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Examining the Applications of Educational Technologies in Teaching and Learning Practices in a specialist intervention setting

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Abstract

The use of technology in the classroom nowadays is widespread and seen by both students and teachers internationally as almost essential. Research indicates that students, particularly today, prefer technology because they think it improves their learning. Their views also include how the use of digital tools appears to improve the effectiveness of their learning. The question arises, do educators on the other hand complement the teaching with sufficient educational technologies? This study will look into two goals which have implications for the use of technology across the world, focusing on implementation in Singapore to provide a case study of improved effectiveness. Firstly, it will start by examining how educational therapists at the Dyslexia Association of Singapore Limited have adopted Educational Technology (EduTech) in their specialist intervention classes. Secondly, it will examine the usefulness of EduTech in teaching and learning. The Technology Adoption Paradigm (TAM), the most popular and scientifically supported model for technology acceptance, serves as the foundation for this research study's investigation of these goals. The findings have implications internationally for educational organisations incorporating technology into their teaching and learning.

Keywords: Educational technology, Online teaching, COVID-19, Teachers' attitudes, Self-efficacy, Special education, Specialist intervention, Dyslexia, Remote teaching

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INTRODUCTION

Technology has cemented its presence in our lives for many years and particularly in this century. Technology is constantly present in many aspects of our daily lives and plays a very important role. Raja & Nagasubramani (2018) also further assert that "the impact of technology can be felt in every possible field and one such field is Education."

In today's educational landscape, the use of technology is prevalent and considered almost essential to students and teachers. Especially in this modern era, students prefer technology as they believe that it has an impact on their learning. Their beliefs extend to how the incorporation of technology tools seems to have an increased effectiveness to their learning (Raja & Nagasubramani, 2018). Ritchie & Wiburg (1994) also mention that "technology's greatest power may be the way in which its use causes teachers, administrators, and students to rethink teaching and learning" (p. 152).

In 2020, the COVID-19 pandemic shook the world "which forced the sudden closure of schools and the directive to work from home" (Goodsall, 2021). Adaptation was mandatory especially in the field of education and this called upon an immediate change for schools to move lessons online and have both teachers and students adapt to new styles of delivering lessons and studying. "Thanks to technology; education has gone from passive and reactive to interactive and aggressive", (Raja & Nagasubramani, 2018)

This sudden change has proved overwhelming for teachers. They have not had time to accept and embrace the change. Usually, such paradigm changes in any field happens over a period of time with a lot of experimentation and analysis of what works and what needs to be tweaked. Unfortunately, COVID-19 did not give us that opportunity due to the sudden closure of schools and the need for alternate modes of education. Trying to replicate physical lessons in an online situation is a major change in the way teaching is done. As Milman (2020) notes, "Educators suddenly thrust into emergency remote teaching do not have ideal conditions to offer well-planned, quality instruction."
This change was equally overwhelming for students also. The boundaries between school and home blurred and the lack of socialisation and community also had a major impact on the motivation and engagement levels of students. This sudden transition to online learning could possibly lead to a deficit in learning for students, according to (Winter et al., 2021). These deficits in learning will have more of an impact on the disadvantaged learners as they face more barriers when it comes to online learning (Willis, 2020).

The prevalence of technology has undoubtedly helped to contribute to the possibility of shifting classes online almost instantaneously. This stands true even within special education classrooms in Singapore. Within the Dyslexia Association of Singapore Limited,

Educational Therapists (EdTs) have also followed suit and turned towards virtual learning when the directive was given for a nationwide lockdown.

AIM OF STUDY

As our team began this study, we set out to investigate an objective. We will be looking at the adoption of educational technology (EduTech) by educational therapists in the Dyslexia Association of Singapore Limited. This research study also incorporates the Technology Acceptance Model (TAM), the most influential and empirically validated model for technology acceptance, as its basis for exploring these items.

Technology Acceptance Model

Davis (1986) proposed the Technology Acceptance Model (TAM) to foresee user acceptance of any given technology by adapting the Theory of Reasoned Action (Fishbein & Ajzen, 1975). (See Figure 1). Davis (1986) asserts that a user's Intention to Use is the most important determinant of his or her ultimate use of a technology. However, it is hypothesized that such intention is positively influenced by a user's overall attitude toward using technology. This attitude is influenced by two beliefs: perceived usefulness and perceived ease of use.

Perceived Usefulness is defined as "the degree to which a person believes that using a specific system would improve his or her job performance," whereas Perceived Ease of Use is defined as "the degree to which a person believes that using a specific system would be free of effort" (Davis, 1989, p. 320).

Perceived Usefulness has a direct impact on attitude toward using a technology and behavioural intention to use the technology, whereas Perceived Ease of Use has an indirect impact on attitude toward technology use and behavioural intention to use a technology. Similarly, external variables such as objective system design characteristics

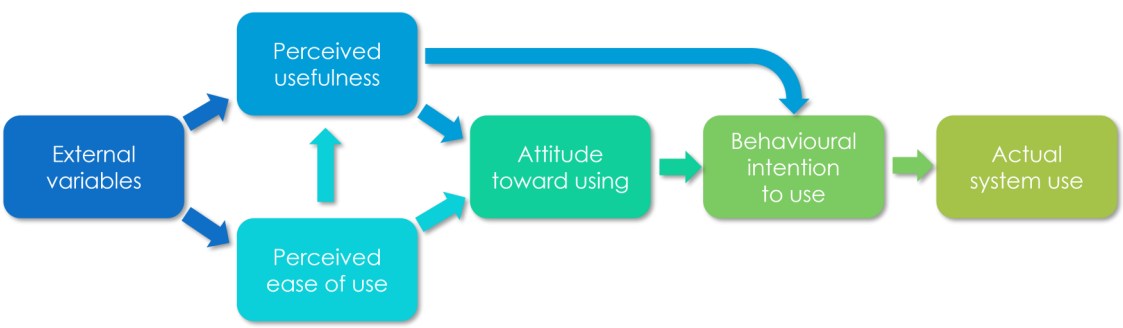

Figure 1. Technology acceptance model (Davis, 1989)

and learners' self-efficacy in using technology are hypothesized to have a direct influence on both beliefs (Davis, 1986).

When it comes to context-based understanding of the usage of a specific technology, TAM only provides general information about whether users are willing to accept a technology (Liu et al., 2010; Padilla-Meléndez et al., 2013).

Despite these limitations, TAM has been shown to be one of the most effective models for examining users' technology acceptance and usage behaviour (Grani & Maranguni, 2019). Researchers have increasingly used the Model to predict learners' acceptance of technology-assisted learning (Al-Emran et al., 2018). These studies expand and modify TAM's initial constructs by incorporating various variables that fall primarily into two categories: external variables and perceived variables.

RESEARCH DESIGN AND METHODOLOGY

For this study, we conducted a survey with educational therapists (EdTs) from the Dyslexia Association of Singapore Limited (DAS). EdTs are trained to work with children primarily with dyslexia and/or with comorbidities. The age group of these children ranges from 7 years old to 16 years old. The EdTs are trained to teach using the Orton-Gillingham approach and have been trained to integrate tech tools in their lessons. The EdTs have been using these methods to teach at least a year prior to the study.

The data was collected over 2 phases. Phase 1 consisted of interviews with 8 EdTs. Phase 2 consisted of a survey with 50 EdTs. The questions for the survey were derived after analysing the interview responses of the 8 EdTs.

Phase One of Study

Participants

In Phase One, 8 participants out of 50 were interviewed on their personal views on how their technology usage is like on a regular basis. Within this group of participants, we have a range of educational therapists with varying levels of teaching experience. In the first round, 8 Educational Therapists participated in online interviews. They were spread across a varied age group from mid-twenties (37.5% - 3 female) to early thirties (37.5% - 2 female and 1 male) and early fifties (25% -1 male and 1 female). The students they teach range from the ages of 7 to 16 with the focus being on literacy. Two of the Educational Therapists also teach Mathematics for the students aged between 6 and 13. 25% of the teachers have more than 15 years of teaching experience, 50% of the teachers have between 5-7 years of experience and 25% of the Educational Therapists have between 3-5 of teaching experience.

All the 8 Educational Therapists have a laptop and at least 3 iPads for students' use. 50% of the Educational Therapists would fall under the high usage category (using some form of technological tools at least eight times a week), 25% would fall under the medium usage category (usage of technological tools at least 5 times a week) and 25% would fall under the low usage category (usage of technological tools at least 2 times a week).

Measures

Phase 1 of data collection consisted of semi-structured, face-to-face interviews with 8 EdTs. The participants were interviewed on the following variables. Attitudes (attitudes towards EduTech), Self-efficacy (self-confidence in using EduTech), Usage (what influences EduTech use in their classrooms, effectiveness of EduTech and how is it implemented), Experiences (current experiences with EduTech, and suggestions on future EduTech use), Pedagogy (EDT's teaching approaches & EduTech tools used in teaching practices), Perceived environmental support (from both organisation and colleagues) and Perceived student learning outcomes.

Procedure

The interviews were conducted online through Microsoft Teams over a period of 10 days. Each interview lasted for an hour and the questions were open ended.

Phase One Results

One of the important aspects being examined is the teacher's beliefs and attitudes One of the important aspects being examined is the teacher's beliefs and attitudes towards technology. This is important as it can be one of the major obstacles in the implementation of technology. "Second-order barriers are intrinsic to teachers and include beliefs about teaching, beliefs about computers, established classroom practices, and unwillingness to change", (Ertmer, 1999) Upon completion of the interviews and based on the research conducted, there were several key findings that surfaced from our analysis.

Overall, it was noted that there were varying degrees of acceptance towards EduTech among the participants. Those participants who were found to be from the EduTech team showed more acceptance and participation in the use of tech. However, the participants who were not from the EduTech team were observed to have more reservations when it came to accepting the use of tech. In addition, this also further contributed to the difference in the participants' general attitudes towards EduTech and how they perceived the implementation efforts of technology by DAS. In the next part of the findings, it was noted that reasons for using technology would have an impact on how the participants made their selections of Edutech tools for lessons and the kind of approach that they would undertake to implement the use of technology.

Reasons for Using Technology

Based on the data compiled from the interviews, there were a few commonly cited reasons for using EduTech among the participants. These include using tech tools for i) teaching and learning purposes, ii) implementing the use of technology to benefit their learners, iii) using technology to help improve classroom behaviours as well as iv) meeting organisational expectations and requirements.

Technology has an important role in promoting activities for learners and has a significant effect on teachers' teaching methods (Ahmadi, 2018). Our interview data analysis has also shown that the participants were generally keener on using technology when they perceived it as being helpful in enabling them to have better control in their classrooms. One participant quoted that, "Edtech is effective for my role as a teacher" and this is further elaborated by another participant who shared that, "Some of the things that we traditionally have cannot really be replaced by any tool or technology, but we can definitely enhance the learning experience through it." This demonstrates that when a teacher employs the use of technology and integrates it as part of their teaching method to support the curriculum, there are gains that extend beyond the learners and have an impact on the teachers and their lesson delivery. This contributes to a more positive outlook and attitude towards implementing technology in a classroom.

Secondly, as students possess individual learning capabilities, the use of technology has also helped to accommodate their differing abilities and contribute to their understanding and growth of learning such as reading and spelling. They have also gained a better understanding of their lessons. This is further supported by (Dawson et al, 2008) and (Gilakjani, 2014) who established that the use of technology allows the focus of learning to be centered on the learner. As shared by one of the participants, "..there are learners with different abilities in a class, for the faster learners, we can give them apps to enrich their learning while waiting for their turn." This further reinforced that the implementation of technology has helped accommodate differing learning capabilities and has provided opportunities for teachers to produce alternatives for varying learner's profiles while maintaining the interest of every learner.

Thirdly, the use of technology becomes much more convincing to the participants when they note that it has helped them to improve classroom behaviour. These behaviours may include but are not limited to the students' attention, confidence, motivation to learn and engagement. As mentioned by one of the participants, "My students are very engaged when I use PowerPoint or when videos are shown to them." Therefore, depending on the teacher's objective of the lesson, suitable tools are selected. For example, some participants shared they used games or online mind maps to enhance their lesson and improve interaction.

Lastly, setting organisational expectations and requirements of using technology creates a culture and an environment within DAS where teachers are encouraged to use technology. This directly contributes to and opens an opportunity and provides a platform for the teachers to gain access to technology and expand their knowledge on it. Some of the participants also cited environmental and organisational efforts as factors that helped support them to increase their usage of technology in class. Such efforts include conducting workshops, access to monthly newsletters on tech tips and having an iRep(trained teacher in technology) at their centre to assist and provide support that has helped them.

Selecting EduTech Tools for Lessons

Technology often allows teachers to add on another dimension to their lesson delivery. As mentioned by Bolick and Cooper (2013), "integration of technology into the classrooms is by no means an effortless process". Teachers will have to go through the process of researching suitable tools and trying each one out before introducing it into the classroom.

Based on our findings, there were a few common factors when it came to the selection of EduTech tools. These considerations include teaching purposes, learners' profiles, EdT's self-efficacy and recommendations from colleagues and organisations.

Teaching purposes refers to what an EdT aims to achieve in that lesson. If the objective of the lesson is to check on the understanding of the concept, a game format would then be chosen. Alternatively, if the objective is to introduce the topic, the teacher would then look up a video or a tool that would help in explaining the concept or in giving the student some background knowledge.

One of the other factors that is high on the list includes the availability of the tool. If the app or tool is preloaded in the tablet or computer, this easy access to it increases the chances of use by the EdT. However, the cost of the tool is also a factor. Free apps or tools tend to be more popular; however, participants cited that these apps or tools have their limitations as well, such as short free trials. This is similar to the results of the survey conducted by Winter et al. (2021) where the Irish primary and secondary teachers also felt that there were many useful tools available, and they would be used effectively by the teachers provided they were available and the teachers were trained in using them.

Learners' profiles also play an important role in the tools chosen. The age and ability of the learners are considered when choosing a tool as the aim is to make the learning interesting and interactive and not to leave the learner feeling incompetent or frustrated when it comes to tech usage. The difficulty level and length of time spent on the tool are also based on the age and ability of these learners. Some participants added that on top of these factors, another challenge within this includes learners who are not familiar

with the use of certain devices such as the iPad. Quoting a participant, "slow learners may not understand how to use the tech tools." Overall, this also adds on to the time taken to use the tool during class time.

Another factor for tool selection is the self-efficacy of the EdT. Teachers have the very important role of being the decision makers in using technology. Their views and notions on the benefits or difficulties in using a technological tool can either encourage or hamper the implementation of technological tools or platforms. As Christopoulos and Sprangers (2021) mention, the successful assimilation of any technological tool is dependant (to a large extent) on the teachers' mindset and self-belief in using that technology. The comfort and ease of usage from the EdT's point of view, along with the time taken to learn and implement will impact the choice. If EdTs are trained in using the tool, the probability of the tool being chosen are high owing to familiarity.

The last factor in the choice of tools lies in whether the organisation recommends it or whether other colleagues have successfully used the tool and have further recommended it. This again is like the findings of Winter and colleagues (2021) that teachers are leveraging the knowledge and skills of their colleagues. Participants have shared that the current efforts promoted by DAS in addition to having been supported by iReps and colleagues do help to increase their exposure and usage of the tools. However, they had also cited that the use of tools would depend on the individual's comfort level, and they felt that they were gaps in training.

Mixed Approach in Using Edutech Tools in Classrooms

Another key finding in Phase 1 was the mixed approach to the usage of tools within the classroom. In some instances, the participants controlled the usage of the tool to a certain extent. This approach is mostly dependent on the age of the student. Younger students were closely monitored in the usage of the tool, to ensure that the tool was used appropriately to maximise learning opportunities. It has also been observed that some participants preferred their students to use the tools independently to encourage self-learning while some others adopted a blended approach whereby the students had independence within a controlled or a monitored setting.

Perceived Support from Environment and Satisfaction Towards DAS Initiatives In Promoting The Use Of Edutech

To employ technology and implement it successfully, there are usually a variety of factors which influence the process. One of the important factors include the support from the environment. In the interviews, participants were asked if they felt like there was enough support to encourage them to use technology. For those participants who felt supported, they cited that having initiatives such as M-Learning Week, Appy Hour sessions and weekly sharing helped expose them to more tools. In addition, there was also support

from the Edutech team if they had queries. They also found motivation from colleagues who use tech more often and received feedback on their usage. For those who felt less supported in their environment, they cited the lack of time and insufficient training as their reasons.

Overall, it was found that those participants displaying a higher level of satisfaction were generally more enthusiastic in trying to employ the use of technology in class. They felt more motivated and positive about technology and even tried to create interest among colleagues. They tend to find more opportunities to use technology in their classrooms which led to enhanced teaching on their end.

Those who displayed a lower satisfaction level cited the lack of time, duration, and quality of training as reasons for it. The participants find that the sessions are too short and there is not enough time to explore the tools. In addition, the training was not comprehensive enough for them to be able to understand how they can use it within their lessons.

COVID-19

With the arrival of the pandemic, traditional face to face lessons had to give way to make room for technology to reduce the disruption and learning for the learners. Within DAS, lessons also moved online within a short period of time.

Teachers had to tap on their knowledge of technology to conduct lessons using online tools. Some participants shared concerns of how younger learners may struggle with using online tools as they were unfamiliar with them, and parents may not be available to provide technical support. This also applies to teachers with lower tech usage who face similar struggles. As for teachers who use technology more frequently, they have some background in technology and generally cited less anxiety as compared to their peers. Overall, most of the participants displayed greater awareness and confidence in using technological tools after having to conduct online lessons over a period of time. They also cited that the support from the Edutech team and their colleagues helped them as they were introduced to suitable tools and provided relevant support when necessary.

Hence, their experiences during the lockdown helped pave the way to integrate technology more effectively, with the use of a wider variety of tools such as online whiteboards, game platforms, quizzes, learning to edit online documents/slides etc.

While the pandemic is unfortunate, it has opened up an opportunity for the growth of our teachers in terms of increasing their knowledge in tech and enhancing classroom instruction in an innovative way.

DISCUSSION

Suggestions Based on Phase 1 Results to Improve Tech Usage at DAS

Through the research, it has been observed that there is a need to increase the number of resources for teachers and learners. In addition, DAS will also need to spend more time on training the staff to implement technology within their classrooms. Firstly, for the teachers, there is a need to increase the number of devices (iPads) for each teacher as the current number of 3 iPads per teacher is insufficient for all the learners to use in class. Teachers would also benefit from having more readily available resources and lesson materials. As for the students, for them to benefit from the use of Edutech, there is a need to install more apps on the iPads for teachers to explore and use. It will also be beneficial if laptops are made available for them to use as needed.

As for the implementation of Edutech within classrooms, teachers will benefit from higher quality training on an organisation-wide level as well as receiving enhanced support for one-to-one training. It was also proposed that we could employ online platforms for material consolidation such as Blackboard.

The 8 participants were interviewed based on their personal views on the adoption of educational technology. The results were analysed and the team identified some of the reasons based on the participants' responses to i)adopting tech in their classrooms, ii) how they make their selection for tech tools to be used in their lessons and iii) how they have implemented it in their classrooms.

One of the key findings of this survey also demonstrated that there were contrasting satisfaction levels when it came to DAS' EduTech initiatives. The EdTs who were more satisfied with DAS EduTech initiatives were more likely to incorporate EduTech in their lessons while those who were dissatisfied were less likely to incorporate EduTech. The reasons cited were a general lack of quality in terms of comprehensive training and also a lack of time to explore tech tools as their reasons.

Furthermore, the contrasting satisfaction levels were dependent on the perceived support from the environment when it came to using EduTech. Those participants who displayed positive satisfaction levels were more motivated to use EduTech and more likely to participate in the usage of Edutech. They were also generally more receptive to feedback with their usage of Edutech. These participants were generally observed to be part of the EduTech support team. However, the participants who were dissatisfied felt less supported and commonly cited the lack of time and resources to use EduTech as well as insufficient training for their perceived lack of support from the environment.

This study has helped to identify some of the areas where DAS can improve its EduTech initiatives. One of the main aspects is to continue to build and expand on the EduTech resources available to the EdTs. This includes having readily available lesson materials and making more EduTech tools accessible to EdTs and students. The second aspect is implementation of online platforms. Online platforms like Blackboard and Google Classroom are user-friendly and open opportunities for Edts to make provisions for differing student abilities. The final aspect for consideration is training the EdTs in the usage of various apps and tools. Concurrently, DAS could continue to give them opportunities and time to explore EduTech tools by providing them with videos and links of apps in usage. Another possible suggestion is to increase awareness and emphasise on the benefits of the usage of selected tools in conjunction to the lesson objectives.

CONCLUSION

In conclusion, this paper serves to understand how Edutech is currently being adopted by the EdTs within DAS. The research applies the Technology Acceptance Model (TAM) framework where it helps us to understand how individuals adopt and use technology.

Based on the results and analysis conducted by Temasek Polytechnic, we hypothesise a significant difference between the different levels of Edutech advocacy. Higher advocacy scores (i.e: higher levels of Edutech advocacy) result in increased levels of frequency, attitude, and motivation towards the use of EduTech. This may also give rise to better teaching outcomes and student learning outcomes. The success of technology in boosting student learning depended on how openly and successfully teachers accepted and incorporated it into education (Mubarak & Ram, 2016). The change-agents are teachers, not technology. In addition to this, with the advancement of technology, we should learn to progress and continue to embrace the change.

Upon conducting the survey and interviews, we noted several barriers that have an impact on the teacher's decision on whether they would choose to use tech within a classroom. The first-order barrier, a term referred to by Ertmer (1999), suggests that the first barrier to embracing tech is due to the lack of tools and training provided. As long as steps are done to acquire these tools and enough time is allocated to instruct and train teachers to incorporate them into lessons, the first barrier can be removed. However, more crucially, the key to breaking down these barriers may ultimately depend on teachers' attitudes and views about technology. In the case of DAS, tools and training have been provided. However, it is noted that the initiatives can be further improved to allow for more learning opportunities to take place. Additionally, it was noted from the interviews that despite receiving tools and training, some teachers continued to express reluctance toward using technology because of their perceptions of their own technical skills and capabilities. Therefore, it is essential to comprehend the objectives when making training plans. The training must be more extensive and effective in its teaching approaches, with a focus on boosting the confidence of those employing technology.

Furthermore, in light of the current political atmosphere, it is even more crucial that we fill in any knowledge gaps among educators about Edutech. The use of digital technology has permeated every aspect of contemporary life. People are growing comfortable with the idea of technology, and this marks a strong contrast between two different generations. Students these days are referred to as "digital natives," suggesting that they have grown up with technology while adults are frequently referred to as "digital immigrants," denoting the necessity for them to acquire new skills (Mubarak, 2017). The progress of technology will only continue to advance, and it is crucial to keep up with them as it opens endless opportunities for the teaching industry.

There is now more acceptance of the use of tech tools in classrooms, especially after our experiences with COVID. The environment has forced this change and altered the traditional modes of teaching and learning for both teachers and students alike. Currently, technology has become deeply ingrained in our educational system and has made it possible for tools and ideas to be shared internationally. The value of technology has grown exponentially within a short span of time, not only increasing awareness among people but also contributed to an increased level of the tech abilities among teachers and students. Access to learning has become even more attainable with the help of technology. Lessons have become more interactive with the inclusion of videos and online learning games. This transformation has, in its own way, carved a new path that leads up to a new generation of learning and has eventually witnessed a greater acceptance towards the implementation of technology within the education field. The value of technology will seemingly only increase over the coming years, paving the path for additional developments. The case study research presented here of the integration of technology into an educational organisation is specific to the context in which it was used but has wider implications internationally for the readiness of teachers to access the full potential of technology.

LIMITATIONS AND DIRECTIONS FOR FURTHER RESEARCH.

There are certain limitations to our research.

The drawback is the relatively small sample size of participants who took part in Phase One interviews. There were only 8 participants and out of which 6 of them fell under the age range of 40 years and below. Among the 6 participants, 4 of them belong to the EduTech team. On the other hand, the other 2 participants were above 50 years of age and 1 of them did not belong to the EduTech team. The age group of these participants may also inadvertently impact their beliefs and perceptions toward the use of technology. Overall, considering the participants' age group and integrating their opinions and interactions with technology, this could affect the research's findings, especially given the small sample size and variable levels of tech use dependent on each participant's exposure within the DAS. Hence, this makes it difficult to interpret and extrapolate the data in full.

With this data in hand, a follow-up study will be carried out in the following article to investigate how EdTs within DAS embrace technology and whether the advocacy tier (low, middle, high) they belong to, has an impact on the achievement of the students as measured through our bi-annual curriculum-based assessment.

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APPENDIX

Interview questions for users with high technology usage

QUESTION
In your mind, what is educational technology?
ATTITUDES
What do you think about the use of educational technology in classrooms?
Do you use Edutech in your classroom? Why or why not?
Does technology in the classroom help with your lessons? How so or why not?
When was the first time that you encountered Edutech? Have you used it in your previous experiences?
What was your initial impression about it?
Are you referring to in DAS or elsewhere?
What are some of the Edutech that you first used?
How about currently in DAS?
Are you still using them now? Do you use other Edutech apart from the ones you were first introduced to?
USABILITY
How do you decide which Edutech to use?
How have you incorporated technology into your lessons? Can you provide some examples? What do you use Edutech for? What is the ease of using Edutech? How often do you incorporate the use of Edutech in your lessons? Do you think Edutech is effective for you in your role? Why or why not?
What are some effects of using technology to teach?
Can you elaborate on the benefits and challenges of using Edutech?
OUTCOMES
What are some of the student outcomes that you observe in using Edutech in your classroom?
How does it help them in learning the content? Cognitive (How does it help in understanding?) Engagement (socio-emotional, motivation) Why? Why not? How?

PEDAGOGY
How frequently do you incorporate technology into your lessons? (For e.g., within a week?)
How do you use technology to teach your students? Can you take me through your lesson plan where you incorporate Edutech in your lesson? ~~(Use)~~ Can you tell me why you do not use technology as much? (Use minimally)
Can you describe your teaching approach with regards to the use of technology? Do you allow students to use technology independently/do you control their usage.
Within some of the educational programs that you use, what are some typical functions within those programs you use? Why do you like them? Are there some functions that you are aware of that you don't use? What do you do with it?
What are some teaching materials that you put into these functions?
Based on what you know, do your colleagues at DAS use the same approach and programs as you?
EFFICACY
As an educator, how confident/comfortable are you with using Edutech? To what extent do you feel prepared to select and use Edutech? Do you feel that you are being sufficiently supported/encouraged to use Edutech in class?
ENVIRONMENT
To what extent does your environment/organisation support and/or encourage you to use technology in the classroom? Current efforts by DAS? Colleagues support?
EFFICACY
What are some of the factors that affect your use of Edutech?
Personal (confidence, anxiety, personal preferences) What has helped you gain confidence or held you back? What are some challenges that you have about using Edutech? What do you think can increase your confidence in using Edutech?
Organisational (environmental, work, organisational) factors What are the factors that can be made to support the use of technology in the classroom?

EXPERIENCES
What are the limitations of current technology/technological platforms in DAS? Can you provide an example? (fit into challenges)
What would you change about the current use of Edutech (work process/types/ implementation) in DAS? Why do you say this? Is there anything you would like to improve on?
What sort of technology do you think is useful for DAS?
COVID-19
When you first heard about the full HBL approach, what were your initial impressions about it? Have these concerns changed? Why or why not?
Now in this current COVID situation where it is fully online learning, what are some of the Edutech that you use to teach? Can you show me a typical lesson plan you used recently?
What technologies or platforms are you using to conduct your online classes?
Why are you using it? How are you using Edutech to teach? (the differences & adaptability) What do you like / dislike about it?
Are these different from what you have used before? How easy was it to adapt to the use of them? What are some of the challenges you faced in using these technologies?
What are the student outcomes during the HBL? How likely are you to continue using the tech after the COVID situation?
Has teaching with the use of Edutech during this COVID-19 period changed your perception on Edutech use in the class? How so?
DREAM QUESTION
In 5 years' time, what progress would you like to see in the special needs sector in relation to educational technology
MISCELLANEOUS NOTES

Interview questions for users with low/no technology usage

QUESTION
In your mind, what is educational technology?
ATTITUDES
What do you think about the use of educational technology in classrooms?
Do you use Edutech in your classroom? Why or why not?
Why do you not use Edutech in the classroom?
When was the first time that you encountered Edutech?
What was your initial impression about it?
Are you referring to in DAS or elsewhere?
What are some of the Edutech that you have used?
Are you still using them now? Do you use other Edutech apart from the ones you were first introduced to?
If you don't prefer to use technology, what do you typically use to teach your students? Why this approach instead of technology? What are some effects of using your approach to teach? Can you elaborate on the benefits and challenges of using Edutech?
OUTCOMES
What are some of the student outcomes that you observe in using (their approach) in your classroom?
How does it help them in learning the content? Cognitive (How does it help in understanding?) Engagement (socio-emotional, motivation) Why? Why not? How?
PEDAGOGY
How frequently do you incorporate technology into your lessons? (For e.g. within a week?)
Is there a reason why you don't use it at all? (Don't use)
Can you describe your teaching approach with regards to the use of technology? Do you allow students to use technology independently/do you control their usage?
Within some of the educational programs that you use previously, what are some typical functions within those programs you might have tried and used? Why do you like them? Are there some functions that you are aware of that you don't use? What do you do with it?
Based on what you know, do your colleagues at DAS use the same approach and programs as you?

EFFICACY
Do you feel that you are being sufficiently supported/encouraged to use Edutech in class?
ENVIRONMENT
To what extent does your environment/organisation support and/or encourage you to use technology in the classroom? Current efforts by DAS? Colleagues support?
EFFICACY
What are some of the factors that affect your use of Edutech?
Personal (confidence, anxiety, personal preferences) What has helped you gain confidence or held you back? What are some challenges that you have about using Edutech? What do you think can increase your confidence in using Edutech?
Organisational (environmental, work, organisational) factors What are the factors that can be made to support the use of technology in the classroom?
EXPERIENCES
What are the limitations of current technology/technological platforms in DAS? Can you provide an example? (fit into challenges)
What would you change about the current use of Edutech (work process/types/ implementation) in DAS? Why do you say this? Is there anything you would like to improve on?
What sort of technology do you think is useful for DAS?
COVID-19
When you first heard about the full HBL approach, what were your initial impressions about it? Have these concerns changed? Why or why not?
What was your initial impression, thoughts, concerns on the full HBL approach?
Now in this current COVID situation where it is fully online learning, what are some of the Edutech that you use to teach? Can you show me a typical lesson plan you used recently?
What technologies or platforms are you using to conduct your online classes?
Why are you using it? How are you using edutech to teach? (the differences & adaptability) What do you like / dislike about it?
Are these different from what you have used before? How easy was it to adapt to the use of them? What are some of the challenges you faced in using these technologies?

What are the student outcomes during the HBL? How likely are you to continue using the tech after the COVID situation?
Has teaching with the use of Edutech during this COVID-19 period changed your perception on Edutech use in the class? How so?
DREAM QUESTION
In 5 years' time, what progress would you like to see in the special needs sector in relation to educational technology
MISCELLANEOUS NOTES