INSTITUTE FOR ADULT LEARNING SINGAPORE

# COVID-19 Educator Survey

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# Executive Summary

The sudden emergence and rapid spread of COVID-19 throughout the world has transformed work and learning as we know it, with governments worldwide mandating remote work and learning for most of 2020 in response to this global health crisis. This has greatly accelerated the take-up rate and transition to online learning, teaching and training. In Singapore, although many educational institutions implemented online learning systems and protocols in their curriculum after the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003, full online learning is usually only periodically implemented (such as having an e-learning week), and not on such a large scale or for prolonged periods (Chandran, 2011). In general, the take-up rate of online learning outside of such e-learning weeks is low. A previous study suggests that there are a multitude of reasons why online learning was not adopted more widely before 2020, which include lack of funding, as well as lack of qualified and skilled adult educators to design and facilitate effective online learning (Chen, Ramos, Puah, & Cheng, 2020).

The enforced shift to the online mode during the COVID-19 pandemic is thus wholly unprecedented. This COVID-19 Educator Survey aims to understand adult educators' perspectives of the transition to online learning, the current and long-term impact on higher education and the adult training sector, and potential changes to the future of education in Singapore due to the COVID-19 pandemic. To our best knowledge, the COVID-19 Educator Survey is the first nationwide study on online learning during COVID-19 from the adult educators' perspectives in Singapore. Specifically, our survey covers the following areas:

1. Changes in online teaching and training practices
2. Changes in organisations' businesses and plans to go digital
3. Impact on educators and the TAE labour market
4. Impact on learning and learner wellness
5. Impact on educational organisations, higher education/training, and the future of education
6. Challenges faced and the support needed by adult educators
7. Learning participation and professional development received and needed by adult educators

The key findings from our study are as summarised below.

<u>Current and short-term impacts</u>

1. Adult educators were generally confident and positive about the move to online learning, assessment and training. However, open-ended responses from the survey revealed that short-term trends during the lockdown also held negative sentiments, due to the disruptive nature of the sudden change that uncovered a multitude of shortcomings and challenges in online learning.
2. A majority of respondents (48%) felt positively about the impact of the move to online learning on their mental well-being. However, a significant proportion (~40%) felt negatively about the move to online learning.
3. A majority of respondents (66%) felt secure about the likelihood of keeping their jobs in the next 12 months. Despite this, a majority of respondents (85.6%) still saw the need to significantly improve their knowledge and skills in online learning to remain employable in adult learning and higher education.

4. Responses were mixed with regard to the impact of online learning on their learners' engagement with learning, with a higher proportion of respondents giving a negative response.
5. A large number of respondents reported an increased workload to convert face-to-face content to be compatible with the new online format, as well as creating new content and sourcing for external content. This suggests that many of the courses were internally developed or converted by educators themselves, which presents opportunities for the development of learning technologies as learning institutes look to ensure the operational efficacy of their digital infrastructures and capacity to deliver online.

6. Training providers and higher education institutions also reported direct financial implications in the open-ended answers. On the one hand, organisations who had existing online provisions prior to the pandemic saw the move to online as cost-saving, in terms of rental and utility costs. On the other hand, organisations that were pushed to digitalise viewed the changes as costly, as they were already facing financial difficulties from the pandemic. Many felt that there was a high financial investment needed to move their courses online.
7. Other challenges expressed by respondents included a lack of mental readiness or resistance to change in mindsets of having to move online, as well as a loss of the social aspects of learning and work.
8. However, while bonding and rapport were difficult to establish with the learners and among learners, it did not necessarily mean totally losing a sense of community within the adult educators themselves. Many found that they were facing the same issues and overcoming the same obstacles as their peers, and so built a community of practice to share ideas and successes, and to support and learn from one another.
9. A majority of respondents (>90%) indicated that their organisation would replace a majority or all of their face-to-face programmes with online offerings in the short term (i.e. to mid 2021).

<u>Long-term impacts</u>

1. A majority of respondents (71%) believed that online learning would continue to be the way of the future, and would be the new normal. However, there were concerns with regard to the quality of teaching and learning, especially in the areas of competency of educators in online learning design and development, pedagogical and technical support, and the level of engagement and connection.
2. A majority of respondents also felt that learning exclusively online would be damaging to their learners' mental (47%), physical (47%), and social (64%) health, as well as the learning outcomes of their learners as compared to face-to-face (56%) and blended learning (59%%).
3. A majority of respondents (80%) felt that the move to online learning would help their students develop digital skills, and also the knowledge and skills needed for employment (60%).
4. A majority of respondents (>90%) indicated that their organisation would replace a majority or all of their face-to-face programmes with online offerings in the short term (i.e. to mid 2021).

Unlike educators from other countries, our respondents from Singapore tended to be more positive in rating the impact of this online transition. For many, this transition to online learning, teaching, and assessment may not only be a temporary response to the crisis, but could also lead to a shift to the **permanent digitalisation** of higher education and adult training. Ostensibly, far from closing down access to higher education and adult training, the COVID-19 pandemic has resulted in the potential for

increased and more flexible participation in learning. Overall, COVID-19 is seen as presenting an opportunity for paradigm-change which educational institutions and educators should grasp.

The current study captures a snapshot of attitudes and experiences of educators shifting to online modes. It provides a glimpse into the future of adult learning in the post-COVID era for future studies to uncover more effective strategies for online engagement as well as to ensure good mental and emotional health of both learners and adult educators. The challenges and experiences of adult educators in Singapore were also found in other parts of the world while converting to online learning during the pandemic (European Centre for the Development of Vocational Training, 2020; ILO-UNESCO-WBG, 2020; Marinoni et al., 2020). It is therefore hoped that the lessons learned from this current study could provide useful references to a wider community in higher education and adult training beyond Singapore to emerge stronger from the pandemic.

# 1. Background

The novel coronavirus (COVID-19) emerged in late 2019 and has spread rapidly throughout the world. As of April 2021, 219 countries and territories have reported an estimated 131 million confirmed cases and 2.8 million deaths due to COVID-19.[1] As a direct result, governments worldwide have had to institute lockdown measures in order to contain the spread of the virus. Such measures include the reduction of air and sea travel, enforcement of social distancing, closing down of public entertainment and retail venues, as well as the closure of schools. On this last point, 94% of the world's learner population have been affected by closures of learning institutes and spaces (United Nations, 2020). As a result, many learning institutes have moved onto online platforms to continue teaching and learning (ILO-UNESCO-WBG, 2020; Marinoni, Land & Jensen, 2020; QS, 2020).

Of course, online learning has been around long before the COVID-19 pandemic. Online learning came into existence with the introduction of the computer and the Internet in the late 20th century, and the confluence of multiple factors such as globalisation, advancement in new technologies, the global adoption of the Internet and the intensifying demand for a workforce continually trained for a rapidly changing digital economy (Palvia et al., 2018) has long set the stage and trajectory for online learning to become commonplace. Back in 2012, 69% of academic leaders indicated that online learning was a critical part of their long-term strategy for their institutions (Kentnor, 2015). Singapore has been no exception, having incorporated online learning into the curriculum at all education levels, and even in the workplace, since the early 2000s (IMDA, 2001). Now online learning has made its way into many education systems around the world. For the purposes of this report, "online learning" is used in its broad sense to include teaching and learning that take place over the Internet with the use of learning technologies. Examples of these learning technologies include web-based tools (e.g. Learning Management System (LMS), video conferencing tools (e.g. Zoom), simulations/virtual reality technologies and social networking platforms (Singh & Thurman, 2019).

Many educational institutes have seen a rise in the number of adult learners due to the growing importance of lifelong learning. As online learning allows for more flexibility in catering to learners' needs, it has become a popular learning mode that is well-received by adult learners (Chong, Ding, and Kong, 2015). Even before the pandemic, in the United States (US) alone, 31.6% (6,359,151) of the learners were taking at least one distance education course, which was a 5.6% increase from 2015 to 2016 (Seaman, Allen & Seaman, 2018). Investments in education technology worldwide increased from USD$16.34 billion to USD$18.66 billion in 2019 (METAARI, 2020) and it was projected that the global online education market would reach a whopping $350 billion by 2025 (Research and Markets, 2019). With the increase in the uptake of online delivery across learning institutions worldwide amidst the COVID-19 pandemic, it is expected that the total investments in online learning and the global online educational market will see an even larger increase.

[1] Source from https://covid19.who.int/

The COVID-19 pandemic has definitely accelerated the take-up and transition to online learning, teaching and training. According to the Organisation for Economic Co-operation and Development (OECD), searches for terms such as online learning, e-learning, and Massive Online Open Courses (MOOCs) increased up to *fourfold* between March and early April 2020, as strict lockdown measures were implemented in most OECD countries (OECD, 2020a). However, does the cultural resistance among educators towards online learning still persist (Kentnor, 2015; Selwyn, 2016) in the new context of COVID-19? How are adult educators coping with this move to online learning, teaching and training? What is the impact on higher education and adult learning? How will it impact TAE (Training and Adult Education) jobs and skills? It is timely that we attend to these important questions and conduct this study to capture the sentiments of adult educators in Singapore amidst the rapid transition to online teaching and training.

## 1.1. COVID-19 as a catalyst for transition to online learning and training

First of all, it is useful to briefly outline the COVID-19 pandemic situation in Singapore in order to provide the context behind our research. As of March 2021, there have been over 60,000 cases of COVID-19 in Singapore, though a majority of cases have recovered and been discharged from hospital. The COVID-19 pandemic in Singapore can largely be split into 4 phases:

1. Initial outbreak and dealing with imported cases
2. Local infections and community spread
3. Foreign worker dormitory spread
4. Increase in community and imported cases

In the first phase beginning on 7th February 2020, the Disease Outbreak Response System (DOSCORN) level was raised from yellow to orange as the increase in imported cases led to clusters of local transmissions.

Furthermore, with the number of global cases rising exponentially, overseas Singaporeans were encouraged to return to Singapore. This led to an increase in the number of imported and thereafter local cases. Ultimately, this culminated in the government instituting a nationwide "circuit breaker", a term used to describe a partial lockdown. The circuit breaker entailed the following: (1) stoppage of all dine-in services of F&B outlets, with only takeaway allowed, and closure of all non-essential retail outlets; (2) closure of all non-essential workplaces, with only essential businesses or companies that were not able to allow all their employees to work from home allowed to remain open; (3) closure of all schools and a shift to home-based learning; and (4) closure of all recreation venues, attractions and places of worship.

In the third phase of the outbreak, there was a sharp spike in cases from foreign worker dormitories. The government instituted a series of measures such as designating affected dormitories as isolation areas, and work stoppage orders for all foreign workers living in dormitories.

In the current phase of the outbreak, there has been sporadic outbreaks of community cases, as well as imported cases, as the government loosened both incoming and outgoing travel restrictions.

With the closure of many businesses and enterprises, the education sector has not been spared, and has faced tremendous challenges. All schools in Singapore were shut down from 8th April to 4th May 2020,

with all learning and training shifting to online home-based learning. All in-person classroom lessons in higher education institutes (including the polytechnics and autonomous universities) were replaced with online learning. Furthermore, all training providers were not allowed to offer any in-person training, with all Continuing Education and Training (CET) to be conducted via virtual classrooms or other forms of e-learning.

Thus, the major immediate impact on the higher education and TAE sector has been the compulsory shift to total online learning, and the rapid uptake and adoption of digital technologies needed to support this shift (The Head Foundation, 2020). While online learning is not something new, it had mainly been used alongside traditional forms of synchronous, physical teaching and learning, but not as a complete replacement as it was during the circuit breaker. In Singapore, the government has been promoting online or blended learning in both the higher education and TAE sectors, e.g. the iN.LEARN 2020 (SkillsFuture, n.d.-a) initiative aimed to push the adoption of learning technologies in the TAE sector, and the TAE Skills Framework (SkillsFuture, n.d.-b) which highlighted the trend for the sector to adopt blended learning. A nationwide survey conducted back in 2018 found that the majority of adult educators (77%) had reported using learning technology in their TAE-related work (Chen, Chia, & Bi, 2020).

Additionally, although many educational institutions have implemented online learning systems and protocols in their curriculum after the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003, full online learning is usually only periodically implemented (such as having an e-learning week), and not on such a large scale or for prolonged periods (Chandran, 2011), as compared to the enforced shift to online during the COVID-19 pandemic. Our previous study suggests that there are a multitude of reasons why online learning has not been taken more seriously, which include a lack of funding, as well as a lack of qualified and skilled adult educators to design and facilitate effective online learning (Chen, Ramos, Puah, & Cheng, 2020). Research has also shown that educational institutes and training providers have faced challenges in transitioning to an exclusively digital interface for their provision of teaching and learning as a result of COVID-19 and that there are regional differences in the extent of their challenges (ILO-UNESCO-WBG, 2020; Cedefop, 2020; OECD, 2020a).

However, little is known about how adult educators and their training organisations are coping with the new challenges in Singapore. While acknowledging that the COVID-19 pandemic has caused major disruption in education systems and in people's lives, we also recognize an opportunity to rethink how technology can better contribute to learning. It is therefore timely to understand what changes are happening in the TAE sector and how they may impact learning and training. This study aims to understand educators' perspectives on the impact of online learning on adult educators and learners, the current and long-term impact on higher education and TAE sector, and potential changes to the future of education in Singapore due to the COVID-19 pandemic. To our best knowledge, the COVID-19 Educator Survey is the first nationwide study on online learning during COVID-19 from the educators' perspective in Singapore.

It is hoped that the results of our study can be used to support the implementation and rollout of the TAE Industry Digitalisation Plan (TAE IDP), jointly developed by Infocomm Media Development Authority (IMDA), in partnership with SkillsFuture Singapore in 2020. The TAE IDP is aligned to the existing TAE Industry Transformation Map (ITM), and was created to help Small and Medium Enterprises (SMEs) in the TAE sector digitalise their organisations in order to unlock operational efficiencies, streamline routine processes, and glean insights from data (IMDA, 2020; SSG-WSG, 2020). The TAE IDP will guide SMEs on digital solutions and training required for business growth, and to provide a roadmap for the three

stages of digital readiness and growth. This initiative is expected to support the TAE community to leapfrog the present and develop into a new, more permanent state for online learning and training.

Singapore places significant emphasis on education and continuing education and training to support skills development for a resilient and future-ready workforce that is both relevant and competitive in a rapidly changing global economy. This vision of building up a culture of lifelong learning among Singaporeans is tasked under the TAE sector where adult educators and training providers operate in. This study will support this vision as it provides a snapshot of adult educators' sentiments on the move towards online learning and training during the COVID-19 period, which can be compared with our TAE Landscape 1 study (conducted in 2018 as a pre-COVID-19 baseline) to track the changes and progress as laid out in the TAE IDP. For example, the TAE landscape study (Chen et al., 2020) found that only about a quarter of the training providers had used blended learning in their training programmes. Furthermore, for those who had not started their digital journey, they explained that they did not see a strong market demand for technology-enabled learning then.

However, the respondents also believed that the trend would move more towards the digital and top areas for improvement were digital literacy skills and tech-enabled learning. With the compulsory shift to online learning in Singapore due to the COVID-19 measures, there could be changes in the attitudes of adult educators as well as the training providers towards online learning and the way they approach online learning. The current study will be able to show how the COVID-19 pandemic has impacted and changed the TAE sector in Singapore, as well as allow us to understand the potential long-term impact and changes to the future of education. The findings are also expected to uncover the challenges experienced by the adult educators and support needed during the COVID-19 pandemic, which will provide useful information for policy makers to better plan interventions and allocate resources to shape the post-COVID-19 landscape for the TAE sector.

# 2. Literature Review

In this section, we review relevant literature on online learning and teaching. We start with the affordances of online learning, mainly its flexibility, accessibility and affordability. We then review the impact of COVID-19 on learning and training in other countries, as well as the challenges faced and support needed by learners, educators, and training organisations to tide over the pandemic for better online teaching and training.

## 2.1. Affordances of online learning

Firstly, online learning allows learners to be flexible in their learning (Fleck, 2012; Thompson, Kass & Fulk, 2012; Conrad & Openo, 2018). Two key categories of tools that can be used for online learning are synchronous and asynchronous tools. When educators use synchronous tools, such as video conferencing platforms like Zoom, there is a set time for the learners to show up for real-time exchange, similar to how face-to-face learning takes place (Conrad & Openo, 2018). The main difference between online synchronous learning and face-to-face learning is that online learning can take place remotely, without the need to be at the same physical location. Asynchronous online learning similarly does not require learners to be at the same physical location, but unlike synchronous learning, it does not require real-time performance or attendance (Conrad & Openo, 2018). Some examples of asynchronous tools that are used for learning are discussion boards, quizzes and communication platforms such as email. Synchronous online lessons can also be used asynchronously, through a recording of the live lesson that is then uploaded onto the institute's Learning Management System (LMS). With the provision of asynchronous online learning, learners are able to choose whenever they want to access their learning materials (Thompson, Klass, & Fulk, 2012).

The flexibility offered by online learning is particularly valued by adult learners. As compared to school learners, adult learners often hold greater responsibilities outside of studying, such as work and family duties. As finding a balance between their family, work and other responsibilities has been a major challenge for adult learners (Selwyn, 2011, as cited in Kara, Erdoğdu, Kokoç, Cagiltay, 2019; Yasmin, 2013, as cited in Kara, Erdoğdu, Kokoç, Cagiltay, 2019), the flexibility offered by synchronous and asynchronous online learning provides a great avenue for adult learners to pursue further education and training without compromising their other commitments (Thompson et al., 2012).

Moreover, online learning allows for greater accessibility as it utilises internet- and web-based tools to facilitate learning. According to the Digital 2020 reports published by Kemp (2020), more than 4.5 billion people are currently using the internet, which is a 7% increase from the number reported in 2019.

Additionally, the ease of access of online learning through mobile devices could provide more opportunities for more individuals to gain access to education worldwide. In 2018, it was reported that close to 300 million people connected to mobile internet for the first time (Bahia & Delaporte, 2019) – with mobile devices being a common device owned by so many (compared to desktops), even more learners will be able to access learning easily and education providers will have a greater market (Fleck, 2012). In this way, the growth in mobile internet adoption will help drive digital inclusion, especially for people who live in low- and middle-income countries (Bahia & Delaporte, 2019). It was found in the Online College Students 2019 survey that 56% of the online college learners had used a tablet or smartphone to

complete part of their course-related activities (Aslanian, Clinefelter & Magda, 2019). In another study, there was a drastic increase in the number of learners that use their mobile devices for learning purposes, from 32 percent in 2012 to 69 percent in 2016 (Seilhamer, Chen, Baeur, Salter and Bennett, 2018).

Online learning also holds the potential for greater opportunities to better facilitate adult learning and higher education. Adult learners are allowed to have greater freedom in the sense that they are able to create the ambience that suits them the most for learning, as compared to how children are usually taught in the classroom (Conrad & Openo, 2018). By allowing learners opportunity to learn in the way that best suits them, learners are able to feel more comfortable and self-directed, which is a crucial competency for encouraging lifelong learning (Mukhtar, Javed, Arooj, & Sethi, 2020).

The opportunities that are provided through online learning allows learners and educators to save costs, making the pursuit of further education more affordable. According to the National Center for Education Statistics (NCES) (2019), the cost of four-year college programmes in the US in 2017-2018 had risen more than twice the cost in 1985-1986, from roughly USD$12,000 to about USD$27,000. With such courses rising in cost, many learners may be looking for an alternative way to afford further education and training. Since online learning does not require learners to travel to a physical campus, there is less travelling and usage of other resources (Mukhtar et al., 2020). Moreover, learners who are otherwise employed do not necessarily need to take time off from work to undergo online learning and training and sacrifice income-earning opportunities (Protsiv, Rosales-Klintz, Bwanga, Zwarenstein & Atkins, 2016).

However, there are also others who believe that online learning and face-to-face learning do not vary drastically in cost, or that online learning could be even more expensive than face-to-face learning. For one, it can be costly for individuals who do not already own the necessary gadgets to make new purchases, which can be burdensome in the current stressful COVID-19 situation (Mukhtar et al., 2020). For educational institutions, there could be additional costs they have to bear for online provisions, such as for online instruction and additional support services (Legon, Garrett & Fredricksen, 2020).

With the conflicting views on whether online learning is more affordable or costlier, this study will find out how educators perceive the costs of moving to online learning in Singapore, since most learning institutes have shifted their operations online during the pandemic.

## 2.2. Impact of online learning on physical and mental health

Despite all the affordances of online learning, replacing physical in-class time with online lectures and discussions may have an adverse effect on learner's health (OECD, 2020). As adult learners tend to have multiple responsibilities outside of the classroom (work, family responsibilities, etc), the always-on connected nature of online learning may lead to increased stress, due to conflicting commitments or underestimating the amount of time needed to complete online coursework (Thompson and Porto, 2014). Most of the literature on work-life balance tends to view the workplace and home as separate entities. However, as online learning has increasingly blurred the lines between the workplace and home, the boundaries between them are becoming more easily breached and more permeable (Berry and Hughes, 2019).

Even before the enforced move to online learning, studies had found that online learning had a negative association with educator well-being. For example, Smith, Brashen, Minor & Anthony (2015) found that 67% of the sampled educators felt that the online environment had the greatest impact on their stress levels,

as compared to 32% who felt stress from face-to-face environments. Among the different factors mentioned, technological issues, large class sizes, and time constraints were the most significant stressors in online learning. More than half of the educators mentioned that their performance in the online environment was affected by their stress levels. Some of the symptoms that came as a by-product of stress were sleep disturbances, impatience, feeling overwhelmed and having reduced work quality (Smith, Brashen, Minor & Anthony, 2015). Findings by Dolan (2011) show that adjunct online educators were unhappy about aspects such as compensation, sense of disconnection from the institution, lack of belongingness, and feeling undervalued. In the case of the pandemic, one can only imagine how the combinations of all the different factors would affect the well-being of educators.

Additionally, there is also the pressure that comes with being an educator in the digital space. Educators often find it challenging to deliver online learning as they are expected to be an expert with learning technologies to support the development of learning materials, activities and assessment methods for the online learning environment (Baran & Correia, 2014). During the COVID-19 pandemic, the sudden shift from conventional face-to-face learning to online learning may have made it harder for educators to cope with the challenges of online learning and also manage their own stress levels. Verma and Priyamnada (2020) reported that 61% of the educators were distressed from the increased workload and lack of necessary technological equipment to conduct online learning.

It is important to understand how educators are going through the changes and what challenges they are facing. In this study, we will look into how online learning has impacted educators' and learners' health and mental wellness in Singapore, especially during the ongoing COVID-19 pandemic.

## 2.3. Impact of online learning on learning outcomes

Previous literature has shown that compared to face-to-face learning, online learning resulted in better performance scores (Sendra-Portero, Torales-Chaparro, Ruiz-Gomez & Martinez-Morillo, 2013; Assadi et al., 2015), learning retention (Subramanian, Timberlake, Mittakanti, Lara & Brandt, 2012), engagement (Chen et al., 2010; Dumford & Miller, 2018), and likelihood to engage in deep approaches of learning (Chen et al., 2010; Paulsen & McCormick, 2020). Additionally, there were studies which compared blended learning (i.e. online learning integrated with face-to-face learning) with full face-to-face learning and found better performance scores for the blended learning groups (López-Pérez, Pérez-López and Rodríguez-Ariza, 2011; Kiviniemi, 2014; Baragash & Al-Samarraie, 2018).

On the other hand, other studies suggest that there is no significant difference in learning outcomes between online learning and face-to-face learning. More specifically, there was no significant difference in learner grades (Driscoll, Jicha, Hunt, Tichavsky, & Thompson, 2012; Thompson et al., 2012; Cavanaugh & Jacquemin, 2015; Francescucci and Rohani, 2019), satisfaction (Driscoll et al., 2012; Thompson et al., 2012), performance (Heiman et al., 2012), and knowledge gains (Holmes & Reid, 2017). The National Research Center for Distance Education and Technological Advancement (DETA) owns a database to expand the literature on learning outcomes between alternate modes of education delivery (DETA, n.d.), and a majority of the studies included in this database supports the notion that there is no significant difference between the alternate modes of education delivery, which includes online learning.

In terms of evaluation of learning outcomes, while there has been concern over the academic integrity of online learning and assessment (Mukthar et al., 2020), one particular study by Stack (2015) attempted to control the testing environment for the learners' final examination by conducting it on campus for both

online and face-to-face learners. The findings showed that there was no significant difference in the final exam scores between online learners and face-to-face learners.

The contrasting perspectives towards how online learning impacts learning outcomes show the importance of further research. The paucity of such research in adult learning and training allows this study to make a timely contribution to literature. We will try to understand the impact of the compulsory shift to online learning and training due to the COVID-19 measures in the higher education and TAE sectors in Singapore.

## 2.4. Brief review of studies on COVID-19 and online learning

According to the United Nations (2020), approximately 1.6 billion learners in more than 190 countries have been affected by COVID-19. Additionally, the closures of learning institutions and spaces have affected 94% of the world's learner population, with the number going up to 99% in low and lower-middle income countries. Efforts have been made to understand the impact of such measures. Some have covered the overall impact of COVID-19 on learners and educators in general, while others specifically looked into the impact on higher education and vocational education and training.

The abrupt shift to online learning from face-to-face learning can be a difficult process, and sometimes even unrealistic, as the shift requires "careful planning, preparation, adaptation and appropriate learning space" (ILO-UNESCO-WBG, 2020). Table 1 below summarizes the key challenges that were faced during the COVID-19 pandemic (Cedefop, 2020; ILO-UNESCO-WBG, 2020; Kim, Krishnan, Law and Rounsaville, 2020; Marinoni, Land & Jensen, 2020; Morris, Hastings, Wilson, Mitchell, Ramia & Overgaard, 2020; Mukhtar et al., 2020; OECD, 2020a).

### Table 1. Key challenges faced during the COVID-19 pandemic

| Key challenges | |
|---|---|
| 1. Accessibility to learning technologies | ● No access to the internet and learning technologies<br>● Living in areas with low internet penetration |
| 2. Digital competences and pedagogical skills | ● Do not know how to use up-to-date learning technologies<br>● Different pedagogy is needed for distance/online learning as compared to face-to-face learning |
| 3. Financial issues | ● Many learners reported that they had lost their jobs or had reduced working hours, hence had a loss of income<br>● Difficulty paying for college and other expenses (e.g. accommodations for international learners)<br>● Costly to upgrade technological devices and internet access in order to conduct and receive teaching and training from home |
| 4. Requirements of specific fields of study/training/courses | ● Reliance on specific technical equipment (e.g. laboratories, creative art equipment) for some courses<br>● Hands-on training programmes were interrupted as they cannot be delivered online<br>● Educators were only able to teach and assess knowledge components |

| | |
|---|---|
| 5. Mental well-being | ● Increase in stress as educators are forced to meet new demands and overcome new challenges<br>● Increased discomfort due to complexity in teaching and longer working hours |
| 6. Learner engagement | ● Decreased learner engagement and motivation<br>● Lack of learner feedback during online lectures<br>● Availability of online recordings of lectures and lessons leads to decreased attention from some learners |

With education moving to online platforms due to COVID-19, there is serious concern for learners who do not have access to the internet or digital technologies (ILO-UNESCO-WBG, 2020; Marinoni, Land and Jensen, 2020). With the financial impact of COVID-19 on individuals, fewer people would be able to afford purchasing the latest learning technologies or even continue their pursuit of higher education (Kim, Krishnan, Law, & Rounsaville, 2020; Morris et al., 2020). The shift to online learning during the COVID-19 pandemic may widen the existing gaps and make the segregation between different social classes and income levels more obvious (Pearson, 2020). Similarly, a report by ILO-UNESCO-WBG found that there was a difference in the most common tools used between countries with varying income levels (ILO-UNESCO-WBG, 2020). Respondents who stayed in lower income countries reported using offline learning tools (e.g. written resources, television) while those staying in higher income countries reported more often using virtual learning platforms, communication applications and video conferencing tools. How these learning technologies and digital applications are used will result in various learning experiences and outcomes.

It is also essential that learners and educators are capable of using these learning technologies effectively and efficiently. However, it was largely pointed out that many learning institutions faced the challenge of the lack of digital competences and pedagogical skills (Cedefop, 2020; ILO-UNESCO-WBG, 2020; Marinoni, Land, & Jensen, 2020). Without the necessary digital skills, learners are unable to acquire knowledge as it would hinder their access to learning resources and education. More worryingly, educators who are not equipped with digital skills face difficulties designing and delivering online teaching (Cedefop, 2020) and there was a reported difference between the level of preparedness or readiness among different educators (Marinoni et al., 2020). Some institutes of higher learning mentioned that they did not necessarily have a management structure to help them develop teaching competences and digital skills, hence they had resorted to “learning by doing” approaches or try to imitate how they usually conduct face-to-face learning in the online environment (Marinoni et al., 2020). While conducting education through online means may not be of the same quality as face-to-face education due to the unpreparedness for the shift, it was reported to still be better than providing no education at all (Marinoni et al., 2020.).

Support is needed to help learning institutions and training organisations, educators, and learners in this transition to online learning and training. Table 2 summarizes the common support given or recommendations made to counter the challenges that were faced during the COVID-19 pandemic (Cedefop, 2020; ILO-UNESCO-WBG, 2020; Kim et al., 2020; Kimenyi, Otieno and Kaye, 2020; Mukhtar et al., 2020; OECD, 2020a).

## Table 2. Support given and/or recommendations for online learning

| | Support given and/or recommendations |
|---|---|
| 1. Accessibility to learning technologies | ● Allow free access to digital educational resources/online platforms to all learners<br>● Allow digital equipment lending service for learners<br>● Allow free or subsidised online training for a period of time<br>● Leverage on already existing resources before making costly investments<br>● Find out what kind of technologies learners are able to access before deciding on a platform<br>● Use multiple technologies to deliver the same learning content so that learners in different contexts can access through different options (e.g. mobile applications, print, radio)<br>● Seek out collaborations (e.g. other institutions, government, technical professionals) to help in developing training materials or providing learners access to learning content<br>● Provide educators with internet access, licensed software and cameras to allow for better teaching and learning experience |
| 2. Digital competences and pedagogical skills | Educators<br>● Provide educators with professional training courses to learn pedagogical and technical skills (e.g. how to use online tools)<br>● Provide continuous technical support and training<br>● Learn how to integrate technology into teaching and learning<br>● Allow for exchange between educators to share their practices and ideas with one another<br>● Align decisions with effective best-practices of online learning<br>● Set up online portals to include digital resources for online teaching and learning to support educators<br>Learners<br>● Provide free digital literacy training programmes that can help target learners at risk of exclusion (e.g. learners with special educational needs, those from disadvantaged socioeconomic backgrounds)<br>● Reach out to learners who are more likely to be disengaged |
| 3. Financial issues | ● Institutions can provide financial assistance, special considerations, and deferment of fees for learners<br>● Provide educators with additional funds or subsidies to purchase or upgrade their computers and internet |
| 4. Requirements of specific fields of study/training/courses | ● For mixed training programmes, providers were recommended to deliver their theoretical training on an online basis before the practical training and work placement<br>● Once COVID-19 is under control, provide revision classes for practical/hands-on learning |
| 5. Mental well-being | ● Free psychological counselling for learners, educators and parents<br>● Support for learners with special educational needs<br>● Consider how COVID-19 can impact learners' lives (e.g. change in employment, family situations) and anticipate potential issues on |

| | |
|---|---|
| | their learning<br>● Create response plans to address the issues by certain groups of learners and how it can be mitigated |
| 6. Educator-learner communication | ● Provide a platform where leaders and educators can consolidate their acquired knowledge, maintain regular content, and continue building up their knowledge<br>● Leverage on technologies that both educators and learners already own (e.g. SMS messages, Whatsapp groups, radio, and television)<br>● Engage in continuous communication |
| 7. Learner engagement | ● Enhance interaction between learner and educator through innovative activities<br>● Can conduct flipped classroom learning, so learners have shorter lectures and more targeted learning<br>● Provide feedback as it helps enhance learners' motivation and self-efficacy<br>● Integrate online formative assessments (e.g. Kahoot and Socrative) |

Despite all the challenges that have surfaced due to the sudden shift to online learning during the COVID-19 pandemic, both learners and educators have recognised some of the opportunities of online learning. A report by education analytics firm Quacquarelli Symonds (2020) investigated learners' levels of interest in participating in online degree programmes due to the COVID-19. In March 2020, 42% of them had indicated that they were not at all interested in studying their degree online, but the figure gradually decreased to 36% in August 2020, suggesting that learners are slowly becoming more accepting towards online learning. Additionally, 88% of respondents in a study by Pearson (2020) agreed that online learning would be integrated into the university experience in the future and many believe that online learning has the potential to expand access to education.

Of course, experiences with online learning would differ from country to country and at the regional level, the impact of COVID-19 on learning and training is unequal (Marinoni, Land and Jensen, 2020). This presents a need to capture the experiences of countries at different points of the online learning readiness spectrum. As previously mentioned, Singaporean educational institutes are not unfamiliar with online learning, and the country boasts a high internet penetration rate with good access to online learning. The experiences and challenges faced, then, may be different from what were captured in the literature. Additionally, in previous international surveys (e.g. Marinoni, Land and Jensen, 2020; Watermeyer, Crick, Knight and Goodall, 2020), Europe is overrepresented among respondents of the survey, while the Americas and Asia-Pacific are underrepresented. This study thus fills in the gap, and is overall necessary to understand the Singapore context of the impact of COVID-19. Ultimately, how educators and their organisations are making sense of the change will impact the future development and direction of education.

# 3. Methodology

## 3.1. Focus of our study

The COVID-19 Educator Survey was designed based on an earlier survey that was conducted by the University of Bristol to examine the preparedness of academics in the United Kingdom's universities towards the rapid move to online learning, teaching, and assessment (LTA) (Watermeyer, Crick, Knight, & Goodall, 2020). We collaborated with the University of Bristol and expanded the original scope to capture educators' perspectives of the impact of online learning on adult educators and learners, as well as the current and long-term impact on post-secondary educational institutions, the higher education and adult training sector, and potential changes to the future of education in Singapore due to the COVID-19 pandemic. Specifically, our survey covers the following areas:

1. Changes in online teaching and training practices
2. Changes in organisations' businesses and plans to go digital
3. Impact on educators and the TAE labour market
4. Impact on learning and learner wellness
5. Impact on educational organisations, higher education/training, and the future of education
6. Challenges faced and the support needed by adult educators
7. Learning participation and professional development received and needed by adult educators

## 3.2. Survey design and administration

The survey went through five rounds of pre-testing and revisions based on comments and suggestions from colleagues. It was then piloted on a subsample of educators working in the training providers (TPs) and the Institutes of Higher Learning (IHLs). Pilot respondents were asked to comment on the clarity of the survey questions, time needed to complete the survey and suggestions or comments to improve the survey and interface in general. Based on their feedback, we further revised the survey questions and pre-tested it before it was distributed to our targeted sample.

The final questionnaire included a maximum of 21 multiple-choice questions (the exact number of questions would vary according to the display logic triggered by respondents), 10 slide-scale questions from 0-100, and 8 open-ended questions. Multiple-choice questions were mostly utilized for demographic and profiling questions (e.g. age, ethnicity, type of organisation they work for, highest qualification, employment status, working experience, etc.) to situate the respondent within the HE/TAE sector; slide-scale questions were for perceptions and extent of agreement; open-ended questions were for experiences such as challenges, adjustments, and support received, to ensure that respondents shared their most genuine and authentic experiences.

The survey was administered through the online tool Qualtrics during the lockdown period from 28th May – 15th June. Participants were provided information on the purpose of the survey, and that participation was on a voluntary basis and that their responses would be kept anonymous. Survey links were then distributed through the largest database of educators in Singapore (the Adult Educator Network), online community of educators and training professionals, associate educators' portal, government agency's databases, professional networks, social media (Facebook and LinkedIn) and emails. Thus, respondents

were recruited through a convenience sample using snowballing from the initial contacts that we reached out to.

Analysis on the quantitative survey data was performed with the statistical analysis program STATA, using descriptive statistics to explore the snapshot of educator experiences. Qualitative data from the open-ended questions were identified and coded with the data analysis program NVivo.

## 3.3. Profile of respondents

After removing cases with partial completion (i.e., respondents completing less than 60% of the survey questions) or suspicious cases due to invariance in answers, the survey gathered a total of n=1,553 responses from adult educators working in Singapore, including:

- Academic, teaching and research staff, adjunct lecturers/educators in IHLs
- Adult educators working in training organisations, who perform the roles of Learning Facilitator, Assessor, Courseware Developer, Learning Technology Designer, Learning Consultant/Learning Solutionist, Curriculum Lead, etc
- Freelance adult educators
- Training professionals working in enterprises with in-house training

Due to the distribution method, we cannot calculate the response rate. However, the respondents did represent the population regarding some key characteristics. Table 3 below presents the key profile of our respondents.

### Table 3. Demographics of respondents

| | n | % |
|---|---|---|
| **Gender** | | |
| Male | 835 | 53.8 |
| Female | 718 | 46.2 |
| **Age** | | |
| 35 and below | 301 | 19.6 |
| 36-55 | 920 | 60.0 |
| 56 and above | 312 | 20.4 |
| **Highest Educational Qualification** | | |
| Secondary & below | 15 | 1.0 |
| Post-Secondary (Non-Tertiary): General and Vocational | 23 | 1.5 |
| Diploma and Professional Qualification | 210 | 13.5 |

| | | |
|---|---|---|
| Degree & Post-grad Dip/Cert | 590 | 38.0 |
| Masters & PhD | 810 | 45.7 |
| Modular Certification (non-award courses / non-full qualifications; obtained a certificate or other qualification by a professional body or vocational institution) | 5 | 0.3 |
| **Job Function** | | |
| Teaching staff | 1342 | 88.6 |
| Non-teaching staff (e.g. academic/administrative support, learning technologists, etc) | 172 | 11.4 |

About two thirds were working with training organisations (64.5%) and the rest in institutes of higher learning (35.5%). About half were permanently employed by the organisations (48.1%) – the rest were on fixed-term contract (21.2%), or worked as freelancers (22.7%), owners (4.8%), or unemployed but seeking HE/TAE-related work at the time when the survey was conducted (3.2%). We compared demographic details of this sample with the available information gleaned from the recent nationwide survey about the adult educators in Singapore (Chen, Ramos, Puah, & Cheng, 2020). The comparison found a similar pattern in selected characteristics, such as about 80% of the educators have obtained degree or above qualifications, and close to 60% have worked in higher education or adult training for more than 5 years. About 80% of them are between the age of 26-55 years old, which is representative of the Singapore working population.

# 4. Findings

## 4.1. General Impact of COVID-19 on TAE in Singapore

To examine the impact of COVID-19 on the TAE sector, the findings will take a multifaceted, nuanced view that first considers the different time-dependent natures of certain impacts (i.e. current impacts during the lockdown and transition versus long-term impacts on the future of online learning), as well as the different experiences and perceptions of relevant groups (educators, organisations and institutions, and learners themselves). Findings will be reported based on overall responses reported by all adult educators as well as breakdown by the type of organisation in which adult educators work in - by training provider (TP), Institutes of Higher Learning (IHLs). We also zoomed into groups by other demographics, e.g., age, qualification, employment status, etc – however, only findings with statistically significant differences will be reported. Additionally, items will have differing numbers of respondents due to routing of questions and differing completion rates among all the questions in the survey.

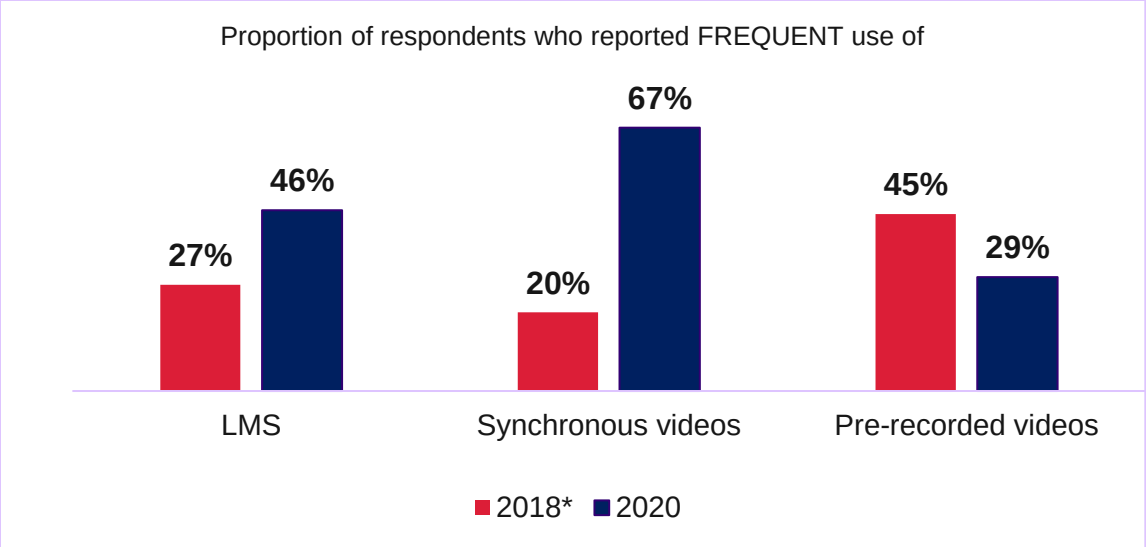
## 4.2. Current and short-term impacts

Adult educators were generally confident and positive towards the move to online learning, assessment and training. Respondents were aware of the short-term benefits of moving to online learning, such as being able to work from home to ensure learning continuity while practicing safe distancing within the period of COVID-19. However, open-ended responses from the survey revealed that short-term trends during the lockdown also held negative sentiments. Respondents expressed frustration at the disruptive nature of the sudden change that uncovered a multitude of shortcomings and challenges in online learning, such as lack of training and access to ICT equipment that resulted in a compromise in the quality of learning. However, respondents were also aware of the short-term benefits of moving to online learning: being able to work from home to ensure learning continuity while practicing safe distancing within the period of COVID-19.

### 4.2.1. On Adult Educators

#### Changes in the use of digital tools and skills

One of the most significant impacts on adult educators was in relation to the use of technological tools and devices, along with the digital skills required to manoeuvre the technology. In terms of specific mediums, frequent use of synchronous videos and learning management systems (LMS) increased significantly as compared to pre-COVID-19 (see Fig 1 below). About two-thirds of our respondents reported frequent use of synchronous videos such as Zoom or Microsoft Teams. Comparatively, the TAE Landscape study conducted in 2018 had reported that the major tools used were asynchronous videos, e.g. YouTube Videos and self-developed content videos.




## Figure 1. Use of learning technologies before and during COVID-19

*2018 data was from the TAE Landscape study (2018), IAL.

To adjust to the different requirements of synchronous modes of teaching, respondents reported having to procure new or upgrade their existing equipment, both in terms of software (new applications, new licenses to access platforms) and hardware (microphones, headsets, lights, speakers). Learning in real time also meant that a strong and stable internet connection was vital; however, some struggled with issues of reliability and connectivity.

> “Sometimes, there are disruptions during synchronous sessions like internet disconnection or disruption."
>
> “How to engage learners if online cut off due to power shut or telco issues. Must make stability adjustments.”
>
> “Videos quality drop and lag sink in.”

Fortunately for many of the respondents, with all the changes also came support from their organisations, in terms of supply of technological software and equipment, IT support for connectivity or other technical problems, and skills related to facilitating online teaching.

> "My organization has been supportive with all the software licenses and platform."
>
> "[Received] IT support to ensure uninterrupted training sessions."
>
> "Training provided by training company to assist me make the transition towards digital, online & elearning."
>
> "The institution has organised helpful sessions on how to facilitate online teaching."

However, there were also concerns about the digital divide brought about by online learning and teaching. Most respondents expressed that the new necessities of upgraded equipment and skills might exacerbate existing inequalities among both educators and learners. Those who lacked the support and skills to cope with the swift shift to online learning were at risk of falling behind those who received assistance or were more technologically inclined.

> "Some educators will struggle with digital adoption, education systems and SOPs will need to be revisited and revised, which may prove to be a challenge in the economic slowdown."

> "Teachers/trainers who are not very tech-savvy might struggle to deliver classes online."

> "Steep learning curve for those who have not spent much time using computers/laptops or online learning tools."

One respondent who reported a lack of support also cautioned at possible long-term consequences:

> "Lecturers are not provided with tools and knowledge to teach online. Very little support is given as most lecturers are left to their own devices to learn to teach online and to find tools and platforms. This will be challenging to the older generation which is a pity [as] they are likely to (be) content experts of their courses. If this problem is not addressed, then content will not be adequately passed to the students. Lecturers may get discouraged with IT and lose interest in teaching and move to other sectors leading to talent drain."

In such terms, the negative experience in tackling current challenges may demotivate domain experts without much prior online teaching and training experience. These concerns may translate into potential bigger worries about loss of domain experts from the TAE sector.

### Impact on confidence to deliver online learning and training

Despite the challenges that came with online learning, about 81% of the survey respondents were not deterred, still feeling confident in their ability to deliver teaching, assessment, and training-related work online.

## Table 4. Proportion of respondents reporting their confidence in their ability to deliver teaching, assessment, and training-related work online (n = 1393)

| Organisation type | Disagree | Neutral | Agree |
|---|---|---|---|
| Overall | 10% | 9% | 81% |
| IHLs | 8% | 8% | 83% |
| TPs | 11% | 10% | 79% |

Further analysis found additional demographic factors that revealed differences within the level of confidence in delivering online LTA: age and highest educational level. Strangely, a lower proportion of younger respondents aged 35 and below (73%) were confident in their ability to deliver LTA online as

compared to older respondents (83-84%). A higher proportion of respondents with post-graduate degree (81%) were confident in online learning and training as compared to 72% with lower educational qualifications.

### Table 5. Proportion of respondents reporting their confidence in their ability to deliver teaching, assessment, and training-related work online by age and highest educational qualifications (n = 1393)

| | Disagree | Neutral | Agree |
|---|---|---|---|
| **Age** | | | |
| 35 and below | 15% | 12% | 73% |
| 36-55 | 8% | 9% | 83% |
| 56 and above | 9% | 7% | 84% |
| **Highest Educational Qualification** | | | |
| Pre-tertiary | 15% | 14% | 72% |
| Bachelor's degree or post-graduate diploma | 11% | 11% | 78% |
| Post-graduate degree | 8% | 9% | 81% |

#### Impact on mental health

Approximately 48% of the respondents felt positively about the impact of the move to online learning on their own mental well-being (e.g. stress, motivation levels, etc). The results were similar for educators from both IHLs and TPs.

### Table 6. Respondents' views about the impact of the move to online learning on their own mental health (n = 1299)

| Organisation type | Negative | No Change | Positive |
|---|---|---|---|
| Overall | 37% | 15% | 48% |
| IHLs | 38% | 13% | 49% |
| TPs | 36% | 16% | 48% |

However, close to 40% of the respondents felt negative impact on their well-being. A higher proportion of freelancers or contract educators (41%) felt negatively about the move to online LTA on their own mental health as compared to those who were permanent staff (34%).

Open-ended responses corresponded with the quantitative findings, showing emotional support was among the top types of support they relied on during the transition, which served to boost mental health. When asked about the support they relied on during the transition, respondents shared, for example:

"Emotional support through online communications with colleagues, fellow learners etc."

"Physical and mental well-being program provided by the institution."

"Boss's care, concern, and understanding."

These responses suggest a possible reason behind the different impact on the mental health perceived by permanent staff and freelancers or contract educators. If mental well-being support mostly came from the policies and practices of an institution, the distribution of benefits (such as access to counselling centres or similar services, closer and more personal relationships with management) may differ based on employment type.

### Impact on perceived job security

Most respondents (66%) felt secure about the likelihood of keeping their jobs in the next 12 months. However, approximately a third (34%) of the respondents expressed concern about losing their jobs, with those working in TPs feeling more at risk.

## Table 7. Respondents' views about the likelihood of losing their jobs related to higher education/training and adult education in the next 12 months (n = 1322)

| Organisation Type | Not Likely | Somewhat Likely | Very Likely |
|---|---|---|---|
| Overall | 66% | 25% | 9% |
| IHLs | 72% | 23% | 5% |
| TPs | 63% | 27% | 10% |

However, as compared to permanent staff (34%), freelancers or contract educators seemed to be more worried about their job security, with over 40% of them feeling it was likely to lose work or job within the next 12 months from the time the survey was conducted.

Educators who conducted lab sessions were also more optimistic about keeping their jobs, with close to 80% of them feeling not likely to lose job in the next 12 months; however, for those who did not conduct lab sessions, about 35% of them felt uncertainty towards keeping their work.

### Impact on perceived necessary upskilling

Though most respondents felt secure in their jobs, overall a larger majority of respondents (85.6%) still saw the need to significantly improve their knowledge and skills in online learning to remain employable in adult learning and higher education.

### Table 8. Respondents' views on the need to significantly improve their knowledge and skills in the delivery of online teaching, assessment, and training related work (n = 1322)

| Organisation type | Not Likely | Somewhat Likely | Very Likely |
|---|---|---|---|
| Overall | 14% | 29% | 56% |
| IHLs | 16% | 33% | 52% |
| TPs | 14% | 28% | 59% |

Specifically, the most useful professional development courses that respondents indicated they had participated or would like to participate in during COVID-19 included topics such as use of applications and technology, lesson facilitation and management, lesson engagement, lesson design and development, as well as assessment and evaluation.

## 4.2.2. On Learners

#### Impact on learners' engagement

The survey also asked respondents about the impact of the move to online learning on their learners' engagement with learning. Responses were mostly mixed, with roughly the same proportions indicating that the impact would be negative or positive.

### Table 9. Impact on student/learner engagement with learning (n = 1294)

| Organisation type | Negative | No change/impact | Positive |
|---|---|---|---|
| Overall | 46% | 7% | 47% |
| IHLs | 50% | 7% | 43% |
| TPs | 46% | 6% | 48% |

When broken down by age, a significantly larger proportion of younger respondents aged 36 and below (53%) felt that the move to online LTA would have a negative impact on learner engagement.

Learner engagement was also extensively and consistently mentioned in open-ended answers when respondents were asked about their challenges and adjustments. Many were worried about capturing and retaining the attention of their learners to sustain engagement through a screen. The lack of face-to-face interaction also meant that it was difficult for educators to monitor their learners and engage each individual student. Classes were not as interactive and respondents shared that learners tended to lose focus easily and become distracted.

> "Classes are not interactive & little engagement. Students might not be fully focus on the lessons."

> “Lack of engagement. Easier to be distracted and not pay attention when attending online learning.”

The change in learners’ engagement was perhaps most consequential when it came to a vital tool of trade for educators: their course materials. One of the major adjustments educators made during the transition was to increase engaging content and interactive material within the courses with the objective of more participation, interest, and attentiveness.

> "We need to be more conversant with the different online gamification tools; lessons cannot be too boring.”

> “To include videos, games and audio to maintain the learner's interest.”

> “Shorter classes that are focused on those parts of the lesson that call for engagement, e.g., presentation, critique and discussion.”

### 4.2.3. On TPs/HEI

#### Impact on development/procurement of online programs

In the same vein, a large number of respondents reported an increased workload to convert face-to-face content to be compatible with the new online format. They also needed to spend more time creating new content and sourcing for external content.

> “More work to prepare on online materials (may have to produce videos and electronic learning materials).”

> "We provided video (non-interactive) ahead of virtual interactive session... it is double the effort for the educator."

> "Going through all learning material, make necessary change to make material fits the online learning."

Respondents also reported needing to adjust the assessment portions of the courses, again converting existing formative and summative assessments to be compatible with online platforms, or changing the assessment methods completely to make it more relevant to the learners.

> "Switching from Paper Examinations to Graded Assignments (new rubrics, assessment points, submissions)."

> "Assessment, no point having it closed book and testing content. Needs to be problem based or assessing very high levels of thinking."

> "Use of project-based assessments/graded assignments instead of written papers."

This finding also suggests that many courses were internally developed or converted by the educators themselves, and this can be corroborated by an item in our survey that asked respondents about how their organisations were developing their online courses and course materials. On average, about 42% of

respondents indicated that their organisations' digital offerings were developed internally, while 35% were outsourced to or purchased from external companies/partners. This presents opportunities for learning technologies as training organisations and IHLs are looking to ensure the operational efficacy of their digital infrastructures and capacity to deliver online.

### Table 10. Average proportion of how respondents' organisations were developing digital/online programmes (n = 1418, respondents who responded "I do not know" for this question are not illustrated in this graph)

| Organisation type | Internal development | Outsourcing development | Purchasing externally | External open-access programmes |
|---|---|---|---|---|
| Overall | 42% | 14% | 10% | 11% |
| IHLs | 44% | 9% | 9% | 9% |
| TPs | 41% | 16% | 11% | 12% |

#### Impact on financial standing of the organisation

From a more macro point of view, the move to online LTA also had direct financial implications for training providers and higher education institutions. The new cost of business seemed to go in either one of two ways - on the one hand, organisations who had existing online provisions prior to the pandemic saw the move to online as cost-saving, especially in terms of rental and utility costs, as there was less need for huge spaces and campuses.

> "Due to reduced numbers of footfall of staff and students in the institution, there could be savings in rental and utilities."

> "It should bring down the overall cost. No need for physical space and large campuses."

Some even saw the move as an opportunity for expansion. With online course offerings, programs were not limited to physical classrooms and so had a wider reach globally.

> "We do see an opportunity to go overseas with online training (for certain topics) with minimal costs."

> "This period is a good chance for us to explore various ways of teaching over online platform which allows us to expand our business overseas."

However, on the other hand, organisations that were pushed to digitalise viewed the changes as costly, especially as many were already facing financial difficulties from the pandemic. Many respondents felt that there was a high financial investment associated with moving online such as the need to produce good quality pre-recorded videos, protect copyrighted online materials, and implement LMS and TMS.

> “As business revenue has dropped, the budget for training will be reduced, leading to less training opportunities for staff; also operating costs may also go up to ensure COVID-19 precautionary measures are sustained.”

> “Heavy cost investment in technology and manpower.”

> “Education institutions need to upgrade system specs for speed.”

### Other current impacts (challenges and adjustments)

Aside from the challenges of technological apparatus, technical ability, and learner engagement, the other two top challenges expressed by respondents were the lack of mental readiness or resistance to change in mindset, and the loss of social aspects of learning and work.

Firstly, many respondents faced a lack of mental readiness and resistance to digitalise, observing that a large proportion of their learners and fellow adult educators showed a preference for face-to-face lessons that was difficult to change.

> “Overcoming mental block and phobia to transition.”

> “Having to change the mindset of the lecturers and students, especially those who have preference towards face-to-face. There might be some resistance.”

> “Mindsets stuck in tradition, both educators and students alike.”

Respondents also lamented over the loss of the “human touch” and “human-to-human connection”, which had both educational and social implications: losing out on bonding and rapport, difficulties in reading body language, and only allowing for limited opportunities for group and collaborative work.

> “We are all connected online but I think the fundamental connection of working with people in person is missing. The human element is missing.”

> “Dramatic loss in social and professional networking opportunities.”

> “The social bonding that is present in a cohort will never be easily replicated online.”

However, while bonding and rapport were difficult to establish with the learners and within learners, it did not necessarily mean totally losing a sense of community among the adult educators themselves. Many found that they were facing the same issues and overcoming the same obstacles as their peers, and so built a community of practice to share ideas and successes, and to support and learn from one another.

> “I have turned to my community of practice colleagues to learn to adapt our delivery of teaching to our students. The sharing of experiences and ideas for adaptation to the new approach has been very helpful.”

> “I formed a Whatsapp Zoom Support Chat Group with fellow instructors and we shared tips, materials, experiences so that we could learn from one another. This was very, very effective.”

> “Best practices shared by fellow adult educators (AEs) and testing out technology with fellow AEs.”

Similarly, besides the adjustments of extra preparation for content, increasing engaging material, changes in assessment modes, and technological improvements, the other top adjustment mentioned was having to provide additional support for learners. Respondents reported having to put in longer hours or conduct additional sessions after classes to reach out to their learners, in order to provide extra educational, mental, and technical support.

> “Spend more time outside class to mentor and coach those who need.”

> “Conduct extra informal session between formal sessions to enhance learning and reduce anxiety of learners.”

> “Longer consultation opportunities especially after class hours including technical support sessions.”

## 4.3. Long-term impacts

In terms of the long-term impact, respondents believed that online learning would continue to be the way of the future, and that COVID-19 expedited and accelerated a trend of online learning that was already occurring. Going digital would be the new normal. While some respondents were hesitant about the big transition, most felt that the change would be positive provided that certain support was provided and improvements were made. Specifically, analysis of the responses found that the biggest concerns with online learning involved the quality of teaching and learning, more specifically in the following key areas:

- Lack of sufficient competency in online learning design and development perceived by educators
- Lack of pedagogical and technical support in online teaching and training
- Less engagement and connection

In particular, investing in training to improve skills for educators and learners was a must, and the technology that the educational institutes and organisations chose to invest in was a critical factor of consideration as the quality of education will continue to depend on it. Respondents held the view that if educators were able to remove these barriers over time, hesitation with online learning would drop substantially. Educators would appreciate the benefits that effective online learning could bring, for example, greater cost efficiency, agility and flexibility, and more seamless and innovative teaching.

This qualitative finding is supported by the respondents’ response to the survey item “Delivering teaching, assessment, and training related work online is the future of higher education, continuing education, and lifelong learning”, where a majority of the respondents (71%) stated that they agreed.

Respondents also predicted that the move to online learning and teaching would likely lead to a proliferation of online course offerings from training organisations, and an increase in “online universities”.

“Education will be possible all-day round and all year round. This will help online universities to bloom and flourish. Cost of education can be lowered and we can create more job opportunities in this sector. Education without limits - this is the future of education.”

### Table 11. Proportion of respondents that agree delivering teaching, assessment, and training related work online is the future of higher education, continuing education, and lifelong learning (n = 1393)

| Organisation type | Disagree | Neutral | Agree |
|---|---|---|---|
| Overall | 18% | 11% | 71% |
| IHLs | 20% | 12% | 69% |
| TPs | 17% | 10% | 73% |

In direct comparison to the short-term impact of limited access to traditional forms of education due to social distancing rules and the digital divide of the transition, in the long term, online education and training is seen to provide enhanced accessibility for learners. Respondents were asked whether they believed that the move to online learning would help more people gain access to higher or continuing education and lifelong learning, and a majority (78%) agreed. A similar proportion of 79% also agreed that the move to online learning and training would widen participation in higher or continuing education and lifelong learning of people who normally would not attend a university or adult training.

Respondents had the view that in the long term blended learning was a worthy model to consider, offering the best of both worlds, the traditional and the new, and thus acting as a compromise for those craving face to face classes.

## 4.3.1. On Learners

#### Impact on learners' well-being

While a majority of the respondents agreed that online learning was the future, many also suggested that keeping learning exclusively online would be damaging to their learners' well-being in terms of mental health (47%), physical health (47%), and social health (64%).

### Table 12. Proportion of respondents perceiving the impacts of learning exclusively online (n = 1359)

| | Organisation type | Disagree | Neutral | Agree |
|---|---|---|---|---|
| Damaging to mental health | Overall | 39% | 14% | 47% |
| | IHLs | 47% | 13% | 49% |
| | TPs | 41% | 14% | 46% |
| Damaging to physical health | Overall | 40% | 13% | 47% |
| | IHLs | 38% | 12% | 50% |
| | TPs | 41% | 13% | 46% |

| | | | | |
|---|---|---|---|---|
| Damaging to social health | Overall | 27% | 9% | 64% |
| | IHLs | 22% | 8% | 70% |
| | TPs | 29% | 10% | 61% |

A higher proportion of respondents who were teaching staff (66%) indicated that learning exclusively online would be damaging to their learners' social health as compared to their non-teaching counterparts (54%).

### Impact on assessment processes

Approximately 48% of respondents felt that the move to online learning would have a negative impact on assessment processes. However, a greater proportion of respondents from the IHLs felt negatively about the move to online assessment processes, with 56% indicating a negative response, and 43% from the TPs felt so.

## Table 13. Respondents' views about the impact of the move to online learning on assessment processes (n = 1322)

| Organisation type | Negative | No Change | Positive |
|---|---|---|---|
| Overall | 48% | 9% | 43% |
| IHLs | 56% | 9% | 35% |
| TPs | 44% | 8% | 48% |

### Impact on learning outcomes

Similarly, a majority of the respondents felt that exclusive online learning would negatively impact the learning outcomes of their learners as compared to face-to-face learning (56%), and compared to blended learning (59%).

## Table 14. Proportion of respondents responding to the impact on learning outcomes (n = 1359)

| | Organisation type | Disagree | Neutral | Agree |
|---|---|---|---|---|
| Learning exclusively online will negatively impact learning outcomes, compared to **face-to-face** learning | Overall | 30% | 14% | 56% |
| | IHLs | 29% | 12% | 58% |
| | TPs | 30% | 15% | 55% |

| | | | | |
|---|---|---|---|---|
| Learning exclusively online will negatively impact learning outcomes, compared to **blended** learning (both face-to-face | Overall | 30% | 11% | 59% |
| | IHLs | 30% | 11% | 50% |
| | TPs | 29% | 12% | 59% |

#### Impact on learners' development of digital skills and future employment

On the positive side, a majority of the educators (80%) felt that the move to online learning would help their students and learners develop digital skills, likely due to increased opportunities to use and practice online tools. About 60% of the respondents felt that the move to online learning would also help their learners develop the knowledge and skills needed for employment, as learning online would reflect the increasingly globalised working environment within the digital economy of the future, which learners would face once they graduate. Although such a move may lead to a withdrawal of social interaction, it would also provide a more seamless transition to labour market participation in the context of a more globalised digital workforce.

> "The learning environment will become more physically isolated and digital-based. It reflects the kind of working environment the learners will go into once they graduate."

### 4.3.2. On TPs and IHLs

#### Impact on course offerings

A majority of respondents (>90%) indicated that their organisation would replace a majority or all of their face-to-face programmes with online offerings in the short term (i.e. to mid 2021), while 4% of the total respondents (n =1553) indicated that their organisation had no plans to move online on a permanent basis.

This increase in online provision of courses is likely to be a result of the perceived positive impact on enrolment in online programmes, and the reduction in enrolment for campus-based or centre-based programmes. Over 76% of respondents felt that there would be a positive impact on the enrolment of online programmes, while 46% of respondents felt that there would be a negative impact on enrolment.

## 4.4. Overall trend to be more digital

Finally, to tie together the short-term and long-term impacts and provide a general overview of technology usage over time, the survey asked respondents about their use of online platforms for online learning-related work before and during the lockdown period, as well as their planned usage post COVID-19. This allows an overall look of the changes in technology usage by adult educators in Singapore.

## Table 15. Proportion of respondents reporting frequent use of online platforms for teaching, assessment, and training related work (n=1,553)

| | Pre COVID-19 | During COVID-19 | Post COVID-19 |
|---|---|---|---|
| Overall | 14% | 63% | 51% |
| IHLs | 20% | 74% | 58% |
| TPs | 14% | 56% | 48% |

In 2018, the overall technology usage was relatively low, with only 14% of respondents reporting frequent usage of online platforms (Chen, Ramos, Phua, & Cheng, 2020). This proportion increased dramatically over the lockdown period in Singapore, with an increase of over fourfold, as circuit breaker and safe distancing measures necessitated a push to online operations. We also asked respondents on their plans to use online platforms post COVID-19. Planned use of digital technologies will actually decrease; however, the change to online learning seems to be permanent and substantially higher compared to pre COVID-19. This hints at a significant change in mindset among adult educators. As they grow more familiar with online platforms, and as digital tools become more ingrained into their daily work processes, they are unlikely to completely revert to previous methods of learning and training even when there will no longer be an enforced need to do so.

# 5. Discussion

For many of our respondents, the transition to online learning, teaching and training may not be a temporary response to the emergency crisis, but could lead to a shift towards permanent digitalisation of higher education and adult training. Over 70% of the adult educators think that delivering teaching, assessment, and training related work online is the future of higher education, continuing education and lifelong learning. Unlike educators from other countries (e.g., Watermeyer, Crick, Knight and Goodall, 2020), our respondents from Singapore tended to be more positive in rating the impact of this online transition due to COVID-19 on their work, learning outcomes, learner wellbeing as well as their own health and well-being.

Online education and training is seen to provide enhanced accessibility for learners, support learners in developing digital skills as well as the knowledge and skills needed for employment in an increasingly globalised labour market. The advantages of online migration are also seen in the potential cost-affordances and the generally non-negative impact on effectiveness of such provisions, although some voiced concerns about technology fatigue and growing reservations about its side effects. Still, the overall optimism bodes well for the HE and TAE sectors in Singapore, with its advanced digital infrastructure and the centrality of its policy focus on skills towards a digital future that supports learners and workers to emerge stronger from the pandemic.

Along with the overall positive sentiments, the online migration is viewed by majority of our respondents as a call for paradigm-change in education. They describe the physical lock-downs caused by COVID-19 as providing an opportunity for pedagogical experimentation and innovation, and professional growth among educators. It is perceived as a positive interruption and turning point away from traditional methods. Our results showed that educators have been proactive in adjusting to changing needs, ensuring learning continuity, and have at the same time tried to protect the learning experience and learning outcome:

> "Due to the COVID-19 situation, we teachers have transformed our teaching methods without compromising on the quality and delivery of knowledge disseminated to our students. Online teaching has opened up new avenues to improvise our teaching and made it an exciting challenge that motivates us to re-invent ourselves for a better tomorrow."

While adult educators were cautiously optimistic about their job prospects, there was also the fear that those who fail to make the necessary digital leap to keep up with this shift within the sector will be left behind. We find that the accelerated digitalisation caused by COVID-19 is seen as reshaping rather than replacing educators' roles. In such terms, respondents expressed the need for professional development in the design, development and assessment of online learning as a core component for continuing improvement. In addition to attending formal, professional development programmes, adult educators also reported receiving support at the community level as particularly helpful, such as mentoring and peer support. They also conducted self-directed informal learning through webinars and online platforms to learn the best practices for online learning and then applying it to their own teaching and training. (Cedefop, 2020; Kimenyi et al., 2020; OECD, 2020a; ILO-UNESCO-WBG, 2020). Moreover, organisational support is crucial to recognise the time commitment and increased workload of having to learn unfamiliar pedagogies and technologies. There was also an urgent need for opportunities for

educators to communicate and exchange ideas with the management in the online learning setting (Dolan, 2011). With increased exposure to digital pedagogies and uplift in use of learning technologies, there is also an anticipated increase of job opportunities for educators to deliver online. The increased popularity for digital learning, correspondingly, necessitates the review of existing quality assurance mechanism and / or development of new mechanism that fits the online environment.

Areas for improvement are mainly concerned with learner engagement and assessment in the online environments. About half of the respondents (48%) felt that online learning will have a negative impact on assessment and learner engagement.

> "Establishing authenticity of learners doing the learning and then assessment is the biggest challenge that unfortunately has not been resolved with today's technology."

> "Increased possibility of cheating and fraud. Copying of assessments using Whatsapp to share answers, using frozen imaged screen technology as virtual background pretending to be in class"

While many find it difficult to engage and assess learners effectively online, interestingly, there are studies showing that moving to online may well boost participation. For example, for learners who are less confident, they are now able to approach their educators and teaching materials easily as they may feel more comfortable behind the screen and prefer using chatbots to contact their educators (Mukhtar et al., 2020). Similarly, in Baragash and Al-Samarraie (2018), learners preferred to interact through the use of real-time text-based chat or comments during their educators' lectures. Communicating through written forms had allowed learners more opportunity to reflect and express their opinions freely as compared to face-to-face learning. Interactive web-technologies such as quizzes and Kahoot can provide educators with instant feedback to understand learners' strengths and weaknesses and provide necessary intervention or guidance.

Moreover, asynchronous tools can also provide additional learning opportunities for learners besides regular lesson interactions. Recorded learning videos, such as lectures, can be easily viewed by learners whenever they want a summary of what was being taught or for revision purposes (Diep et al., 2019). Using inbuilt analytics, assessment can be carried out throughout the learning activities by harnessing data on learners' behaviours such as discussion threads with peers and videos that capture learners' skill practice. The question then may not be how to use technology to replicate the traditional face-to-face teaching in the online environment, but rather how to leverage technologies to create new learning activities and experiences that foster learning outcomes previously not possible without the support of technologies (Tan & Wangyal, 2021). As the authors argue, it is time we transform learning with technology and "steer towards leveraging the human-computer partnership which can empower our learners and engage them in meaningful and deeper learning with technology" (Tan & Wangyal, 2021).

More than 9 in 10 respondents indicated that the majority or all of their face-to-face programmes would be replaced with online offerings in the short term. The transition to online learning and training is likely to lead to a proliferation of online educational organistations and online course offerings, which will open up a world of possibilities in education by connecting overseas learners with overseas educators, allowing greater potential for the scalability of the organisation's programmmes with a wider reach globally. Along with the changes in offerings, business models should be kept up-to-date. Many organisations have changed to a subscription model for online course offerings to ensure sustainability. Furthermore, investments in digital transformation are also needed. Long-term investment in innovative teaching

methods and learning technologies will result in a better learner experience and learning outcomes in the long run. Organisations will therefore need to review their cost structures for technological infrastructure, specialised support services and administrative personnel, and division of labour (Fleck, 2020).

The shift to online learning is also likely to lead to the rise of EdTech companies and greater opportunities for EdTech solutionists. Our findings show that training providers and IHLs are actively seeking external help for the development of digital/online programmes, and stronger partnerships between the training providers and EdTech companies will be envisaged in the post-COVID-19 world of digital resettlement (Watermeyer, Chen and Ang, under review). The long-term impacts may be further widening – or crowding – of an educational marketplace and even fiercer international competition and invasion by commercial EdTech companies (Williamson, 2020).

# 6. Moving forward

While we encounter some inconsistencies in the views of our respondents, we find a general view of a permanent change to more digital learning and training. Ostensibly, far from closing down access to adult training and education, the COVID-19 pandemic has resulted in the potential of increased and more flexible participation via the online migration. Overall, COVID-19 is seen as presenting an opportunity for paradigm-change which educational institutions and educators should grasp. The digitalisation of the HE and TAE sectors brings new opportunities to think globally while acting locally. There are accounts of organisations taking advantage of this global transition to online learning to extend their course offerings to wider audiences through the virtual classroom with minimal costs. For adult educators, the forced transition presents a potential opportunity for fostering re-professionalisation and sustainable learning innovation.

What, then, are the implications for practice? Strategically, to move forward into the online sphere and convert learning programmes online to ensure that business continues, educational institutes and training organisations need to develop both short-term and long-term action plans. Moving forward into flourishing within "the new normal", individual organisations in their differing contexts and situations will need to think carefully on:

- How to support educators and learners with readiness, confidence and capabilities for online learning and training
- How to reduce the digital divide and increase technology affordances so that learners and adult educators "without" are not disadvantaged
- How to protect wellbeing and social aspect of adult learning
- How to refocus on what matters most – the quality and outcomes of learning

Undoubtedly, the shift to online learning also holds many implications for policy making. Decision-makers need to consider affordances and challenges for learners, educators, and education businesses. One major area to work on is in quality and credentialing. New modes of learning necessitate new quality assurance frameworks, that incorporate factors for high quality online learning practices, design, and delivery. This would require incorporating mechanisms that recognise quality and best practices in online learning. As credentialing on the other hand is linked directly with the job market, policymakers should look into bridging gaps between formal, non-formal, and informal learning. Credentialing is more than recognition of prior learning or issuing of badges, but the key is to build credentialing or micro-credentials across platforms into the qualification and skills frameworks, and to get employers to recognise and accept the quality of such learning.

The current study captures a snapshot of attitudes and experiences of educators shifting to online modes. It provides a glimpse into the future of adult learning in the post-COVID era for future studies to uncover more effective strategies for online engagement as well as to ensure good mental and emotional health of both learners and adult educators. The challenges and experiences gone through by adult educators in Singapore were also found in other parts of the world while converting to online learning during the pandemic (European Centre for the Development of Vocational Training, 2020; ILO-UNESCO-WBG,

2020; Marinoni et al., 2020). It is therefore hoped that the lessons learned from this current study could provide useful references to a wider community in higher education and adult training beyond Singapore to emerge stronger from the pandemic.

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