

# Adult learners' perception of online learning due to COVID- 19

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**Final report**

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# Executive Summary

The rapidity with which governments worldwide introduced the adoption of remote work and online learning in response to the COVID-19 pandemic has led to profound changes to work and learning as we knew it. The push to fully remote and online experiences is without precedent, with many learning institutions being forced to abruptly and completely transition all in-person learning activities to online learning. Little is known about the adult learner's experience with this sudden and transformational shift in learning and work, as many had taken the institutional or faculty view. Only some early insights are available through a variety of rapid snapshot polls and surveys, such as the quick poll conducted by EDUCAUSE in April 2020 with 267 IHLS (Grajek, 2020). Other studies such as those conducted by Lim (2020) and Chan (2020) were also limited to IHLs, and was primarily concerned with students in degree-granting programmes. It is thus undetermined if the findings from these studies are generalizable.

To fill this gap by extending the net to professional adult students in non-degree online learning activities, an online survey (n=1,354) was conducted to investigate Singapore adult learners' experiences with transitioning to full online learning as a result of the COVID-19 pandemic. The survey consisted of a series of Likert-scaled items that ask respondents to reflect on their most recent online learning experience, their perspectives on online learning, as well as their learning strategies and motivation. A subset of the survey participants was further invited for a focus group discussion (n= 4, with a total of 30 participants) or semi-structured interview (n=15) to gather information on their experiences and collective suggestions, which includes what could improve their potential participation in online learning.

The key findings from this study and their implications are summarised below:

1. Respondents in this study by and large accepted that online learning is here to stay. This finding is evident across a range of data and questions in both the qualitative and quantitative phase of this study.
2. The benefits of online learning are as follow:
  - a. The convenience of online delivery as well as the flexibility of online learning was highlighted in both the qualitative and quantitative data.
  - b. Different learners vary in how they benefit from online learning. This is in part, due to their perceptions of what learning is, and thus their expectations of the online learning experience. Benefiting from online learning also varied according to circumstances, individual preferences and type of course, be it synchronous, asynchronous or mixed.
  - c. Adult learners who reported higher self-direction in their learning, and being more tech-savvy, were more likely to report that their participation in the online learning programme helped them to improve their skills and knowledge.
3. In terms of their reasons for not participating in online courses during the Circuit Breaker period in 2020, 66% of the survey respondents indicated that they did not know what online programme to sign up for. Interview respondents spoke not only of the plethora of courses available online, but also agreed that for some this could be overwhelming. More specific reasons relate to a fear of online learning, anxiety induced during the lockdown, and the uncertainty of having work to return to.
4. The following observations were made about synchronous and asynchronous delivery:
  - a. Asynchronous learning offers flexibility, and was perceived as ideal for short how-to learning needs.
  - b. Even among those who were tech savvy, most of the focus group respondents indicated that asynchronous learning requires additional focus and drive.
  - c. Where deeper knowledge was required, most respondents suggested a blended approach that included physical face-to-face, or at least a hybrid approach using both synchronous and asynchronous delivery.
5. All interview and focus group respondents highlighted the importance of the role of the trainer, and a number of respondents commented that the required capabilities of trainers have changed as a result of the move to online learning.

6. The following challenges of online learning were brought up:
  - a. Screen fatigue was a major challenge faced by the respondents. This implies that it is crucial for online courses to have frequent breaks to allow learners to re-charge. The use of asynchronous mode of delivery when possible can help to shorten the synchronous lessons and provide learners with flexibility in the time and pace they learn.
  - b. Learners' and trainers' lack of familiarity or discomfort with the online learning system was another highlighted challenge. This calls for provision of technical support and perhaps a pre-course session for learners and trainers to familiarise with the online learning system. It is beneficial if the online training system is easy to navigate, and system update does not overhaul the interface.
  - c. Both the design and facilitation of online learning, i.e. the pedagogical practices of educators, become important to examine more deeply than relying on what may be inferred from the respondents' account of their learning experiences. The Community of Inquiry (CoI) framework provides a useful and ready means to evaluate online design and the likely impact on learners' learning through its core dimensions – social, cognitive and teacher presence (Garrison & Arbaugh, 2007) in the online environment.

In a post-COVID-19 adult learning landscape where online learning will become the norm, there is a need for three main areas to be improved in order for it to be sustainable:

1. The online learning system – For adult learners to continue to participate in online learning, the ease of use of the system is an important determinant. Therefore, the online learning system adopted by Training Providers should facilitate and enhance the online learning experience.
2. Learners' experience – For learners to continue with online learning, there is a need to help learners to adapt to online learning by overcoming the challenges encountered.
3. Trainers capability and learning design – Almost 40% of the survey respondents reported that course lessons or activities did not translate well to a virtual environment. This calls for an improvement in the quality of design of online learning, especially in creating an interactive environment which is meaningful, authentic and consistent.

# 1. Introduction

Singaporeans are no strangers to online learning. In 1997, long before the COVID-19 pandemic in 2020, the Singapore government launched a 'Master Plan for IT in Education' with the aim of enhancing teaching and learning through IT and online learning, both at the K-12 and tertiary levels (Hung et al., 2003). Adoption of online tools was widespread and varied in extent but gradual in speed, until the SARS outbreak in 2003 and schools and campuses nationwide closed for one week. After the outbreak was brought under control, the education sector moved to adapt its business continuity plans, installing learning and content management systems and implementing 'e-learning weeks' to prepare staff and students in the event that such closures were to happen again (Chandran, 2011).

Online learning, both in these short weeks and for longer-term online courses, came with its own challenges. For adult learners studying in Institutes of Higher Learning (IHLs) in Singapore, an exploratory study conducted by Guan, Ding and Ho (2015) found that a number of factors affected the effectiveness of online learning methods such as technical training for the learners, improved infrastructure by the institution, and the use of localised examples and cases. Respondents of the study were also asked to rank-order critical factors for online learning effectiveness with the following findings: self-discipline, study materials, instructor, network access and stability, own technical competence, technical support from helpdesk, and course mates. These helped to inform and improve institutional online learning strategies to include curriculum enhancement and instructor capability development, especially concerning content development and use of appropriate pedagogical activities for online learning environments.

These experiences are echoed by other studies centred on challenges faced by adult learners in online learning. Kara, Erdoğdu, Kokoç, and Cagiltay (2019) performed a constant comparative analysis on 36 journal articles around the topic and found that the challenges experienced by adult learners were interrelated, multifaceted, and greatly varied depending on their age, gender, knowledge and skills, as well as the online learning context. The authors categorised the challenges into three main categories: internal, external, and program-related challenges. Internal challenges were subdivided into management, learning, and technical challenges, and included individual challenges related to characteristics and circumstances such as time and work-life balance, prerequisite knowledge and lack of interest, and technological readiness and access. External challenges were subdivided into job-related and domestic challenges, and included those related to work and domestic environments that were separate from challenges related to their adult learner persona such as a lack of employer support, lack of family support and inadequate study space. Lastly, program-related challenges were subdivided into tutor-related and institutional-related, and referred to challenges stemming from the academic program itself such as low engagement and misaligned or excessive course requirements. It is essential to note, however, that the authors limited their sampling frame only to online distance education programs offering academic degrees, without including studies on massive open online courses (MOOCs), corporate training, or non-degree professional training programs. As such, it is unclear if non-degree-seeking adult learners in professional or corporate learning activities face the same challenges, to the same extent, and in the same contexts.

While the factors and themes put forth by Kara et al. (2019) are quite comprehensive within its scope, other aspects of online learning beyond just the challenges must also be addressed. This includes considerations such as motivation, self-directed learning capabilities, and support networks. In terms of motivation for instance, in a systematic review of the enablers and barriers to online learning in health sciences education, Regmi and Jones (2020) found that motivation to learn online was influenced by contextual factors such as time, IT and flexibility in course design, and that embedding feedback and evaluation was vital in influencing learners' intrinsic and extrinsic motivation. Several studies also considered the need for and development of self-directed learning and performance in online learning (Manganello, Falsetti & Leo, 2019; Rostaminezhad, Mozayani, Norozi & Iziy, 2013).

The relevance of course design and content are also important considerations in learners' levels of satisfaction with the course, impacting motivation and completion rates as well (Park & Choi, 2009). These factors point to the criticality of online learning design. Herrington (2006) observes that "with

many learners failing to engage with didactic and outmoded instructional methods, and unwilling to use technology that simply replicates the one-way transfer of information from teacher to student, authentic learning designs have the potential to improve student engagement and educational outcomes." She suggests that engaging learners in tech-enabled learning requires authentic activities that reflect the way the knowledge will be used in real life; access to expert performances and the modelling of processes; multiple roles and perspectives; collaborative construction of knowledge; reflection; coaching and scaffolding, and authentic assessment. Similarly, Kara et al. (2019) highlighted the importance of program factors such as the extent of interaction and collaboration, feedback, flexibility in the course design, quality of course materials, use of authentic material-issues-problems, quality of educator and alignment between aspects of the course. Interaction and collaboration were also found to be essential for learner success in several other studies (Manganello et al., 2019; Regmi & Jones, 2020).

An important caveat for all of these studies is that they were conducted pre-COVID-19, when face-to-face learning in a classroom was still the default and online learning was just an option that institutions could gradually ease into, usually at a minimal level. After the first few months of 2020, however, it was clear that the same online learning methods would garner a wholly different experience. The rapid spread of the COVID-19 pandemic worldwide and the ensuing policies mandated to close schools to promote social distancing and lessen the spread of the virus prompted most learning institutions to abruptly and completely transition all in-person learning activities to online learning.

Although many have taken the institutional or faculty view, some early insights of the impact on the education sector are available through a variety of rapid snapshot polls and surveys. For example, EDUCAUSE, a global non-profit trade association of more than 2,300 organisations and over 100,000 individuals across 50 countries, conducted a quick poll in April 2020 with 267 IHLs (Grajek, 2020). They found that the most significant challenge for learners were bandwidth and Wi-Fi access, followed by access to the necessary devices required to support fully online learning. Access to institutional services was also a challenge for many students (although the extent varied considerably by institution and services required) - in some instances, navigating institutional changes and administration presented more difficulties for a student than the transition to fully online learning. For the institutions themselves, many of the challenges were financial. The report also mentioned emerging practices to adapt the courses to the limitations, including offering drive-up internet and providing Wi-Fi hotspots in parking lots, delivering live and online training and support for faculty and students, and giving students options for withdrawal, grade deferrals or extensions.

In Singapore, educational comics created by the National University of Singapore (NUS) (and later endorsed by the World Health Organization) were proliferated as early as January 2020 to sensitize the populace about the virus (NUS News, 2020). Some IHLs implemented online learning earlier than required to provide ample time for adjustments - in the Singapore Institute of Technology, for instance, online learning platforms were implemented across the entire university for all large classes in March 2020 even before university campuses were mandated to close (Lim, 2020). A survey collecting student feedback just before this transition included learners' concerns about effectiveness of online lectures, changes in assessment, and self-discipline when learning online (ibid.). In NUS, student evaluations at the end of the first fully online semester in May 2020 revealed three key findings: that perception of modules were significantly more positive compared to previous semesters; that students faced more challenges than benefits but had a positive perception of how the university handled the transition; and that students were generally understanding of adjustments, although there were some areas for improvement (Chan, 2020). 64% of the findings relating to student experience were negative (ibid.), suggesting that students found the transition challenging.

In such insights, however, just like in Kara et al. (2019), the unit of analyses was limited to IHLs and was primarily concerned with students in degree-granting programs. It is undetermined if the findings in this poll are generalizable; this is where this current study fills the gap, extending the net to study professional adult students in non-degree online learning activities as well, such as those in corporate environments. Additionally, as online learning proliferates and the majority of professions and occupations are becoming increasingly dependent on technological work tools, it is crucial to understand how to improve the use of such technologies for the best outcomes, particularly concerning learning.



## 2. Methodology

This was a mixed-method research study consisting of two phases. Phase One comprised a 20-minute online survey (n=1,354) that collected data on adult learners' perceptions of online learning, motivation, experiences, and challenges. The survey included a series of Likert-scaled items that probed participants to reflect on their most recent online learning experience, their perspectives on online learning, their learning strategies, as well as their learning motivations. Data collection started on 9 September 2020 and ended on 23 September 2020.

Phase Two was a combination of 60-minute interviews (n=15) and 90-minute focus group discussions (n=4, with a total of 30 participants), with a purposive sample drawn from Phase One. Phase Two aimed to gather more in-depth information on adult learners' experiences and their collective suggestions, which included suggestions that could improve potential participation in online learning. Data collection started on 6 October 2020 and ended on 5 February 2021.

### Participants

The participants were recruited from a combination of sample listings: (i) past participants of IAL surveys, (ii) IAL learners, (iii) members of the Adult Education Network (AEN), and (iv) Singapore University of Social Sciences Continuing Education and Training students. All individuals within this sample frame aged 21 and above were invited to participate in the study.

A total of 1,354 individuals participated in the study. Table 1 provides a breakdown of the participants.

**Table 1: Breakdown of sample collected**

Sample listing	Proportion (%)
Past survey participants	15.14
IAL Learners	3.24
Adult Education Network (AEN)	77.77
SUSS CET students	3.84
<b>Gender</b>	
Male	57.09
Female	42.91
<b>Age</b>	
Below 30	9.75
30- 39	25.78
40- 54	45.86
55 and above	18.61
<b>Highest Qualification</b>	
Secondary and below	2.89
Post- secondary	20.52
Degree and above	76.59
<b>Employment status</b>	
Employee	65.44
Self- employed/ Freelancer	21.27
Unemployed	6.87
Out of labour force	6.41

### 3. Findings

In this chapter we present the findings from the survey and the qualitative data from focus group discussions and interviews. The chapter is organised in response to the research questions as follows:

- 1) How have the transition(s) to e-learning during COVID-19 impacted the adult learners?
  - a. Why do adult learners continue to learn during this period? If they do not, why not?
  - b. In what ways are adult learners benefitting (or not) from their transition to online learning due to COVID-19?
  - c. Are there specific categories or types of adult learners that are benefitting more (or less) than other categories or types of other adult learners?
  - d. Do different online design strategies and modes of e-learning impact adult learners in different ways?
  - e. How are/have adult learners' perceptions or attitudes changing/changed as a result of these online learning experiences?
    - i. How have adult learners' perceptions of face-to-face learning changed?
    - ii. How have adult learners' perception of the role of the trainer/facilitator changed?
  - g. How have adult learners' perception of the role of the trainer/facilitator changed?
- 2) What are the challenges adult learners experience in their transition to online learning due to COVID-19?
  - a. How did learners overcome these challenges?
  - b. What support have they received during the transition to online learning, and what is their perception of its effectiveness?
  - c. What motivated them to continue participating in online learning?
  - d. What other support do they need to sustain their learning?
- 3) How are adult learners who are either unable or unwilling to participate in online learning, pursuing their learning goals?
  - a. What needs to be different to have these adult learners participate in online learning?
  - b. What is stopping/deterring them from participating in online learning?

The final research question, as stated below, is addressed in the discussion and concluding chapters:

- 4) What are the implications of these changes and challenges (or the absence of) from transitioning to online learning?
  - a. How can online learning be sustained in a post-COVID-19 adult learning landscape?
  - b. What is the role of face-to-face learning vis-à-vis online learning post-COVID-19?

#### Learners' reaction to online learning

Respondents in this study by and large reported in both the qualitative and quantitative data that they accepted that online learning is here to stay. This finding was evident across a range of data and questions, but most clearly indicated in the following survey question in Table 2.1. Over three quarters of respondents (76%) indicated they would continue to learn online.

**Table 2: Proportion of respondents who intend to participate in online learning in the future (%)**

Question	Disagree	Neutral	Agree
I intend to participate in online learning in the future	3.84	20.09	76.07
I will be attending another online programme	3.99	25.04	70.98

This finding reflects a study by Chen et al. (2020) regarding the impact of the move to online on adult educators. Given the sample in this study (online learners who are for the most part well educated professionals), this finding is perhaps not surprising. As planned, access to additional sampling representing a greater variety of backgrounds and work will give a more rounded picture. Although there appears to be acceptance that online is here to stay, there were considerable challenges for many, with reported experiences indicating that there is much to be improved.

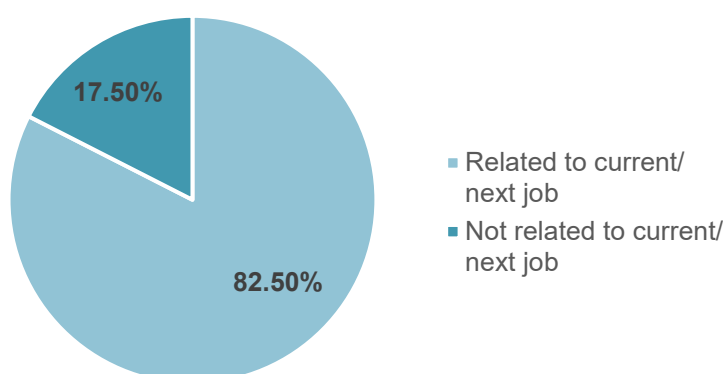
Reasons for learners' participation in online courses are discussed in the following section. The remainder of this chapter addresses research questions one and two in more detail: how have the transition(s) to e-learning during COVID-19 impacted adult learners, and what are the challenges learners experienced? The third research question (what needs to be different to encourage those who did not participate in online learning and what is discouraging them) is embedded in the following sections.

### Reasons to continue learning during Circuit Breaker

In addressing the question of why adult learners continue to learn during COVID-19, it is important to note that learning occurs through everyday activity; learning is an inevitable part of being human and a necessary response to change (Jarvis, 2009). This study did not attempt to cover such a broad scope – rather, the researchers sought to capture learning mainly through participation in online courses and some forms of informal online learning activities.

Work was the main reason given for enrolling in some kind of online programme or course. As indicated in Figure 1, a very large majority (82.5%) of respondents gave work as the motivating factor.

Figure 1: Reasons for enrolling in courses during COVID-19



Job-related reasons for enrolling in courses further varied. Interview respondents such as Kate<sup>1</sup> told of being sent on courses, including, for example, using LinkedIn Learning as required by her company. Henry explained that his company was accessing NTUC courses to assist staff to “cope with the changing situation”. He added that although the courses were not directly related to his job, “they give you a better or broader idea about what is going on today in the society, and they help you to cope better with what is going on in the crisis conditions”. Nicholas shared that he was undertaking a free MBA as a refresher course as he wanted to “refresh myself with the general business” as preparation for setting up a start-up company.

Others such as Cherry enrolled in online courses because she was “really, really bored during the Circuit Breaker” and thought she could “spend my time learning something useful.” She found free courses through the Udemy online learning platform.

<sup>1</sup> The names of all interviewees are replaced with pseudonyms

## Benefits perceived from the transition to online learning

### Convenience

The convenience of online delivery was highlighted by both FGD participants and interviewees alike. For one, saving travel time meant being able to get more sleep. Even when their overall preference was for face-to-face learning, nearly all FGD participants and interviewees spoke of the convenience of doing the courses in the comfort of their own homes. For those who were engaged in asynchronous learning, the convenience of completing learning activities at times of their choosing, and at their own pace, be it “on the go” (Nicholas) or at home, also meant being able to take a break when they wished.

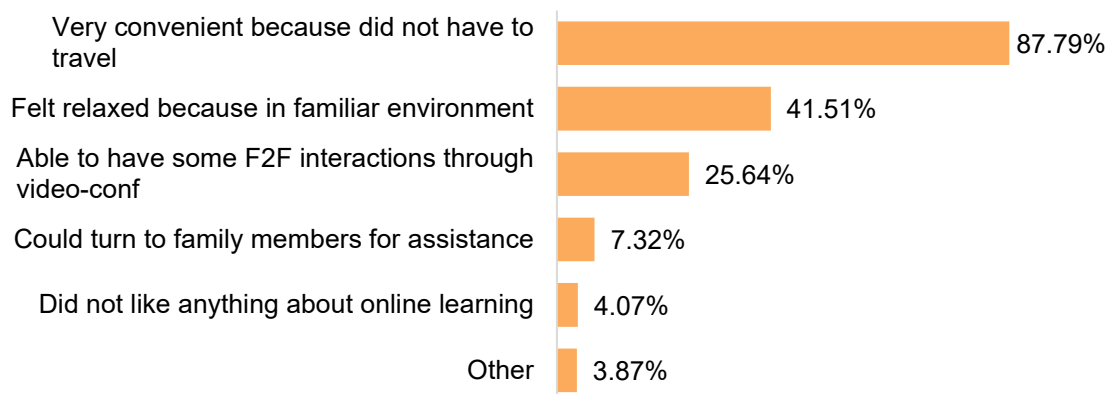
Survey respondents and interviewees also mentioned that they enjoyed the flexibility of online learning:

“...it’s very useful and I miss a certain, like a certain chapter or something I did not understand, I can just go back and re-watch it.” (Cherry)

“Flexibility in completing the learning at different times or by breaking the training down into multiple sessions.” (survey respondent, 69720)

The convenience enjoyed by the learners was reiterated in the online survey where close to 90% of the learners liked online learning due to the convenience of not having to travel (see Figure 2).

**Figure 2: Benefits of online learning**



### Accessibility

Free online courses through platforms such as Udemy, Microsoft, and Datacamp were free to participants as they were supported by their employers. The ease of signing up for Udemy courses was particularly commented on, an important point as discussed later in the Technology Acceptance Model (TAM). For self-directed and informal learning, YouTube was frequently given as an example. One focus group participant (FGD, P23, 15/10/2020) shared that “sometimes I go to YouTube or other websites to watch those online lectures on certain topics”.

### Design and mode of delivery

For those such as Tiffany, who described herself as having an “anti-social trait” and not needing to draw energy from being with others, online learning “really worked” for her. Design of online learning and lecturer responses were also given as reasons for committing to and continuing with the course. This is discussed further in later sections.

### Self- motivation

Another was motivated by interest in the topic and “grab some of family members to learn together” (FGD, P29, 15/10/2020). Tech-savvy participants were appreciative of the many resources available online. This group also tended to be the ones who could navigate the plethora of possibilities online which is further elaborated in the later sections.

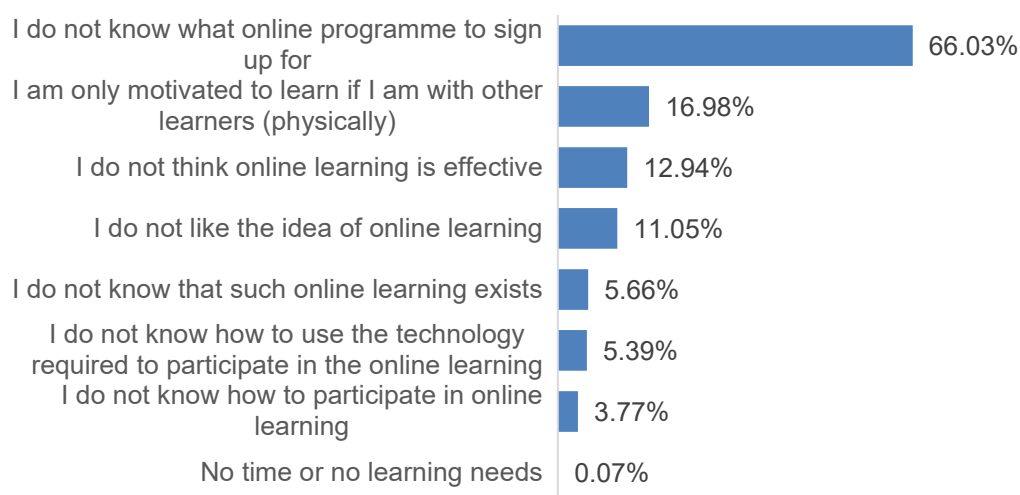
### Reasons for not participating in online courses during Circuit Breaker

#### Overwhelmed by the plethora of courses online

66 percent of survey respondents did not participate in online learning courses (see Figure 3) because they did not know what online programme to sign up for. Interview respondents agreed that the plethora of courses available online could be overwhelming for some. The more tech-savvy interviewees and focus group participants made specific suggestions on strategies to make decision making easier; these are discussed in the section on support for online learning. As one interviewee noted, if your purpose is clear this is key in addressing the issue of how to decide on which options, and of navigating and making decisions about the plethora of offerings (FGD, P5, 06/10/2020). However, this linear causal argument may be oversimplifying the issue. For example, a vague intent can become clearer with more information.

**Figure 3: Reasons for not participating in/ dropping out of online learning programme since Circuit**

#### Breaker



#### Lack of digital proficiency

More specific reasons for not enrolling in courses during the lockdown relate to a fear of online learning, as highlighted by this focus group member:

“I will not recommend online learning. Yeah. I'm talking on behalf of those who are not tech savvy like myself, because I'm afraid to go online to learn because you'll be surprised but maybe looking at myself, like I don't look so old but I come from a background that, you know, I'm not good at technology and that's why I will not want to attempt to go online, ... some of my friends, even the younger ones who are not good at technology, they feel that online learning is sort of like a waste of time, or they are not good at it, therefore, they don't benefit from it. I get threatened by a new online course that it's on a different platform. So, that is the reason why I didn't want to take up online learning during the CB [Circuit Breaker].” (FGD, P14, 08/10/2020)

## *Uncertainty*

Another respondent spoke of anxiety induced during the COVID-19 lockdown, and the uncertainty of having work to return to, resulting in “I really didn’t have mood to start online learning” (FGD, P9, 08/10/2020). These concerns were echoed by another respondent who was also facing extreme uncertainty, and was concerned that if he did take up a course it would conflict with work should it start up again, especially as he worked long hours. The same respondent mentioned that friends who had taken up an online course did not find it conducive, and that this influenced his decision (FGD, P15, 08/10/2020) not to undertake online courses.

However, even for this group of respondents, learning continued for some.

## *Learning continues: Informal learning taking place*

One focus group participant shared her continuous learning through reading books, as well as learning from her children who taught her how to use the platform Zoom then the platform Teams “and then I have to relearn again (FGD, P14, 08/10/2020).” The concern about having to ‘relearn again’ is indicative of the depth of fear of being online; unless the specific navigation steps for each program are used consistently and often, they are forgotten. Merz, Elzinga and Schwabe (2016) found that stress may alter the contributions of multiple memory systems to learning, promoting a shift from flexible, “cognitive” to rather rigid, “habit” learning and memory. This would suggest a need to teach the principles of navigation and, setting initially simple challenges that can be addressed by the learner to build confidence in overcoming fears, and to gradually encourage experimentation in trying out what happens when clicking on various icons, rather than using a step by step approach which requires memorising.

A number of focus group participants explained that they were too busy with work to enrol in courses or that the company scheduled their required learning at the end of the year when there was more down time. Given that our sample included many educators, it is not surprising that although focus group discussion and interview participants did not enrol in a course, they were continuously learning. These participants, and those who did undertake online courses, were continuously learning through other online means. The examples captured here indicate being comfortable in the online environment, and that for this group, being online is rich in resources which enable them to readily and continuously learn.

- In terms of just bits and pieces of like informal upskilling, or just learning a bit of knowledge here and there, that was more possible during that period of time (FGD, P6, 06/10/2020);
- I pursued my personal interests, which I did do some self-learning, but it's not a formal course. I learned about the phone Android system, which I'm able to sort of repair my own phone now, software wise (FGD, P1, 06/10/2020);
- I went through quite a number of the Facebook Live sharing. And some of them are really, like, quite good. Yeah, they really teach you the skills that there is actually very applicable, although they may not have a formal curriculum or content planning, but whatever is being shared during that 20 minutes or 30 minutes is actually very useful (FGD, P2, 06/10/2020);
- I also searched on YouTube and Google about management, how to motivate people, how to lead my team, all that. Personal basis, for example, during Circuit Breaker, I just searched online on different recipes and tried them out (FGD, P4, 06/10/2020);
- I was job hunting – then I would go online and like, okay, how do I get better in my interview skills and stuff like that (FGD, P10, 08/10/2020);
- Because of this new job, I really got to learn on the fly... I am learning on-the-job... like how to remote manage projects at home, making sure that even when we work at home, we must be able to deliver our products or services to the customer (FGD, P13, 08/10/2020).

The last example is a reminder that there are many layers in continuous learning. For example, P13 was not only learning online communication tools, some of which were new to him, but also learning

project management capabilities, AND that this new arrangement of working from home does not stop you completing your work tasks and meeting objectives.

### How do adult learners benefit from their transition to online learning?

Unsurprisingly, different learners vary in how they benefit from online learning. This is in part due to their perceptions of what learning is, and thus their expectations of the online learning experience.

For example, learners such as Xavier found that the online environment was less anxiety producing and more straight forward. He commented that if a question was posed to him in the online environment he will get to the point, answer it and “get over it” whereas in physical face-to-face sessions, he would worry that he would say the wrong thing that may offend or show “stupidity”. The anonymity of being online helped overcome this anxiety. Other respondents expressed similar concerns and experiences. Concerns about appearing stupid suggest that his experience of learning is to provide the correct answer. It is common in classrooms the world over to expect to experience the Initiation- response- feedback (IRF) sequence of teacher initiation-student response-teacher feedback, or in other words, the need for recitation (Guzmán & Larrain, 2021). In IRF, there is no room for pondering, exploring, consideration of alternatives, building and co-constructing knowledge, which requires an open mind, a sense of curiosity, and a safe psychological space to consider different possibilities and to be tentative in order to improve on ideas (Scardamalia & Bereiter, 2014). The commonly used practice of IRF results then in a disconnection between theory and practice (ibid).

Positive responses to online learning such as the opportunity for more think time and the ability to go back to the recorded lecture suggest that learners are indeed active sense/meaning makers, who need interaction to not only stay focused but also to achieve deeper learning. Bella, for example, explains that:

“There's actually more time to think through and understand or rather digest what the lecturer is saying as compared to face-to-face. Because ... sitting there sometimes is easier for your mind to go blank. Just sitting there doing nothing. But ... on your own, if you don't understand something, I can still look through the slides back again. Yeah, so it's actually kind of churn more ideas or questions if I want to ask.” (Bella)

Benefiting from online learning vary according to circumstances, individual preferences and type of course, be it synchronous, asynchronous or mixed. Table 3 shows that the majority of respondents (85.2%) found that the online learning programme that they had attended was effective to some extent, in terms of improving their skills or knowledge. Similarly, 77.6% of the respondents reported that they made use of what they have learnt. It is worth noting that there are more learners who attended programme with mixed mode of delivery (synchronous and asynchronous) reporting that the online learning programme is effective.

**Table 3: Effectiveness of online learning**

Question	Mode	Not at all to a little (%)	At least to some extent (%)
Improve skills / knowledge	Synchronous	16.95	83.05
	Asynchronous	15.54	84.46
	Mixed	10.86	89.15
	Overall	14.85	85.15
Application in current job	Synchronous	22.5	77.5
	Asynchronous	30.91	69.09
	Mixed	17.12	82.87
	Overall	22.43	77.57

As indicated earlier, all value the convenience factor of learning online, including most of those who prefer physical face-to-face sessions. As indicative of the convenience example, benefits are rarely straight forward; indeed, often they are tempered in various ways or are offsets for other types of learning experiences.

- Convenience: Tiffany, for example, commented that there is no rush to catch the bus, no concerns about late night finishes; or if earlier sessions, that she does not need to get dressed, she can drink her coffee and have time to do other things.
- The ability to revisit lectures that have been recorded, including recorded Zoom sessions. This was valued as if participants missed a section, due to boredom, attending to other matters, or did not understand some parts, then they had the opportunity to replay and undertake their own sense-making;
- The ability to privately message the lecturer after the session, for help as well as undertake their own research. For some this replaces having ready access to the lecturer in face-to-face sessions, and is also available in this mode. However, it seems that the availability of the chat function might be a prompt for some to feel more comfortable to reach out;
- If participants attended a session with friends, then the ability to ask classmates if they missed something. This was not an option for those new to a group. Indeed, these respondents spoke of the shifu<sup>2</sup> and the kiasu<sup>3</sup> effects. That is, many would hold back perceiving learning as a competitive endeavour, and being fearful of being beaten in the test or exam, if they shared too much;
- Online opens up possibilities for international networks and connections. A small number of interviewees spoke of this. David, for example, is interested in establishing business connection in Sri Lanka and attended a webinar conducted by the Sri Lankan embassy. The webinar included a break out session where David was able to converse with participants from Sri Lanka, and has established and maintains contact, learning about the Sri Lankan culture - valuable knowledge for doing business.

Convenience and the ability to revisit recorded sessions are the standout benefits of the online experience. These aspects are thus important for decision-makers, designers and trainers/facilitators to keep in mind when designing learning. This also needs to be in the context of preferences for face-to-face by many, who indicated that a hybrid or mixed modes of online and face-to-face would be the best of both worlds.

### *Learners' learning practices*

Additionally, there are important, but less stand out benefits of online learning experiences. These benefits relate to individual's learning practices highlighted by the online environment. What follows below is nothing new; learners have always been active sense-makers but have not always been required to exercise active sense-making in formal structured sessions.

A small number of stories emerged where the design of the learning required learners to actively engage and exercise their creativity. These are discussed in more detail in the section about Design of learning. Relevant here is that the trust placed in learners and the expectations of learners delivering, strongly contributed to self-directed learning, and the further building of this capability. Other courses such as mathematics courses required learners to undertake a variety of mathematical exercises, and as Bryan notes, finding the answer yourself means you are less likely to forget it, as compared to being "spoon-fed". Quite a number of interviewees and focus group participants mentioned their use of Google, YouTube, Wikipedia to find information and how to guides, in order to help them complete required activities. Demi, for example was required to come up with a solution to a problem; Cherry, Bryan, Tiffany, Zoey and Bella used these sources to gain understanding of what was not clear to them.

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<sup>2</sup> A title for a skilful person in Mandarin

<sup>3</sup> Having a grasping or selfish attitude arising from a fear a missing out on something



Although there were reports of the loneliness of the online experience, there were also some reports of collective support and learning. Demi, for example shares what she finds from her online searches with the class via her lecturer; Evan asked classmates about something he missed or did not understand. He also commented that learning together is more fun. Others spoke of preferences for attending classes with friends or colleagues. This more readily gives them access to peer support even when it is not part of the learning design. These examples are not isolated, but specific instances, indicating the need to build into the design and facilitation of online learning, opportunities for collective learning, to build a community of practice (Wenger, 1998).

Learners also developed various workarounds to aid their learning and use of online delivery. These included handy tips such as the following:

- Having both Zoom screen and slides open. Having the slides open means the learner can move back and forward with the slides to check understanding. This helps reinforce symbolic language (Eilam, 2012), important for understanding. This strategy replaces what happens in the classroom setting;
- Recording times markers (30 minutes, 45 minutes etc.) when the lecturer is talking about specific topics, making it easy to find the topic when revisiting the recording
- Using apps to facilitate learning online, Cherry, for example, uses a note-taking app called Goodnotes to make notes
- Purchasing of a good quality headset to enhance sound and clarity

### Categories of adults benefitting most from online learning

From the findings above, we see that learners vary in how they benefit from online learning. In this section, we further explore the specific categories of adult learners who benefited more from online learning. To investigate, we employed a logistic regression model to examine the association between effectiveness of online learning programme, levels of self-directed learning, the degree of technology savviness and learning strategies. The outcome variable is the effectiveness of online learning programme which is defined as the improvement in skills and knowledge reported by learners after participating in the online learning programme. The outcome variable was recoded into a dichotomous variable where a reported improvement in skills and knowledge is recoded as “1” and no improvement was recoded as “0”.

Table 4 shows the odds ratios of the logistic regression. Adult learners who reported higher self-direction in their learning, and being more tech-savvy, are more likely to report that their participation in the online learning programme helped them in improving their skills and knowledge compared to learners who exhibit lower self-directed learning. On the other hand, adult learners who collaborated with their classmates in their learning, made extra preparations for their learning, managed their time for learning, actively sought help for learning, or set goals and standards for their learning (learning strategies), did not seem to benefit significantly more than learners who did not do so.

**Table 4: Odds ratio of learning practices on effectiveness of online learning programme<sup>4</sup>**

	Odds Ratio
Self-directed learning (scale of 1-5)	2.02**
Tech-savviness (scale of 1-5)	2.24***
Choosing/finding optimal time/location for learning (scale of 1-5)	0.48*
Trying to answer the questions that other students asked	1.00
Trying to solve difficult problems with other students when encountered	1.31
Working with other students on online projects or assignments	1.43
Studying the lesson contents with other students	1.22
Asking other students for help when couldn't understand a concept taught in online class	0.90
Making use of online chat groups like Whatsapp, Telegram to communicate with other students	1.18
Made extra preparations for learning (scale of 1-5)	1.26
Time management for learning (scale of 1-5)	1.11

+p<0.1 \*p<0.05 \*\*p<0.01 \*\*\*p<0.001

#### *Self-directed learners*

The logit regression shows that self-directed learners are two times more likely to report an effective online learning programme than other learners. Long (1998) considered SDL critical in online learning because of the physical and social separation of learners and instructor and Shapley (2000) highlighted that students need a high level of self-direction in order to succeed in an online learning environment. Therefore, it is not surprising that adult learners who are self-directed would benefit most from online learning as it is believed that online learners have more control over their learning than in traditional classroom setting (Garrison, 2003). This is also consistent with the qualitative findings on learners' learning practices.

#### *Technology savviness*

Technology savvy learners are 2.24 times more likely to report an effective online learning programme compared to learners who are less technology savvy. A study conducted by Tchoubar, Sexton & Scarlatos (2019) demonstrated that online learners who are technology savvy find the online learning environment easy to use and helpful, compared to learners who are not technology savvy. Participants in an online learning programme need access to the internet, to navigate and make use of the different functions of the online learning platforms adopted by the online learning programme. The learners may need to locate additional learning resources peripheral to the online programme from the internet or engage the trainer and fellow learners virtually through different online applications. Therefore, online learners require a certain level of proficiency in technology for a positive learning experience.

<sup>4</sup> The analysis controls for age, gender, race, highest qualification attained, and labour force status.

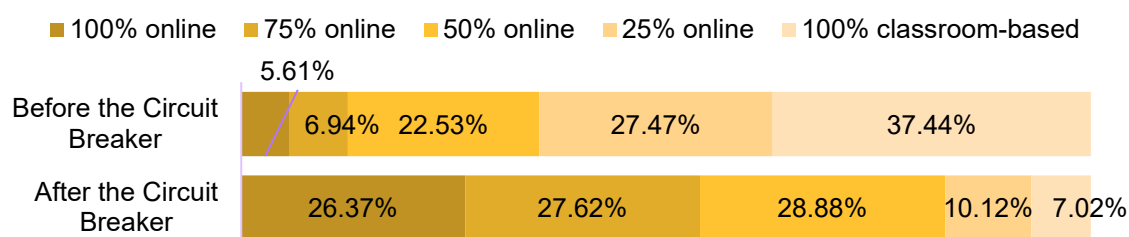
However, it is noted that learners who tend to find optimal time or location for learning are 0.5 times more likely to report an effective online learning programme than the other learners. This finding suggests there is a need for further investigation in future studies.

### Attitudes changed towards online learning

#### Online vs classroom-based learning

Since the start of the Circuit Breaker on 7 April 2020, there has been a fourfold increase in preference for 100% online learning from 5.6% to 26.4%, and a slight increase in preference for blended learning from 56.9% to 66.6% (see Figure 4). However, there remains a strong preference for face-to-face learning with over 40% of the respondents preferring face-to-face learning.

**Figure 4: Preferred mode of learning before and after Circuit Breaker**



Change in perceptions of physical face-to-face sessions compared to online learning has shifted quantitatively; however, the experience of COVID-19 lockdown and push to online learning seems to have highlighted differences between these two modes of delivery. As previously noted, learners very much value the convenience of online delivery, and the ability to return to recorded sessions. The ability to learn on the go, anywhere, anytime, the mantra of online learning when it was first introduced, still stands today. Demi neatly captures one aspect of the convenience of online learning as compared to having to attend face-to-face classes:

“There’s no question about it. Online. I mean I can’t even go back to the time that, you know, we had to get out of our office by 6 plus. Have a hurried dinner, just swallow the hot stuff and then rush over to Paya Lebar and come for training by 7 o’clock. Oh my goodness. That is such a thing of the past. I think this is much better.” (Demi)

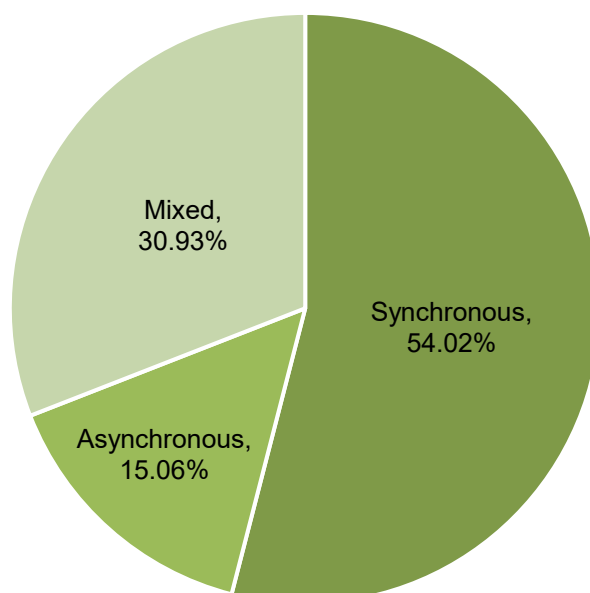
Also already mentioned is the ability to develop international connections. While some found that the anonymity made it easier to ask questions, others found the opposite (that it was harder to ask questions). There are many factors that contribute to this different experience, ranging from personality, past experience of learning, comfort levels with technology and importantly, the design of the learning. In relation to design of learning and its impact on learners benefiting from online learning, many interviewees and focus group participants suggested that online was good for bite-sized asynchronous learning. Some suggested online was good for theory sessions. One focus group member gave an example of an excel course he attended online which he considered was much better than the classroom experience:

“I took a course on Excel spreadsheet, you know that’s a crazy course to take, yeah? Excel with all the formulas and all that. And I actually enjoy it, which shocked me. Because on my screen is the whole Excel. I have my own screen. I don’t have to look at a slide on the wall, and try to figure out what the trainer is trying to point at and move. Everything is personal to each individual. And when we ask questions, it’s very specific.” (FGD, P16, 13/10/2020)

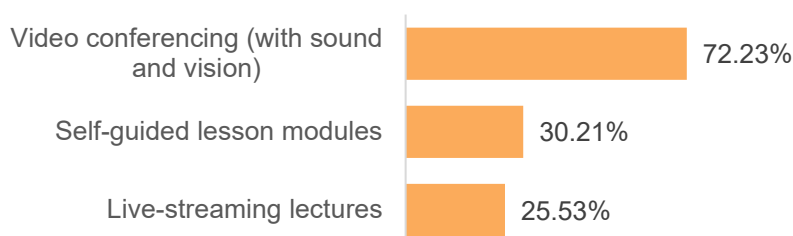
## Synchronous and asynchronous delivery

In this section, we investigate the impact of synchronous and asynchronous delivery on adult learners. Figure 5 shows that over half of the online participation in courses was synchronous (54%) with 72.2% of the programmes delivered through video conferencing as shown in Figure 6.

**Figure 5: Proportion of programme delivered through synchronous and asynchronous mode**



**Figure 6: Top three common modes of delivery**



For asynchronous learning, our respondents spoke about the difference quality materials made, the need for activities that help with contextualising knowledge, and that these sessions were generally shorter. Asynchronous was perceived as ideal for short 'how-to' learning needs. Where deeper knowledge was required, most respondents suggested that a blended approach that included physical face-to-face or at least a hybrid approach using both synchronous and asynchronous would be more effective. Other ways that learners reported asynchronous as helpful was the ability to revisit recorded lectures and sessions.

For some, the debate between synchronous or asynchronous was not an issue:

I think synchronous and asynchronous learning experience, I feel like it has been happening everyday in our lives. Be it pre-COVID, before COVID, during COVID now, after the COVID, it's in our everyday lives from studying, working, discussions with colleagues or you know, with your classmates. So it's already in our lives so I don't really think that there is anything striking about it because we are actually used to it. Live discussions. (FGD, P26, 15/10/2020)

For those who are tech savvy and use computers as part of their everyday work, this focus group participant's observation holds true. For those who fear technology, are not exposed to it on a day-to-day basis, the experience is very different, as previously discussed. However, even for those who are tech savvy, most indicated that asynchronous requires additional focus and drive. One participant shared that:

"To remain enthusiastic myself, to keep myself on track and committed to finishing up the learning module is torture. It can take days and in fact, sometimes I'll just go through that motion to finish up. Just clicking page by page and then when it comes to the quiz portion, I'll just randomly answer and hope that it is an MCQ so I can game my way out." (FGD, P19, 13/10/2020)

Asynchronous modes offer flexibility – "our lives are quite busy now. At least if it's asynchronous, I can choose when, where" (Kate). Again preferences depend on individual purpose, resources available (e.g. time, degree of tech savvy, additional resources mentioned earlier such as additional screen etc.). Many respondents indicated a preference for a mix of synchronous, asynchronous and face-to-face delivery modes. This is a design issue related to fit for purpose.

### Perceptions of change in the role of the trainer

All interviewee and focus group respondents highlighted the importance of the role of the trainer. Respondents differentiated those trainers with good technological capabilities, and their ability to manage multiple tools, as is required for synchronous online delivery, as better quality, from trainers who did not have these capabilities. Respondents strongly highlighted the importance of being engaged, of interaction in the online environment as necessary for learning, and for motivation to stay awake and focused. Sadly, there were many comments about trainers who read off their slides, sending learners to sleep, or resulting in learners turning off cameras, doing other things, or exiting the session. This included one bizarre story of a trainer who did exactly as she always did in classroom sessions – write notes on flip charts. When learners informed her they could not read what she was writing she tore the sheet off and held it up to the camera. Needless to say, this was not effective.

The required capabilities of trainers have indeed changed as a result of the move to online. This was commented on by a number of respondents. For example, in relation to the need for being technologically savvy and able to manage multiple tasks at the one time, a focus group respondent reported how the engaged learners, at the same time actively checked through the chat messages and responded verbally, sharing with everyone, and sent a link to the group to respond to a survey question or other activity. Everyone could see everyone else's faces. "it's almost as if we are in a real classroom. All of us were very engaged. So I feel that for this current, this new normal now, this facilitator, trainer role has to be to that calibre" (FGD, P24, 15/10/2020).

Another focus group respondent noted the change required of trainers. He begins by explaining that pre COVID-19:

"A trainer could simply teach their lessons very conventionally. So they could just keep on talking and lecturing mostly one-way, yeah. But now they have to put in the effort to try and engage their students. So similar to what [FGD, P22, 15/10/2020] said earlier, almost everyone is muted with their cameras off so trainers nowadays don't have a choice but they have to engage their students to ensure that everyone actually - basically ensure that everyone is actually learning because they don't really get to see their students face-to-face. So I would say that the role of a trainer, it's a bit more difficult as compared to last year." (FGD, P26, 15/10/2020)

This comparison between 'conventional' approaches and the need for interaction and learners' engagement in the online environment starkly highlights the need for interaction and engagement in

order for learners to stay focused and motivated. As many respondents noted, in classroom settings, norms apply such that it would be rude to walk out (which is possible in the online environment), or fall asleep, if the trainer is boring (also possible in the online environment). Learners now find it in their power to stay or leave the session or simply turn off their camera and do other things, while appearing to be present. Many respondents spoke of their bed being just behind them, interaction with family members, attending to emails, or online shopping or other activities while in the online environment. In a sense, the online environment enables learners to vote with their feet; something they felt powerless to do in the physical face-to-face settings.

This experience highlights the division of labour between learners and trainers. Division of labour is about roles and power differentials. In the online environment, this is highlighted by the technology. On platforms such as Zoom, “the teacher has control” (Henry). Bella, like many interview and focus group respondents, is concerned about interrupting the lecturer as they lecture. The online environment enables her to message the lecturer in the chat function of Zoom, or if an asynchronous discussion, by using email or even in the LMS. This seemingly positive experience of online, conveys an understanding of learning where the voice of the learner is of limited consequence or importance (Bound et al., 2019; Scardamalia & Bereiter, 2014). The learner is positioned as largely passive and secondary to the trainer/lecturer. This is the common power dynamic in structured learning environments, limiting opportunities for deep understanding, learner agency, important in contributing to learners’ ability to thrive in dynamically changing contexts.

To build in interaction, active learner engagement requires very deliberative decisions and good levels of technological capability on the part of the trainer, as the technology is a barrier to creating a more democratic environment. The online environment makes stark, the need for interaction and learner engagement; trainers therefore need not only strong technological capabilities but strong pedagogical capabilities. Zane commented,

“It’s not every day, you will find yourself having an engaging lecturer... If you have one which monotonous, like just reading off, and yeah, I’ll be slowly going away. And, if have a bubbly one who likes to share their experience, sounds interested in the topic, definitely, definitely have to sound interested. If the lecture him or herself is not interested, or rather just monotonous, then so am I. So, it’s going to be, I’ll be doing the same.” (Zane)

Enthusiasm for their subject is a minimal requirement for trainers/lecturers. As a focus group respondent noted, “the facilitator literally just read out from the PowerPoint slides ... I don’t need someone to tell me what is on the paper” (FGD, P25, 15/10/2020). Another focus group respondent observed that if the instructor keeps reading off the slides ‘which happens quite often actually’ (FGD, P26, 15/10/2020), it results in him (the learner) having “very low self-motivation” (ibid).

### Challenges of online learning and how learners overcome these challenges

Learners experienced considerable challenges online, and more so for those who were not so tech savvy. Most notable amongst these challenges was screen fatigue, regardless of the mode of delivery. Be it learners or trainers, discomfort or lack of familiarity with technologies or applications used was reported as a technological challenge by over a quarter of survey respondents who participated in programmes that were 100% synchronous (Table 6). Design issues with lack of interaction and this difficulty in keeping focussed and motivated was also high amongst challenges experienced (Table 8). Screen fatigue, a health and safety issue, was reported by a concerning number of survey respondents (Table 7), and was mentioned by many interview and focus group respondents. Each of these is covered in more detail in this section.

#### *Technological infrastructure and access to technological support*

A common experience was the loss of internet connection. Some interviewee and focus group respondents found this frustrating as it required the lecturer to repeat portions of the lecture when connection was regained. Some indicated that when they experienced this it was very stressful,

especially when connection was lost during a timed assessment. There were respondents who took such events in their stride, without letting it worry them. However, for the not so tech savvy learners, loss of connection is very stressful, and a source of embarrassment (FGD, P14, 08/10/2020).

Courses such as those involving mathematical symbols prompted a number of participants to purchase or access additional equipment, such as a bigger screen or an iPad.

“It’s very hard to do everything on one screen, because usually in the lecture theatre, I’d be watching the teacher and then typing or writing down my notes. But it’s a bit hard to do it just on one screen, so I got, like a complementary iPad and—so the iPad can also— have a screen-share function, then I can write down like—I can share whatever I’m writing on the iPad in real time. So, like—say, like, we’re doing calculations, then I can write down like, the different steps and the different formulas. Because it’s very troublesome to type it out, yah.” (Cherry)

Cherry also told us about Apps such as Goodnotes, allowing her the ability to edit and write on any file. This app addressed the problem of having multiple windows open on Zoom.

**Table 5: Challenges: Technological infrastructure**

	Synchronous	Asynchronous	Mixed	Overall
My access to reliable internet / wifi service	22.98%	20.27%	23.03%	22.58%
My access to a reliable digital device (e.g., laptop, mobile device)	10.55%	12.16%	12.50%	11.39%
My access to specialised software (e.g., Adobe products, statistical packages)	13.37%	18.92%	21.05%	16.58%
My access to library resources	14.31%	15.54%	15.46%	14.85%
Adequate digital replacements for face-to-face collaboration tools (e.g., whiteboards)	25.99%	25.68%	28.29%	26.65%
Unclear expectations around which technologies and applications I am required to use	23.35%	19.59%	27.30%	24.01%

A small but nevertheless concerning number of survey respondents reported limited or no access to a reliable laptop or mobile device (11.39%); 16.58% reported limited or no access to required specialised software. These infrastructure issues are important to address, as they affect social mobility, widening the gap between the information rich and the information poor.

*Technological expertise*

A quarter of the survey respondents (25.74%) indicated that their trainer was technologically challenged. Cherry’s account of having to show the teacher how to use various functions was experienced by a number of interview and focus group participants. Bella recounted an experience with one older lecturer who “many times exited the group unknowingly. And then she didn’t know how to join the group.” This resulted in lost time and delays, and “sometimes many topics weren’t covered. And then she ask us to read up on our own” (Bella). David told of one his lecturers not being sure how to share his screen, resulting in an hour’s extension to the session. Other respondents shared how they had to teach their lecturer how to operate Zoom.

**Table 6: Challenges: Technological expertise**

	Synchronous	Asynchronous	Mixed	Overall
Instructor’s discomfort or lack of familiarity with required technologies or applications	28.44%	18.24%	25.00%	25.84%
My own discomfort or lack of familiarity with required technologies or applications	27.12%	15.54%	27.30%	25.43%

Similarly, about a quarter of the survey respondents (25.43%) indicated they were not familiar or were uncomfortable with the required technologies. This is important to note especially given that three quarter of the survey respondents were professionals. Tiffany’s frustration showed through when she commented that “Zoom babies cannot even find the mute button”. Many mentioned background noise from participants disturbing the session, and needing to point out that it was necessary to mute their microphone and explain how. Trainers who were tech savvy, reported Cherry, would mute these participants or ask them to mute.

Others had more fundamental concerns, related to fear and discomfort with technology; concerns such as “I will look silly... do something wrong and then you miss out on the learning and people get frustrated” (FGD, P14, 08/10/2020). This focus group participant, gave these as reasons for not wanting to further pursue online learning, but also recognised that “this is something that is the future”. Learners who are not tech savvy, are very much in danger of being excluded from this future.

#### *Health and well being*

The biggest challenge was screen fatigue, with 68.06% of survey respondents indicating this as an issue (see Table 7). Evan commented that its “kind of tiring to just look at a screen as compared to in-class learning. Tiffany expressed a similar experience: “the screen, it makes a lot of light that tires your eyes. After a Zoom meeting, you just feel so tired” (Tiffany).

**Table 7: Screen fatigue**

	Synchronous	Asynchronous	Mixed	Overall
Screen fatigue	67.23%	68.92%	69.08%	68.06%

Screen fatigue was not the only health and safety issue. Long sitting times have a negative impact on bodies; as one focus group participant commented, “my bottom pays the price so now I'm learning to stand up” (FGD, P16, 13/10/2020). Ultimately, this is a design issue. In the hierarchy of health and safety engineering controls, designing the problem out is the best solution - that is, to have much shorter synchronous sessions. Asynchronous sessions are usually short and the learner has control over how long they sit, assuming the session can be saved or is pre-recorded.

#### *Limited interaction*

Whatever the mode of delivery, a concerning number of survey respondents had issues with the lack of interaction between learners (50.97%) and between learner and trainer (43.03%) (see Table 8). This concern was even more strongly expressed by interview and focus group respondents, already referred to in previous sections.



**Table 8: Design of learning**

	Synchronous	Asynchronous	Mixed	Overall
Difficulty focusing on or paying attention to on-screen / online instruction or activities	42.00%	40.54%	40.46%	41.30%
Personal motivation / desire to complete coursework	21.28%	33.11%	23.36%	23.70%
Not being able to see classmates	19.59%	16.89%	18.42%	18.82%
Lack of interaction among classmates	53.67%	44.59%	49.34%	50.97%
Lack of interaction among learners and facilitator / trainer / lecturer	43.31%	45.27%	41.45%	43.03%
Not able to get required attention from the facilitator / trainer / lecturer	17.70%	20.95%	17.11%	18.01%
Course lessons or activities that haven't translated well to a virtual environment	40.11%	35.14%	40.13%	39.37%

Table 8 tells us that 39.37% of survey respondents experienced design of online learning that did not translate well with the online environment. This is an important and concerning issue that will be addressed separately in the final section of this Chapter.

While interaction in the online environment can be readily included in design, and respondents provided positive examples of this (listed in Perceptions of changes in the role of the trainer), technology plays a major role, creating some possibilities and limiting others. Examples include the loss of non-verbal and nuanced verbal interaction online (Henry). This is an important factor in the additional time it takes in group work to get agreement (ibid). This loss of what we call the 'human factor', and pauses being a feature of online interaction, resulting in interrupted 'flow' is discussed further in the following section. The limitations of the technology make it challenging to design and facilitate dialogical approaches in the online environment. This was notable for courses that were not so much dialogic but required high levels of interaction and debate, as noted by Cherry.

"The course I took was focused on political science in the Asian region — political science is more like a debative, or rather, discussive topic, so, there wasn't much of that aspect going on in that online course.... It was mainly delivering the theory." (Cherry)

The online environment poses considerable limitations for some disciplines in particular, making it extremely difficult to develop disciplinary ways of thinking. Other limitations of the online environment included the use of symbolic language such as the use of mathematical language. Cherry was also undertaking such a course and commented that it was "tough to ask questions over Zoom", as typing the symbols was very time consuming. Cherry later purchased an iPad and a stylus to help overcome this issue. This suggests it is necessary for providers to a) inform students of such needs and b) for those students who cannot afford the additional equipment, there needs to be access to the equipment.

#### *Other challenges*

One third (34.79%) of survey respondents indicated time was an issue. Similarly, 28.69% indicated that course and/or assignment requirements were not clear (see Table 9). This could be a design issue, a navigational design problem or simply poor organisation or lack of clarity in the materials on the part of the Provider.

**Table 9: Other challenges**

	Synchronous	Asynchronous	Mixed	Overall
Finding time to participate in synchronous classes (e.g., live-streaming lectures or video conferencing at a set time)	35.03%	29.73%	36.84%	34.79%
Unclear expectations around course / assignment requirements	30.32%	18.92%	30.59%	28.69%
Competing class meetings and schedules	19.40%	18.92%	25.66%	21.26%

Interview and focus group respondents spoke about the need for access to a separate space. Some were lucky to have access to a separate room, others were juggling family around them and sharing the dining table, as well as the noise and interaction of family life making concentration difficult. A number of these respondents bought tables, creating a corner “just for work” (Evan).

To summarise this section, the main challenges were:

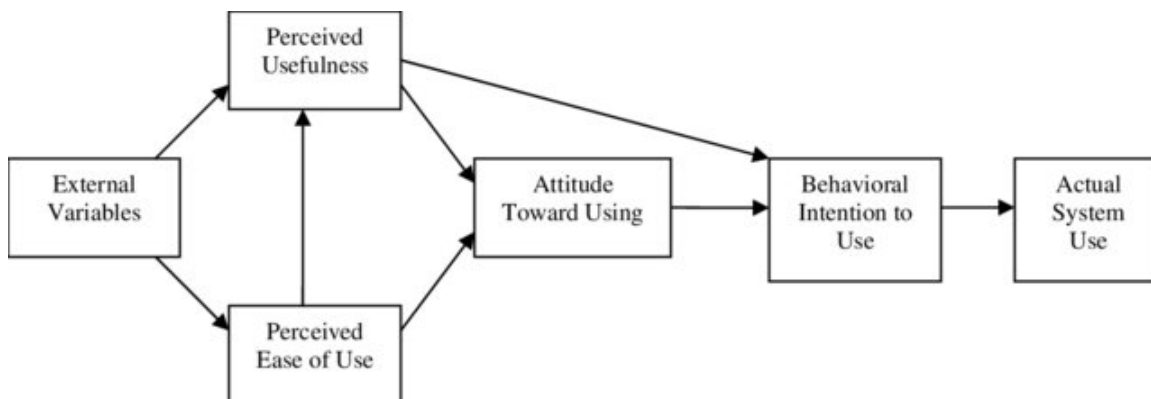
- the stability of the internet connection,
- access to timely online help,
- technological proficiency of the learner
- technological proficiency of the trainer
- lack of space
- limited or lack of interaction
- poor design of the online environment (navigation)
- sessions being too long contributing to back ache
- screen fatigue

It is important to address all of these challenges, as the experience of such challenges can contribute to increasing the divide between the haves and have nots, the knowledge rich and the knowledge poor.

### **What motivated learners to continue to participate in online learning?**

To investigate why learners continue to participate in online learning, this study adapted questions from an oft-researched theoretical model of user acceptance and usage of technology, called the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989). Based in part on the Theory of Reasoned Action (Fishbein & Ajzen, 1975), TAM in its original form suggests that an individual's motivation to use technology is influenced by their perceived ease of use, perceived usefulness, and most importantly, the individual user's attitude toward using the system in question. The model posits that perceived ease of use directly influences both perceived usefulness and also the individual user's attitude towards system use (see Figure 7).

Figure 7: Technology Acceptance Model (Davis, Bagozzi, & Warshaw, 1989)



Even in its first decade this model was already widely applied, testing the acceptance of a variety of technologies (such as email, Internet, information systems), under a variety of situations (time, culture, workspaces), with a variety of different control factors (gender, organizational type and size), indicating its external validity and robustness (Lee et al., 2003). In the next decade since then, with the proliferation of even newer technologies and systems, the number of studies testing and validating TAM have increased exponentially. The more recent TAM2 (Venkatesh & Davis, 2000) attempts to provide more explanatory power for the reasons behind an individual's perception of usefulness (or lack thereof) and comprises antecedents delineated across two categories: 1) anchors – the general beliefs of an individual about computers and its usage (e.g., playfulness, self-efficacy, etc.), and 2) adjustments – experiential-based beliefs resulting from use of the specific system in question (e.g., enjoyment and usability).

A great number of studies have tested the model specifically for online learning acceptance in the educational context, to positive results. For instance, Granić & Marangunić (2019) reviewed 71 studies of TAM in educational contexts, and found that perceived ease and perceived usefulness were proven antecedent factors affecting acceptance of learning with technology, with perceived usefulness being the strongest determinant for adoption of tech-enabled learning. As a caveat, though, Ritter (2017) conducted an analysis on 13 studies testing TAM for online learning and found that the model was more context-sensitive than expected, such as cultural and gender differences. This indicates a need for testing in the Singaporean context on a sample of adult learners specifically. Additionally, because our study seeks to explicate additional external factors from the adult learner's experience with the sudden transition to fully online learning, we will test a Technology Acceptance Model adopted from TAM2, further expanded to include the following relevant and important factors:

*Subjective norms (Norm)*

Defined as a “person’s perception that most people who are important to him think he should or should not perform the behaviour in question” (Fishbein & Ajzen, 1975). Venkatesh & Davis (2000) posited that subjective norms can indirectly influence one’s intention to use, through perceived usefulness.

*Quality of online learning (Qual)*

Quality of online learning refers to learners’ perceptions of the performance of the system. Venkatesh & Davis (2000) hypothesized that output quality significantly explains the unique variance in perceived usefulness. However, the hypothesis was not supported.

*Flexibility (Rel)*

Flexibility refers to the learners’ autonomy to learn at their own pace and time. This is found to be a main benefit for participating in online learning programme and we posit that it significantly influences perceived usefulness of online learning.

*Result demonstrability (Results) (dropped from the model)*

Result demonstrability is defined by Moore and Benbasat (1991) as the “tangibility of the results of using the innovation” and will directly influence perceived usefulness. This factor

was included in the initial SEM model, however, it was dropped due to insignificant relationship with perceived usefulness and produced poor model fit results.

### *Results of SEM*

Structural Equation Modelling (SEM) is conducted and Figure 8 shows the results of the proposed model. Result demonstrability is found to be insignificant and is dropped from the model. As posited by the TAM, perceived usefulness and perceived ease of use significantly and positively influence attitudes. Subjective norms and flexibility have direct influence on perceived usefulness while output quality is shown to have influence on perceived ease of use.

### *Perceived usefulness (PUse) and perceived ease of use (EASE)*

According to the TAM, perceived usefulness and perceived ease of use are the main determinants of adoption of new technology (Davis, 1989). Perceived usefulness is the extent that learners believe a system will improve their performance, thereby motivating the learners to use the system. Thus, for online learning, perceived usefulness involves learners' belief that the online environment will enhance their learning performance (Lee, Cheung & Chen, 2005). Perceived ease of use is defined as the learners' beliefs that the use of a system is relatively easy, and in the context of online learning, it involves the beliefs that the online learning system and resources are user friendly. The proposed model shows that perceived ease of use is a direct determinant of perceived usefulness (0.32). Venkatesh & Davis (2000) also highlighted that with lesser effort required to use a system, the increase in usage can lead to increase in performance.

### *Attitude (ATT) and intention to use (Intent)*

Attitude is the learners' negative or positive feeling regarding the use of online learning. The TAM posited that attitude significantly influences an individual's behavioural intention to use, and our proposed model shows a significant and strong relationship between the two measures (0.64).

There is also a direct and positive relationship between perceived usefulness and attitude (0.63) as well as perceived usefulness and intention to use the learning system (0.23). We have also observed a positive and significant relationship between perceived ease of use and attitude (0.18). Therefore, to motivate learners to continue to participate in online learning, the facilitators will have to consider an online platform that is easy to use and to support learners in familiarising with navigating the online system and to provide useful information for learners to access online resources.

### *Subjective norms and perceived usefulness*

Our proposed model has shown that subjective norms have direct and positive influence towards perceived usefulness (0.19). This is consistent with the findings by Venkatesh & Davis (2000). Therefore, it is important for learners' co-workers, family and friends to be encouraging and to believe in online learning participation. An example was provided earlier where a respondent mentioned friends who had taken up an online course, did not find it conducive, and that this influenced his decision (FGD, P15, 08/10/2020) not to undertake online courses. Hartwick & Barkl (1994) warned that the positive effect of subjective norms will attenuate with increased usage of the system as learners become aware of the strength and weakness of the system. Therefore, it is important that the learners' online learning experiences are positive to ensure continuity in participation.

### *Flexibility and perceived usefulness*

We also found a positive and significant relationship between flexibility and perceived usefulness (0.62). This result is highlighted in our qualitative findings where learners mentioned how they have benefited from being able to learn at their own pace and time. Thus, there is a need for trainers to make use of the asynchronous mode of delivery to allow learners to enjoy such flexibilities.

### *Quality of online learning and ease of use*

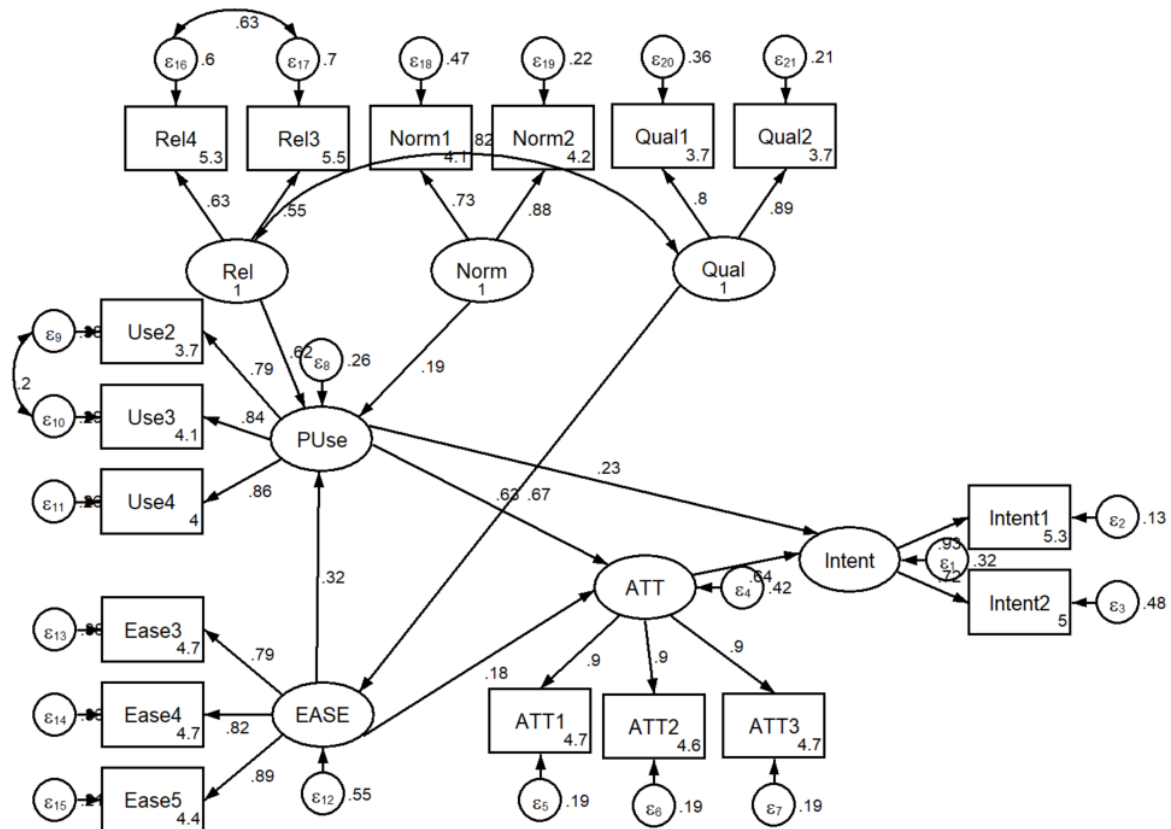
Learners tend to relate the quality of the online learning with perceived ease of use instead of perceived usefulness, with results showing a positive and significant relationship between quality of online learning and perceived ease of use (0.67). This again emphasizes the importance of adopting an online learning platform that is user-friendly and easy to navigate.

In summary, the TAM model has highlighted the importance of adopting an online learning system that is intuitive for learners to continue to participate in online learning. There is a need to provide relevant technical support for learners, especially learners with low technological capabilities, to

familiarise with and to help them navigate the online system. Several studies have reported anxiety with using technology (Ogunsanya et al (2020), Gillett-Swan, 2017, Saade & Kira, 2007) and frustration with the functionality of the learning system (Gillett-Swan, 2017) as barriers to online learning, further stressing the importance of an intuitive online learning system.

There is also a need to ensure flexibility, by balancing the use of synchronous and asynchronous learning, in order to allow learners some degree of autonomy in the time and pace at which they learn. This has direct impact on learners' perceived usefulness of online learning, leading to the intention to participate in online learning.

**Figure 8: Proposed Technology Acceptance Model**



### Sustaining online learning

#### How trainers engage their learners

As previously identified, be it synchronous or asynchronous online delivery, respondents frequently referred to the need for additional motivation for online delivery; this also relates to the limits of interaction in online environments: “you don't have your colleagues to further say focus, you know, we got to get things done” (FGD, P15, 08/10/2020). The subtlety of communication in human interactions loses something in the online environment.

“In a classroom setting, people who need help, sometimes they don't need to ask the trainer; they can just whisper to someone next to them and ask for help. During a Zoom meeting, training session, when one person needs help, they shout it out to everybody and sometimes it can be quite disruptive.” (FGD, P20, 13/10/2020)

The unevenness of trainers' pedagogical expertise is evident in the contrast in our respondents' experience, ranging from the stories of very traditional transmissive practices captured above, to

experiences of good facilitation practice in the online environment. Respondents shared these positive learning experiences with us, indicating what the trainer did to engage them:

- Trainer uploading Google forms for learners to ask questions within, during the lecture (Bella); use of a range of different platforms (for those who are tech savvy) to enable different activities
- Breaking the session into 15 minute segments that included an activity (David)
- “Back and forth conversation” achieved by inviting questions, asking questions, encouraging feedback, responses to others contributions, the use of games and other activities, combined with “logically placed breaks”. At the same time expert modelling of professional practice was taking place (Demi)
- Holistic, authentic activities and materials that relate to learners’ life or work (Evan)
- Authentic assessment, such as facilitating a class online for ACLP (Demi)
- Setting challenges for learners (Nicholas). This might also include adding a sense of drama by posing a challenge just before a break (FGD, P21, 13/10/2020). If the challenge is strong enough participants will think about it during the break, and some learners will discuss it over the break – if a norm of interaction has been established.
- Activities that get learners thinking outside the box. Nicholas shared where his trainer put them into groups gave them a challenge, some tools and asked the group to work it out. The trainer “brings certain element of hands-on activity to it, and eventually doing the activity, you would then realise across different grouping of people, the way we think of, the way we behave, co-relates to how we think, how we innovate... He did not say we cannot go beyond, I only gave you a question, toolbox, no rules, no regulations, work on it. But we are always forcing our own thoughts to work on it. So that illustrate how it was brought to life really, really well.”
- Build on learners’ experience and expertise (FGD, P6, 06/10/2020). As one focus group participant explained, “I also noticed that I [feel] encouraged and more motivated to participate when I'm being given a chance to share my own experience, or I hear about other peers' experience and then chiming in to give my feedback as well. And that really helps because I'm contextualizing (FGD, P19, 13/10/2020).
- Have learners provide feedback on each other’s ideas or performance (FGD, P19, 13/10/2020). Bella gave the example of being put in breakout rooms to provide feedback on each other's project, which she found very helpful. Those who had undertaken ACTA, observed that peer review requires agreeing on constructive ways of giving feedback.
- From the beginning of the session build rapport (FGD, P7, 06/10/2020). Interaction between learners starts very early in any session. Doing this helps establish a norm, and expectations, of participation.

This useful list of online teaching strategies in synchronous online environments, is representative of quality teaching practices in any environment. Herrington (2006), for example, informs us that in the online environment authentic activities that reflect the way knowledge will be used in real life improves engagement and educational outcomes. She adds that access to expert performance and modelling of processes, roles and access to multiple perspectives, collaborative construction of knowledge, reflection, coaching and scaffolding and authentic assessment are also important. Most of these are variously evident in the list above. The importance of engagement and interaction, what some call “active learning” (Manganello et al, 2019), cannot be emphasised enough, as they contribute to the development of self-directed learning and performance capabilities (ibid). However, even high levels of interaction are not sufficient for deep learning as discussed in the following section.

In summary, learners do see that trainers require greater technological and pedagogical capabilities than in the pre COVID-19 lockdown. The online environment highlights differences between trainers, not just in terms of their tech savviness and ability to handle multiple tasks at once in the online environment (very tiring work, as acknowledged by some respondents), but highlights the pedagogical capabilities or lack of. Our respondents’ sharing, show that these capabilities are highly variable in the TAE sector, with some respondents stating it was unusual to have a lecturer who was engaging. However, what is heartening is that respondents also had positive experiences to share, indicating there are good practices in the sector. However, it would seem that these practices need to be more widespread to ensure positive learning experiences for our learners.

### *Effect of design on learners' experience*

There are three main aspects of design relevant to this question of the effect of design on learners' experience; pedagogical, technological and materials design. In terms of technological design, respondents spoke about the need for ease of navigation, and for not so tech savvy learners, the need for technological and navigation support. This is highlighted in the TAM analysis which illustrates the importance of ease of use which has a direct influence towards learners' perceptions of usefulness of online learning and attitude towards online learning leading to their intention towards participation.

The limitations of technology highlight the need for high levels of pedagogical capability in designing and facilitating online learning. Respondents highlighted design of online learning that is engaging and requires interaction as being critical for maintaining their motivation, focus and which leads to better learning. Additionally, respondents request that synchronous sessions include meaningful, authentic and consistent interaction; this combination improves learning and is necessary for maintaining motivation. Further, respondents reported that in asynchronous environments, the quality of the materials adds to the learning experience; that the design of online navigation is an important factor in contributing to the smoothness of the learning experience, ease of use contributes to maintaining motivation; and finally that, working in technical assistance and how-to reminders to the design is appreciated, and needed by the not so tech savvy learners.

However, half of our survey respondents reported a lack of engagement. This is in part due to the emergency switching to online delivery. More importantly, providers and educators' response to shifting to online delivery highlights limited pedagogical and technological expertise of trainers, experienced by many interview and focus group respondents, and reported by some 50% of survey respondents.

"I think [the shift to online] doesn't work because a lot of trainers make the mistake of having a one to one shift. So they think that because I used to do this, like that in the face to face setting like, I give a PowerPoint and I talk, then I can do it online as well over Zoom. ... An online session, there needs to be a greater conversation rather than a monologue. That's why for me, the experience has been very, very bad because, quite crucially, I am paying the trainer not really for his information, because I could get that for free and of better quality on Google, but I'm paying for his insight and that insight, I don't think it's something that's been coming out in the online sessions that I've been part of." (FGD, P17, 13/10/2020)

The reference to one on one shift of trainer talking to a PPT, is an outcome of both the design of learning and of limited pedagogical capabilities of both designer and trainer. This focus group participant was not alone in his expression of frustration as a result of the one on one conversion from classroom delivery to online delivery.

"A lot of the online learning that I've experienced is just so bad. You know, like at the end of the zoom session, you can feel like you're like a zombie, right? You feel like your whole energy after two hours of Zoom just drains you." (FGD, P17, 13/10/2020).

Another focus group participant spoke of an eight-hour online module driving him "nuts" (FGD, P16, 13/10/2020). The message from survey, interview and focus group respondents is clear, design AND facilitation capabilities matter. In other words, it is critical to develop the pedagogical and technological capabilities of trainers and designers. As noted in previous sections of this Chapter, our respondents voted with their feet, so to speak, in the online environment; something they felt they could not do in physical face-to-face delivery. If sessions are boring, with little or no interaction and engagement, learners will switch off, leave the session or continue to be online but turn their attention to other activities, be they work related or personal.

### *Humanness missing in the online environment*

Many of our interviewees and focus group participants, spoke of "something missing" (Zoey) in the online environment, that it was "cold" (Patricia), and that there "is usually not much chance and time to interact with other learners" (FGD, P28, 15/10/2020). For example,

"It's like it's very cold. Even in the breakout rooms, you have so limited time to do your exercise and you are being called in. So, everybody is so stressed, ... the human touch is not there already, you know. You don't have time to build up the rapport really (Patricia)

But when we learn from the computer, we feel something is like missing, like you don't see your classmate, number one and you only see one person, your lecturer, yeah, and it's like in terms of like cross-communication with your schoolmates is not so much. You feel lonely, in the sense that you have questions, but you don't know who to ask, unlike in the class, you have a lot of classmate, I can ask, "Eh, what she say? Can you explain to me? Can you help me?" Then we interact with each other. Even after the workshop, we still like exchange phone number. I call you, "Hello, eh that day, the lecturer or the trainer, what he say? Not very sure." But when you do over the Zoom, and everybody log in, then when the meeting is over, the training over, everybody just go their own way. So that is the disadvantage part. You cannot really form friendship." (Zoey)

This need for human interaction – "we're human beings and human beings like to interact with other human beings: (FGD, P22, 13/10/2020) – was strongly evident in comments such as:

"I much prefer classroom learning as compared to online learning because for me, classroom learning, I have the opportunity to, build friendships and also get to speak to the lecturer directly. And I find that time is well used"; (FGD, P14, 08/10/2020)

"I think it's very important for us humans to have that connection. I think it helps also with our cognitive and yeah, in terms of that form of learning. So yeah, overall I would prefer face-to-face learning." (FGD, P24, 15/10/2020)

This recurring theme in the data about the limitations of interaction and communication online highlights the computer as mediator of the design and experience of learning. Design of learning aside, it seems the technology has much to account for. For example, the lack of flow, the fluidity of interaction is not technologically well developed. The following quotes from focus group participants explain their experience of the flow issue:

"When the trainer asks a question, she has to wait for all of us to answer online before she can act, to the next slide, or to the next question. So, it's a bit sort of delayed." (FGD, P13, 08/10/2020)

"Class learning, we have the relationship between trainees and we learn together, the type of personal touch – it's so special. It's so interesting, you see, compared to really online. Online is just, seems to be very formal, ... no relationship." (FGD, P3, 06/10/2020)

Scollins-Mantha (2008) refers to the need to cultivate social presence in online learning, referring to the degree of feeling, perception and reaction to being connected with others, the sense of community and engagement in dialogical exchange, that is a critical aspect of community. Our respondents highlighted not being able to see other's body language, the time lag in responding in, for example Zoom (as the mute is first turned off) that interrupts flow, the inability to discreetly ask a peer a question (other than through chat), seek clarification and have ready access to the trainer. While Zoom as a technological solution has been invaluable in enabling synchronous sessions, it has its limitations. The next challenge technologically is how to overcome these challenges. This aside, there are pedagogical design approaches and strategies that enhance social presence online; many of these strategies were experienced by some respondents and are listed in the section above on how trainers engage their learners.

However, responsibility for online presence is not solely that of the trainer/facilitator; responsibility for shaping the social aspects of online learning also lies with curriculum designers and with the learners themselves (ibid; Rovai, 2002). One interviewee respondent made mention of the role of learners in contributing to social presence online:

"We become friends, we will help each other, at the same time while the instructors are still busy. I mean as we help each other, more smoothly. Previously like everybody is so blur, so we are all exploring. But the third day, we are – we have seen many – we have troubleshoot



some of our things so we are able to help each other. One of the classmate did voice out during the class to tell the instructor that, hey, we are not doing going by the right pace, we are like very slow based on the syllabus and all those things. So that again wake us up to say that we need to be more cooperative rather than selfish. Yeah. So eventually, that's what I mean by harmonise the culture or the habit. The house rules lah. The so-called house rules." (Xavier)

In this learner's experience, it is the combination of learners and trainer together that contributes to the creation of social presence, connection and exchange online. A learner voicing concern about being behind, the experience of helping each other troubleshoot technical issues with the support of the trainer, and the opportunity for exchange and interaction all played a role in contributing to a sense of social presence. As Bryan notes, the alternative experienced by quite a number of our respondents is that "everyone is on his own, and like a stranger to each other, ... By interacting with each other, you can share some ideas, discuss certain topics right, this is not happening online. Definitely. Very sad." The result is that participants "get very sleepy" (Bryan).

Be it online or physical face-to-face, collaborative learning and its requisite dialogue is associated with higher levels of cognition (Garrison & Arbaugh, 2007; Bound, 2010; Gouma, Anderson & Zundel, 2019; Jia, et al., 2020). Meaningful, purposive dialogue and higher order cognitive thinking can be challenging to achieve in the online environment, in part because the technology does not readily enable interaction that flows.

#### *Courses for online and courses for face-to-face*

Respondents observed that some courses were better suited for online platforms than others. Excel, for example, involves considerable procedural knowledge, requires active engagement in activities, and if designed in this way is ideally suited to online delivery. Most respondents clearly conveyed that for deep learning and understanding, face-to-face was required; and anything that involved the need for practice or demonstration (by both trainer and learners) needs face-to-face delivery. A focus group participant shared his perception of the importance of having opportunity to interact, particularly for what he called 'hard skills'.

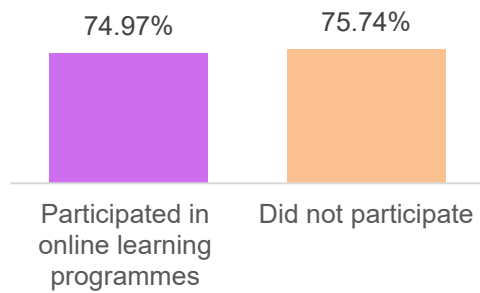
"And I think in terms of hard skills itself, it is very important for synchronous learning to take place. Because it really requires a lot of interaction and a lot of asking of questions, instead of referring to self-guided tutorials, or going to a FAQ which is not live at all. Having somebody to answer your questions and putting your question into scenarios and perspective really helps." (FGD, P19, 13/10/2020)

Moving forward, beyond the COVID-19 experience, decisions about delivery modes, hybrids and blends require careful consideration of fit for purpose. The key message in this section is that the quality of design and facilitation is critical for ensuring better learning and maintaining motivation.

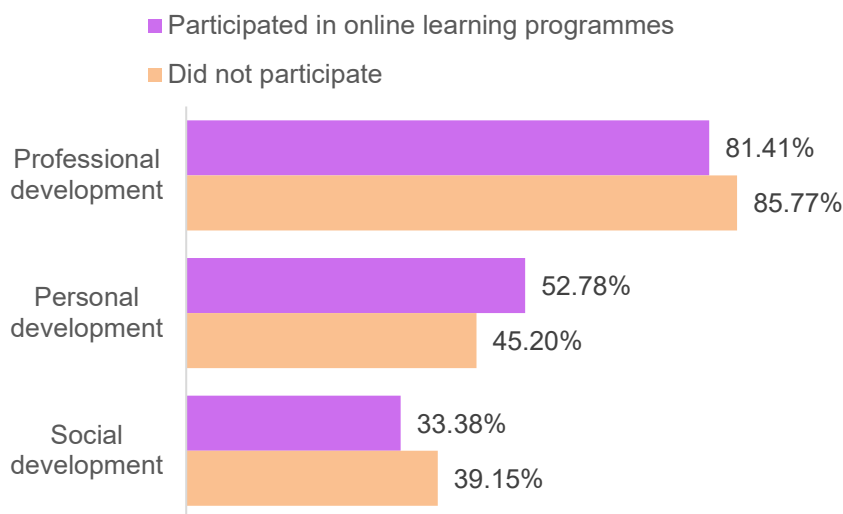
#### **Participation in informal learning**

For those who did not participate in any online learning programmes during the Circuit Breaker period, the majority (75.7%) of these respondents were still continuously learning through other online means. It is noted that the rate of participation in informal learning (Figure 9) is similar among online learners (75%) and non-online learners (75.6%). The majority from both groups of respondents participated in informal learning for professional development (over 80%) and about half did so for personal development (Figure 10). This is a reminder that there are many layers in continuous learning, and that being comfortable in the online environment as well as its richness in resources enable adult learners to readily continuously learn.

**Figure 9. Participation rate for informal learning**



**Figure 10. Benefits of informal learning**



**Chapter summary**

Our data shows beyond doubt that respondents consider online learning is here to stay. The convenience of online delivery was appreciated by the large majority of respondents; it saved travel time and allowed learners to be in the comfort of their own home. This aspect, along with being able to return to recorded lectures or use asynchronous learning where learners can learn anywhere and anytime, were the main benefits of online learning reported by respondents.

Challenges included screen fatigue, long sessions that contributed to back issues, the need to purchase additional hardware such as an additional screen, iPad, stylus, and software, and the lack of dedicated space where they were free from distractions. Some were not confident of, indeed feared, the online environment. A key challenge was the limited or lack of interaction, named up by respondents as the lack of ‘humanness’ in the online environment.

The main motivator for undertaking online courses was work related, but personal reasons also featured in the use of Google, YouTube and the like. When it came to selecting courses, many were too bamboozled by the plethora of online offerings to be able to make a selection. Other reasons for not undertaking courses during the lockdown included being too busy with work and high anxiety levels due to being stood down and not knowing when, or if, they would be called to return to work.

Respondents expected trainers to be more democratic in the online environment as compared to traditional classroom lectures. An intuitive learning system and opportunity for active engagement were highlighted as necessary for maintaining motivation and contributing to better learning. Design of the online environment, the need for social presence, for challenge, quality materials were all

identified as important. The implication being that the design of learning and of the online environment matters.

Respondents, including those who did not participate in the online learning programmes, have also continuously learned through other online means. This highlighted the importance of individual's technological proficiency and level of comfort to tap on the richness of the online environment to learn.

## 4. Implications

The findings from this study have provided useful insights on how to sustain the transition to online learning after the pandemic. The challenges identified need to be addressed and the good practices highlighted should be adopted when relevant. In this chapter, we will first touch on the implications of findings on non-pedagogical issues before discussing the learning design and facilitation of online learning in details.

Screen fatigue is a main challenge highlighted by the respondents. It is understandable that having to stare at a screen for many hours is tiring and may turn learners away from online learning. In a recent study, it is reported that online learning has reduced physical activity and increased near vision stress among learners (Peper et al, 2021). The study advised learners to get up and move every 30 minutes and suggested ways to regenerate vision. Therefore, it is crucial for online courses to have frequent breaks to allow learners to re-charge. The use of asynchronous mode of delivery when possible can help to shorten the synchronous lessons and provide learners with flexibility in the time and pace they learn.

Another challenge highlighted is learners' and trainers' lack of familiarity or discomfort with the online learning system. This calls for provision of technical support and perhaps a pre-course session for learners and trainers to familiarise with the online system. It helps if the training system is easy to navigate and system update does not overhaul the interface.

Both the design and facilitation of online learning, that is, the pedagogical practices of educators become important to examine more deeply than inferred from our account of learners' experiences so far in the previous Chapter. Like our focus group participant (FGD, P17, 13/10/2020) quoted above, there is some recent literature that assumes the online environment will be more interactive than the face-to-face sessions. Gouma, Anderson and Zundel (2019) note that dialogue in the online environment is critical for deep learning. Other researchers note the intent of design and facilitation in the online environment, learners being accountable for their learning, learners engaging in higher level thinking, and controlling when and where they learn (Murray, McCallum & Petrosina, 2014), demands motivation, cognitive engagement, agency and perseverance (Aguilera-Hermida, 2020). In their mixed methods study of shifting the flipped classroom to totally online during COVID-19 lockdown, in the University of Hong Kong, Jia, Hew, Bai and Huang (2021) used the Community of Inquiry (CoI) framework to adapt their conventional flipped classroom to online flipped classes. The CoI framework (see Figure 11) provides a useful and ready means to evaluate online design and the likely impact on learners' learning through its core dimensions – social, cognitive and teacher presence (Garrison & Arbaugh, 2007) in the online environment.

Establishing social presence requires meaningful dialogue, dialogue that is exploratory, involving different views and perspectives (ibid; Bound, et al., 2019), necessary for knowledge construction. Exchange of differing views and perspectives requires time in order to reach the stage of newly constructed knowledge (Gunawardena, Lowe, & Anderson, 1997). Vaughan (2004, in Vaughan & Garrison, 2006), notes that this happens at the same time as affective and open communication decreases. In other words, indicators of social cohesion, change over time, as the focus of communication shifts to focus on academic purposes – gaining deeper insights into content and the purpose of the course. Measuring social presence therefore is not about counting the number of interactions, but understanding the nature of exchanges – are they inquiry based, reflective interactions?<sup>5</sup>

For a community to sustain itself, it is essential that the group feels secure to communicate openly and coalesces around a common goal or purpose (Thompson & MacDonald, 2005). Social presence must move beyond simply establishing socio-emotional presence and personal relationships. Cohesion requires intellectual focus (i.e., open and purposeful communication) and respect... social

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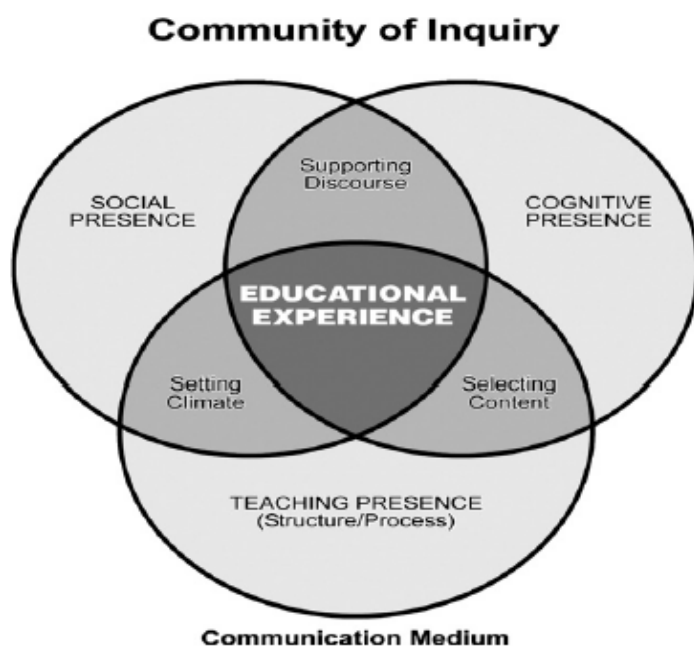
<sup>5</sup> The Map of Dialogical Inquiry (Stack, 2006; Bound, 2010; Stack & Bound, 2012) provides a tool for capturing and understanding the quality of interactions

presence evolves from open communication (interaction), to purposeful academic exchanges (discourse), and finally, to achieving a feeling of camaraderie. (Garrison & Arbaugh, 2007, p.160)

Cognitive presence hails from Dewey's (1933) construction of dialogical inquiry, key to critical thinking. Cognitive presence involves learners' exploration of a problem, integration and application (Garrison & Arbaugh, 2007) of solutions, or resolution. Integration and resolution are more demanding than exploration, requiring greater time to achieve (Gunawardena, Lowe, & Anderson, 1997). This is an important consideration in our respondents' comments that breakout room time for discussion was always too short. Additionally, the role of the trainer is critical in facilitating learners to reach these stages (ibid). One aspect of the role of facilitators and designers is that the task enables learners to have shared goals. This does not necessarily mean learners have to work on the same task. Learners may be working on their own, somewhat different problems, but their shared goal(s) are about understanding for, example, application of theory to develop practical solutions to shared types of problems (Bound, Tan, Chow, Wang & Chuen, 2019). While facilitation is important it should not dominate the discourse (Garrison & Arbaugh (2007); it is learners who need to do this work (Bound et al, 2019). This highlights the relation, not only between social and cognitive presence, but particularly between cognitive and teaching presence.

Teaching presence provides the parameters and focus for interaction and the direction of cognitive presence. Teaching presence has been shown to be important for student satisfaction in online environments, perceived learning and sense of community (ibid). Teaching presence refers to the quality and easy navigation to online materials, guidelines on how to use the delivery medium effectively, and support for dynamic discussions. Facilitating meaningful interaction involves establishing expectations of active participation, establishing norms of respect and support, and keeping the discussion moving to deeper levels. Social, cognitive and teaching presence in online environments are the core elements of Garrison, Anderson & Archer's (2000) community of inquiry (Col) (see Figure 11). The Col was developed in the context of higher education, where courses are much longer than many found in the TAE sector. Nevertheless, a number of our respondents were undertaking diploma or degree studies, with the same concerns as discussed previously. Despite the considerably lengthier times frames available in higher education courses, to develop the three presences, there are still many lessons to be learnt from the Col framework for the multitude of shorter courses available in the continuing education environment. Also worth noting is that there is considerable overlap between the conceptual underpinning of the Col, the Six Principles of Learning Design (Bound & Chia, 2020) and dialogical teaching and learning approaches (Bound et al, 2019), all of which are contributing to the shaping of future-oriented pedagogical practices in the TAE sector.

**Figure 11: Community of inquiry (Col) framework (Source, Garrison & Arbaugh, 2007, p.158)**



It is interesting to note however, that reasons learners limit their agency in actively contributing to social presence in synchronous sessions range from lack of time as adult learners juggle work, study and family to long established cultural norms.

“In university, it's pretty competitive aspect. Everyone is just looking out for themselves and so I feel like, my course mates, they would, provide help if you encounter technological problems. But then, when it comes to helping each other understand the subject better, then not as much help would be offered. Because, you know, if you are helping somebody, then, what if they score better than you? I feel like, that's the nature of the education system in Singapore.” (Cherry)

“To be frank, I mean maybe for Asian culture, we are more of a taker than a distributor – contributor lah. So, I'm not searching for how I contribute, but about how I get my things done and get over it, that kind of mentality.” (Xavier)

Such cultural norms contributed to “most of the classmates, they are a little bit selfish in the sense that they don't want to share — because it's like they want to be better than the other” (Xavier). To address such cultural norms, requires highly skilled pedagogical and technological design and facilitation capabilities. These observations are not something that can be ignored, as it is the trainer, not the learner who is doing the learning to learn work. These observations also speak of a culture of learning as acquisition, not as participation and active engagement (Sfard, 1998). So, on the one hand, respondents are indicating a need for interaction and engagement and on the other, some bring with them cultural ways of being that can work against engagement.

# 5. Conclusion and Recommendations

Due to the sudden transition to online learning during the Circuit Breaker, many Training Providers are not sufficiently prepared to provide for a smooth online learning experience for both learners and trainers. Lessons were transited from classroom to online wholesale using available applications like Zoom and Microsoft Teams, however, these applications may not fully meet the needs of conducting online courses. Also, trainers, with the lack of online teaching experience, using inappropriate learning design and facing learners with different level of technological capability, encountered various issues which include:

- Lack of engagement
- Lessons that are too lengthy
- Lack of support for learners with technical difficulties

Moving forward, online learning will be the norm and there is a need for the following main areas to be improved:

- The online learning system
- Learners' experience
- Trainers capability and learning design

## **Recommendation #1: Adopt an intuitive Learning Management System that covers all training needs**

Our findings have shown that for learners to continue to participate in online learning, the ease of use of the system is an important determinant. Therefore, the online learning system adopted by Training Providers should facilitate and enhance the online learning experience.

**Invest in a Learning Management System (LMS):** The LMS should be a one-stop learning platform for learners, minimising the need for learners to locate information from different sources.

Therefore, the LMS needs to:

- be simple and easy to use for users
- be accessible from different devices (e.g. laptop, tablet, mobile)
- allow learners to access all necessary course information and tools
- enable delivery of online courses (synchronous and asynchronous)
- support interactive activities used throughout and after the course (e.g. chat group, voting, gamification etc.)
- able to collect various learners' data for trainers to provide more targeted support to learners of different profile

**Provide additional support for learners with low technological capability:** The LMS can be intuitive but there will be learners, especially learners with low technological capability, who need support with the navigation and the use of various functions of the LMS. These supports should ease the anxieties of learners having difficulties with the system and allow them to focus on the course content.

**Strengthen trainers' technological capability:** It is critical that the trainers are proficient in facilitating courses with the adopted learning system, able to utilise the functions of the system appropriately to create a positive learning experience for the learners.

## **Recommendation #2: Help learners to adapt to online learning**

For learners to continue with online learning, the challenges encountered will need to be overcome.

**Improve the digital literacy of learners:** Digital literacy is more than technological capability but to be able to make sense of the overwhelming information available online. Learners need to be able to consume, communicate and create digital content to be considered digitally proficient.

**Improve the wellbeing of learners:** Help learners to reduce screen fatigue by:

- providing frequent breaks during online lessons, at least every 30 minutes
- educate learners on how to reduce screen fatigue. For example, adjusting the room lighting, screen brightness, looking at a distance or massaging the eyes to relieve eye strain etc.)

Learners should also be encouraged to move around during breaks as they would usually sit in front of the screen for a prolonged period compared to physical classroom lessons.

**Create online learning communities within each course:** Create online learning communities for learners to make connections with fellow online learners. A set of guidelines should be in place to remind learners that the purposes are to provide for some “humanness” and for learners to support each other throughout the online course as well as to discuss and debate about course content. It is important for learners to actively contribute meaningfully to the discussions

**Active participation during online lesson:** It is important for all learners to make the effort to participate actively, creating social presence through exchanging of ideas through meaningful dialogues. Learners need to be provided with opportunities for such interactions.

**Provide guidelines on how to develop a time- management strategy:** It is important for learners to devote time to participate in the online class and to carry out other course- related activities like reading or completing assignments. However, this requires self-discipline to adhere to scheduled timings.

**Provide physical classroom and resources for individuals who lack access to technological equipment or internet access:** Some individual may not have access to stable internet connection, equipment or do not have a conducive space for learning. Therefore, providing them with access to a classroom with the necessary equipment will enhance their learning experience.

**Recommendation #3: Improve the quality of design and facilitation of online learning**

Close to 40% of the respondents reported that course lessons or activities did not translate well to a virtual environment. This calls for an improvement in the quality of design of online learning, especially in creating an interactive environment which is meaningful, authentic and consistent.

**Strike a balance between synchronous and asynchronous mode of learning:** Synchronous lessons should be engaging and the length of each lesson should be kept short. Thus, asynchronous mode of delivery (pre-recorded lectures, lecture notes, readings etc.) can be used to complement synchronous learning. However, clearly defined expectations need to be set.

**Setting clear expectations:** It is important for trainers to set their expectations from the start of the course. Expectations may include:

- how the trainer and learners will engage in the course (e.g., active participation of learners, sharing of experience and insights between learners are expected, use of discussion forum etc.)
- Orientate learners on the use of the online platform, including how to reach out for support
- Timeline for class activities or offline activities

**Plan for hybrid mode of delivery:** The combination of classroom delivery and online delivery will create opportunities for interactions among learners and with the trainer, thus bringing back the missing ‘humanness’ into the learning environment.

**Share best practices among trainers:** Create a platform for trainers to share best practices for online learning, learn from each other and improve their online teaching styles.



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# Annex

**Table 10: Factor Analysis and reliability of TAM variables**

Items	1	2	3	4	5	6	7
ATT2. I have a generally favourable attitude toward using online learning	0.91	0.03	-0.01	0.02	0.03	-0.02	0.00
ATT1. I like the idea of using online learning	0.90	0.00	-0.02	0.02	-0.02	0.03	0.02
ATT3. I believe it is a good idea to use online learning for my learning	0.88	0.02	-0.01	0.00	0.06	0.02	-0.01
Norm1. People who have an influence on my decision (e.g. supervisor, co-workers, mentor etc.) think that I should participate in online learning	-0.05	0.94	0.04	0.01	-0.01	-0.01	0.04
Norm2. People who are important to me (e.g. family, friends etc.) think that I should participate in online learning	0.08	0.85	-0.05	0.00	0.02	0.02	-0.05
Rel3. Online learning enables me to learn at my own pace	-0.02	0.00	-0.97	0.01	-0.03	-0.01	0.00
Rel4. Online learning allows me to learn when suits me best	0.02	0.00	-0.89	-0.01	0.05	0.02	0.01
Ease4. I find it easy to find information through online learning	-0.04	0.02	-0.03	0.97	-0.04	-0.06	0.01
Ease5. I find it easy to learn what I want to learn from online learning	0.08	0.00	-0.02	0.82	-0.01	0.09	-0.04
Ease3. My experience with online learning was effective	0.00	-0.01	0.04	0.79	0.09	0.03	0.04
Qual1. I have no problem with the quality of online learning	-0.01	0.00	0.00	0.00	0.95	-0.02	0.00
Qual2. The quality of learning I get from online learning is high	0.04	0.01	-0.02	0.03	0.82	0.06	0.03
Use3. Participating in online learning improved my learning performance	-0.02	-0.01	0.01	-0.01	0.03	0.93	0.00
Use2. I learn better through online learning	0.02	0.00	0.01	0.04	0.00	0.89	-0.07
Use4. Participating in online learning increased my productivity in my learning	-0.01	0.03	-0.03	-0.01	-0.01	0.86	0.08
Intent2. I will be attending another online programme	-0.03	0.03	-0.03	0.02	0.06	0.02	0.92

Intent1. I intend to participate in online learning in the future	0.41	-0.02	-0.04	0.09	-0.07	0.10	0.51
Mean	3.82	3.37	4.04	3.76	3.43	3.30	3.86
Cronbach's Alpha	0.93	0.78	0.86	0.87	0.84	0.89	0.81

**Table 11: Goodness-of-fit measures for TAM**

Fit measures	Values	Recommended value
Chi square	680.48 (p=0.00)	p>0.05
RMSEA	0.063	<0.08
CFI	0.965	>0.90
TLI	0.955	>0.95
SRMR	0.111	<0.8