meditation as a healthy habit of self-care daily. Further, the teachers can utilize multiple delivery methods during online education. It has been accepted that students engage effectively in online learning maximum of thirty minutes.

Accordingly, teachers can use multiple techniques after thirty minutes like brainstorming sessions, case studies, playing video clips, deeper

discussions, quizzes, etc. These types of interactive activities facilitate retaining their attention towards the learning process and ultimately lead to enhancing the mindfulness among the learners.

The concepts like technology breaks can also be introduced to remove both internal and external distractions whenever they engage in learning to cultivate mindfulness among the learners"[4].

Ultimately, it is apparent that the inclusion of mindfulness programmes in the online platform enhances student well-being and will provide greater reach and equivalence for students studying online, especially in a pandemic situation.

Conclusion

The pandemic has accelerated the adoption of online education in many contexts around the world. With this sudden transformation of conventional education into the online platform, teachers and learners are highly vulnerable to physical, mental, and spiritual issues. In such a critical situation, being mindful can play a vital role in the education system, enriching with endless benefits to both learners and the students. Thereby, this chapter briefly stressed the effectiveness of using mindfulness in the teaching and learning process. When the teachers and learners are well-being, they can create an effective learning environment that cultivates higher cognitive levels and improves performance, especially during the outbreak of COVID-19 pandemics.

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[1] Li, C., & Lalani, F. (2020, April 29). The COVID-19 pandemic has changed education forever. This is how. World Economic Forum. https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/

[2] Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. Clinical psychology: Science and practice,10(2),144-156. https://doi.org/10.1093/clipsy.bpg016

[3] Bailey, N., Opie, J.L., Hassed, C.S., & Chambers, R. (2019). Meditation practice, dispositional mindfulness, personality and program outcomes in mindfulness training for medical students. *Focus on* Health *Professional Education, 20(1),* 50-68. https://doi.org/10.11157/fohpe.v20i1.311

[4] Praveeni, S.M.N., & Wickramasinghe, C.N. (2021). Impact of Smartphone Addiction on Academic Performance of Undergraduates in Sri Lanka: Mediating effect of Technology Driven Multitasking. *Kelaniya Journal of Management, 10,* 25-36. http://doi.org/10.4038/kjm.v10i0.7681

Section 02

Teaching-Learning Process Transformation to the Online Platform

CHAPTER 5

Effective Online Teaching and Learning during Pandemic

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Introduction

The COVID-19 virus has been a deadly disease infected around the world since the end of 2019. The pandemic has led to the loss of human lives worldwide and has affected the health sector and the global economy. Millions of people are sinking into poverty, and most developing countries' economies have collapsed. The outbreak has had a direct impact on the education sector. More than 1,257,000,000 students from primary to tertiary can't attend schools since early 2020[1]. The crisis has impacted Sri Lanka's education sector in the same way as other countries or more than others.

Various academic institutions such as schools, and universities abandoned their methods of physical education and struggled to find options for reducing the negative impact on education. Social distancing has harmed most teaching and learning methods and was uncertain to return to normality soon. This environment brings to mind the planning of optional strategies for teaching and learning in academia around the world[2].

An educational update was needed with the rapid development of technology. Online education has been developed in some international institutes during the last twenty years. But in developing countries, most schools and universities were not ready for that conversion. However, with the sudden onset of the pandemic in early 2020, all educational institutions have had to change their usual teaching and learning practices.

However, most schools and universities focused on implementing e-learning environments where most students and staff did not have good exposure and experience in virtual learning environments. In this scenario, MOOC (Massive Online Open Course) was a way to encourage staff and students for online teaching and learning[3]. MOOC has included a guide for learners to follow the course in several steps and learners to be motivated to follow the guidance and encouraged to learn in a virtual learning platform[4].

Online Teaching and Learning

Education mode is always critical to a successful outcome through the teaching and learning process. Distance education is one of the main approaches which has been supported by the sudden development of technology through online teaching and learning. As a result, the Covid-19 pandemic situation is the turning point in the mode of academic activities. Online learning, distance learning, open learning, blended learning, web-based learning, computer-mediated learning, or e-learning are common terms used to convey a message about teaching and learning approaches facilitated in a virtual platform. All these approaches have the common capability to connect the learner and teacher via a computer connected to the network[5].

The teaching and learning process has changed with the usage of online education tools. It has converted into a student-centred approach, and it has become more innovative compared to the commonly adopted modes. Availability and familiarity with digital platforms and applications, learning management systems, and collaborative platforms for live video communication are critical areas that need to be concerned when adopting distance education. Those areas are rapidly developing with the implementation of online teaching and learning. During the Covid 19 pandemic, university students and staff were practising new replacements to carry out their educational activities. Distance learning was recognized as a primary solution for university education. The rapid adoption of distance learning was reported throughout the world. From the beginning of 2020, 90.3% of Japanese universities converted and initiated such programs. In addition, 88% of upper-middle-income countries began distance learning, including 45% through video conferences and 40% through online testing[6].

Available Resources for Online Teaching and Learning

Several resources are available for distance education. Based on the application, three categories of related resources can be identified. Curriculum resources, professional development resources, and tools are the primary resources required and available to conduct online teaching and learning.

Curriculum Resources

The resources which assist students directly to acquire knowledge and skills are categorized as curriculum resources. Lessons, videos, and interactive learning modules are examples of this category. These resources play a significant role in the online teaching and learning process. Students can reach for new knowledge areas, self-study lessons, and grab missing parts by watching lessons again.

Professional Development Resources

Professional development resources may be used to assist teachers and parents in supporting and guiding learners. Although several tools are

available for online education, many teachers are wondering how to start and where to start. Further, parents have no idea for selecting the best tools for their children. Through professional development resources, teachers and parents can develop their capacity to support learners to learn independently at home.

Tools

Tools can be used to manage online education platforms effectively. Several free and paid online tools are available to support the online teaching and learning process. Learning management systems, Communication tools, or any digital tool that can be communicated among teachers, learners, and parents can be used in online education. These tools can be used for interaction and engagement, individual and collaborative work, creating online learning content, getting feedback, and collecting ideas and content online.

Problems Associated with Online Teaching and Learning

Online teaching and learning have spread quickly around the world in a short time. Although many technologies are available for online education, teachers and learners face many challenges. The lack of training of teachers and pupils is a crucial issue identified in the education sector. The time allocated for training was inadequate to cope with the rapid evolution of the education sector since the transformation of traditional practices into online practices is challenging. Hence, teachers and learners had to face many difficulties with the adoption of modern technology ranging from download errors, installation problems, connection problems, audio and video problems, etc.

As a developing country, the lack of resources for students and teachers has become another major challenge when promoting online education. Moreover, poor internet connection is a common problem in rural areas in Sri Lanka. Although the facilities are not satisfactory, 88% participation rate has been achieved by students in Sri Lankan higher education institutions in both state and non-state universities[6].

Sometimes students find online learning to be boring and have no interaction. Further, so much flexibility in this education model is another problem. Because of that, students will never find time to listen and work on their studies. Personal attention to an individual student is very important in the teaching-learning process. Implementation of two-way interaction is very challenging in online learning. The teacher can't catch the facial expressions of the audience through zoom or recorded lectures. Without having feedback from students, teaching will not be successful.

The learning process will be complete after students practice what they learn. Most of the time, conventional online teaching deals only with theories but does not allow students to practice what they learn. Online teaching and learning have not become an effective method throughout the period where it was introduced to our education sector.

Possible Solutions

The pandemic affects everyone, and all the engaging parties must find solutions to overcome those problems associated with distance education. Solutions can be identified by considering the parents', students', and teachers' perspectives. Within this short period, several solutions have been identified to change the online teaching and learning process into an effective method for teachers and learners. The key points highlighted here to easily overcome distance-mode issues are technology, interactive activities, and selecting the most appropriate tool to assess students against cognitive levels.

Know the technology

Despite the rapid shift to online mode, proper training has not been received by both teachers and students. There are many types of technologies available for use in online teaching as described in Figure 1. Most teachers are aware only of zoom and conduct all activities through zoom. But, a technology-based more interactive classroom would be very beneficial for both the teaching and learning processes.

Interactive resources will facilitate to enhance the communication among teachers and students in various ways. Also, teachers should always consider the effectiveness of the technology used in the class. The teacher should know how to use technologies effectively to address the learning objectives. You want to be sure that the technology is beneficial to address the proper objectives.

Until the beginning of the pandemic, most of the students conducted the academic work physically and didn't use technology for their assessments and learning. When a teacher selects a technology for delivering lessons and assessments, the teacher should think about student awareness related to the technology. The teacher must think about the typical technology skills of the students enrolled in the particular course and whether they have enough resources to install the required software applications.

The teacher should select compatible technology from various PC, Mac, or even tablet platforms. The teachers should be confident in using selected technologies before applying them to the teaching and learning process. Students should not have to give their personal information to access the technology, and they should have access using a link with course-related information such as student id number or course code.

Let the student do the work

When the teacher uses only the zoom platform for teaching, the session will only be a one-way discussion. This is the main reason to end up with uninteresting lecture sessions. The more time students engage with the content, the more they will learn[7]. On the other hand, by introducing ice-breaking activities, students can be encouraged for discussions. Breakout

room is one option in the zoom platform for arranging discussions. The teacher can give instructions for the discussion and can define the outcome of the discussion. The teacher can visit each breakup room during the discussion and check their progress. Finally, each group can present whatever they finalized according to the defined guidelines. Further, the teacher can let the student work themselves through different technologies.

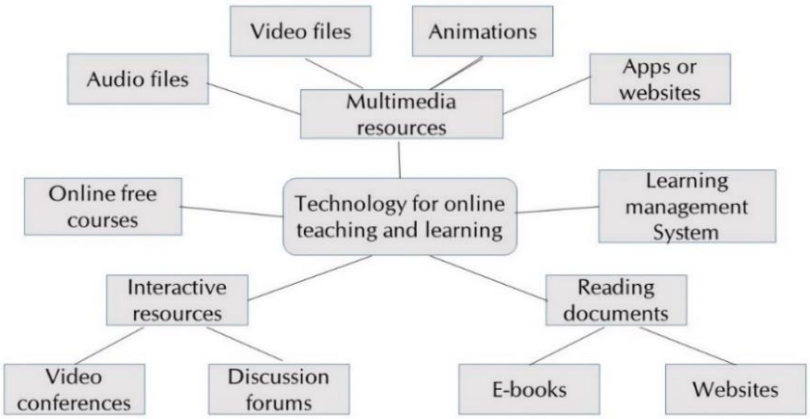

Figure 1: Types of Technologies Available for Online Teaching and Learning[3]

Effective online teaching through Bloom's Digital Taxonomy

Creating an attractive and effective learning environment for students is very important for successful online course delivery. The framework of Bloom's Revised Taxonomy and digital tools for online teaching and learning has been combined in unique ways by specialists in the education sector. The newly developed Digital Bloom's Taxonomy can be a useful tool to identify solutions for online teaching and learning related issues.

According to Bloom's Digital Taxonomy, a set of instructions are given to use new technology and digital tools in online teaching and learning processes. This gives the best possible solution for the online teaching and learning process related issues. Furthermore, six categories of the order of learning, Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation are described as the educational objectives.

In 1956, Benjamin Bloom with collaborators, Max Englehart, Edward Furst, Walter Hill, and David Krathwohl developed the concept, taxonomy. It is popular as Bloom's Taxonomy.

Bloom's Revised Taxonomy was developed in 2001. It was developed to integrate the teaching, learning, and assessment process according to Bloom's Taxonomy. This has been classified into six categories: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating.

Bloom's Revised Digital Taxonomy was developed based on Bloom's Revised Taxonomy. It describes the effective usage of new

technology and tools for assessing online and distance education learning outcomes. Further, the Taxonomy describes how the tool can be used for interactive teaching and achieving each taxonomy level.

Figure 2 describes the model created by Andrew Churches in 2008 to help learners and teachers use digital tools in the online teaching and learning process aligned with each level of Bloom's taxonomy[8].

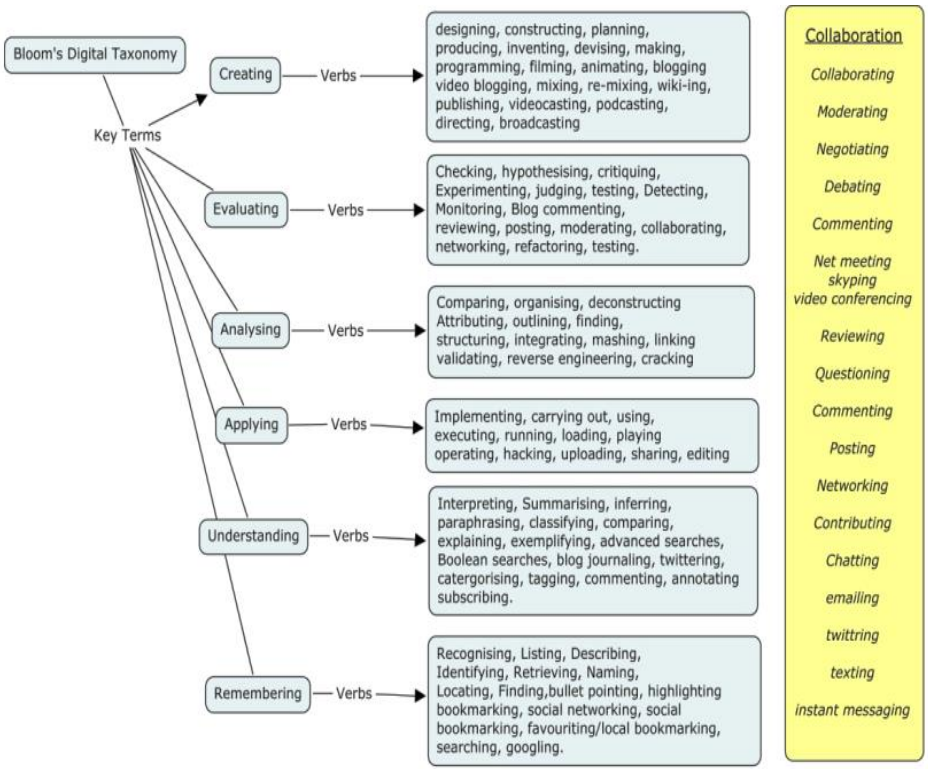

Figure 2: Types of Technologies Available for Online Teaching and Learning[8]

"Remembering" is the lowest level in Bloom's taxonomy and acts as the foundation of all higher levels. Bookmarking, copying, googling, and ground networking are some examples of digital tools which can be used at this level. The second level, "Understanding" has been defined to express ideas, outcomes, and theories from written material or graphs. Tagging, Commenting, blog journaling, annotating, and tweeting are some example tools for this level. "Applying" is the third level in Bloom's revised taxonomy. Digital tools are introduced at this level, such as editing, hacking, presenting, and uploading, to use information in models, presentations, and diagrams. "Analyzing" is the fourth level. At this level, the learner gets a complete picture of the concept or identifies interrelation among all parts of the structure. Mind mapping, surveying, meshing, and validating are some examples of digital tools used at this level. In the fourth level of Bloom's revised taxonomy "evaluating and decision making" is done by using digital

tools such as reviving, grading, rating, reflecting, and networking. "Creating" is the sixth and the final level. Animating, blogging, filming, broadcasting, publishing, simulating, wiki building, video blogging, programming, and directing are the tools that can be used in online teaching and learning for this level.

Bloom's Revised Digital Taxonomy can be used to create online learning activities for students' needs. Teachers can choose tools based on each level's outcome requirements and can be aligned with students' activities in the online teaching and learning process.

In conclusion, the teacher should have the technical knowledge, training, and confidence to use new methods for online teaching. Teachers should be changed from conventional methods to advanced effective methods of online education. Always, student-centred teaching methods should be conducted in the online teaching and learning process. Teachers should identify appropriate forms based on the outcome level of the student. Bloom's Revised Digital Taxonomy can be used for determining the most suitable tools for achieving each cognitive level through distance education. Finally, online teaching and learning will convert from surviving to an effective method by addressing some critical points.

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[1] UNESCO. (2021). Education: From disruption to recovery. Retrieved 9 October 2021 https://en.unesco.org/covid19/educationresponse.

[2] Fufi, E.F., Negassa, T., Melaku, R., & Mergo, R. (2020). Impact of corona pandemic on educational undertakings and possible breakthrough mechanisms. *BizEcons Quarterly, 11,* 9-14.

[3] Lynch, M.M. (2004). Learning online*: A guide to success in the virtual classroom.* New York : RoutledgeFalmer.

[4] Louwrens, N., & Hartnett, M. (2015). Student and teacher perceptions of online student engagement in an online middle school. *Journal of Open, Flexible, and Distance Learning, 19(1*), 27-43.

[5] Venera-Mihaela, C., Iulia, L., Valentin, N., & Gabriel, L. (2014). SWOT anlysis of e-learning educational services from the perspective of their beneficiaries. *Procedia - Social and Behavioral Sciences, 116,* 1999-2003. https://doi.org/10.1016/j.sbspro.2014.01.510

[6] Hewagamage, K.P., Maddawin, A., Garcia, M., & Hayashi, R. (2020). Online teachiing in Sri Lanka's higher education institutions during Covid-19 pandemic. *ADB BRIEFS.*

[7] Pelz, B. (2010). (MY) Three Principles of Effective Online Pedagogy. *Journal of Asynchronous Learning Networks, 14(1),* 103-116.

[8] Churches, A. (2008). *Bloom's Digital Taxonomy*. http://teachnology.pbworks.com/f/Bloom%5C's+Taxonomy+Blooms+Digitally.pdf

CHAPTER 6

Acceptability of Online Teaching-Learning in Engineering Technology Degree Programs under New Normal - Sri Lanka

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Pre-Pandemic Era

Learning styles were one of the frequent topics of pedagogical psychology. Once the World Wide Web (WWW) was invented in 1992, online education became increasingly accessible and allowed new pedagogical models to emerge. Many believe that online teaching and learning is recent because of the invention of the web. However, that is not the case. Online education was one of the initial progenies of the invention of e-mail, and development which is interlaced with historical computer networking. When the revolution in the field of education was developed in the 1980s and 1990s, most people interrogated the value and quality of online education as a critic. Also expressed the concerns of some faculty who felt they would be displaced by less well-trained staff[1].

Once the 21st century started with plenty of technological advancements, online education became a smart tool in the field of higher education. After the pandemic triggered at the end of 2019, things were exponentially developed towards online mode, which is in the process of forming virtual space into social and learning space, a lot of shifts happened during that time.

COVID-19 Outbreak

"The emergency imperative to 'move online', caused by the recent Covid-19 pandemic, has added to the stresses and workloads experienced by university faculty and staff. They were already struggling to balance teaching, research, and service obligations, not to mention the work-life balance. The teaching staff of all backgrounds and ages have had to prepare specially for online teaching and deliver their classes from home, with all

the practical and technical challenges this entails, and often without proper technical support" [2]

In response to school closures, UNESCO recommended the use of distance learning programs that schools, and teachers can use to reach learners remotely and limit the disruption of education. Prioritizing solutions to address psychosocial challenges before teaching is essential. Mobilize available tools to connect universities, schools, parents, teachers, and students with each other. Creating communities to ensure regular human interactions, enable social caring measures, and address possible psychosocial challenges that students may face when isolated is a fundamental requirement.

University Under New Normal

Adopting healthcare measures to safeguard day-to-day life is considered as new normal globally. "At this juncture of the COVID-19 pandemic, university education is almost entirely done through the online system since traditional education cannot be continued. Hence, it has become very important to find the best models and learning platforms for online teaching and the problems students are facing in this process. Comprehensive studies should be conducted while implementing new procedures by considering the type of university programs. And checking the possibilities and students' perspectives on moving to an online system are important. Therefore, there is a need to research and find out whether these objectives are being met"[3].

Active Learning Environment

There are plenty of techniques to promote active learning under teacher-centred education. First, it is important to discuss the historical background pre-pandemic era. Lecturing can be considered the most traditional way of teaching. Most learners believe that lecturing is a passive learning method and hence their role in the lecture is passive. Then the learners try to sit back on a chair and feel relaxed with or without paying attention to the lecture. Sometimes, it creates boredom, and it acts as a catalyst for causing learners to be disengaged. The teacher should identify interactive teaching strategies to maintain the attention necessary for active learning during the lecture.

It is very effective if the teacher could use a combination of different teaching aids, such as whiteboard, flip charts, multimedia projector, in an organized way. Further interesting video clips related to the content of the lecture can be added to generate interest in the lecture. Rather than showing a too wordy slide or lecture note, the teacher can use graphs and other illustrations to explain the same content. It greatly aids in remembering the content to the learners. Furthermore, the teacher can provide incomplete

handouts like gap handouts instead of providing complete handouts. Then the learners actively participate in the lecture to complete the handout.

As to match with each course, the teacher can select practical ways to motivate learners, such as simulations, case studies, and scenario-based learning. Storytelling is one such scenario-based learning. Learners tend to remember the content of the lecture better when it is presented in a story. Storytelling combines multiple elements of teaching and learning such as relevance, interactivity, entertainment, and memorability to bring concepts in the course to real life.

It is always challenging to maintain an acceptable level of active environment in the online mode. Special care should be given to professional degree programs. Teachers are always responsible for finding alternatives to conventional teaching.

Sensible Teaching

Questioning also provides an active learning environment for the learners when we talk about the sensible way of teaching. It is better to ask questions from the entire class rather than asking from individuals. Then the learner is ready to find an answer as they don't know who the teacher's selection will be. It helps to keep the attention and involvement of the learners. The teacher should show interest in all answers and remember to thank learners who respond to your questions. Similarly, when the learners ask questions from the teacher, the teacher should not criticize learners' questions, which may discourage them from asking questions in coming sessions. Special attention should be given in the virtual classroom.

The teacher should set times during each lecture to ask questions or discuss issues. According to the investigations, it has been found that a typical learner's attention period is limited to about 15-20 minutes. Hence, after about 15-20 minutes of lecture time, it is suitable to ask questions or discuss issues if any. Depending on the teachers' perspective, it is possible to use smart tools available with the online platform. When the teacher does this as a habit, the learners try to listen more actively to the lecture to answer the questions to be raised. Especially, it provides opportunities for learners to develop their own critical thinking. Then both behavioural and cognitive engagement can be improved. Bloom's digital taxonomy can be introduced in the case of e-learning practices.

The group discussion method in teaching gives the power to enhance not only learners' interest and communication skills, but also to encourage them to develop skills in searching and adopting, reflecting, and building their confidence. Further, learners listen to group members' opinions & express their opinion. Then the learners can exchange their ideas. At the same time, the learners may enjoy the discussion as they don't need to make a huge effort. The learners' thinking skills can be improved, and creativity among learners can be developed through group discussions.

Furthermore, collaborative skills such as teamwork, tolerance, negotiation, compromise, content-based skills such as recall, comprehension, application, analysis, synthesis and evaluation, and organizing and communication skills of learners can also be achieved. The teachers in higher education institutions should adopt a small group discussion method of teaching and learning to sufficiently empower learners to become creative and innovative in their learning activities. Nowadays, most online platforms are capable of giving group activities in the virtual space.

While setting questions from a particular chapter, the teacher has a responsibility to set questions from different levels of revised Bloom's Taxonomy to check the ability of the learner in knowledge, comprehension, application, analysis, synthesis, and evaluation. This has to be modified by incorporating characteristics of the virtual learning environment. By setting and raising blended questions from all levels, the teacher will be able to assess learners' retention, comprehension as well as knowledge grasp, and skills.

Use of New Tools and Techniques

Online and mobile technology can be used to provide active learning activities and to keep learners engaged even outside of the lecture room. The teacher can set small online quizzes for learners to complete within a given time. Then the learners can select a convenient time for them and complete the task. Rather than facing a quiz in the lecture room, the learners actively participate in online quizzes as it is a new experience compared with traditional lecture room quizzes.

The current learners are bound with online and mobile technology. Further, the learners have the freedom to select physically and mentally comfortable periods for the quiz does not unlike traditional lecture room quizzes.

In addition to that, if the learners can access the lecture material online, they can refer to them even during the traveling. Then the opportunities for learner engagement are high. The availability of soft tools which can be utilized effectively in online education is exponentially increasing.

Technological Teaching and Learning

With the strong background with historical facts, it is important to review the acceptability of online teaching-learning in Engineering and Technology degree programs under the new normal -Sri Lanka. "Basically, used in the relevant matter of subject is using online delivery as a replacement for the physical coursework or study material or increase the technological learning.

If the result of online delivery or physical learning is the same, the online teaching method can be easily used because it is relatively cost-

effective. A few of the students live near to the university or institute and students in specialized courses, etc. can be fairly treated. On the other hand time and money wasting is not the solution for improving knowledge or skills[4]

Technological Learning: A Case Study

A case study was conducted with 352 responses to capture the overall context of virtual teaching and learning in Sri Lanka. Data was gathered through google forms. Analysis of the data which was collected from the Questionnaire regarding the perception of the acceptability of online delivery in technological degree programs under the new normal in Sri Lanka. Table 1 illustrates the relationship between gender and willingness to use online education in the summarized form. The willingness to use technology can be varied with gender in south Asian cultures.

Table 1: Gender vs. Willingness to Use Online Education

			Willingness to use online education Online	
			Yes	No
Gender	Male	% Within Gender	89.10%	10.90%
	Female	% Within Gender	95.40%	4.60%
Total		% Within Gender	91.50%	8.50%

Table 2 indicates that most of the respondents who are willing to use online education belong the age of 18 to 55, which represents 91.7%. Moreover, 20% of respondents who belong to the age category of 46-55 were not willing to use Online education for their learning purpose. The analysis identified a significant impact of the age groups on the willingness to use online methods.

Table 2: Age vs. Willingness to Use Online Education

		Willingness to use online education % within age	
		Yes	No
Age group	18-25 years	91.7%	8.3%
	26-35 years	97.1%	2.9%
	36-45 years	91.0%	9.0%
	Above 46 years	82.3%	17.7.0%
Total		91.5%	8.5%

Based on the study results, 90% of the total sample were answered as online education systems were extremely cost-effective, and 5.1% of the

total sample were answered as online education systems were moderately cost-effective for educational purposes. 55.3% of the engineering and technology students were answered as conducting online exams are very good for an engineering and technology degree program, and 44.5% of the total engineering and technology students were answered as conducting exams online for an engineering and technology degree is not good at all.

Considering the present situation due to Covid-19, physical education problems need to be fixed as soon as possible. It is possible to suggest the following recommendations for the betterment of the education system. The objective is to standardize and ensure the quality of delivery of the module content via online platforms during the COVID-19 pandemic.

Lecture Delivery

Live via Zoom: These sessions could either be online (all students attend online) or hybrid (where a classroom session is live-streamed). Every session must be recorded and uploaded to Moodle before the next lecture. Pre-recorded: Relevant visual content is essential. Possible choices for visual content could include but are not limited to videos of the lecture presentation slides, images, articles, or book chapters and animations. Student-lecturer and student-student interaction must be ensured (e.g., separate live Q&A sessions via zoom, online chat, discussion forums, email, etc.). The content must be uploaded to Moodle before the scheduled date of the lecture. Limit the duration of a lecture whether live or pre-recorded to a maximum of 50 minutes. The timetable should be amended accordingly for online delivery. If a live lecture takes longer than the recommended 50 minutes, break it up into two or more sessions of 50 minutes or less with a 10-minute interval between two consecutive sessions.

Incorporate a student engagement activity about every five minutes. Examples of such activities would be random questions, quizzes, or polls. Some of these activities may contribute towards a formative assessment, in which all students should have the opportunity to participate. Formative assessments may be done through during-class quizzes, polls, and other suitable activities. For any during-class formative assessments, suitable alternatives should be made available for students who only refer to the recorded content.

Practical Components

Practical sessions where student's learning happens primarily through hands-on experience, taking part in a real-time demonstration, operation of equipment, etc., under the guidance of an instructor. (i.e. conventional lab classes). Practicals may be conducted online or via a simulator when the subject matter permits. [If software installed in the university is required, Remote Desktop Protocol (RDP) may be used to allow

students to use them remotely.] When receiving authority to conduct onsite practical, physically in the lab provided it can be conducted in small groups maintaining social distancing guidelines. These measures are to be followed to reduce the time students need to spend in the labs, which would aid in scheduling and maintaining the recommended social distance. Pre-recorded introductions by a video (or narrated content) for all practical (lab-based) should be uploaded to Moodle.

Assessments should be conducted online via Moodle. For example, students upload reports, quizzes, etc. If it is not feasible to conduct a practical and there is a prerequisite for a particular lecture, a suitable video providing the essential knowledge necessary to follow the lecture will be made available to the students via Moodle before the lecture. The lecturer has the freedom to conduct the actual practice at a future date when conditions allow.

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[1] Dağ, F., & Geçer, A. (2009). Relations between online learning and learning styles. *Procedia-Social and Behavioral Sciences, 1*(1), 862-871. https://doi.org/10.1016/j.sbspro.2009.01.155

[2] Hodges, C.B., Moore, S., Lockee, B.B., Trust, T., & Bond, M.A. (2020). *The difference between emergency remote teaching and online learning*. http://hdl.handle.net/10919/104648

[3] Haththotuwa, P., & Rupasinghe, R. (2021). Adapting to online learning in higher education system during the Covid-19 pandemic: A case study of universities in Sri Lanka. *Sri Lanka Journal of Social Sciences and Humanities, 1*(2). 147-152. http://doi.org/10.4038/sljssh.v1i2.46

[4] Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies*. http://repository.alt.ac.uk/id/eprint/629

CHAPTER 7

Transformation of Teaching-Learning Process to Online Platforms during the Pandemic

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Introduction

Education's objective is to mould a person into their ideal self. They can reach their objectives with the help of education. Learning is at the heart of education. Learning is the process of learning new information or abilities via study, practice, or instruction. On the other hand, learning is about change, so changes are happening through developing new skills, and attitudes.

In students' learning process, a teacher has the prominent role of guiding students through different teaching methods. Over the past years, different teaching methods have been introduced and practiced in the higher education system. However, most of those methods were used in-class or in-person. Somehow online teaching methods were developing globally but not in Sri Lanka. Most Sri Lankan universities were using traditional classroom methods for teaching-learning and evaluation processes.

Any unusual accident that occurs anywhere around the globe has an influence on the teaching-learning process. The global spread of this deadly virus has caused educational institutions to close in order to stop the infection's transmission. This occurrence caused education experts to consider other teaching techniques during the lockdown. It provides opportunities for web-based learning, often known as e-learning or online learning.

Electronic Learning and Online Learning

"e-learning" refers to various methods that transmit material via electronic media such as the Internet, intranets, extranets, satellite broadcasts, audio/ videotapes, interactive television, and CD-

ROM. Online learning, which includes learning through modes musch as the Internet, intranet, and extranet, is just one aspect of technology-based learning.

The course content and images, activities, testing, and record-keeping, such as test scores and bookmarks, are included in basic online learning software. Animations, simulations, audio and video sequences, peer and expert discussion groups, online mentoring, links to content on a business intranet or the Web, and communications with corporate education records are part of a comprehensive online learning program[1].

Online learning has evolved considerably since the 1960s, influencing small and medium scale businesses, large businesses, private and public education, the training sector, and the military in various ways. Table 1 shows the brief history of online distance learning development over the time.

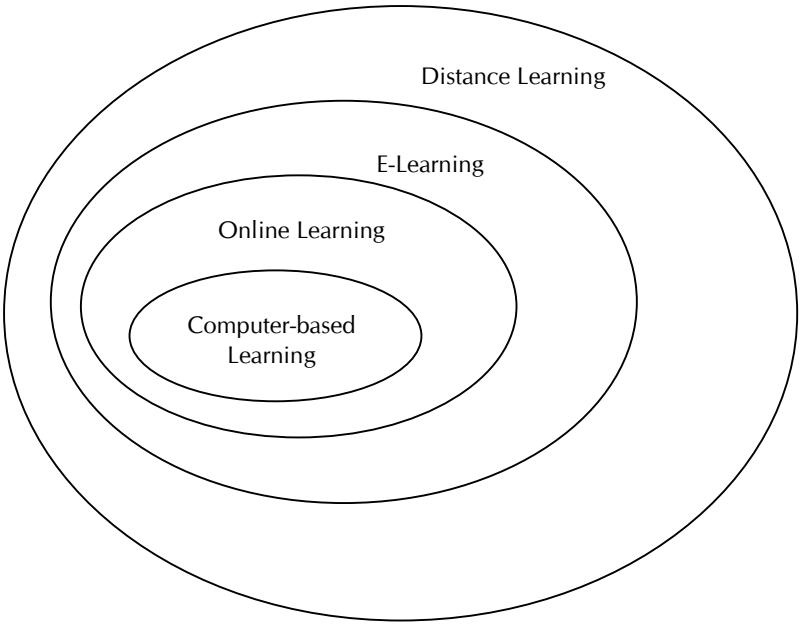

Figure 1: Subsets of Distance-Learning[1]

Emergency Remote Teaching

Emergency remote teaching is defined as a fast interim transfer in instructional delivery to an online delivery mode as a result of a big tragedy, as opposed to online courses that are initially designed and prepared to be delivered remotely[2]. A case study of the transformation process of emergency, remote teaching of Middle East College Oman has identified two phases namely curriculum transformation and staff development.

Online lectures using a variety of information technology devices posed significant difficulties. To obtain effective teaching results, teachers who previously taught live courses will need to participate in innovative approaches, which may impact the quality of higher education. On the other hand, Students in isolated and rural regions may lack network bandwidth, resulting in educational possibilities being lost.

Table 1: A Brief History of Online Learning Development

Era	Focus	Characteristics
1975-1985	Programming; Drill and practice; Computer-assisted learning CAL	Learning and teaching methods based on behaviorism. To create tools and solve issues, programmers use programming. Interaction between the user and the computer at the local level
1983-1990	Computer-Based Training Multimedia	Use of interactive multimedia courseware with earlier CAL models; The passive learner approach is the most common. Constructivist influences are beginning to show themselves in the design and usage of educational software.
1990-1995	Web-Based Education &Training	Content delivery over the Internet; active learner models created; constructivist viewpoints prevalent; limited end-user interactions
1995-2005	e-Learning	Online multimedia courseware; common distributed constructivist and cognitivist paradigms; remote user-user interactions; flexible courseware supplied over the Internet; improved interactivity; online multimedia courseware;
2005-present	Mobile learning and social networking	Learning that is facilitated by a wireless device such as a PDA, a smartphone, or a laptop; interactive distance courseware distributed online through learning management systems with social networking components; learning that is facilitated by a wireless device such as a PDA, a smartphone, or a laptop The focus of learning using portable technology is on the learner's mobility.

The transformation process is given in Figure 2. Initially, the delivery of lecture content is started from online lectures through available planform like MS Teams. These online lectures provide a thorough overview of the topic and chances for students to ask questions regarding the topic or the

broader module. Then online lecture recordings are shared on learning platforms (Moodle) and social media (MS Kaizala). So that facility gives more availability to the students who face internet connection disturbances. However, according to the availability of data quota, students may face some downloading problems of recordings. In that case, voice-over PowerPoint slides are helpful since they take less amount of data. In Sri Lankan higher education, internet service providers and Lanka Education and Research Network (LEARN) provide free access to platforms like Zoom and university learning management systems. Other than that, online learning packages were also introduced due to the current pandemic situation.

The next phase of transformation is staff development. With this pandemic situation, teachers need better training about online learning tools to deliver the course contents effectively while achieving institutional goals and objectives.

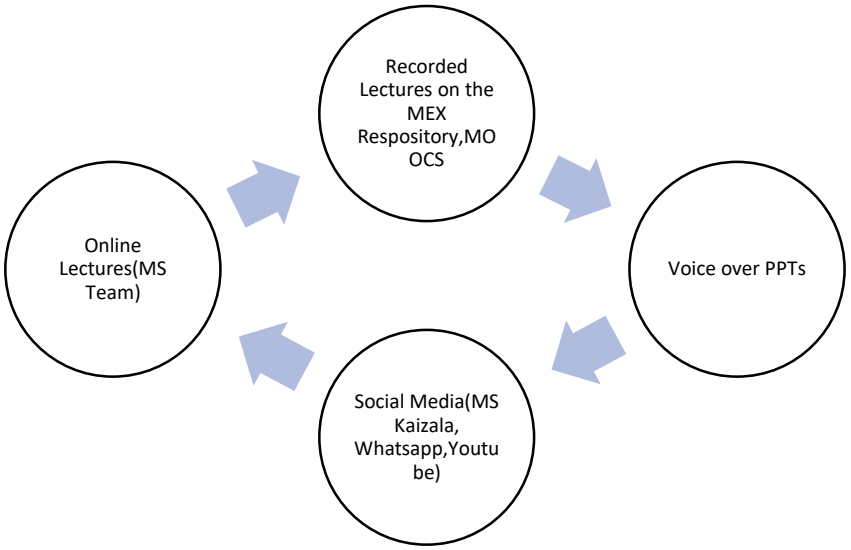

Figure 2: Transformation Process Model[2]

Role of Faculties in Online Learning

With unique characteristics such as the flexibility of online learning platforms, the role of an online teacher or instructor should also be flexible and technical over traditional teaching methods in this pandemic situation. Higher education institutes should now reconsider the role of teachers in their programs since teaching in online platforms is very special. The role of an online teacher or instructor can be viewed under four categories.

1. Pedagogical
2. Social
3. Managerial
4. Technical

As Keengwe & Kidd, 2010[3] explain the pedagogical role potentials educational facilitation. A social role is involved by creating a friendly environment when teaching on an online platform. This role will be significant to attract and keep students active in virtual classroom space. Agenda planning, pace, goal setting, rule creating, and decision making are all part of the managerial role. The technical function of the teacher is highly dependent on the instructors getting familiar with the technology in use and then being able to convey that comfort to their students.

Benefits of e-Learning for the Teaching-Learning Process

Accessibility to e-Learning content and information 24/7 is the main benefit of e-Learning. Accessibility is possible for students to learn at their home. It is also important for teachers to discover the tools in an e-learning platform to improve their teaching online.

E-Learning provides the knowledge at the right moment. So it is essential to update the learners at the right time. Otherwise, they will have forgotten the content provided early, and the learner may find some other material late uploads. E-learning contents are provided as modules. So, learners can take them separately for their studies for an effective learning experience. For example, short videos (about 5 minutes long) will be more beneficial to study one topic than paying attention to long video lectures. E-learning becomes learner-centric by allowing learners to customize their experience and learning phase.

These online learning methods can be cost-effective over traditional learning and teaching by reducing travel costs and time. E-learning is always interactive and collaborative. However, this will depend on the characteristics of the online teacher or trainer. If the teacher or trainer has better attributes for e-learning, the teaching process is more effective so that learners are going to interact and collaborate with the teacher and other learners.

These kinds of platforms will increase the practical knowledge of information technology of teachers and learners. So, it directly affects the effective delivery of learning material and the easy movement of learners in the virtual system[4]. However, there may be some drawbacks like incompatibility of technology devices and unsuitable training or outdated training details.

The Approach of Sri Lankan Universities to e-Learning during the Pandemic

Most Sri Lankan universities used the traditional teaching-learning process to deliver the content before this COVID-19 pandemic. Due to these unexpected situations at the beginning of the year 2020, universities faced huge problems regarding teaching. However, there were online learning platforms developed to some extent but not enough to provide a better

learning experience. It was a considerable challenge to establish an accessible online learning platform. And another problem was the training and knowledge of the users. So, universities had to develop the entire platform, including training of users.

By 2021, most universities have developed better online learning platforms to cater to the students' needs. And also teachers are adopted with good training programs and workshops. For example, the e-learning platforms of the Wayamba University of Sri Lanka are well prepared and organized to provide continuous service to learners and teachers. Other Sri Lankan universities are now capable of providing service to their learners online. It will be a remarkable movement of the higher education sector. So universities can expand their programs and resources through these developed systems. Figure 3 shows the average logins per month(May 2021) of the learning management system of Wayamba University of Sri Lanka, Makandura premises. It will give a rough idea of the availability and user engagement of the current system of the university.

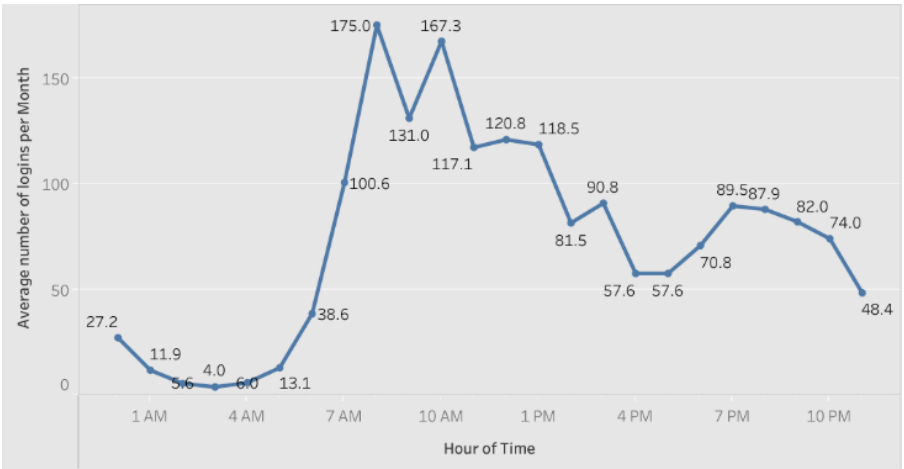

Figure 3: Average Logins by the Time of the Day (May 2021)

Conclusion

COVID-19 pandemic shutdown everything suddenly, and one of the major areas affected is the education sector. Education moves quickly to online distance learning platforms simply known as Emergency Remote Teaching. Remote or online learning and teaching can be challenging in countries like Sri Lanka, with minimal experience with these kinds of technologies in education. The amount of technical knowledge and other facilities like internet connections also matter in this situation. However, by 2021, students and teachers well adapt to the e-learning platforms to complete their academics.

The role of the teacher becomes critical in these kinds of virtual classrooms. The attitude of the teacher will be tested teaching in e-learning

platforms. This is because the learner and the teacher are contributing equally on online platforms rather than traditional teaching. Therefore, a teacher needs to be more active and role model to deliver online content effectively.

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[1] Urdan, T.A., & Weggen, C.C. (2000). Corporate E-learning : Exploring a new frontier. analysis, 88. http://wrhambrecht.com/research/coverage/elearning/ir/ir_explore.pdf

[2] Mohmmed, A.O., Khidhir, B.A., Nazeer, A., & Vijayan, V.J. (2020). Emergency remote teaching during Coronavirus pandemic: the current trend and future directive at Middle East College Oman. *Innovative Infrastructure Solutions, 5*(3), 1-11. https://doi.org/10.1007/s41062-020-00326-7

[3] Keengwe, J., & Kidd, T. (2010). Towards best practices in online learning and teaching in higher education. *Journal of Online Learning and Teaching, 6(2),* 533-541. http://jolt.merlot.org/vol6no2/keengwe_0610.htm

[4] Pollard, E., & Hillage, J. (2001). Exploring E-Learning- IES Report 376 (Issue January 2001). https://www.researchgate.net/publication/234759791_Exploring_E-Learning_IES_Report_376

Section 03

Effective Teaching Learning Practices: Path to Distance Learning

CHAPTER 8

Rethinking Higher Education in Post Pandemic

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Higher education is the tertiary education offered by higher education institutes such as private or government universities, which completes with an academic degree. It comprises education that leads to a degree, including training and research guidance at education institutions. Higher education institutes, most prominently universities, are intimately connected to three main functions: teaching, research, and contribution to society. As the world moves towards a knowledge-based society, the demand for higher education has increased. Hence, higher educational institutes have an enormous role to play.

Effect of COVID-19 on Higher Education

In 2019, with the sudden outbreak of the COVID-19 pandemic, the whole world suffered from extensive human fatality and caused an unprecedented challenge to public health worldwide. It has caused catastrophic effects on all aspects of life globally, from the economy, health, transportation, education, and personal lifestyle. The pandemic particularly affected the countries that are already dealing with crises.

Higher education is one of the major sectors that have been most drastically affected by the repercussions of the pandemic. Higher education faces severe challenges in the conduct of teaching, learning, and research as academia must follow public health guidelines to ensure the safety of its employees and students. Higher education institutes were forced to close down in the middle of the academic years, leaving a phase of confusion and uncertainty on how to proceed forward. Health officials confirm that the COVID-19 is best fought by social distancing. Hence, students, academic and non-academic staff members of the universities were confined to homes. Everything in academia had to move online within a couple of days hastily to mitigate the devastating pandemic across the globe.

However, critics argue that COVID-19 has accelerated the stagnating processes for many years. The overall structure of the degree programs and teaching-learning methods and assessment processes had to rapidly move into an emergency online learning system from the ordinary face-to-face teaching that most higher education institutes practiced. This was a new way of education for many educational institutes that they have had to adopt.

Although it was a rapid transition, online education has reported positive and negative impacts on higher education. Understanding these will help the institutes gear up the education more strategically and efficiently in the future, ensuring an uninterrupted learning experience for the students. Physical classrooms limit the number of students and the usage of resources. However, online education demands lesser resources and lesser expenditure than classroom education and has facilitated the opportunities for a broader audience to enrol and study a wide range of courses. This has reduced financial costs for the programs and has made education more affordable. E-Learning has offered the students the choice of learning from wherever they are, which has surpassed geographical barriers. Some students find it convenient to learn through online platforms as a wide range of teaching-learning tools can be adopted, such as audios, images, podcasts, videos, etc. Another benefit of e-Learning is that the students have more free time than physical face-to-face education, which can be used in more studies and individual learning. Study hours of students have been reduced, and assessments have become more efficient using collective tasks and peer assessment.

Conversely, there are some complications in online teaching and learning when adapting to higher education, especially in developing countries like Sri Lanka. One of the major problems faced by students in online education is the lack of suitable digital devices such as laptops, desktop computers, tabs, or smartphones. Owing to the sudden transition, some students and their families find it difficult to afford such devices. Correspondingly, some students do not have proper internet connection facilities with a consistent connection and a considerable speed. They face problems in connection to real-time education and assessments. Another issue students face is the difficulty of maintaining concentration and focusing on a screen for a long time. Parents have concerns about the health of their children as they are concentrating many hours on the digital screens mainly, mental health and physical health. Students may suffer from self-isolation as they lack social interactions with fellow students, teachers, and the community. On the other hand, some teachers might not be very familiar with using distance learning tools and materials to conduct lectures and they lack the basic understanding of the usage of digital platforms. Further, the teachers might not be able to get an idea of the students' level of understanding, and there will be issues with the reliability of the

examinations. Besides teaching and learning, conducting research with a high standard has become a challenge for many higher education institutions.

Higher Education in Post Pandemic

The spread of this unprecedented contagious disease adversely traumatized education all around the world. The education system is one of the critical fields which require significant changes with the erosion caused by the pandemic. The education of 91.3 % of all the students (1,576,021,818 students in total) in 188 countries has been interrupted due to the COVID pandemic[1]. However, as the world is heading towards 'post-COVID' realities, it is a must to rethink the future of higher education. Studies reveal that the world will have to live with COVID-19 for a very long time. Hence, special attention must be taken to efficiently and effectively continue education around the world amidst the pandemic.

The sudden outbreak of the COVID pandemic has created insight for higher education institutions to rethink and find possibilities to function in crises. Thus, the provided education must be acceptable in the teaching and learning processes. With the experience gained through the sudden global pandemic, the higher education institutions got the opportunity to be ready to continue teaching under any catastrophe.

The demand for higher education has shown some reduction under the current pandemic situation. Students who desired to acquire their higher education abroad had to delay their studies until the borders among countries re-open and reassure that studying at the universities is safe again. Further, studies reveal that about 40 % of international students have decided to change their study plans abroad and explore alternative options locally or regionally[2].

Suggestions to Resume Higher Education after the Pandemic

Blended Learning

Almost all the high-ranking universities in the world have moved towards conducting their education using online platforms with distance learning from 2020 onwards. Further, the number of universities that have moved to online education has increased over time.

Blended learning is not a new term, and it has been in use for almost two decades. There are different definitions for this term, and it was initially used for the combined use of in-class teaching and online education. Blended learning is defined as 'the effective combination of different modes of delivery, models of teaching and styles of learning'. According to Dzuiban *et al.* (2004)[3], blended learning is an effective method of achieving learning outcomes and the satisfaction of students and teachers. A well-organized and customized lesson can be delivered to the students

with the combined use of different blended learning techniques. As most of the younger generation nowadays are more familiar with the new technologies and have access to the tools, they are more enthusiastic about moving into blended learning mode.

As almost all higher educational institutions have adapted virtual modes of education at present, even after the pandemic, the concept of "blended learning" can continue even when learning returns to the physical classroom.

The educational institutes can collect actual data on the effectiveness, limitations, and challenges of current online teaching practices. It is essential and important to evaluate the applicability of digital platforms as a substitution for the courses. The results of the evaluation would be helpful to determine the requirement for each course, and then they should reorganize teaching modules based on their skill levels and capacity.

The blending of online activities into courses can be done by completely redesigning new courses or adding some online activities to the existing courses. Considering different ranges of blending of online and in-class activities, Alammary *et al.*, 2014[4] have identified three design approaches.

- Low-impact blend
- Medium-impact blend
- High-impact blend

The addition of supplementary online activities to the existing physically conducted courses is considered in the low-impact approach. However, studies reveal that teachers who involve in creating blended courses tend to add online activities to the existing courses without replacing the existing physical activities[5].

In the medium-impact approach, some of the traditional physical activities are restored by online activities. It is assumed that the replaced parts of the course can be effectively conducted online. The unresolved physical sessions can be left unchanged, or some changes can be made to the in-class activities. In the high-impact approach, the complete course is subjected to a full redesign, total redesign, or radical change. Hofmann[6] recommended that the teacher must consider the learning outcomes of each course and determine the best delivery option for the outcome without considering the course as a whole.

Maximum benefits of blended learning are expected from the high-impact blend approach and where a unique curriculum is created by utilizing both traditional and online methods. Teachers get the possibility of trying a range of new blended components and integrating them into the course. The teacher gets the opportunity to choose the suitable method to meet the learning objectives resulting in considerable improvements to students' learning experience.

Student Assessment

Assessment of students is an essential indicator of learning that evaluates the competency students have received after completing a particular course in higher education. A more holistic approach must be taken in designing assessments considering the actual target competencies a student should acquire. The classic end of the course evaluation proved ineffective during distance learning due to the impossibility of maintaining efficiency, resistance to cheating, and equality for all students. However, incorporating formative assessment methods into the traditional end-of-the-course assessment has become more effective and well accepted. Continuous assessment methods such as peer evaluations, skill tests, viva voce, assignments, unannounced quiz examinations, etc. can be easily adopted even on online platforms.

Another concern of replacing physical examinations with virtual assessments was possible by implementing a mechanism to identify students' identities. Examination frauds during online examinations can be avoided by using eProctoring technology, where the student is constantly monitored using cameras or artificial intelligence for student verification. However, the applicability of this is low in higher educational institutes in developing countries like Sri Lanka. Nevertheless, an assessment of learners must be carried out while ascertaining the quality and academic integrity of higher education.

Strengthening Research and Development

Apart from formal education, another massive crisis the higher education institutions had to face during the pandemic was the inability to conduct the research efficiently and effectively due to the lockdowns imposed in different parts of the world. A significant reduction in research and publications has been recorded after the Covid pandemic outbreak. Although there is a lag in research and publications, the researchers from some fields have plenty of research topics and data pertinent to COVID-19. The pandemic has provided enormous data for the researchers of bioinformatics, statisticians, molecular biologists, clinicians, and many others, specifically in the medical field. However, when the world gets back to functioning with the new normal, professionals of higher education need to engage and strengthen the efforts in research and development and improve student learning. Further, a priority must be given to investing more in research and development in various fields with the support of the funding agents and governments.

Strengthening Outreach

Outreach activities conducted by universities include providing guidance, giving solutions for prevailing problems, and coming up with professional activities done by the academic and other staff members for

individuals, government and non-government institutions, and all-inclusively for the general public. These stakeholders are generally not enrolled or directly linked to the higher educational institute. During the pandemic, these outreach activities were hindered in many higher educational institutes mainly due to lockdowns and social distancing. Therefore, with the end of the pandemic, there is a need to strengthen the outreach activities of the universities, which is one of the major responsibilities of higher education institutes. However, after an outbreak of an infectious disease like COVID-19, maintaining hygiene is essential according to the health guidelines.

Social distancing has profound control over the spread of the virus. Many virtual platforms are used for these social services as a way out method. The increased number of online webinars, workshops, training programs, etc. is a silver lining during a rampant like COVID-19 outbreak. This has increased the chances for more outreach activities to be carried out, increased the number of enrolments, and provided opportunities for a wide range of communities without distance barriers. Many outreach activities can be carried out in the future with blended methods more efficiently and effectively.

Training of Teachers for Online Education

Even in a post-pandemic period, the shift to online education requires a high digital literacy rate among academics in higher educational institutes. Teachers might feel it absurd to move into online education as they do not physically contact the students. Further, the teachers should get hands-on experience with the use of digital devices and online applications and be competent in conducting online activities such as pre-planning, implementing, teaching, conducting research, student assessment, and other outreach activities.

Teachers have the potential to use a wide range of innovative and operative devices and tools that are freely available for educational purposes. However, most teachers lack experience and may not be competent enough to cope with these devices, tools, and change. Thus, teachers in higher education institutes must be adequately trained and assisted in effectively delivering the courses through electronic delivery with the help of appropriate devices, and tools. By training the teachers adequately, the students get the opportunity to learn the curricula in an effective way, and the teachers can strategically align learning outcomes when teaching. This will provide many benefits for the teachers and the students. When the teachers are well trained, they can strategically plan the lessons with the available technologies helping students to learn what they need to learn and guiding them to seek more knowledge on the available online platforms. With that, students can be motivated to learn, and they will perform well in assessments.

Although the higher education institutes were affected by the Covid pandemic outbreak at first, they have found and adopted way out methods. With a new vision, the higher educational institutes can resume functioning with all the amendments when the pandemic is over.

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[1] United Nations Educational, Scientific and Cultural Organization (UNESCO). (2020). Global education monitoring report 2020: Inclusion and education: All means all. 92310038..

[2] Nair, P., Keppell, M.J., Lim, C.L., Mari, T., & Hassan, N. (Eds.). (2021). Transforming Curriculum Through Teacher-Learner Partnerships. *IGI Global*. https://doi.org/10.4018/978-1-7998-6445-5

[3] Charles, D.C., Hartman, J.L., & Moskal P.D. (2004). Blended learning. *Educause Centre for Applied Research*, *7*(3).

[4] Alammary, A., Sheard, J., & Carbone, A. (2014). Blended learning in higher education: Three different design approaches. *Australasian Journal of Educational Technology*, *30*(4). https://doi.org/10.14742/ajet.693

[5] Kaleta, R., Skibba, K., & Joosten, T. (2007). Discovering, designing, and delivering hybrid courses. In A.G. Picciano, & C. Dzuiban (Eds.), *Blended learning: Research perspectives* (111-143). Needham, MA: The Sloan Consortium.

[6] Hofmann, J. (2006). Why blended learning hasn't (yet) fulfilled its promises. In C.J. Bonk & C.R. Graham, *Handbook of blended learning: Global perspectives, local designs* (27-40). New Jersey: John Wiley & Sons.

CHAPTER 9

Digitalization in Education during COVID-19 Pandemic in Sri Lanka

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Introduction

The coronavirus (COVID-19) pandemic in 2019 has affected all aspects of modern life and all sectors in the country. The education sector, essential to any country, has been greatly affected in its teaching-learning process. The various types of viruses have been developing and reported the vast spreading ability. Countries worldwide follow lockdown and social distancing to limit the severe acute respiratory syndrome caused by COVID19. Even in Sri Lanka, actions were taken to lockdown to maintain social distancing from time to time. Therefore, the educational system at all levels has been moved online due to the interruptions mentioned above. School-level education is unprecedentedly affected, and the teaching-learning activities are decreased to a considerable level. At the beginning of the pandemic, the teaching-learning process in schools stopped due to the lack of competencies in online education and facilities. Sri Lanka had not developed strategies to go with online education utilizing technology. Universities in Sri Lanka also stuck initially and then slowly grew up in online education. However, many problems could be found mainly due to adaptation to change suddenly.

Due to the challenges faced by the academic staff in universities during the pandemic, it is required to investigate and find solutions to improve the teaching-learning process. Many researchers have conducted research in this domain to introduce creative teaching-learning methods to maintain a high-quality teaching-learning process in higher education institutes (HEI). Not only HEIs, but school education also faced big problems to maintain their teaching-learning function. Even though the schools in the least affected areas could be opened from time to time with the health

restrictions, the schools in most-affected areas couldn't be opened from the beginning of the pandemic. Some schools in urban areas started online teaching-learning utilizing digital technologies. However, the online process has been happening slowly.

Digitalization in Education

Digitalization in education has been discussed for several years. Digitalization is usually referred employing digital technologies and information to transform processes[1]. This definition is usually defined related to business processes. However, the idea behind the definition can be applied to education at all levels. During the pandemic, digital technologies have emerged in an unprecedented manner throughout the world. Higher education institutes (HEI) are taking advantage of the technology to maintain HEIs at their very best level. Digital technologies such as smartphones, tablets, laptops, software applications, high-speed internet connections, etc., have played a major role from the beginning of the pandemic. Education systems are not possible to survive in the pandemic without the help of digital technology. Therefore digitalization in education can be discussed with the current practice in the teaching-learning process in HEIs as well as school education. As it is seen, digitalization can be introduced as a pivotal part to enhance the teaching-learning process.

Before the covid-19 pandemic, students engaged in higher education used online education at a low level. With the pandemic, online education has emerged in the education sector in Sri Lanka from primary level to higher education. However, the sudden emergence of online education results in many unexpected outcomes that are difficult to solve at once. Poor internet connectivity, poor literacy of parents/students on digital technologies and their usage, lack of quality digital devices, and economic problems are several issues that have to be considered and addressed when it comes to online education[2].

Benefits of Digitalization in Education

Digital technologies play the most crucial role in this pandemic to carry on the teaching-learning process in HEIs and schools. It can clearly be seen that no education activity can proceed without digital technology with maintaining health restrictions related to the pandemic. Various teaching-learning activities can be performed online with the effective use of technology. It is possible to successfully blend with the traditional higher education system in Sri Lanka, as seen during the pandemic. A learning management system (LMS) is a very good example of digital technology used to manage the teaching-learning activities in HEIs. Not only it is used in the teaching-learning process, but it can be used to perform assessments for students also. The LMS consists of many tools and features that can be used to perform various teaching-learning activities. Zoom is another well-known example of digital technology used everywhere in the education sector. Not

only in the education sector, but online platforms similar to Zoom also facilitate any other personnel, and organizations to continue their day-to-day activities as usual.

Internet, broadband connection, and electronic devices are major components in the digitalization in education. All these technologies have been invented and developed with the help of science and engineering. Utilizing them in the education sector has been widened by the pandemic. 24-hour recourses can be maintained if technology is used sufficiently in education. The students can engage in their learning activities anywhere and anytime conveniently. The lecturers and professors in HEIs are able to deliver their lectures to students at convenient times while it is able to record lectures and upload them to the available online systems.

Connected learning is another strong benefit to the students and lecturers to engage in the activities at any time and get help from others easily. Zoom, Microsoft team, and WhatsApp are several popular tools being used in the pandemic frequently. Lecturers and students get connected and get help from others to complete the assigned task without any time barriers. The use of digital technology often facilitates users to familiarise themselves and master enough during the teaching-learning process. That is a huge benefit for students as well as lecturers to improve their literacy in digital technologies. The students who are well-familiarized with digital technologies are more prone to find good jobs, while some of them can start their own information technology (IT) related businesses.

Utilizing digital technologies for all possible situations promotes sustainable development activities and a clean environment. It is reduced harmful emissions to the environment and makes healthy breathing. Printing lecture notes and other materials can be minimized by using the technology as much as possible. It contributes to increasing resource efficiency and reducing the carbon footprint.

Challenges of Digitalization in Education

Challenges arising with digitalization in education should be resolved to make a quality and pleasant teaching-learning environment since there are many benefits and opportunities that can be observed with the current education environment[3]. Curriculums, pedagogy, assessments in online education, and blended learning should be revisited[4]. Moreover, to conduct laboratory practicals, examinations in online platforms have to be critically discussed and researched for new methods. Considering the fact that the education is not totally based on digital technology for an effective teaching-learning process, possibilities are there to implement blended learning with the help of current online teaching-learning practices.

Students need the self-discipline to maintain an effective learning environment since this is not like physical classroom sessions. Students are able to easily skip online classes without any force. Not only that, there may

not be having good concentration during the lectures, and they may be fed up with engaging activities in the discussions. This badly affects the learning process of students and the teaching process since teachers too are in difficulty having good interaction with students. To avoid this problem software tools, and interesting videos related to the topic can be used, and interactive discussions with students can also be done. During the lecture, the students can be divided into groups and assigned small tasks. Subsequently, discussions with them can be done about the group tasks.

Social interaction, an essential part of the learning process, is missed in the online teaching-learning environment. In a physical classroom, many discussions related to lecture material as well as other topics coming out from the lecture topic are taking place. Other opinions can be seen interactively, which makes an interactive learning environment for students. Many extra-curricular activities are organised in a physical university environment, and they work together to succeed in events. Such activities are almost dropped by the hands of students in this digital learning environment. However, the students can be encouraged to do group works and assignments related to curricular as well as extra-curricular activities. Students can be promoted to use frequently available online tools like WhatsApp, Viber, etc. to get together and to have some interactive sessions to improve their social skills and teamwork.

Many difficulties in technologies that students and teachers possess can be seen through this digitalization in education, especially during the pandemic. Having low-performance electronic devices, and poor internet connections limit access to the online teaching-learning process. The access to the learning materials depends on the technology and performance of the devices that they possess and the internet connection. For instance, if a student works with low-performance smartphones, it isn't easy to engage smoothly learning environment as compared to others. Some software applications don't work properly in poor performance digital devices. In such situations, the students need to go for high-performance electronic devices to continue their learning process smoothly. However, it totally depends on the financial capacity that they have. It is shown here that the infrastructures should be shared among students fairly to maintain a smooth teaching-learning process through digitalization. The aforementioned problems are not only with students, but teachers may struggle. As a result, the teaching process is also difficult to keep on track fruitfully.

Strategies to Overcome the Challenges

Blended learning utilises technology and digital media in the teaching-learning process with the existing traditional classroom activities[5]. Therefore, it can be seen that blended learning connects to digitalization in education. With the help of the pandemic, almost all HEIs in Sri Lanka converted their traditional classroom activities into online-based teaching-learning platforms. Even though some difficulties and inertia to change were

at the beginning, most academic staff, by now, have adapted to the online deliveries and doing some assessments too. They are getting help from digital technologies and software applications on smartphones, tablets, and laptops to maintain quality teaching. Not only the academics but the students also have adapted to online learning. National-level policies can be formed to introduce blended learning based on the current online education to the future. If blended learning is strengthened by high-level authorities, it will be beneficial to the country in similar situations that would be happened in the future. As a result, the education would not collapse drastically, and it would proceed with at least basic teaching-learning activities without total failure[6]. The strategies for implementing blended learning should be added to the strategic plan of the universities too. Information and Communication Technology Centers (ICT) should be strengthened with new technologies that can be applicable to digitalization in education.

When blended learning comes to school-level education, this will be a big challenge to win. The intervention of parents is very high at the primary level of education and considerable at the secondary level too. Together with the government, the education ministry has to be taken action to make the parents and school children aware of technology while providing access to the technology in an affordable manner. The measures have to be discussed at the higher-level authorities to provide infrastructure facilities financially viable to all in the country. Sustainable development goal 4 (SDG 4) introduces equitable quality education and lifelong learning for all7. With proper national-level policies and strategies, Sri Lanka is able to contribute considerably towards the SDG 4 by 2030 providing necessary recourses and facilities equitably at a financially viable level to people. The education ministry and the government can support students by giving loans at a low-interest rate to buy required electronic devices.

Students and teachers should be provided with a strong internet connection that covers the whole country. Internet service providers (ISPs) can form strategies to smoothly maintain the blended learning process. All ISPs can get together to support education in the country and maintain an effective teaching-learning environment for schools and HEIs. National-level policies should be produced and implemented to strengthen the economy of the people in the country. As a result, most people are able to access the technology cheaply and then the education via digitalization which uses the technology strongly. Speed internet connections should be provided to students at a low price for their education.

Teachers should be trained on digitalization in education and the tools they can utilize while teaching and doing assessments. Ministry of education and the universities should lead the training and workshops to familiarize the digital technologies among teachers. Not only the aspects of technology but the attitudes towards using digital technologies, as much as possible, to enhance the teaching-learning process should be inculcated to change the mindset. Changing the attitudes to get support from the

technology is vital to implementing blended learning effectively in the future. The teachers and students should also be trained to digitalise in education and online education to gain the maximum knowledge and skills from their higher education. If the students do not have an understanding of how to manage the technology and time effectively during their education, it would lead to a waste of time for them, and nothing would be gained.

A curriculum revision is needed to perform to be in line with online education and blended learning. The traditional curriculum consists of onsite teaching-learning methods, a lower usage of digital technologies, etc. Since traditional pedagogy uses digital technologies at a low level, it is necessary to rethink changing the pedagogy by using currently available software tools and digital devices. It would be very difficult to have assessments such as online examinations. Holding critical examinations onsite agreed to the blended learning otherwise, the evaluation would not be effective. Some assignments, design classes, and tutorial classes can be conducted online. Therefore, it is better to take time and carefully study the existing curriculum. As a result, the difference between traditional and blended learning would be identified. Then it should be tried to minimize the difference through digitalization in education and increase its effectiveness.

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[1] Micheal, K., Ortrun, G., & Simone, A. (2019), Five common assumptions that prevent digital transformation at higher education institutions, *INTED2019 Proceedings.* 1448-1457.

[2] Rajaguru, S. (2021). Forced and unplanned digital transformation of education in Sri Lanka during Covid-19 crisis: A case study. https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1566364&dswid=-8793

[3] Adedoyin, O.B., & Soykan, E. (2020). Covid-19 pandemic and online learning: the challenges and opportunities, *Interactive Learning Environments.* https://doi.org/10.1080/10494820.2020.1813180

[4] ADB Brief (2020). *Online Learning in Sri Lanka's Higher Education Institutions during the COVID-19 Pandemic*. Asian Development Bank. http://dx.doi.org/10.22617/BRF200260-2

[5] Tayebinik, M., & Puteh, M. (2012). Blended Learning or E-learning?, *International Magazine on Advances in Computer Science and Telecommunications*, *3*(1), 103-110.

[6] Rupasinghe, R.A.H.M., & Haththotuwa, P.M.P.S. (2021). Adapting to online learning in higher education system during the Covid-19 pandemic: A case study of universities in Sri Lanka. *Sri Lanka Journal of Social Sciences and Humanities*, *1*(2), 147-160. https://doi.org/10.4038/sljssh.v1i2.46

[7] United Nation, Sustainable Development, https://sdgs.un.org/topics/education

CHAPTER 10

Effective Teaching Learning Practices in Distance Education and its Evolution through Centuries

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Introduction

Education is an essential element of society. It defines the quality of an individual's life. Education enhances one's knowledge and skills and develops attitude and personality. The educational institutions were first established for the students who can physically participate in the courses and obtain the qualifications. However, the distance education concept was developed, targeting the people who could not join these institutions physically due to various factors such as time, money, and distance.

Distance education, also called distance learning, remote learning, or online learning, is a form of education in which the students can participate their classes from a distance. The various technologies are used to facilitate student-teacher interactions in this mode. Earlier, distance education targeted mostly full-time workers and non-residents or students in remote areas who did not have easy access to educational institutions. However, it has been significantly developed and extensively adopted in the recent past globally and locally due to the pandemic situation. Compared to the 19th and 20th centuries, distance education has gained a substantial improvement today because of progressions in teaching-learning methods and other prominent technologies and inventions. This chapter discusses the evolution of teaching-learning practices of distance education across past centuries and how the teaching-learning process has developed to deliver effective distance education today.

History of Distance Education

The concept of Distance education was initially experimented in 1728 in the USA to attract students for a shorthand course, which was

planned to send lessons via mail weekly. However, the first distance education course was conducted in 1840 in the UK to teach a shorthand system by mailing texts transcribed into shorthand and receiving transcriptions from students in return for correction. Subsequently, major universities in the UK (e.g. University of London) and the USA (e.g. University of Chicago) started distance education programmes. The correspondence schools in the USA, which were mainly targeting the people who could not afford full-time residence at an educational institution[1], grew explosively in the 1890s, from 2500 new students in 1894 to 900,000 total enrolments in 1906[2]. The teaching method was to send out complete textbooks instead of single lessons to educate the student on a specific stream in contrast to the regular technical school or college aiming to educate students broadly. However, these schools were subjected to criticism and regarded as merely business-oriented.

Leading technological development in distance education occurred with the incorporation of radio and television into the teaching process in the 1900s. One of the first major implementations of radio for distance education took place in 1937 in Chicago as the schools were closed for three weeks due to a polio outbreak, and the lessons were broadcasted to the city's elementary school students through radio.

Consequently, many schools, universities, and other educational institutions have included radio for broadcasting lessons and live classroom discussions. Some universities sent study material to the students for a lower tuition fee rate before broadcasting the live classroom discussions that were held in the university. Meanwhile, television was also incorporated into the distance education process, while some educational institutions had their own television channels to telecast the educational programmes.

The Open University, established in the UK in 1969, was the pioneer of using technology to supplement print-based instruction through well-designed courses, which showed great success in distance learning. Later, the UK's Open University model was adopted by many countries and continues until today, incorporating novel technologies for distance learning. Moreover, a significant advancement in distance education occurred with the introduction of computers in the late 1970s and the Internet in the 1980s for the purpose. With the continuous development of new computer-based technologies, information and communication technologies, and their extensive implementation, distance education has reached the pinnacle today.

Current Teaching Practices of Distance Education

Though an earlier definition said that distance learning separated the teacher and the student by 'place' and 'time', the time factor is no longer valid due to the recent developments of interactive platforms. Even though

the teacher could reach the students in live programmes via radio and television platforms, the teachers could not get live feedback from students. Since the demand for distance education practises was substantially increased even in traditional schools and universities as their long-term closures due to the global pandemic, new technologies were rapidly developed to cater to the demand. In this online education system, teachers and learners have more opportunities to interact with each other, ask questions, get feedback, show the paperwork, etc.

Many teaching-learning practices used in traditional classrooms can still be applied and can easily be practised in online education. For example, in online education platforms, some important features promote group discussions, sharing participants' work, and conducting quizzes/ polls to collect participants' thoughts. Moreover, with the help of video conferencing, the teacher can observe the facial expressions of the students, whether they are following the lesson, whether they can understand, etc., which makes online education closer to the physical classroom environment.

In addition, customizable cloud-based learning management platforms, which are widely used in universities, provide the facility to deliver study materials, conduct online quizzes, give assignments with deadlines, etc. which are similar to traditional classroom activities. Furthermore, the development of new mobile applications for effective communication has immensely supported online education as the teachers can easily reach a group of students, arrange meetings, and share materials.

Online education has some advantages over the physical classroom, mainly flexible learning environment as many students attend online classes from their comfort home or any other convenient place and flexible working hours as the classes can be arranged to fit the busy schedules of the students. However, this flexibility can be a disadvantage to some students as they have to be extremely self-motivated. In this context, online teachers should be highly capable of keeping all the students on track by incorporating effective online teaching strategies.

Effective Online Teaching Learning Strategies

With the emergence of the pandemic situation, most of the traditional educational institutions had to migrate their face-to-face teaching to online education, which was new to many teachers. An effective online teacher should "(a) facilitates student learning, (b) aims to feel connected with students in the classroom, (c) shares experiences, (d) is approachable, (e) establishes mutual comfort, and (f) is responsive to students' needs"[3]. To fulfil these demands, an online teacher can combine different teaching strategies and turn online teaching into a more effective and interesting learning experience for the learners. Some of the useful online teaching strategies are discussed below.

Use of New Technology

The key element of online education is technology. It is vital to be familiar with the technology before reaching the students and to be prepared for troubleshooting if any technical faults occur. Most of the companies provide technical support, and therefore the students should be clearly informed where to reach for any technical support.

Moreover, different tools can be combined to deliver effective online education. The online teaching platforms and effective communication tools can be used to keep good contact with the students to reach them anytime, arrange group meetings, submit their work, help on their issues, etc.

Attractive Teaching Material

In a traditional classroom setting, most teachers print their lecture materials in black and white with more text and fewer pictures. As the printing of teaching material is not necessary for online teaching, more colourful and attractive images can be used in the lecture material, especially in presentations.

Providing teaching material in various formats is also vital in online teaching. Video and audio components can be embedded in online presentations in addition to the text and images to get more attention from the students. Furthermore, students can be provided with reading material before the online session. An interactive session can be conducted to work through it and perform a thorough discussion with the teacher and peers as practised in flipped classroom technique.

Group Discussions

Group discussions are essential for brainstorming. They provide a greater diversity of ideas and encourage learners' participation and teamwork. Similar to traditional classrooms, group discussions can be effectively held in the virtual classroom due to the new features of online teaching platforms. Students tend to express their views comfortably in group discussions than in common question and answer sessions.

Moreover, group assignments are supportive for the development of the teamwork skills of the students. Facilitating group discussions through online platforms encourages students to complete their group assignments effectively and successfully as they cannot physically get together and work on the assignments. Problem-based learning is also useful for students to apply subject knowledge to real-world problems in small groups, which helps develop their creativity and critical thinking skills.

Lectures Recordings

The online platforms provide the facility of recording the live lectures. Then the students can be provided with the recordings through

learning management systems for later reference. The availability of lecture recording facilities is highly beneficial to the students. The main advantage is that the students can download and use recordings at their convenience and, if needed, several times. Also, the students who cannot participate in the live lecture still have the opportunity to listen to the talk other than receiving a typed/ printed lecture note.

Second, the quality of teaching is significantly enhanced due to the recording of lectures. The teacher should well prepare for the lecture with attractive lecture material and a clear and well explanatory talk. The recordings are shared among the students, and many students can get the benefit of the lecture. As some of the students may use these recordings at night-time, the teacher should be able to keep them awake. Furthermore, the recording should be well explanatory as in case some students may not have an opportunity to ask for any doubts from the teacher.

In addition, the teacher can use the recordings to identify misinterpretations, mistakes, or the points that can be ambiguous and improve the lecture materials.

Regular Feedback and Reflection on Learning

In a virtual classroom with many students, the teacher will not be able to see the level of understanding of the students or their perception of the lecture. The most effective way to check the student's impressions is to collect regular feedback from students. Formal or informal surveys can be conducted to assess students' attitudes, workload, and challenges during the online classroom. This feedback can be utilised to adjust the content of the talk (for example, use simple language and more explanations, include examples for better understanding, etc.), talking speed, and to improve the content of the lecture materials.

Quizzes better reflect the students' understanding of the subject. Online quizzes can be given regularly to test the students' knowledge and track their active participation and enthusiasm in learning.

Challenges in Online Teaching-Learning

Though the quality of online teaching can be significantly improved by following effective teaching strategies, still there are challenges and limitations. In a traditional classroom, the teacher can identify the students who are unengaged by their behaviour or facial expressions, and then reach the student and have a one-to-one discussion. However, the teachers can hardly identify such passive learners in virtual classrooms. As a solution, small groups can be formed, and the students can be given a group assignment. At the same time, the teacher can visit each group to have informal discussions with each student to check whether they understood the lecture and their progress.

Distractions and the lack of self-motivation are common challenges for students when learning from home. Classrooms are well designed to keep

students active and engaged in learning. But at home, students face difficulties concentrating on learning with noises and other disturbances. The use of digital worksheets during the online session can be beneficial to keep students active and engaged. Interactive questions make it easy to track completion and knowledge of course content. In addition, since the students are isolated at their homes without peers and friends, it is hard to keep them motivated. Regularly providing the students with clear and measurable goals, which are the best source of motivation, can keep their focus on subject matters. Instead of setting one open-ended task, students can be given several tasks with clear time spans, quantifiable outcomes, and due dates.

The other main challenge is the technical issues/ interruptions during online sessions, which might be unavoidable. Teachers should be well equipped with backup plans and, if possible, technical support. Also, teachers should timely communicate the issues to the students to avoid keeping them waiting and hopeless.

Many researchers focus on developing theories for online education to make it more effective. Picciano[4] has provided a comprehensive analysis of available theories and developed an integrated model applicable in online courses. However, he has suggested blended learning, which combines face-to-face and online instruction to minimise limitations in online learning.

Figure 1: Effective Teaching-Learning Strategies in Online Education

Summary

Distance education has been expanding through the centuries, but it has achieved significant development during the last decade, especially during the current global pandemic. With the evolution and implementation

of new technologies and online teaching platforms, teaching-learning strategies are also improved to provide a better learning environment for students. Unlike in the traditional classroom, teachers should incorporate effective methods to keep students active, engaged, and motivated as the students can be easily distracted. Figure 1 in the previous page summarises some important effective teaching-learning strategies that can be adopted in online teaching.

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[1] Gunawardena, C.N., & McIsaac, M.S. (2008). Chapter 14: Distance Education. In Jonassen, D. & Driscoll, M. (Ed.), *Handbook of Research on Educational Communications and Technology*. New York: Routledge.

[2] Clark, J.J. (1906). The Correspondence School—Its Relation to Technical Education and Some of Its Results. *Science, 24*(611): 327-334. https://doi.org/10.1126/science.24.611.327

[3] Frazer, C., Sullivan, D.H., Weatherspoon, D., & Hussey, L. (2017). Faculty perceptions of online teaching effectiveness and indicators of quality. *Nursing Research and Practice*, 2017. https://doi.org/10.1155/2017/9374189

[4] Picciano, A.G. (2021). Chapter 5 Theories and Frameworks for Online Education - Seeking an Integrated Model. In Cifuentes, L. (Ed.), *A Guide to Administering Distance Learning*. Leiden: Koninklijke Brill NV.

CHAPTER 11

Wining the Dilemma of Virtual Teaching

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The pandemic led to disruptive changes in the lives of people where individuals, businesses, and society had to rethink and reshape their routines to ensure the continuity and survival of lives. There is no evidence of any industry that remains unbeaten by the crisis thus with experimenting strategies to cope with the global health crisis of Covid 19.

The education sector can be considered one of the top victims of the pandemic. During the pandemic, many countries are moving from emergency responses towards policies aimed at recovery. Along with reopening schools/universities and resuming education, these also include tailored support to help students adjust to learning in the new normal, and remedial measures to make up lockdowns and health restrictions forced to shut down the educational institutes from the first wave of the pandemic. According to a UNESCO report, 1.6 billion children across 191 countries have been severely impacted by the temporary closure of educational institutions[1]. In this second year of the for lost learning[2].

Eventually, the traditional physical settings of teaching shifted to virtual platforms where the teachers had to continue their academic work from homes. This was a new experience in the first stages of the pandemic, but gradually, it has been adopted.

In a country like Sri Lanka, online learning is not as popular as teaching, and learning always occurs in person. Hence it was quite challenging to shift to online teaching. Some of the reasons are lack of digital literacy, poor IT infrastructure, weak connections, fewer interactions, passive listeners, and many more. But the process has to continue amidst these problems. Thereby the transition to digitalization needs to tackle strategically to gain optimum benefits to the beneficiaries of the education.

Evidence suggests that digital technologies may enable new opportunities for teaching and learning (Chauhan, 2017), and the use of ICT has become increasingly popular in times of pandemics. The COVID-19

situation[1] requires not only knowledge and skills but also confidence regarding success in online teaching[3].

Educators and learning institutions that have embraced this change as an opportunity for growth and exploration are those who have been able to position themselves to best meet the current and future needs of students. While technological progression in education was always going to happen, the pandemic truly sped up the inevitable – demanding both an acceptance of this requirement and adaptation to digital barriers on a timeline much more expedited than it ever would have normally been[4].

Online learning has required teachers to embrace technology in ways that they may have never experienced before, just as it has demanded a new degree of focus and effort from students forced to continue their studies in a remote environment. The opportunities presented in the wake of COVID-19 have led to the establishment of this mode of educational instruction as a viable option for far more students than before, and the acceleration of remote learning will have tremendous benefits for both teachers and students in years to come[4].

The disruption of regular classroom learning and instruction has been one of the key outcomes of our response to the COVID-19 pandemic. Yet, in many respects, the shift to online learning has highlighted what is (and is not) important in the classroom. It was not an easy shift. Although educators had extra time to plan for online and hybrid classes due to a national health emergency, they faced numerous unknowns, including shifting rates of illness, chaotic decision-making, and more. However, by looking at the content and the way of delivering, instead of when and where it takes place, the pandemic has uncovered opportunities that have never been considered previously. To deliver a better teaching experience in this crisis, the educators need to come up with strategies to tackle the issues encountered. Such strategies can be elaborated as follows.

Recognizing the Key Characteristics of Online Platforms

Currently, there are various online platforms to deliver the content. The most popular platforms in Sri Lanka are Zoom and Microsoft teams. Each tool is comprised of its own features to facilitate teaching and learning activities. Such as screen sharing, break-out rooms, management of learning materials, communication support, chat facilities, etc. Teachers must first comprehend the platform's benefits and limits to organize the classes effectively. The functions should be tested before delivering the session to ensure smooth operation.

Adopting Suitable Teaching Methods and Technology

Unlike classroom teaching, which allows students to interact physically in an immersive atmosphere, online lessons appear to confine teachers to a small screen, causing students to get disengaged from the learning content. Students become disengaged after 20-30 minutes of long due to one-way live streaming sessions. As a result, it is better to break up

the session into small time slots and incorporate a variety of activities to keep students engaged. Teachers can have breakout rooms in the Zoom platform to group students and assign activities. Most of the virtual learning platforms are equipped with such tools that support having more interactive sessions.

Teachers should have sound knowledge and practice dealing with virtual platforms in order to avoid hassles during the sessions. The service providers offer training modules and the Youtube is a better source for learning new digital technologies. Accordingly, the teachers can adopt the most suitable features of virtual platforms to deliver a better teaching experience to the students.

Monitoring Students' Engagement and Progress in Lessons

It is really a huge challenge to keep students engaged throughout the session. Unlike the physical classroom, the virtual environment deviates from live face-to-face interaction. Therefore, some strategies needed to adapt in order to tackle students' involvement and improvement over time. Such as evaluating student progress. To keep track of students' progress in class, create assignments, quizzes, presentations and such activities. Make learning sessions more personalized. To encourage student cooperation and conversation, divide the class into small groups and delegate tasks. Recognize and appraise good student behavior. Create personalized badges and give recognition to the high performers in the class. Thereby the others are inspired and motivated to maintain effective involvement during the sessions rather than being passive learners.

Designing Interactive Learning Activities

Debates, group work, projects, case studies, role play, and student presentations are examples of activities that help students learn skills other beyond academic knowledge and make classes more enjoyable. To facilitate group activities, a variety of online collaboration solutions can be used.

Seek and Use Feedback

Course evaluations are typical fare, and they may be quite helpful in determining what's working and what isn't, especially if new to online teaching. However, such criticism will only apply to future courses teach, not the one you're now teaching. Students can use a course Q&A forum to express questions about the course structure, assignments, and grades as they go. It's a real-time evaluation of how things are going. It is important to follow up with students to check how they're doing. In fact, online learning allows students to devote more time to correcting individual assignments. Tailored feedback can be considered as an effective learning tool. To analyze attitudes, workload, and obstacles, teachers can conduct official or informal surveys. At the same time, student feedback forms are viable sources to analyze students' views. As the interaction of students is very low, their feedback is mandatory to improve the teaching and learning activities. Rather than chatting in front of the camera, getting feedback and providing

a quick response is one of the best ways to continue online teaching successfully.

Alternative Communication Channels

Using extra communication channels such as WhatsApp groups to communicate with the students is tactful. The groups will assist in overlooking students' difficulties and respond to them with immediate effect. In the traditional setting, students find a face to face interactions where they could communicate whenever necessary. But the movement to online platforms has distracted this attention, thus alternative communication channels are required to continue the learning activities smoothly.

Student-Centered Design

Student-centered design is carefully considering what students will really have to do to learn, and that is required for successful online learning. If we concentrate just on content, we will wind up with shoddy, low-cost video or multimedia production that will fall short of expectations.

When we concentrate on what students can do, we can provide more virtual learning opportunities, such as watching videos, listening to podcasts, reading a blog, etc. Rather than engaging them more in teaching sessions, these activities will keep them engaged with studies more interesting and enthusiastic manner. Further, this will assist self-learning where learners can explore independently by offering flexible time rather than limiting to long online hours.

Peer Collaboration

An excellent online course that spans several weeks, fosters peer collaboration. Students are not alone when studying at a distance, and they have the ability to engage in formal and informal relationships. It means encouraging collaboration through group projects, introducing peer teaching or peer assessment from the teacher's perspective. In today's atmosphere, collaboration may also aid in achieving a more solid personal balance.

Continues Assessment

In an online education model, continuous assessment is critical. Online quizzes and presentations are widely used assessments in these in these days. Competence performance criteria exhibited through various assessments can be used to measure the performance of students. Such measuring can be challengeable, but the learners should receive an evaluation of progress during the semester/s.

Expect the Unexpected and Remain Flexible

Whether it's a video conference that won't connect or an assignment and/or resource links that aren't working properly, technology will malfunction at some point. Prepare a backup plan for any assignments or assessments that require the use of technology. When it comes to technology failure, be open and honest with students. Create a guideline that outlines

what students should do if they are unable to submit assignments due to technical difficulties, for example. If you wish to save time, don't be afraid to solve technical issues in real-time, such as during synchronous discussions or real-time collaborative activities.

Create and Maintain a Strong Presence

Send a video message to all students to welcome them to online learning and reassuring them. When communicating with students, use video chat rather than standard instant messaging. Get students talking by starting debates on the discussion board and then responding to queries quickly, consistently, and openly. Use emoji and other nonverbal communication methods.

Set Clear Expectations for the Course

Students are also unfamiliar with online learning. Make it evident to students how their grades will be calculated in the future based on formative and summative assessments. Students should also consider how their future work will complement what they've already accomplished. Although teachers may not want to share every element of their lesson plans, every student should be informed of how they are working to develop. Because the interlinking of course material can be lost in an online format, the links between tasks should be stated (and reiterated) so students can see how everything goes together. The development of session plans and lesson plans can be considered as excellent proactive measures in this regard.

Establish a Sense of Comfort and Develop a Community of Learners

Your students expect you to set the tone. Demonstrate interest and enthusiasm for delivering the course in order to reduce fear, worry, and isolation. Humanize yourself by including a welcome video, a biography, images that tell stories about how you remain busy during social isolation, and links to news articles or video clips in your profile. Pose questions that encourage participants to interrogate one another and elicit lively debate. Instead of directing all responses to an individual outside of the community, respond to the community as a whole.

Promote Reflection and Communication Through Quality Asynchronous Discussion

Your strategy should include instant messaging, webcams, blogs, and vlogs. Ask open-ended questions that allow participants to question one another and spark lively discussion. Instead of directing all comments to persons outside the community, reply to the community as a whole. In any situation, reflection and metacognition are critical to learning; however, teachers must be purposeful about assisting students with reflection in an online setting. Learn how to connect with people to create a strong online community and how to create engagement through conversation. You'll discover how to combine synchronous online learning with the asynchronous offline study. The teachers can study about how to develop

an effective student learning environment from home and how to create a structure for students at this challenging time. You'll choose and design various techniques to engage students and hear from some students about their online learning experiences.

Regularly Check Content Resources and Applications

Check all links, materials, modules, and activities on the LMS and other virtual platforms on a regular basis. Disengagement can occur when online material moves or changes. Assist students experiencing trouble navigating course links or handling content that spans multiple web pages. Demonstrate how to navigate to websites that aren't part of the course and keep track of navigation when bouncing from site to site.

A Variety of Multimedia Resources

When it comes to external media, it's equally critical to deliver contents in many formats. A course can be made more interesting by including video, audio, reading, and interactive content. It also improves a course's accessibility. If a certain medium is the only method to engage with the material, students who struggle with it and those with a reading barrier such as dyslexia or a video barrier such as hearing or attention problems, are at a significant disadvantage.

Choosing an Appropriate Timeframe

The length of the sessions really matters due to several concerns. Keeping in mind the need to limit screen time, only 30 - 40 minutes to a maximum direct engagement with any device should be suggested, depending on the age of each cohort. The time a student spends on his or her own on research, inquiry, reflection, practice, and written assignments, which online classes enable and facilitate (together with time made out for meals, breaks, and other activities), is the key to efficient learning in an online model. We must accept innovative teaching methods. We must stop hoping for a return to the traditional classroom and instead concentrate our efforts on the more effective learning opportunities and teaching tactics that are now available to us. We've learned a lot by becoming remote, but virtual learning could help us improve our teaching even more. When we all return to the actual classroom, we can-and should-take the virtual method with us.

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[1] Dawadi, S., Giri, R.A., & Simkhada, P. (2020). Impact of COVID-19 on the education sector in Nepal: Challenges and coping strategies. https://doi.org/10.31124/advance.12344336.v1

[2] Abayasekara, A. & Silva, T. (2021). *Mitigating Sri Lanka's COVID-19 education crisis: Priority areas for action: Talking economies*. https://www.ips.lk/talkingeconomics/2021/06/07/mitigating-srilankas-covid-19-education-crisis-priority-areas-for-action/

[3] König, J., Jäger-Biela, D.J, & Glutsch, N. (2020). Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany. *European Journal of Teacher Education, 43*(4), 608-622. https://doi.org/10.1080/02619768.2020. 1809650

[4] Lee, A., & Hubbs, H., (2021). *How COVID-19 created opportunities for teachers and students: Campus technology*. https://campustechnology.com/articles/2021/05/05/how-covid-19- created-opportunities-for-teachers-and-students.aspx

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