Forced into it: Digital Technologies for Teaching and Learning During a Global Pandemic

Francis Ben [1, *]

[1] *Tabor College of Higher Education, Australia*
[*] *Corresponding author. Email: fben@adelaide.tabor.edu.au*

ABSTRACT
The global COVID-19 pandemic of 2020 has exposed the inadequacies of education systems around the world. This brought to the fore once again the use of ICT, particularly digital technologies, as education systems race to shift to remote or online learning due to school closures. Hence, teachers were largely 'forced into it'. This paper provides an overview of the challenges that school teachers could have faced in their dramatic change in teaching practices during the pandemic. The paper will also offer recommendations and considerations for the integration of digital technologies in post-pandemic learning environments.

Keywords: digital technologies, teaching and learning, global pandemic

1. INTRODUCTION

Information and Communication Technology (ICT) has been researched extensively by education researchers in the past two decades to explore their impacts on teaching and learning. In recent years, digital technologies – a classification of ICT – due to their accessibility and portability, have caught the attention of the education community for their potential to transform learning.

Currently, the use of digital technologies has been highlighted, not just in education but also in many facets of life in our society, due to the global novel coronavirus (Covid-19) pandemic. In teaching and learning, the use of digital technologies has enabled continuity in student learning and curriculum delivery despite school lockdowns. However, as they were 'forced into it', the question of teacher capacity and readiness to deliver the curriculum and foster learning during lockdowns has also been raised. Part of the focus of this paper is on school teachers and their teaching practices during a global pandemic. It will discuss some of the major challenges that teachers faced to effectively teach students. Then, the paper will offer recommendations and considerations for the integration of digital technologies in post-pandemic learning environments.

2. DIGITAL TECHNOLOGY AND EDUCATION

It is important to define what digital technology means. In this paper, digital technology may be considered a classification of information and communication technology (ICT). Digital technologies are electronic devices based on computers that generate, store, or process data. Common examples of digital technology are mobile phones, tablets, and the Internet.

The use of digital technology in education is not new. Research studies exploring the impacts of digital technology on education, particularly teaching and learning, have been conducted since the Internet became more widely and readily available to learning institutions and family households. Since then, there have been debates around their effectiveness in transforming teaching and enhancing student learning at any level of schooling. While the Digital Education Revolution is a product of the influence of globalization upon education, it, nonetheless, contains contradictory prohibitions and possibilities that can be utilized to take the use of digital technology beyond that of preparing students for work in a globalized information economy (Buchanan, 2011).

Digital technology has been identified to transform teaching practice by eliminating the disadvantages of didactic ways of teaching (Gon & Rawekar, 2017). Some researchers including Utami et.al (2019) have found that digital technologies in the form of program applications were effective in enhancing learning in certain subject areas. In contrast, there have also been published reports that claim fewer or no promising results. In 2015, the Organization for Economic Co-operation and Development (OECD) reported that they have evidence of digital technology having no impact on improving school outcomes within partner countries. Hence, advocacy towards using digital technologies for effective

teaching and learning has always subjected itself to contention. However, whether there are strong arguments for their effectiveness or not, 2020's global pandemic has forced education systems around the world to adopt digital technologies as an alternative to traditional ways of teaching and learning to keep education running.

3. COVID-19: ITS IMPACTS ESPECIALLY IN EDUCATION

The global COVID-19 pandemic in 2020 has practically changed the world resulting in crumbling economies due to the collapse of some industries, and changes in education. It has dramatically changed the way people live, regardless of nationality, level of education, income, or gender. New ways of life within societies have emerged – social/physical distancing; remote learning; significantly more use of food delivery and online video streaming services (such as Netflix, Stan, Disney+), to name a few.

The way education systems deliver education at all levels has also taken a dramatic change. School lockdowns due to Covid-19 brought significant interruptions in conventional schooling. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO) (2020), around 1.6 billion children from 194 countries were affected by these interruptions. Schools at all levels have quickly shifted to delivering their curriculum using online digital technologies, like how universities are delivering their fully online programs, although the global higher education sector has also been greatly affected (see, Crawford et al., 2020).

School systems from many countries around the world had to act with much urgency in finding viable alternatives to traditional face-to-face classroom delivery of the curriculum. Remote learning alternatives using digital and online means have been established to be viable options so as not to delay children in their school learning progression. Quickly, the use of digital technologies such as video conferencing tools (such as Zoom and MS Teams), learning management systems, and online learning materials has become the new norm in education. Thus, the use of the term 'digital learning' has become the talk of the education community.

Apart from the impact on formal education, the Covid-19 pandemic has also had a major impact on informal education in families. Because education is carried out online by utilizing existing technology, parents have a role to play with their children to study at home. Parents need mentor through non-formal education programs, the main needs of these parents are related to the need for knowledge to assist children to study at home, which is 80.43% (Listyaningrum, et. al, 2020).

4. TEACHING PRACTICES DURING COVID-19 PANDEMIC

During the pandemic, to avoid disruptions, educational institutions had to keep education running so they had to quickly adapt to the situation (Teräs et. al, 2020). As social distancing has become imperative, we have adapted our teaching methods and replaced previously scheduled conferences with virtual curricula. We now conduct morning reports via virtual classroom and invite expert speakers to join by video conference (Jefrey, et. al. 2020).

As well as rationalizing any lack of change in terms of structural barriers and individual deficiencies, the promises of potential educational improvement through technology also coalesce into powerful and persuasive grounds for educational change with technology (Selwyn, 2011). At the center of all this is the use of digital technology. Thus, teachers had to quickly adapt to using online digital technology, whether they liked it or not. In other words, they were 'forced into it!' Teachers had to adapt to new pedagogical concepts and modes of delivery of teaching, for which they may not have been trained. So, this raises more questions relating to digital technologies' utility and effectiveness. How were they implemented by teachers? How prepared are the teachers to shift from face-to-face delivery to a fully online one? What are some of the challenges found?

In other words, Covid-19 has exposed many inadequacies and inequities in our education systems (Schleicher, 2020). It can easily be anticipated that teachers were not able to carry out comfortably their normal day-to-day learning activities in an online environment. It was a huge challenge to maintain established relationships with children due to the loss of instructional time anticipating that children would conscientiously complete all their designated learning activities. It is not only the delivery of the curriculum using a fully online platform that presented significant challenges.

Learners from marginalized groups, who do not have access to digital learning resources or lack the resilience and engagement to learn on their own, are at risk of falling behind (Schleicher, 2020). Shortages or inadequacies in digital technology hindered learning a bit or a lot. A lot of teachers found themselves in a situation where they had to re-design their learning activities to suit children's learning needs. However, they did not feel they had the training to do it effectively. According to the OECD, around 60% of surveyed teachers from partner countries reported a high need for training in the use of ICT/digital technologies. Certainly, this calls for the deployment of enhanced and continuing professional development programs in teaching with online digital technologies.

5. POST COVID-19 CONSIDERATIONS

The Covid-19 pandemic has exposed deficiencies in education systems, one of which is the preparedness of teachers to use fully online delivery of curriculum at any level of schooling. The pandemic has established the importance of online digital technologies in teaching and learning. Digital technology does not just change methods of teaching and learning, it can also elevate the role of teachers from imparting received knowledge, as coaches, as mentors, and as evaluators (Schleicher, 2020). Thus, teachers need school and system-level support / professional development in this area more than ever.

Teachers need to renew their skills regularly to be able to innovate their practices and adapt to rapid changes or transformations. Therefore, teachers and institutions need to prepare and improve competencies to support changes in the education system after the Covid-19 pandemic. As was done in one of the universities in Vietnam, that regarding the e-learning infrastructure, we will prepare for technological advances in our modern global environment and we will also remain resilient to social challenges such as Covid-19 (Pham, H.H, 2020).

This is to ensure that teaching and learning designs employing digital technologies adhere to sound pedagogical practices. Teachers need to avoid what Teräs et. al. (2020) pointed in their paper that some forms of online learning are being criticized for not following pedagogical principles and best practices. In other words, teachers should be thinking of the best pedagogy first and foremost when planning for online delivery of learning. Likewise, support in the home learning environment is important.

The task of the family is very urgent, namely to create an atmosphere in the family of a continuous education process (continues progress) to give birth to the next generation (descendants) who are intelligent and have good character (good character), both in the eyes of parents and society (Jailani, 2014). Parents and carers also need to be in tune with the use of digital technology for their children's learning. Schools should initiate community development involving parents or people whose children under their care.

This is to provide effective guidance if the child is stuck in their learning due to a variety of reasons relating to the technology they are using. Indeed, the success of children's education can be achieved if the three people in charge work together in the process. The three persons in charge are family, school, and community (Listyaningrum, et. al. 2020). The pandemic has elevated the importance of schools and communities working together to maintain our children's well-being and engagement in learning.

Schools should be active in conducting action research activities to continue to develop, refine, and establish effective practices in using digital technology for teaching and learning. Parallel to this, a school should build on the already ongoing efforts to develop the infrastructure for online and remote learning to enhance accessibility and system reliability. Continue to develop the capacity of students and teachers to learn and teach in ways to enhance online learning experience akin to face-to-face delivery. It can be argued that learning is very much a social endeavor. Thus, teachers should emphasize priority in developing and maintaining relationships in online environments. Not only knowledge and skills, but attitudes and character development also need to be developed in the learning process, especially during the pandemic and post-Covid-19 pandemic.

Intania & Sutama (2020) explained that: (1) character education in learning has a role for students to foster good character that can be realized in their social life; and (2) in the pandemic era Covid-19 character education can play a role so that students independently want to learn the material and develop an attitude of responsibility towards the tasks given by the teacher in online learning. If student teachers receive no training in the area of moral development, character, or values education they will be unprepared to teach this area themselves (Revell & Arthur, 2020). This can be achieved with pedagogies that promote connection (teaching and learning through relationships), inclusion (teaching and learning through hospitality), justice (teaching and learning through awareness and reflection), and voice (teaching and learning through dialogue) (see for details about these pedagogies: Price, et. al, 2020).

It should be noted that the considerations presented above are with the presumption that online digital technologies are readily accessible to all teachers and students. For systems that are not readily equipped to provide digital technology accessible to everyone in the education system, they need to reflect on the role of education systems in fostering resilient societies. Besides, reacting efficiently and effectively in the future depends on foresight, readiness, and preparedness. The following set of considerations are modified from the learnings outlined by the EduTech Hub in their ICT Works publication (see https://www.ictworks.org) designed for contexts with limited access to digital technologies:

- Consider class size as of critical importance for safety (dependent on staff availability and classroom size and availability) – this is mainly due to mandates for physical distancing to keep everyone safe. Besides, smaller class sizes could always translate into more effective teaching and learning.
- Use what already exists (or build on from here) – think about how available systems could be put to better use.

- Teachers and students owning a device are not enough for learning – pedagogy takes precedence over technology. Remote/online learning needs sound pedagogy.
- Sometimes paper works just fine – as highlighted above, it is all about effective pedagogy.
- Curate content rather than create it (i.e., re-purpose what already exists) – developing new (digital) content takes time and requires monetary investment. Try to research content that already exists and curate it around learning objectives.
- Hardware needs to be targeted and supported (e.g., no point in using slow internet speeds) – this is mainly addressed by education systems and governments. Targeted provision of hardware to specific groups can be helpful.
- Involve parents and 'home teachers' – as above, it is important to involve parents in maintaining children's well-being and engagement in learning.
- Be careful with incentives and accountability (think of equitability) – teachers need to ensure that assignment grades are accompanied by appropriate feedback. Consider alternative activities for students who have limited access to technology or electricity.
- Stay nimble (be flexible) – although it is always to make detailed plans, they should include a series of reflect-and-adapt moments. Anticipating that things could change based on current events or circumstances is always wise.

6. CONCLUSION

The Covid-19 pandemic has challenged the global society in almost all aspects of life, education included. Teachers around the world have been 'forced' to use online platforms to continue the delivery of the curriculum. However, many teachers struggled to cope with this shift, especially in providing support for students' online learning. Hence, education systems need to ensure that teachers are provided the necessary training and support towards the use of digital technologies, particularly online platforms, to ensure that they can adhere to pedagogical principles and best practices to effectively engage students in learning.

Digital technologies have proven their importance during Covid-19, especially in education. Thus, there is a need to re-think good pedagogies and how digital technologies should be integrated to support students and engage them in their learning. As learning is a social endeavor, it should be considered that there is a change in the 'social' aspect of learning in digital learning environments. Teachers are therefore challenged to think about how they, in an online environment, could maintain connection, inclusion, the facility to maintain awareness and reflection, and dialogue to provide students the learning experiences they would get in traditional face-to-face learning environments. When this is achieved, we can guarantee that teachers will be able to support student's well-being, and sustain their engagement in, and motivation towards, learning-even during times of pandemic or similar disruptions.

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