

COVID-19 revolutionising higher education: An educator's viewpoint of the challenges, benefits and the way forward

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ABSTRACT

The global COVID-19 pandemic has radically change the higher education landscape that caused closures of all education institutions in adherence to social distancing. It has forced the education sector to adopt online teaching and learning, and reminded educators that a flexible and robust education system is needed as the future is unpredictable. This paper focuses on educator's viewpoint in adapting and adopting online teaching and learning, highlights the challenges experienced and the ways to overcome it that could serve as a reference for other educators to assimilate in similar circumstances. This paper also explores and discusses the benefit brought by these changes to higher education and the way forward in progressing, revolutionising and sustaining quality online teaching and learning where globalised, borderless and seamless teaching and learning with technology may become "the new normal" in higher education.

Keywords: COVID-19; e-learning; higher education; online learning; distance learning

INTRODUCTION

The coronavirus disease 2019 (COVID-19) is an infectious disease that was first identified in December 2019 in Wuhan, China. As of 28th May 2020, the COVID-19 has resulted in over 5.5 million confirmed cases across 188 countries and territories and over 350,000 deaths (Dong et al., 2020). The global pandemic of COVID-19 has drastic consequences on human behaviours, lifestyle and social interactions (Di Gennaro et al., 2020; Docea et al., 2020). It has resulted in unmatched measures taken by every country to protect its citizen, keeping economies afloat, maintaining the running of a nation and ensuring that education systems is still able to function albeit the pandemic. As of now, with no vaccine or medication, the best approach to prevent the spread of this virus is through preventive measure by practicing social distancing and good hygiene (Adhikari et al., 2020; Bai et al., 2020; Watkins, 2020; WHO, 2020). Some countries have implemented movement restriction of their citizens and closure of all educational institutions in an effort to break the chain of infection (Chinazzi et al., 2020; Ebrahim et al., 2020; WHO, 2020).

The social distancing and closure of all educational institutions has impacted 98.6% of the world's student population and education is severely disrupted for approximately 1.725 billion learners with many of them currently studying remotely in self-isolation (UNESCO, 2020). The ideal model of higher education has remained stagnant and unchallenged over the years and remained largely traditionalist through bricks and mortar infrastructure and face-to-face delivery. The current situation shatters this traditionalist model and rightfully force institutions to rethink their operating models, overall university students and staff recruitment and retention strategies and most importantly how education will be delivered. COVID-19 has created a new normal for higher education by reforming application processes, refining crisis management strategies and inevitably revolutionising the online/distance/remote teaching and learning scenario. (Foronda & Armstrong, 2020)

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Moreover, professional representative bodies have called for the use of technology-based learning to observe social distancing to minimise such contact especially with students (World Federation of Occupational Therapists, 2020). One crucial factor ensuring the success of such transition is the educators. The reform they bring will set the pace of the acceptance, success and sustainability of technologies used to maintain online teaching and learning. Having said that, the COVID-19 sudden outbreak necessitates instant and hasty changes among the educators with no time for them to adapt or prepare. This created chaos and disagreement as there were no consensus or informed policies on how education is to be conducted under such circumstances, hence educators reluctance, technical glitches, lack of experience, resources and support further hampered the transition (Ali, 2020; Bao, 2020).

This paper provides opinion and sharing of experience as educationist in addressing the challenges of online/remote learning and ways to overcome it, the unforeseen benefits and the future progression of this “new normal” way of teaching and learning. The changes it brings will force educators to learn, unlearn and relearn on how teaching and learning is conducted. This reform offers a paradigm shift where globalised, borderless and seamless teaching and learning with technology may become “the new normal” in education (Almarzooq et al., 2020; Daniel, 2020; Huang et al., 2020; Lall & Singh, 2020; Marshall & Wolanskyj-Spinner, 2020; Reich et al., 2020; Stambough et al., 2020; Zhang et al., 2020; Zhou et al., 2020).

CHALLENGES AND OVERCOMING IT

The rapid emergence of COVID-19, has caused a major disruption to the higher education sector and created immense number of issues and challenges for institution, students and educators. The challenges facing by the institution are mainly on the finances, loss of income from international students and providing adequate online learning infrastructures and support to maintain the quality of courses and standard of qualifications (Hubble & Bolton, 2020). From the students’ perspective, the challenges would arise from student finances and scholarships, enrolment, examination, assessments, wet-lab based experiments, continuation of postgraduate studies as well as their motivation, attitude, self-discipline towards online learning and the lack of suitable learning environment and materials (Bao, 2020; Hubble & Bolton, 2020; Quacquarelli Symonds (QS), 2020; Zhang et al., 2020).

This paper will focus on the problems and challenges faced by educators and discuss effective instructional approaches that can be implemented to increase students’ engagement and ownership over their learning and ensure the effectiveness of online education. It is a big task and disruptive shift to move all existing courses online in a very short span of time. Most educators are facing challenges due to the lack of preparation time, inexperience with learning technologies and inadequate support from institution and educational technology teams, inadequate online teaching infrastructure, lack of information and communication between educators and learners (Ali, 2020; Bao, 2020). In addition, the quality of online education in addressing learning outcomes, forms of formative and summative assessments, online continuation of industrial attachment and final year project and student’s receptiveness toward online learning are of grave concern to educators.

From experience, there are several avenues to address these challenges. Some valuable instructional approaches in addressing some of the challenges are summarised in Table 1. These seven approaches mainly explores ways to provide conducive learning environment and improve students’ learning attentiveness and engagement in order to achieve a smooth transition to online learning (Bao, 2020).

Online learning is just not merely recreating face-to-face learning online. It is more about enriching online teaching and learning experiences and creating different opportunities that face-to-face learning may not offer. This includes the understanding on how to mobilise and best engage with students, generating a sense of community and collaboration learning, forming opportunities to work differently and make use of different resources. Another useful resource

that can aid educators in creating online learning and distance learning programmes is the *United Nations Educational, Scientific and Cultural Organization* (UNESCO) ten recommendations to facilitate online and distance learning and limit the disruption of education due to the COVID-19 global pandemic (UNESCO, 2020). UNESCO offers a detailed list of online and distance learning solutions which aim to help parents, educators, educational institutions and administrators to facilitate student learning and provide social care and interaction during this COVID-19 period (Figure 1;). The list includes (UNESCO, 2020):

1. Open educational applications and platforms
2. Applications and platforms to support live-streaming classes
3. Applications to support production of video lessons, Massive Open Online Courses (MOOCs) and asynchronous classes
4. Applications and platforms in low tech environments
5. Assessment tools
6. Applications to support communication between students and teachers

UNESCO International Research and Training Centre for Rural Education (UNESCO INRULED) and Smart Learning Institute of Beijing Normal University (SLIBNU) also released an in-depth publication, ‘Handbook on Facilitating Flexible Learning During Educational Disruption: The Chinese Experience in Maintaining Undisrupted Learning in COVID-19 Outbreak’ that provides guidance in conducting flexible learning (Huang et al., 2020). It encompasses shared core values and strategies as highlighted by others (Bao, 2020; UNESCO, 2020). It consists of seven core elements of effective online education in emergencies including ensuring reliable network infrastructure, adapting user friendly tools, providing interactive suitable digital learning resources, guiding learners to apply effective learning methods that can be used individually or in groups, promoting effective teaching strategies, such as case studies, open debate and discussions, learner-led discovery, experiential learning, etc., providing instant support services for teachers and learners and empowering the partnership between governments, industries, and education institutions (Huang et al., 2020).

It is apparent that the education sector in many countries worldwide are struggling to continue education during the pandemic and this is even more so apparent on the pressure it puts on educators. The challenges are apparent and omnipresent, however educators are able to overcome these challenges by adopting the strategies and approaches aforementioned that best suits their teaching and learning needs.

BENEFITS

The speed of education sector closures and the rapid move to online learning has allowed little time for planning and reflection. While some educators are struggling, the shift in the approach of teaching and learning will lay the foundation to inspire a plethora of innovations and re-align the student-teacher dynamics that would produce mutual benefits to all entities.

Online learning will create endless opportunities as learning is no longer bogged down by traditional semesters, or having to spend hours traveling to and from classes. With the aid of technology, it will allow education institutions and educators the opportunity to redesign teaching and learning and transform university experience that transcends age, demographics, socioeconomic status by offering affordable exciting courses with rich content. This globalised way of teaching and learning will allow both students and educators to communicate and collaborate with other educators and students anywhere in the world. The Malaysian National e-learning Policy (DePAN 2.0) (Ahmed et al., 2010) and Malaysia Education Blueprint 2015–2025 (Higher Education) Shift 9 and Shift 10 (Ministry of Education Malaysia, 2015) as well as the British Council and several other international entities (British Council, 2014; Calderon, 2018; Choudaha & van Rest, 2018; Fullan & Scott, 2014) including the 4th Goal of providing quality education in the United Nation Sustainable

Table 1: Instructional strategies to improve online learning

Strategies	Description
1. Be prepared (preparedness planning and contingency plan)	<ul style="list-style-type: none"> • Prepare content before class and inform students in advance. Preferable time for each online session is about 30 ± 10 minutes. • Check capability of institution online education platform to host large scale users. If not, find alternative online platforms (e.g. Google classroom, Microsoft Teams, Zoom, Webex, etc.). • Check educators' and students' bandwidth to do a live synchronous online session. If bandwidth is low, do asynchronous online learning. • Have information technology/support team on standby in case of technical glitches. • Provide pre-class reading materials to students to ensure engagement and in-depth discussion. • Gauge online learning behaviour characteristics of students.
2. "Bite-sized" information is gold (dividing teaching content into smaller units)	<ul style="list-style-type: none"> • This is to increase student attentiveness and concentration during online learning. • Breakdown the content of the in-class teaching into different topics and adopt a modular teaching method. Ideally each online session address one learning outcome. If learning outcomes are huge, break it into smaller chunks. • Interlay quizzes, discussions, games with the module if possible.
3. Personalise/Humanise (use of "voice" in teaching)	<ul style="list-style-type: none"> • Body language and facial expressions are restricted in online learning • Personalise your online teaching by creating your own videos with voices. Creating animation, digital stories are other options. • Educator should appropriately slow down their speech to allow students to capture key knowledge points. • Use interactive teaching pedagogy where possible.
4. Teamwork makes the dream work (working with teaching assistants, technologist and online support team)	<ul style="list-style-type: none"> • Educators are insufficiently trained or supported to operate online learning platforms. • Educators should communicate with teaching technologist/information technologist support team prior and during each online session and prepare contingency plan • Create 'teaching assistant' between educators. Make them aware of the objectives, knowledge framework, and teaching activities of each session.
5. Empowerment (strengthening students' active learning ability outside of class)	<ul style="list-style-type: none"> • Educator has less control over student engagement and participation during online learning and are more likely to skip classes. • Educator should use various methods to modify students' homework, activities and reading requirements to strengthen students' active learning outside of class.
6. Flexibility (combining online learning and offline self-learning effectively)	<ul style="list-style-type: none"> • Integrate both online learning and offline self-learning. • In the offline self-learning phase, students are given course-specific reading materials both before and after class with activities or assignments. • In the online teaching phase, educator should encourage discussions, group activities for students to exchange their understanding based on their reading. Thus, students will not learn ambiguous, fragmented, and surface knowledge. Instead, they will experience deep learning during the discussion. • Encourage global, community and collaborative learning
7. Reflection (Gauge students' understanding, learning outcome attainment and improvement for next session)	<ul style="list-style-type: none"> • Educator should provide feedback to students' assignments and know the learning cognitive levels of students. • Provide continuous feedback, quizzes and assessment to ensure learning outcomes are achieved. • Allow students to provide suggestions and feedbacks on the learning session. • Reflect on ways to improve the next online learning session.

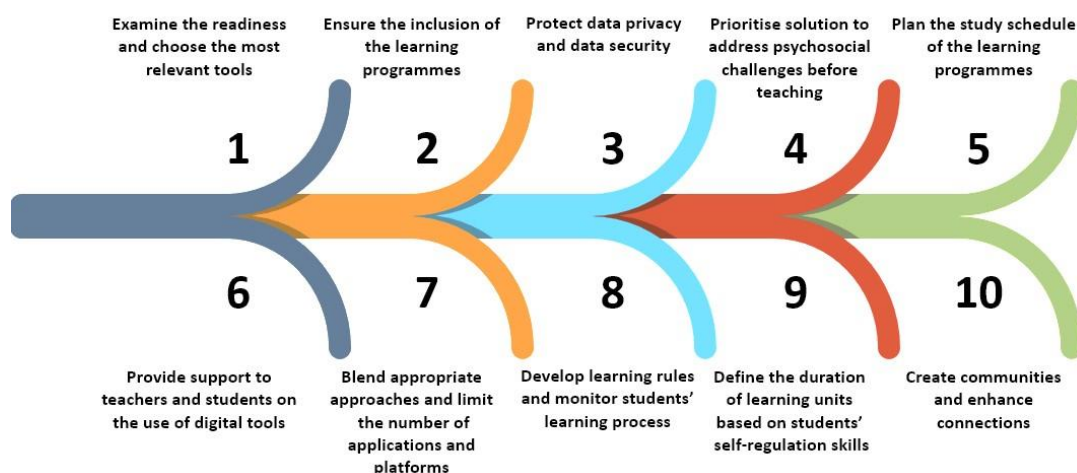


Figure 1: Modified UNESCO 10 recommendations to plan online/distance learning solutions (adapted from UNESCO, 2020).

Sustainable Development Goals (SDGs; United Nations, 2015) encourages the use of information technology and communication as tools for improving the quality of teaching and learning by transforming higher education delivery and “glocalising” (global outreach with a local touch) online learning.

The globalised online learning prove to be beneficial to both higher education sectors and students too. This allows the institutions to offer personalised/customised degree and students have the choice to take certified online courses/modules anywhere in the world. The experiences and learning journey it offers would be valuable to students as organisations these days tend to be agile and flexible; which means the jobs of the future are more digital and technology savvy and more multidisciplinary. Having customisable degree will have real advantages as it offers a wide range of skills, knowledge and experiences that can help in creating future-proof graduates (Garrick et al., 2017).

The COVID-19 pandemic is the change of higher education teaching and learning approaches/strategies that in an instant favours online learning. This forces educators to adopt and adapt technology based online learning. This is an unforeseen advantage to the education sectors as this new way of teaching and learning has indeed indirectly prepared them to cater to the learning need and style of the current and future group of learners. Taking the learning dynamics and preferences of Net-generation learners (digital native learners) into account, the use of technology for teaching and learning does indeed benefit the students and educators (Prater, 2020; Yu, 2020). Students currently in higher education consist mainly of Generation Z and in a couple of years, Generation Alpha will form the majority of students. Among the defining characteristics of Generation Z and Generation Alpha is that they are all about technology, socialising, multi-tasking, interactive, but are less focussed (Cilliers, 2017; Dolot, 2018; Talmon, 2019). At least 75% own smart devices and access them multiple times per hour (Beall, 2016). They expect on-demand, low barrier access to all information (Fong et al., 2019; Preville, 2018) and often selecting in “bite-sized” information. They expect the ability to provide and receive real-time feedback, as well as having access to that provided by their peers (Fong et al., 2019; Stillman & Stillman, 2017). Therefore globalised, interactive and collaborative online learning is the way forward in designing future proof and future ready higher education curricula.

FUTURE PROGRESSION AND GAPS

In addition to transformation of online teaching and learning settings and education delivery modes to meet the requirements of online learning environment, the role of educators must change too. Future education is greatly intertwined with the development of technology. Hence, there is a strong need for all educators to embrace the knowledge of trending technology and to keep abreast with the latest innovations post COVID-19.

The technologies that are paramount for the future progression of online learning are artificial intelligence (AI), big data, machine learning and virtual, augmented and mixed reality (VR/AR/MR), 5th generation technology (5G), cloud based platforms (Goh & Sandars, 2020). These technologies has the capability to become a great equaliser in education and a key differentiator for institutions and educators that embrace it. All administrative, mundane and repetitive jobs will be taken over by these technologies and it will free up time to focus on the actual job of teaching and conducting research. Intelligence tools such as AI will be able to assist educators with basic tasks such as grading assignments, papers or assessments and may be able to identify struggling students through behaviour cues and informs educators to nudge them in the right direction (Goh & Sandars, 2020). This has the potential to maximise educators and students’ success, providing quality education and preparing future-proof students, overcoming one of the biggest limitations of our current traditional and archaic education model.

The Horizon 2020 Teaching and Learning report highlights how emergent technologies has the potential to transform future provision of higher education (Brown et al., 2020). There are two main changes that are foreseen; adaptive learning and extended reality. Adaptive learning

would provide a personalised approach that enables students to access a wide range of learning resources and provide valuable information to educators on students’ performance through the integration of AI and learning analytics (Goh & Sandars, 2020). AI create ‘thinking machine’ that provides learning materials and assessments that can adaptively interact with students through voice and text. On the other hand, learning analytics would analyse information pertaining process and learning outcome and provide feedback to educators to inform the progress and trajectory of both individual and groups of students. Extended reality (XR) enriches student learning experiences by integrating physical and virtual environments (i.e. AR) or total immersive virtual experiences (i.e. VR; (Zweifach & Triola, 2019). The immersive experience mimics real-life experience and is delivered through headsets or mobile devices.

The learning potential offered by these technologies are endless mainly in progressing health sciences education especially Biomedical Science education. The use of technologies for education are highly likely to be vital components of the transformative change and the future biomedical science education. Emergent technologies such as AI and XR may provide solutions to one of the major challenges in health sciences education; conducting wet-lab based practical sessions, final year project and attending industrial attachment. These two aspect are currently overlooked in the quest to transition onto online learning. XR provides opportunities to immerse Biomedical Science students in the curricula, offering deeper, real-life and more vivid learning experiences and extending the learning environment (Brown et al., 2020; Holland et al., 2020; Lalos et al., 2020). Virtual laboratories are currently being developed using XR technology such as XRlab that will supplement traditional learning methods in learning scientific concepts and experimental skills (Budai & Kuczmann, 2018; Lalos et al., 2020; Potkonjak et al., 2016). Virtual Labs, an initiative of Ministry of Human Resource Development, India has created over Virtual Labs consisting of approximately 700 web-enabled experiments were designed for remote-operation and viewing (<http://www.vlab.co.in/>). Yet effective integration of these technologies into the curricula will require careful planning and numerous resources. It safe to say that the best solution to these challenges is to integrate both face-to-face (psychomotor and affective skills) and technology enhanced learning given the current situation. This will humanise the learning process while keeping in par with technology enhanced learning.

As educators, it’s important for us to think about the full long term integration of online teaching and learning into university curricula that emphasises on quality. A study has outlined four critical points that needs immediate attention are (Zhu & Liu, 2020):

1. The need of continuous development of open educational platforms that allow access to high quality learning resources.
2. The need to conduct quantitative and qualitative research and evaluate effectiveness of current models of online teaching and learning, with emphasis on long-term sustainability.
3. The need to develop educator’s capacity for online teaching and professional staff capacity for supporting educators and provide technical support when needed.
4. The need to boost collaboration between universities, local and international organisations and industries, society, and other stakeholders to promote high-quality online teaching and learning.

CONCLUSION

It is highly unlikely that there will be a return to the archaic and impractical approaches to higher education as existed before the COVID-19 pandemic. This crisis has taught us something that we knew all this while; that a good educator cannot be substituted. Technology is paramount and a necessity to support educators in order to have a meaningful and successful interactions and outcomes, but the way those interactions occur in the future will definitely be different from the past.

The forced adaptation to online teaching and learning has been plagued by numerous problems mainly due to improper structure and inadequate preparation. Online teaching and learning provides an avenue for learning to be delivered on demand. However, successful implementation of online teaching and learning requires one to consider proper communication channels and protocols between educators and students, clear instructions and guidance and a fluid, organic and dynamic lesson design. Key areas that needs to be addressed in order to enhance online teaching and learning are;

1. Online capabilities and management
2. Teacher scholarship
3. Content design and development
4. Learner experience
5. Assessment
6. Quality control and assurance

The effectiveness of such approaches are heavily reliant of educators, with the right mind-set readiness, technological proficiency, excellent student support mechanism and future forward thinking. Educators as transformative agents of change are the key determinant in revolutionising higher education.

DISCLOSURES

The author declares no conflicts of interest in this work.

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