Adult Learners' Digital Learning Readiness:

Factors Influencing and Adult Learner Characteristics to Consider

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KEY FINDINGS

1. The mode ideal percentage of remote learning in a programme is 50%. The mode frequency of remote learning activities is once a week;

2. The more self-directed a learner is, the higher his / her ideal percentage of remote learning in a programme. The more confident a learner is of his digital skills, the higher his / her ideal percentage of remote learning in a programme;

3. Digital immigrants (40s and above) prefer digital learning more than the digital natives (20s and 30s);

4. A higher proportion of respondents with non-tertiary educational level are more active remote learners and prefer a higher percentage of remote learning in a programme;

5. Respondents with diploma and professional qualification were the least active remote learners, had the lowest proportion who indicated an ideal percentage of remote learning of 75% and above in a programme. Respondents participating in a diploma programme were also found to display a higher preference for face-to-face learning;

6. Respondents with university and higher qualifications prefer digital to face-to-face learning.

7. Respondents who are in part-time employment had the highest proportion who prefer a higher percentage of remote learning in a programme of 75% or more. Those in full-time employment seemed to prefer it balanced at 50%. The unemployed prefer less remote learning of 25% or less.

8. Male respondents displayed a higher preference for face-to-face learning while female respondents are more resourceful to know someone who can resolve remote learning issues.

9. The more frequent respondents have been engaged with remote learning activities, a larger proportion of them would indicate a higher ideal percentage of remote learning in a programme.

10. There are underlying remote learning efficiency differences among the respondents. There is more to respondents' digital / remote learning preferences than time spent and learning efficiency.

The above would have practical implications for adult educators when designing, developing and delivering fully online and blended programmes.

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INTRODUCTION

The Covid-19 pandemic has upended the delivery of higher education with many Institutes of Higher Learning (IHLs) having to transit into online and remote learning delivery almost overnight. Unlike young learners enrolled in the Pre-Employment Training (PET) programmes, adult learners can defer Continuing Education and Training (CET) programmes if they are not ready to learn online and / or remotely. Consideration of digital competencies among adult learners will be meaningful only when they are ready to adopt that mode of learning.

Online readiness surveys are often conducted on college-bound students who are looking to enrol into fully online programmes. Student characteristics have also been collected by researchers to predict online versus face-to-face programme outcomes. Although there have been no conclusive studies and findings arising to ascertain if these instruments can predict specific online programme outcomes as opposed to generic outcomes (Wladis & Samuels, 2015), it is still worth a deep dive to understand the digital readiness of our adult learners to learn remotely[1].

BULLETIN

Arising from a study conducted on 313 adult learners enrolled in or have completed CET programme(s) at a local polytechnic, this bulletin reports on the data and initial findings on the digital learning readiness and learner characteristics influencing that readiness.

KEY QUESTIONS AND GOALS

The research questions guiding this study are:

1. What are the factors that indicate adult learners' digital learning readiness?
2. What are the adult learner characteristics that influence digital learning readiness?
3. What are the remote learning behavioural and programme attributes that could predict adult learners' digital learning readiness?
4. What is the ideal balance of remote versus face-to-face learning among adult learners?

[1] *A fully online programme takes at least several months to develop and requires robust andragogy and integrated virtual student support structure (Thackaberry, 2020). While online learning typically refers to an entire programme being learned fully online, for the purpose of this study, remote and digital learning will be used interchangeably to mean learning remotely, away from the campus, via digital means.*

Key goals arising from this study include informing CET policy and practices in IHLs on:

1. Factors to consider when designing fully online and / or blended programmes;
2. Adult learner characteristics, remote learning behaviours and programme attributes to consider when delivering remote learning components; and
3. Optimal balance of remote versus face-to-face learning when designing blended programmes.

INSTRUMENT

From several online readiness surveys such as those from Penn State University (P. S. University, n.d.) and Minnesota State University (M. S. University, n.d.), a 37-item instrument was adapted and contextualised to Singapore's context. The instrument was administered between Circuit Breaker (Apr 2020) and into Phase 2 (Jul 2020) on adult learners enrolled in or have completed CET programmes.

PARTICIPANTS

A total of 313 adult learners participated in the study. Their age, gender, employment, education profiles are as follows:

Age Group	Frequency	Percent (%)
Not Specified	21	6.7
20s	86	27.5
30s	71	22.7
40s	85	27.2
50s and Above	50	16.0
Total	**313**	**100.0**[2]

Figure 1: Age profile of respondents

Gender	Frequency	Percent (%)
Female	134	42.8
Male	179	57.2
Total	**313**	**100.0**

Figure 2: Gender profile of respondents

[2] *Rounding difference of 0.1%.*

Employment Status	Frequency	Percent (%)
Full Time (at least 35 hours a week)	245	78.3
Part Time (less than 35 hours a week)	43	13.7
Unemployed	25	8.0
Total	**313**	**100.0**

Figure 3: Employment status of respondents

Education Level	Frequency	Percent (%)
Non-Tertiary	73	23.3
Diploma and Professional Qualification	141	45.0
University	66	21.1
Post-Graduate	33	10.5
Total	**313**	**100.0**[3]

Figure 4: Education level of respondents

FACTORS INDICATIVE OF DIGITAL LEARNING READINESS

5 factors, scaled at maximum average score of 10, were measured. These are:

1. Self-Directedness;
2. Digital Learning Preference;
3. Face-to-Face Learning Preference;
4. Digital Skills; and
5. Digital Accessibility.

Self-directedness, digital skills and digital accessibility were inferred from prior instruments that the present instrument was adapted from. Face-to-face versus digital learning preferences were distinct factors determined from an exploratory factor analysis with a goodness of fit test [chi-square = 48.702, df = 8, sig = 0.000].

This report will detail statistically significant findings of and interaction between factors and influencing adult learner characteristics henceforth. Noteworthy mentions of statistically significant remote learning behaviours, programme attributes and ideal balance of remote versus face-to-face learning will also be made.

[3] *Rounding difference of 0.1%.*

SELF-DIRECTEDNESS

Although there is lack of empirical studies examining the relationship between learners' self-directedness and outcomes of online learning programmes, it is however widely accepted that online learning is a self-directed mode of learning and learners need to be self-directed (Bulent, 2011). A MANOVA was thus performed on respondents' ideal percentage of remote learning in a programme and their self-directedness [F = 8.681, p-value = 0.000]. Finding suggests that **the more self-directed a learner is, the higher his / her ideal percentage of remote learning in a programme**. Practical implications could include a self-directedness survey prior to the conduct of a programme to ascertain an ideal level of remote learning.

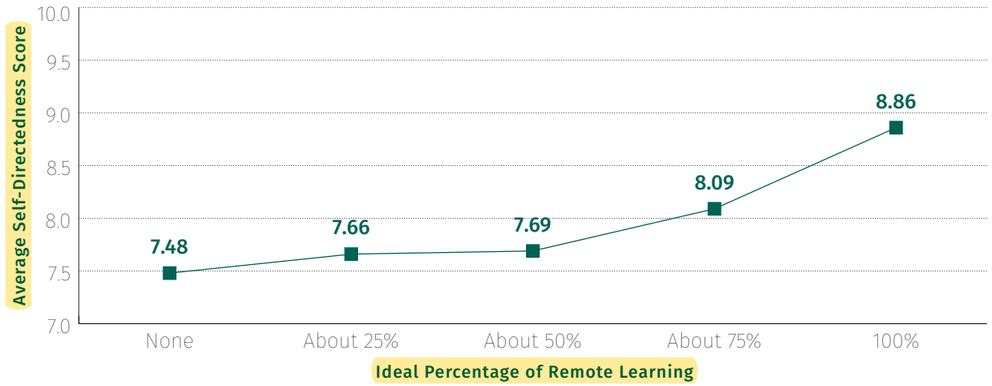

Figure 5: Self-Directedness and Ideal Percentage of Remote Learning

LEARNING PREFERENCES

AGE

Adult learners who are in their 20s and 30s have been termed as 'digital natives' who are generally comfortable in the digital age, because they grew up using technology. Comparatively, those in their 40s and above have been termed as 'digital immigrants' who are deemed to be fearful about using technology. A MANOVA was thus performed on respondents' age and their preference for digital learning [F = 3.998, p-value = 0.008]. Contrary to common assumption, finding suggests that respondents in their 40s and above, otherwise known as **digital immigrants, prefer digital learning more than the digital natives** (see Figure 6).

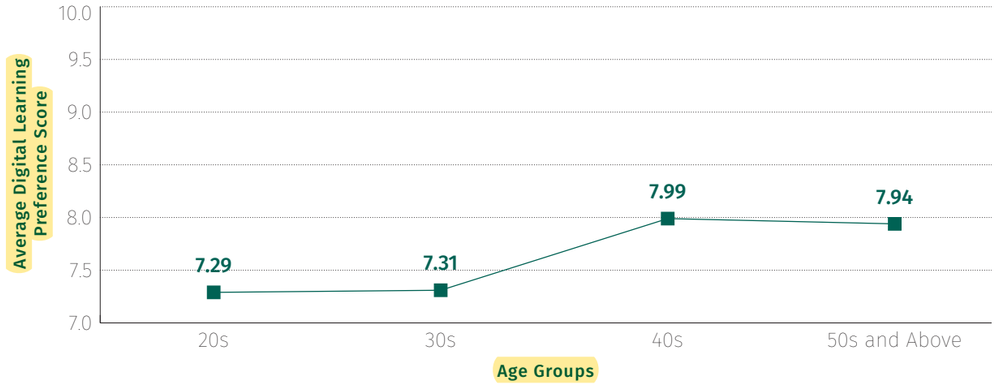

Figure 6: Digital Learning Preference and Age Groups

In Figure 7 [$\chi 2$= 24.925, p-value = 0.015], when asked for their ideal percentage of remote learning, a larger proportion of those 40s and above preferred percentages above 50%; 46% versus 28% and 30% among the 30s and 20s respectively. With **50% being the mode on the ideal percentage of remote learning**, it was also observed that a larger proportion of age groups below 40s preferred remote learning percentages below 50%.

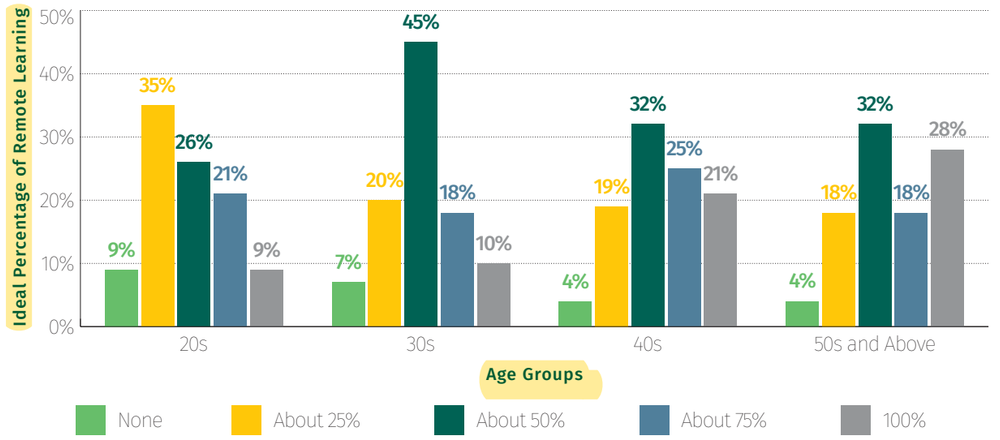

Figure 7: Ideal Percentage of Remote Learning and Age Groups[4]

The above findings seemed to corroborate with a prior finding that the level of use of technology for non-academic purposes, as opposed to academic / learning purpose, among the digital natives tended to be high (Muchsini, Siswandari, 2018). It seems timely now for adult educators to revisit our digital learning preference assumption and look at how we may better engage our learners and enhance their digital learning experiences.

EDUCATION

At the time of this study, there seems to be a dearth of prior studies conducted on learning preferences and behaviour among adult learners from different educational background. An

[4] *Rounding differences in age group 40s.*

attempt was thus made to uncover differences, if any, of learning behaviour and preferences, both digital and face-to-face, as well as the ideal percentage of remote learning among adult learners from different educational backgrounds.

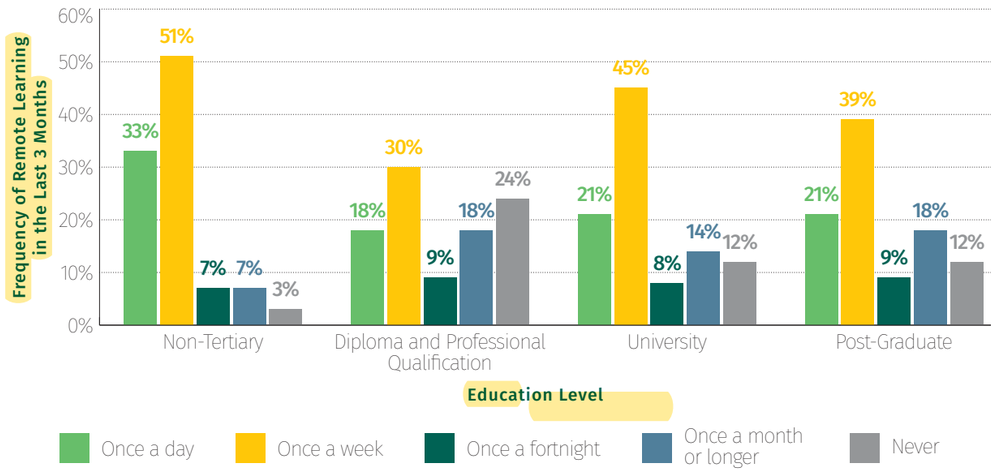

Figure 8: Frequency of Remote Learning in the Last 3 Months and Educational Level[5]

In Figure 8, with $\chi 2 = 31.270$, p-value = 0.002, there are significant differences in remote learning behaviour among respondents with different educational backgrounds. Those with non-tertiary background are the most active group at 84% learning remotely at least once a week or more often, followed by university at 66%, post-graduate at 60% and lastly diploma and professional qualification at 48%. Respondents with **diploma and professional qualification were the least active** with 42% learning remotely at once a month or not at all in the last 3 months.

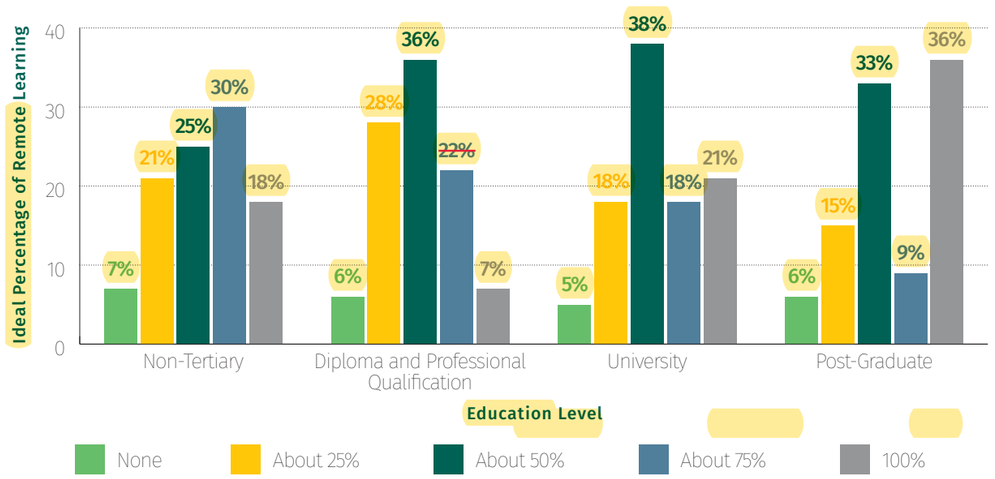

Figure 9: Ideal Percentage of Remote Learning and Educational Level[6]

[5] *Rounding differences in non-tertiary, diploma and professional qualification and post-graduate.*

[6] *Rounding differences in non-tertiary, diploma and professional qualification and post-graduate.*

In Figure 9, with $\chi 2 = 28.584$, p-value = 0.005, it was also observed that respondents with **diploma and professional qualification had the lowest proportion who indicated an ideal percentage of remote learning of 75% and above**, 29%, and conversely the highest proportion who indicated an ideal percentage of remote learning of 25% and less, 34%. Those with university qualification came next with 39% of respondents indicating an ideal percentage of remote leaning of 75% and above, followed by post-graduate at 45% before non-tertiary at 48%. Habits and preferences are seemingly correlated and reinforces each other among respondents with **non-tertiary educational level**. A higher proportion of them are **more active learning remotely and prefer a higher percentage of remote learning**.

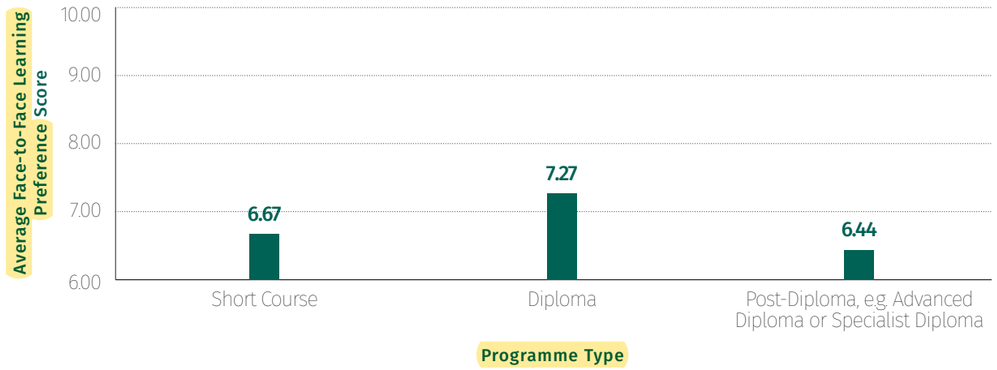

Figure 10: Face-to-Face Learning Preference and Programme Type

In a separate MANOVA ($F = 5.801$, p-value = 0.003) as depicted in Figure 10, respondents currently **participating in a diploma programme were also found to display a higher preference for face-to-face learning** as opposed to learners attending short courses and post-diploma programmes.

In Figure 11, MANOVAs were also conducted on respondents' learning preferences and their educational levels [$F = 10.988$, p-value = 0.000 for face-to-face learning preference and $F = 3.929$, p-value = 0.009 for digital learning preference]. Findings suggest that both learning preferences are inversely correlated across the educational levels. **Respondents with university and higher qualifications seemed to prefer digital to face-to-face learning**.

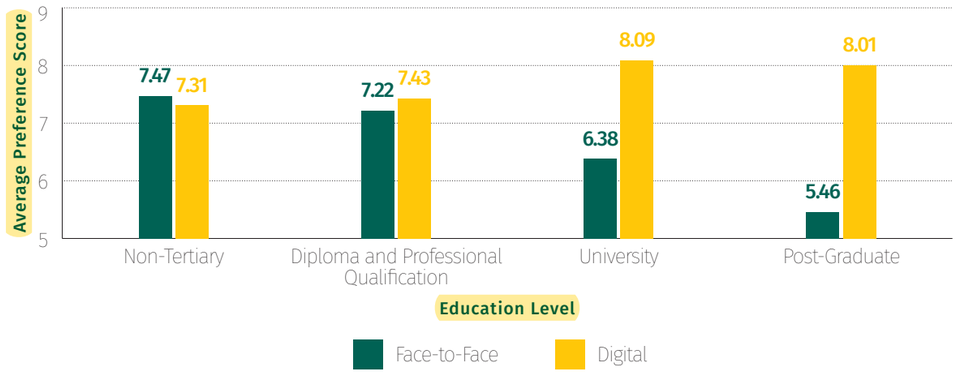

Figure 11: Learning Preferences and Educational Level

The above findings have practical implications when planning for remote learning design and proportion, considering adult learners' education profile and programme type.

EMPLOYMENT

In Figure 12, a chi-square test [$\chi 2 = 31.613$, p-value = 0.000] was conducted to uncover differences in the ideal percentage of remote learning across employment statuses. It was not uncommon to assume that adult learners in full-time employment may prefer a higher percentage of remote learning to save on commute time and to better juggle both full-time jobs and studies. However, findings show that it was **respondents who are in part-time employment** with the highest proportion, 56%, who **prefer a higher percentage of remote learning of 75% or more**. Those in **full-time employment** seemed to **prefer it balanced at 50%** of remote learning. This could be attributed to part-timers wanting to maximise the use of their time and income while those in full-time employment may appreciate a more balanced approach as they may not have the time for self-directed remote learning. Not surprising, at 56%, more of those **unemployed prefer less remote learning of 25% or less**. This observation lends testimony to the full-time, face-to-face learning approach adopted for the SG United Skills Programme for the unemployed.

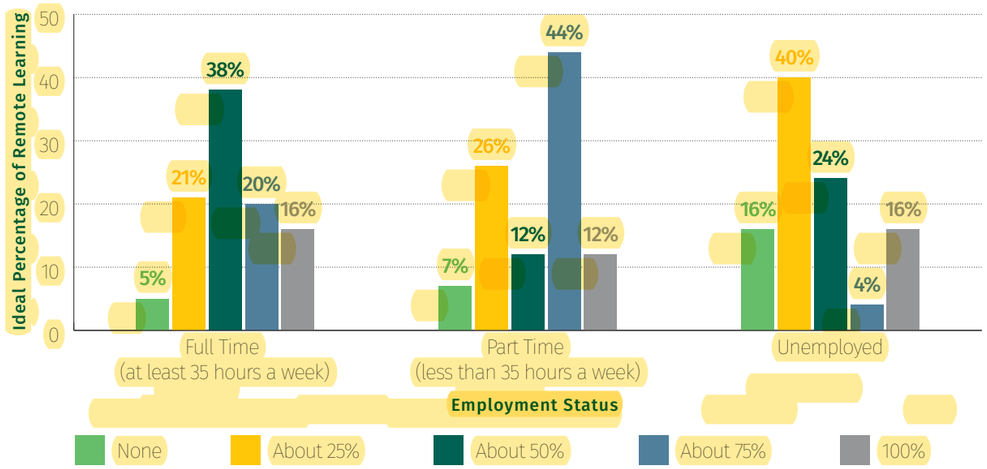

Figure 12: Ideal Percentage of Remote Learning and Employment Status[7]

GENDER

There is a gender dimension to learning participation (Boeren, 2011) where men prefer individual learning and participate more in non-formal, work-related learning while women participate more for personal reasons and seeks to building social relations with fellow students and educator through collaborative learning (Hayes, 2001). Yet in Figure 13, from a t-test conducted [$F = 3.762$, p-value = 0.019], the **male respondents** from this study displayed a **higher preference for face-to-face learning** at 7.15 than females at 6.60 even though females have been ascertained to be more social learners than males. It could be that females are more apt at forming social relations regardless of learning modalities.

[7] *Rounding differences in part-time.*

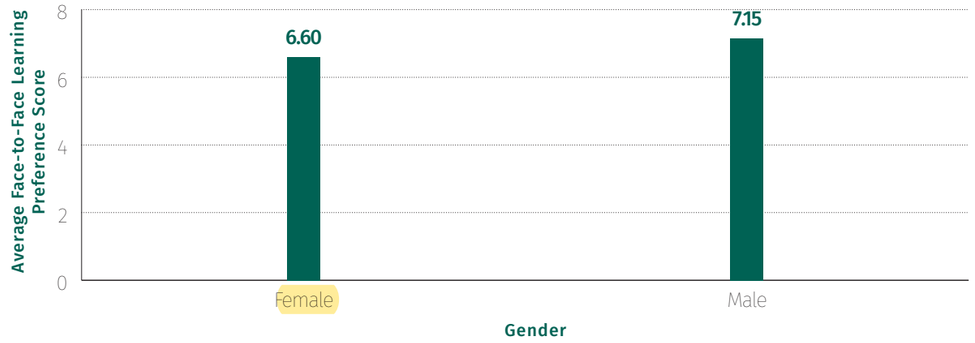

Figure 13: Face-to-Face Learning Preference and Gender

DIGITAL SKILLS

Self-efficacy, beliefs in one's capabilities to organise and execute the courses of action required to produce given achievements (Wood & Bandura, 1989), is a strong predictor of adult behaviour and outcomes (Bong & Skaalvik, 2003). The more confident one is to perform an activity successfully, the more likely that one will participate in the activity (Bandura, 1997). A MANOVA was thus performed on respondents' ideal percentage of remote learning in a programme and their self-assessment of digital skills [$F = 4.108$, p-value = 0.003]. Figure 14 suggests that **the more confident a learner is of his / her digital skills, the higher his / her ideal percentage of remote learning in a programme**. Once again, practical implications could include a self-assessment of digital skills prior to the conduct of a programme to ascertain an ideal percentage of remote learning.

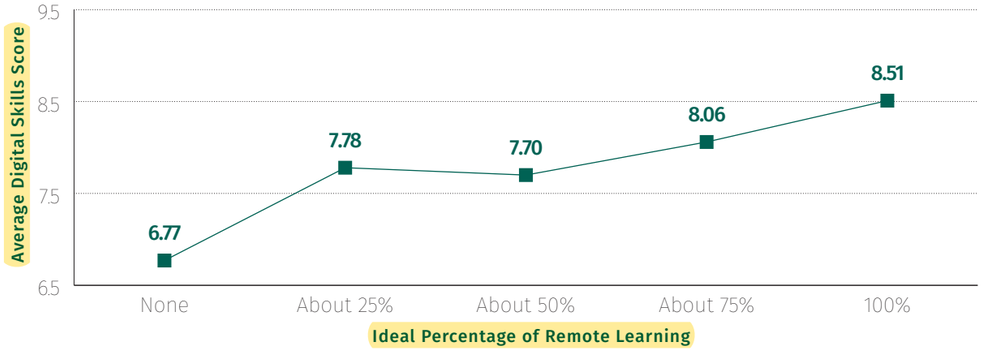

Figure 14: Digital Skills and Ideal Percentage of Remote Learning

DIGITAL ACCESSIBILITY

Statistically significant findings include 97% and 98% of respondents have access to a reliable computer and wifi for remote learning activities, respectively.

GENDER

While not as surprising, a chi-square test ($\chi 2 = 5.798$, p-value = 0.016) in Figure 15 also showed that the **female respondents are more resourceful to know someone who can resolve remote learning issues** with their computers than their male counterparts. This observation may have practical implication when the gender composition in adult learning programmes is skewed to either gender.

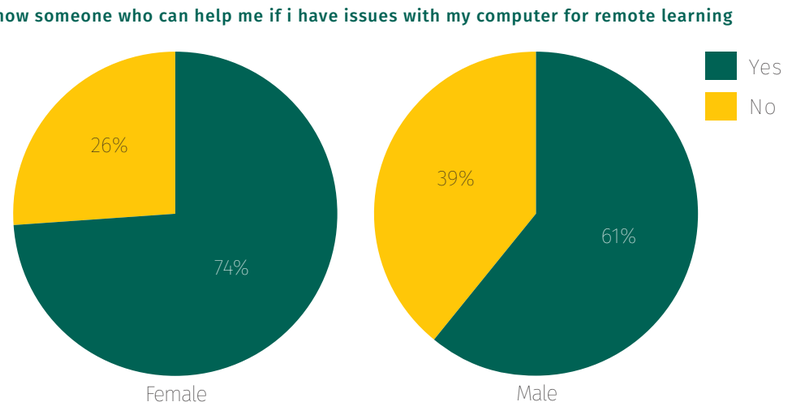

Figure 15: Digital Accessibility and Gender

DIGITAL LEARNING BEHAVIOUR

A chi-square test [$\chi 2 = 31.275$, p-value = 0.012] in Figure 16 showed the **mode frequency for remote learning activities in the last 3 months to be once a week at 39.3%**. Slightly more than 30% of the respondents hardly attempted remote learning activities, at once a month or longer and never.

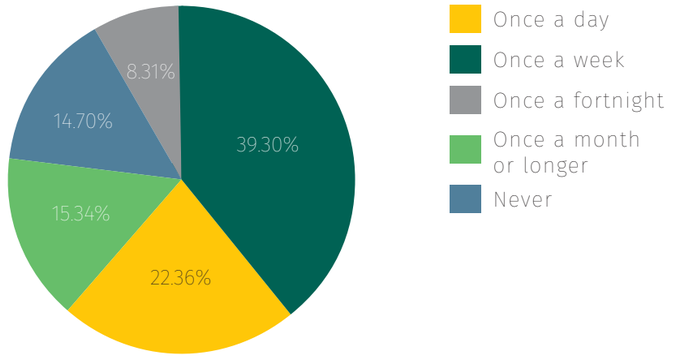

Figure 16: Frequency of Remote Learning Activities in the Past 3 Months

Once again habits and preferences are seemingly correlated and reinforces each other among the respondents. A chi-square test [$\chi 2 = 31.275$, p-value = 0.012] in Figure 17 showed that the **more frequent respondents have been engaged with remote learning activities, a larger proportion of them would indicate a higher ideal percentage of remote learning** in a programme. Among the respondents who have indicated at least 75% as the ideal percentage of remote learning in a programme, at least 68% of them are frequent remote learners who have attempted remote learning at least once a week and more often. Conversely, among respondents who preferred no remote learning, 52% of them have hardly attempted remote learning, with frequency of once a month or longer and never. Findings seemed to suggest that behaviour may be moulded to change preferences and ultimately habits.

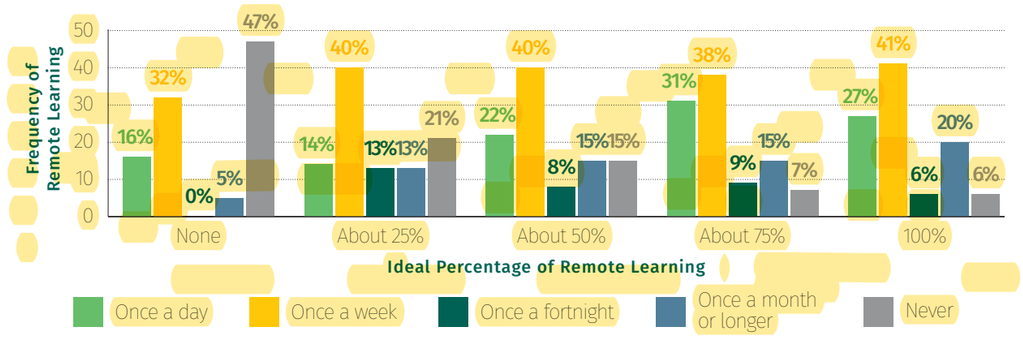

Figure 17: Frequency of Remote Learning Activities in the Past 3 Months and Ideal Percentage of Remote Learning[8]

TIME SPENT

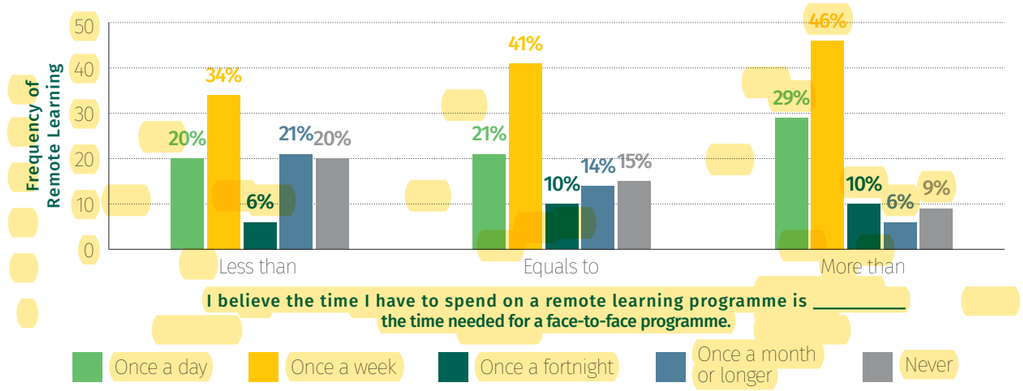

Figure 18: Frequency of Remote Learning Activities in the Past 3 Months and Time Spent on Remote versus Face-to-Face Learning[9]

In Figure 18, a chi-square test [$\chi 2 = 16.545$, p-value = 0.035] was conducted on remote learning frequency and the time that respondents believed they would spend on remote versus face-to-face learning. It was interesting to note that among respondents who think that remote would require more time than face-to-face learning, 75% of them are frequent remote learners. Even among the group who thinks that remote learning would require less time, 54% are frequent remote learners. Findings suggest that there is an **underlying remote learning efficiency differences among the respondents**. Coupled with the observation that among the group who thinks that remote learning would require less time, yet 41% of them hardly attempted remote learning at once a month or longer and never, there is seemingly **more to adult learners' remote learning preferences than time spent and learning efficiency**.

[8] *Rounding differences in "About 25%".*

[9] *Rounding differences in "Less than" and "Equals to".*

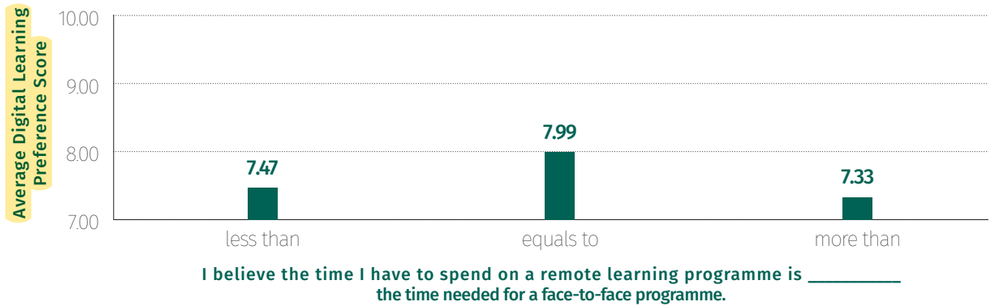

Figure 19: Digital Learning Preference and Time Spent on Remote versus Face-to-Face Learning

Once again, it was thought that the less time an adult learner would have to spend on remote learning as opposed to face-to-face learning, from the perspective of learning efficiency, one would display a higher preference for digital learning. Yet the MANOVA in Figure 19 ($F = 4.391$, p-value = 0.013) between time spent and digital learning preference showed that it was the respondents who were ambivalent on time spent on both learning modes that showed the highest preference for digital learning at 7.99. Respondents who believed that they would spend more and less time learning remotely than face-to-face displayed lower preference for digital learning. Once again, **time spent is but only one consideration for adult learners in their digital learning preference**.

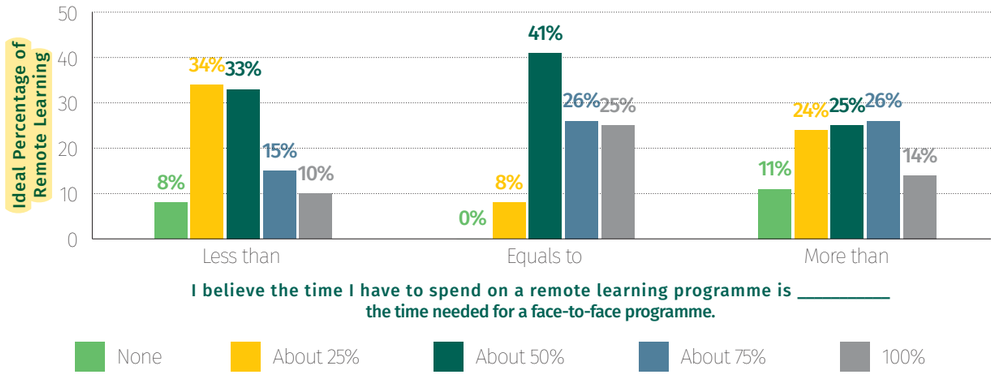

Figure 20: Ideal Percentage of Remote Learning and Time Spent on Remote versus Face-to-Face Learning[10]

This is similarly echoed in Figure 20, in another chi-square test [$\chi 2 = 43.700$, p-value = 0.000] where only 25% of respondents who believed they would spend less time learning remotely than face-to-face indicated an ideal percentage of remote learning of at least 75%. At 51% and 40% respectively, a higher percentage of respondents who think they would spend equal or more time learning remotely than face-to-face indicated an ideal percentage of remote learning of at least 75%.

[10] *Rounding differences in "About 25%".*

CONCLUSION

Findings from this study suggest that digital learning readiness among adult learners are influenced by several factors, such as self-directedness and digital skills efficacy, and adult learners' characteristics, such as age, education level, employment status and even gender. Digital learning habits and preferences seemed to be correlated and reinforces each other. Prior to further research on adult learners' digital learning competencies, adult educators may want to survey their adult learners prior to the conduct of programmes to ascertain, design, develop and deliver an appropriate level of remote learning and modalities arising.

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