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Virtual Educational Therapy—Experiences and Perceptions of Educational Therapists at the Dyslexia Association of Singapore

Nurul Hudaa Binte Mohamed Daud [1*]

1. Dyslexia Association of Singapore

Abstract

School closures were implemented in the first quarter of 2020 to halt the spread of the COVID-19 epidemic. Without adequate preparation time, students and teachers faced the problem of transitioning from face-to-face to online classes. Educational therapy sessions in the Dyslexia Association of Singapore were affected too. This study sought to explore educational therapists' experiences and perceptions of online teaching and learning with school-going age students with dyslexia in an online environment during the COVID-19 pandemic. To accomplish this, a phenomenological approach was employed using in-depth interview techniques with ten educational therapists from the DAS. A six-stage thematic analysis by Braun and Clark (2006) was employed to determine the themes for this study. The findings revealed four key themes: a) benefits of virtual educational therapy, b) challenges of virtual educational therapy, c) perceived success factors and conditions for an effective virtual educational therapy, and d) after-effects of educational therapy for educational therapists. Details in the findings could help educational therapists design better virtual lessons in the future. While online platforms may not be ideal for dyslexic learners, educational therapists believe that age and technological capability contribute significantly to the feasibility of virtual educational therapy. Recommendations for further research include a) a study to explore dyslexic learners' perspectives and experience of online learning, b) a survey of online learning with other programmes, not just the literacy programme and lastly, c) an investigation into the mental health and well-being of dyslexic learners and educational therapists while participating in online learning.

Keywords: COVID-19, dyslexia, educational therapy, online teaching, phenomenological case study, remote teaching.

* *Correspondence to:*
Nurul Hudaa Binte Mohamed Daud, Senior Educational Therapist, Edtech Integration Specialist, English Language and Literacy (ELL) Division, Dyslexia Association of Singapore Email: nurul.md@das.org.sg

INTRODUCTION

The global COVID-19 pandemic had a profound impact on education, causing the most significant disruption in history, according to the United Nations (UN, 2020). Starting in Wuhan, China, in December 2019, COVID-19 rapidly became a pandemic, reaching 220 countries, infecting nearly two billion people, and causing over four million deaths (World Health Organization [WHO] COVID-19 Dashboard, 2021). Governments worldwide implemented various measures to contain the virus, including school closures, affecting millions of students (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2021). Many countries turned to online learning to ensure educational continuity, supported by UNESCO (2020) to limit the virus's spread since students stayed home.

School closures disrupt learning, especially for students with special education needs (SEN) (Petretto et al., 2020). In Singapore, amid closures due to the "circuit breaker" order in April 2020, home-based learning (HBL) was implemented for all students, including those at Special Education (SPED) schools. However, clinician-led therapy services, including the Main Literacy Programme (MLP) at the Dyslexia Association of Singapore (DAS), continued online with safety measures (Ministry of Education Singapore, 2020). This ensured continuity for literacy-focused interventions.

While online learning for atypical learners has been studied, research on online special education for dyslexic school-age students remains limited. Most online education research centres on college students, neglecting K-12 students. This study aims to understand how educational therapists conduct online therapy for dyslexic students aged 7-18 during the COVID-19 pandemic.

Terminology

Educational therapy employs tailored methods to assist those with learning differences (Clark, 2020). The Dyslexia Association of Singapore (DAS) offers the Main Literacy Programme (MLP), based on the Orton-Gillingham (OG) principles, for dyslexic students aged 7-18. "Virtual educational therapy" refers to online MLP instruction during the COVID -19 lockdown, with educational therapists as the instructors.

Dyslexia and online learning

Dyslexia, often defined as a neurological condition, primarily affects literacy (Welsh Government, 2012). However, it also involves challenges beyond reading, impacting working memory and auditory processing (Fostick and Revah, 2018). These deficits can affect organisation, time management, coordination, sequencing (Marchand-Krynski et al., 2017), and attention (Smith-Spark et al., 2004).

Beyond literacy, dyslexic individuals exhibit cognitive deficits in short-term memory, working memory, and processing speed, influencing their learning quality and speed. This makes online learning more challenging for dyslexic students, as it often involves complex processes that require cognitive abilities they may lack. For instance, students with working memory difficulties may struggle when presented with numerous instructions without adequate processing time, potentially leading to information forgetting.

Supporting online learning for students with special educational needs (SEN) are two key arguments:

1. Assistive Technology: Research suggests that online learning can level the playing field for students with SEN (Lancaster et al., 2009). Digital tools, such as communication devices and text-to-speech (TTS) software, can compensate for disabilities. For example, nonverbal students or those with speech impairments can utilise communication devices, while students with dyslexia can benefit from text-to-speech, speech-to-text, and spell-checking software.

2. Student-Centered Approach: Online education, often designed with a student-centred approach, has proven beneficial for students with SEN (Marteney and Bernadowski, 2016). This approach enhances access to learning activities and boosts motivation. It enables open access to course materials, making it easier for students to review content, such as repeatedly watching demonstration videos (Schuck and Lambert, 2020). Furthermore, online education allows teachers to tailor lesson content to suit the unique learning styles of nearly every student, providing them with access to a diverse range of online resources.

However, some learners who struggle in traditional classes, especially those with specific learning difficulties, may face even greater challenges in online environments. Alsobhi, Khan, and Rahanu (2015) noted that students with disabilities, including dyslexia, are often neglected in online tool development, resulting in unequal learning experiences. Woodfine et al. (2008) investigated the issues faced by dyslexic students in synchronous online learning, finding text-based activities like web conferencing and instant chat to be disadvantageous. Firth et al. (2019) also highlighted how functional changes, task-switching, and complex multimedia stimuli can harm attention, memory, and social cognition in online learning. For dyslexic learners already grappling with working memory issues, these challenges could be particularly detrimental. While Lancaster et al. (2009) emphasised the importance of digital tools for students with special educational needs, Alsobhi et al. (2015) pointed out the neglect of online tools for dyslexic students.

Research gaps

Existing studies do not conclusively establish the impact of online learning on students with dyslexia. In summary, one perspective advocates using assistive technology to level

the playing field (Lancaster et al., 2009), while another perspective highlights the neglecting of students with disabilities, including dyslexia, in online lesson development (Alsobhi et al., 2015; Woodfine et al., 2008). Little research literature covers K-12 special education policies and practices for online learning (Burdette, Greer, and Woods, 2013). Understanding how online learning suits school-aged individuals with dyslexia is essential. Most dyslexia research focuses on higher education, which differs from K-12 settings (Pang et al., 2015). Exploring teachers' perspectives has also been limited (Worthy et al., 2016). Teachers' attitudes largely impact technology's success in teaching and learning (Hartman et al., 2019). Given that DAS's educational therapists work with dyslexic students daily, their insights can shed light on the effectiveness of online learning for school-age dyslexic students.

The preceding studies identify the following research gaps:

1. Additional research on dyslexic learners and online learning is necessary, as online learning during the pandemic is unique. The effects of the abrupt and forced change have not been adequately documented.

2. Additional research on younger dyslexic learners is necessary, as the benefits and challenges they face online may differ from university-going dyslexic learners.

3. Finally, instructors' voice is relatively underrepresented in the growing literature on online learning and learners with dyslexia, especially concerning how they conduct their lessons on a different platform than the norm.

PURPOSE OF THE STUDY

Considering the research gaps, this study explored educational therapists' experiences and perceptions of online teaching and learning with school-going-age students with dyslexia in an online environment during the COVID-19 pandemic. Therefore, the study's central question is:

- What are the experiences and perceptions of educational therapists with regards to delivering virtual educational therapy sessions to students with dyslexia during the COVID-19 pandemic lockdown?

The research questions that will shape the current study are as follows:

- How do educational therapists deliver virtual educational therapy sessions to students with dyslexia?
- What are the benefits and challenges educational therapists face while conducting virtual educational therapy with students with dyslexia?

This study aims to explore the experiences of educational therapists providing online intervention to students with dyslexia during the COVID-19 pandemic. Examining therapists' practices during emergency remote teaching seeks to identify effective approaches and challenges. The findings will inform future strategic planning for online education and virtual therapy for dyslexic students.

Online education and online learning during the pandemic

Online education, also known as distance education, is a well-established concept in the field of education. It is defined as "institution-based, formal education in which the learning group is separated, and interactive telecommunications networks are used to connect learners with resources and instructors" (Simonson, Smaldino, and Zvacek, 2012). In recent years, online education, primarily delivered through the internet, has gained significant popularity. Even before the COVID-19 pandemic, a large number of students were already engaged in online learning.

In Singapore, for instance, e-learning weeks are common across primary, secondary, and junior college schools (Powell & Patrick, 2006). Blended learning, combining online curricula with in-person teaching, has been practised in schools for some time (Barbour et al., 2011). In the early to mid-1990s, U.S. universities and colleges began experimenting with online courses (Kentnor, 2015).

Studies on online education in higher education in the United States have been conducted by the Babson Survey Research Group for several years. Their tenth annual survey study in 2013, based on responses from over 2,800 academic leaders, reported that over 6.7 million students were enrolled in at least one online course. Between 2012 and 2019, the number of students enrolled in online courses increased by two million, reaching 7.4 million. The global market for educational technology (edtech) has also seen substantial growth, with expenditures exceeding $17.7 billion USD in 2017 (Edtech in Singapore - opportunities and growth, n.d.).

Online education is not only a response to the COVID-19 pandemic but has been studied for decades. It is considered a means to reduce the achievement gap, increase graduation rates, and enhance students' progress toward proficiency (Patrick and Dawley, 2009). Additionally, it is viewed as an approach to making education more accessible to individuals with geographical, disability, and status-related constraints (Carr-Chellman, 2005). Online education can benefit learners of various ages, socioeconomic backgrounds, abilities, and geographical locations, provided they have access to the necessary technology and an internet connection.

The U.S. Department of Education funded the National Research Center for Distance Education and Technological Advancement (DETA). In 2004, they initiated the "No Significant Difference" database, which compiles research on the effectiveness of online

learning. Approximately 92% of the studies in this database demonstrate that online education is as effective or more effective than traditional education (Nguyen, 2015).

Pre-COVID, research on online learning centred on learners who could choose between online and face-to-face instruction. Given that, they are supplied with a well-planned online curriculum to select, as well as the necessary devices to facilitate their learning. Online education uses a deliberate instructional planning process that incorporates a systematic approach to administrative procedures and course development (Barbour et al., 2011). On the contrary, using online learning amid an emergency, like the COVID-19 pandemic, is not a choice. A well-designed online course is not comparable to online teaching in response to a crisis(Hodges et al., 2020). It is seen as a spontaneous substitute for the typical face-to-face, brick-and-mortar teaching approach (Zawadka et al., 2021). Hodges et al. (2020) have coined a specific term for this temporary form of instruction in times of crisis: Emergency Remote Teaching (ERT). This transition to Emergency Remote Teaching (ERT) presented distinct challenges for key stakeholders in education (Long, 2021), especially for educators of students with special educational needs (SEN). Additionally, the transition presents distinct challenges for students with SEN, too, as they often benefit from strong face-to-face interaction, modelling (from both instructors and peers), and the use of physical manipulatives (Frederick, Raabe, Rogers and Pizzica, 2020) provided in the brick and mortar classroom.

Online education and Special Educational Needs (SEN)

The definition of "special needs" varies globally because different countries' legislations (OECD, 2012) generally apply to children who cannot thrive in mainstream educational settings without additional support or modifications. Typically, these students, classified as having special educational needs (SEN), face more significant learning challenges compared to their peers and require specialised educational services (Delaney, 2016). The category of special education encompasses learners with a range of conditions, including mild dyslexia, mild intellectual disability, severe learning difficulties, and autism spectrum disorder (ASD). Additionally, it includes those with conditions like attention deficit hyperactivity disorder (ADHD), visual or hearing impairments, mobility issues, limited motor skills, and movement challenges. Therefore, students with special educational needs (SEN) may exhibit a variety of issues, including learning disabilities, physical or developmental disabilities, as well as behavioural, emotional, and communication disorders (Kryszewska, 2017). Each student with disabilities and disorders has unique requirements and varying levels of support necessary for their learning.

Benefits of online education for SEN students

Online education offers several advantages for students with special educational needs (SEN), including flexibility in scheduling, the ability to adjust the pace of lessons, and the option to take breaks as needed (Allday and Allday, 2011). It also provides automated

feedback and tailored results to assist students in addressing errors promptly (DiPietro et al., 2010), reducing peer pressure (Tsai, 2009). Online learning allows teachers to customise lesson content to match students' learning styles. For instance, visual learners benefit from presentations, graphs, charts, animations, and videos, while auditory learners can use recorded lessons and audio readers. Providing transcripts aids verbal learners, and additional resources in various technology formats help students grasp course subjects in their preferred way (Marteney and Bernadowski, 2016).

Research by Murders (2017) found that college students with learning disabilities appreciate the convenience and flexibility of online classes. It offers extra time for information analysis and comprehension. Students with SEN may require Assistive Technology (AT) during online learning, and the accessibility of devices, apps, and online platforms for individuals with disabilities has significantly improved. Assistive interventions like text-to-speech (TTS), speech-to-text (STT), word processing, multimedia (hypertext), and smartpens have been studied. Word processing, multimedia, and hypertext interventions have been shown to be the most effective, while smartpens and text-to-speech systems had mixed results, and speech-to-text conversion systems had a modestly beneficial effect (Perelmutter, McGregor, and Gordon, 2017).

Assistive technology interventions, as researched by Perelmutter et al. (2017), can be beneficial for adolescents and adults with learning disabilities. However, it is crucial to understand that AT solutions should be individualised, as not all individuals with learning difficulties will benefit equally from tools like text-to-speech (TTS). The effectiveness of AT depends on the student's specific needs and reading abilities, making a case-by-case evaluation necessary. When appropriately applied, AT can help students with SEN complete assignments more efficiently, increasing their motivation (Bahr, Nelson, and Meter, 1996).

While online learning offers many advantages for students with special educational needs, it also presents challenges. Despite the positive research findings on online and special education, it is essential to consider the issues discussed in the literature.

Challenges of online education for SEN students

Students with special educational needs are more likely to experience behavioural difficulties in the classroom compared to their typically developing peers (Oldfield, Humphrey, and Hebron, 2017). During the COVID-19 lockdown, a study conducted in Germany found that both parents and children were stressed (Christner et al., 2021). Yavari's research in 2021 focused on students with autism spectrum disorder (ASD) during the lockdown, revealing that increased stress and anxiety often led to temper tantrums and meltdowns. Some students with ASD even refused to return to online learning, while others had to quit due to challenging behaviour, triggered by interruptions. Technology presented another hurdle, with Gilbert's research (2015) noting that a lack of reliable

internet access at home was a common difficulty among respondents. Sorensen (2019) also highlighted the technological challenge, emphasising that access to technology, including the internet and devices, is essential for successful online learning. In Sorensen's study, based on Idaho virtual schools, it was found that even when virtual schools provide learners with devices, inadequate internet connectivity can greatly hinder their success. Younger students with disabilities, in particular, may spend excessive time learning how to use technology, which can become a barrier to their learning process.

Several studies, including those by Gilbert (2015), Gorbunovs et al. (2016), and Sorensen (2015), have identified a significant issue in online learning related to learner self-discipline and motivation. It is worth noting that these studies were conducted before the COVID-19 crisis. During the COVID-19 lockdown, a large-scale research study at a Dutch university (Meeter et al., 2020) found that students perceived online education as less satisfying compared to campus-based learning. The study revealed that school closures led to a decrease in student motivation. Furthermore, this qualitative survey involving more than 15,000 students indicated that while work efficiency increased with the transition to online education, satisfaction and motivation declined (Meeter et al., 2020).

Parents play a critical role in the online education of students with special needs. Greer, Rowland, and Smith (2014) note that as K–12 online learning becomes more common, parents or adult household members take on additional responsibilities to ensure the participation of students with disabilities. Teachers often expect parents to help students to complete lessons in the correct order, especially for primary school children with impairments who may require parental assistance even during synchronous classes. This reliance on parents can be challenging, as a lack of parental involvement on the online platform can lead to failing grades, truancy, and frustration (Sorenson, 2019). Effective communication between teachers and parents is crucial to ensure smooth lesson delivery, and family or guardian support is essential for learners with impairments in adapting to remote learning (Patretto et al., 2020). In online learning, caregivers primarily assume the roles that professionals typically handle in a school setting, and these additional responsibilities can be burdensome for parents or guardians who also work.

Learners with dyslexia and online learning

Dyslexia is a learning disorder characterised by difficulties in accurate word identification, decoding skills, and spelling. It is recognised as a specific learning disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). People with dyslexia struggle with word decoding and spelling, even though their reading comprehension is typically unaffected (Snowling et al., 2020). While individuals with dyslexia may experience co-occurring challenges in language, motor coordination, mental calculation, concentration, and personal organisation, these are not markers for

dyslexia in themselves (Rose, 2009). Dyslexic students may encounter difficulties in various study skills, such as note-taking during lectures and composing written assignments (Mortimore and Crozier, 2006).

Murders (2017) suggests that the structure and organisation of the online environment can benefit students with special educational needs (SEN) by providing them with more time to process and understand information. However, this advantage is contingent on the online class being asynchronous, which is not always the case.

Habib et al. (2012) conducted a study involving twelve participants formally classified as dyslexic, including current university students and recent graduates. Their findings reveal that dyslexic students encounter various challenges when using virtual learning environments (VLEs). These challenges include dealing with information overload, inaccurate word processing tools, limited search options, and the need to interact with multiple systems simultaneously. Habib et al.'s (2012) findings align with Woodfine et al.'s (2008) earlier research, indicating that text-based synchronous activities like web conferencing and instant chat functions can pose difficulties for children with dyslexia.

Interestingly, nearly every participant in Habib et al.'s study reported struggling with writing, with many of them feeling that these challenges were exacerbated in an online setting. Two primary factors contributed to these difficulties. Firstly, some participants found that typing was more time-consuming than writing with pen and paper, possibly due to differences in hand-eye coordination required for the two tasks. Secondly, several participants had difficulty connecting what they typed with what they saw on the screen, making text recognition more challenging. Considering that the participants in this study were college-going adults, it raises questions about whether younger learners might face similar challenges.

In their 2021 study, Forteza-Forteza and colleagues delved into the experiences of dyslexic children and youth, aged 9 to 21, who were predominantly enrolled in primary and secondary schools, as they grappled with the challenges imposed by the COVID-19 pandemic and associated school closures. This exploratory investigation engaged 327 parents and 203 children with dyslexia. Rather than solely concentrating on diagnosing dyslexia and its associated specific learning difficulties, the study took a unique angle by shedding light on the emotional states of dyslexic students and their parents throughout the lockdown.

Building upon the findings of prior research conducted by Ghisi et al. (2016), Novita (2016), and Zuppardo et al. (2017), which collectively underscored the heightened emotional stress faced by dyslexic students, Forteza-Forteza and her team reaffirmed that these individuals exhibited significantly lower self-esteem, a more negative self-concept relative to their peers, and a heightened prevalence of anxiety and depression.

Notably, these emotional challenges were attributed to instructional plans devised by educators, which often failed to accommodate the unique reading process needs of children with dyslexia (Forteza-Forteza et al., 2021).

Moreover, the study by Forteza-Forteza et al. (2021) emphasised how the disruptions caused by lockdowns and school closures exacerbated the learning difficulties experienced by dyslexic students, thereby adding to the strain faced by families. This strain became particularly pronounced as parents took on the role of educators amid the uncertainty and stress of the ongoing pandemic.

In a recent study conducted in Italy, researchers aimed to assess the impact of lockdown and emergency remote teaching on children with dyslexia. They recruited 65 children with dyslexia and 52 children without specific learning difficulties. To evaluate reading abilities, a neuropsychological test was administered, and an ad hoc questionnaire was designed to gather insights into the experiences of both parents and children during the lockdown. The study's findings, conducted amidst the COVID-19 lockdown in Italy, were less optimistic than anticipated. Children with dyslexia exhibited a slower-than-expected improvement in their reading skills (Bachenis et al., 2021).

Collectively, three studies, including Habib et al. (2012), Forteza-Forteza et al. (2021), and Bachenis et al. (2021), underscore the distinctive challenges faced by dyslexic learners compared to their typically developing peers. These findings emphasise the need for tailored considerations when preparing to educate dyslexic students via online platforms.

Teachers' perceptions of online teaching

Online education, once an optional component of teaching, has taken on newfound importance in the pandemic era, as statistics clearly illustrate. Educators who once had the choice to incorporate technology found themselves compelled to do so. Giovannella (2020) conducted a study on the Italian school system, investigating how teachers adapted to online education two months into the COVID-19 outbreak. The study involved 336 teachers from both primary (142) and secondary (194) schools. Results revealed that teachers exhibited a positive attitude towards technology integration, making every effort to maintain normalcy in their teaching by utilising familiar tools and online platforms. Nonetheless, the unanimous consensus among these educators was the necessity for digital skills training to better prepare for future teaching endeavors.

In China, Wang et al. (2020) conducted a comprehensive assessment of online learning platform usage in K-12 education during the COVID-19 outbreak. They employed surveys and case studies to gauge teachers' perspectives on platform functionality. An impressive 77.9% expressed a desire to continue using online platforms to enhance classroom instruction in the future, showing overall satisfaction with the experience.

Similarly, Rahayu and Wirza (2020) explored the attitudes of 102 EFL Junior High School teachers in Indonesia towards online English language learning during the pandemic. While teachers generally appreciated the utility and convenience of online systems, over half remained uncertain about the effectiveness of online learning, citing the lack of teacher-student interaction and engagement as a significant concern.
Various challenges such as limited technological infrastructure, disengaged students, and teachers' digital proficiency hinder online education. In a smaller-scale study, Eftimie (2020) examined 20 university teachers in Romania to assess the pros and cons of online teaching. Responses often focused on the downsides of pandemics and online learning, but within the "professional advantages" of these situations, teachers can enhance their tech familiarity and digital skills.

Velichová, Orbánová, and Kúbeková (2020) view the COVID-19 pandemic as a unique opportunity for enhancing online education. Wang et al. (2020) share this perspective, emphasising that technological advancements should not be the sole focus. They argue that fostering digital literacy among teachers should come first, followed by the integration of online tools into standard teaching practices.

Giovannella's study (2020) reveals a widespread acknowledgment of the importance of digital pedagogy and its inclusion in teacher education programs. One-third of participants expressed a preference for a blended learning environment in their future teaching activities. Pelgrum (2001) underscores that the success of educational innovations hinges significantly on teachers' skills and knowledge. It is essential to gauge teachers' perspectives on online education and their technology integration needs.

SAMR Framework

The Substitution Augmentation Modification Redefinition (SAMR) model, developed by Puentedura, 2014, provides a lens through which the impact of computer technology on classroom teaching and learning can be understood. It delineates a progression that many educational technology users follow as they navigate different phases of teaching and learning with technological assistance. In essence, SAMR offers teachers a framework for scrutinising and assessing the technology employed in their classrooms.

The advent of the circuit breaker introduced educational therapists to the world of virtual educational therapy, marking their first foray into online intervention. The SAMR framework, originally a planning tool, emerges as a valuable guide for designing and improving future virtual educational therapy sessions. It is crucial to emphasise that SAMR primarily serves as a tool for crafting enhanced learning experiences for students. With online learning poised to become a permanent fixture in education, educational therapists should harness educational technology. SAMR offers pedagogical insights into how this integration can be achieved effectively. When applied thoughtfully, this model unveils the transformative potential of everyday technology.

ENHANCEMENT	**Substitution**	Technology acts as a direct tool substitute with no functional change
	Augmentation	Technology acts as a direct tool substitute with functional improvement
TRANSFORMATIONAL	**Modification**	Technology allows for significant task redesign
	Redefinition	Technology allows creation of new tasks , previously inconceivable

Figure 1: The SAMR Model (Puentedura, 2014)

Impact of COVID-19 on Education and the Role of Virtual Educational Therapy

The COVID-19 pandemic brought about widespread disruptions across various sectors, including education, which is a fundamental aspect of human society. Despite these disruptions, the business of education had to persist. When governments worldwide enforced workplace and school closures to mitigate the virus's spread, educational institutions responded by adapting to ensure that students continued to have learning opportunities. Consequently, online learning swiftly became the new norm for educational institutions, including the DAS, as they adjusted to the changing landscape.

Research has shed light on the advantages and challenges of online learning, especially for students with special educational needs, as well as the experiences of dyslexic learners in remote emergency teaching and other online platforms. To the best of the researcher's knowledge, only a limited number of studies have delved into the diverse learning obstacles encountered by primary and secondary students with dyslexia during remote learning in the context of the COVID-19 pandemic. Given the uniqueness of everyone's online teaching experiences, the researcher, who works with dyslexic students, is eager to explore the experiences and perceptions of other educational therapists regarding virtual educational therapy and how this approach worked for them. With the ongoing and likely persistent disruptions caused by the COVID-19 pandemic, the shift to online teaching platforms may become a recurring occurrence. The insights from this study may contribute to future efforts aimed at enhancing the integration of technology

into classrooms, benefiting students with learning disabilities in general and, more specifically, learners with dyslexia.

METHODOLOGY

Study design

This qualitative research focuses on the experiences of educational therapists at the Dyslexia Association of Singapore (DAS) during the shift from in-person to online teaching for dyslexic learners due to the COVID-19 pandemic. It utilises the phenomenology approach, selected from various qualitative methods, to explore this transition through in-depth interviews with educational therapists. The research aims to capture the essence of their lived experiences (Creswell, 2013).

The present study was designed to explore the experiences and perceptions of educational therapists about delivering virtual educational therapy sessions to students with dyslexia. The research questions that will shape the current study are as follows:

1. How do educational therapists deliver virtual educational therapy sessions to students with dyslexia?

2. What are the benefits and challenges faced by educational therapists while conducting virtual educational therapy with students with dyslexia?

Setting

Originally planned as face-to-face interviews, the study adapted to COVID-19 restrictions by conducting virtual interviews using Google Meet. The choice of semi-structured interviews allowed for open-ended questions, fostering detailed interactions between the researcher and participants (DeJonckheere and Vaughn, 2019). These interviews were hosted within a dedicated virtual classroom on Google Classroom, streamlining the process. Google Meet was chosen as the video conferencing platform based on its familiarity among educational therapists, ensuring a comfortable environment that encourages honest responses (Lewis and Graham, 2007).

All interviews were conducted by the researcher from her classroom at the Parkway Parade branch of DAS, while the participants joined from the comfort of their homes or classrooms. Notably, Google Meet includes a video recording feature, ensuring that all interviews were video-recorded for reference. During individual interview recordings, the researcher maintained a closed classroom door to preserve audio quality, minimise distractions, and uphold privacy and confidentiality for the participants.

Participants

This research study involved educational therapists from DAS as its participants. The selection of these participants followed a purposeful sampling technique, as recommended by Creswell and Plano Clark (2009). This technique involves the deliberate choice of individuals with direct experience related to the phenomenon under investigation. Unlike random sampling, purposeful sampling ensures that the chosen participants are more informative and representative of the population. To be eligible for participation in the research, educational therapists needed to have conducted online intervention classes during the 'circuit breaker' period. Following Creswell's (2013) guidance for phenomenology studies, a sample size of ten participants (all from DAS) was recruited to undergo the semi-structured interview process. In order to protect the anonymity of the participants, pseudonyms were assigned to them. Among the participants, there were two males and eight females. On average, they possessed seven years of teaching experience within DAS. It's noteworthy that most participants did not have prior teaching experience, and none of them had a background in information technology (IT) or held an IT degree. Detailed demographic information for each participant can be found in Table 1.

Table 1: Demographics of Participants

Participants' pseudonym	Gender	Years in DAS	Prior Teaching Background	IT Background
Amber	Female	8.5	Ten years preschool	No
Brooke	Female	6	6.5 years primary school	No
Chester	Male	6	Yes, tutoring	No
Diane	Female	9.5	Yes, tutoring	No
Elena	Female	3	Yes, tutoring	No
Faith	Female	5.5	Yes, tutoring	No
Gabrielle	Female	8	Yes, tutoring	No
Hector	Male	9	6 months primary school	No
Isla	Female	9	Yes, tutoring	No
Jade	Female	10	Yes, relief teaching	No

The Researcher's Role

The researcher and author, also an educational therapist at DAS, meticulously separated her own experiences and preconceptions from the study by practicing bracketing (Moustakas, 1994). This process aimed to prevent personal biases from influencing the research. Throughout the interviews, the researcher maintained a sharp focus on the educational therapists' experiences, avoiding the imposition of her own.

Materials and data collection procedures

Conducting qualitative research involved securing access to the research site (DAS) and obtaining the necessary ethical clearances. The study was approved by the DAS Research Committee after initial university and supervisor clearances. An open invitation was sent to educational therapists through email, along with consent forms outlining study details, confidentiality, and participants' rights. All communication occurred through email, and interviews were conducted virtually on Google Meet. Participants were reassured about anonymity, non-disclosure of personal information, and the independence of their participation from their organisational roles. Data was meticulously recorded through video and audio backups.

Interview

Giorgi (2009) emphasises that phenomenological interviews typically adopt a broad and open-ended approach, allowing participants to freely express their viewpoints. The researcher's role is to temporarily set aside their personal ideas and experiences related to the phenomenon, as outlined by Creswell (2013). While there exists a fundamental structure for interview questions, it is essential to remain flexible. Depending on participants' responses, the researcher may deviate from the set questions, seeking clarification on specific points, as suggested by Kallio et al. (2016), and encouraging participants to elaborate further. It is paramount that interview questions are framed in the participants' everyday language, as recommended by Brinkmann and Kvale (2015), and that jargon is avoided, in line with Patton (2015). Refer to Table 2 for a detailed list of interview questions categorised for reference.

This semi-structured interview was designed to capture the perceptions and experiences of educational therapists engaged in online instruction with dyslexic students. Commencing with direct inquiries about each participants' tenure in the field and their IT knowledge, this approach aimed to establish essential demographic information, promoting a deeper understanding of how backgrounds might influence their experiences and perceptions. The introductory questions also served as rapport-building, fostering a comfortable environment to facilitate the flow of the subsequent core, open-ended questions. Concluding the interview, the final question provided participants with an opportunity to contribute additional insights and express their concluding thoughts on the subject.

Table 2: Interview questions

Interview Questions		Category
1	How long have you been working with DAS? Do you have any experience in teaching or IT prior to DAS?	Demographic/ Background Information
2	Describe how you deliver a typical online lesson. What specific online resources and tech tools do you choose to deliver your lesson? (Google Meet, Google classroom, Zoom etc)	Experience (provide prompt)
3	What features from these resources are indispensable to engage your student during an online lesson?	Perception
4	How do you facilitate a session with your class to provide an active teaching presence in a virtual classroom? a. Is there EdT-student interaction? Elaborate. b. Is there student-student interaction? Elaborate.	Experience (provide prompt)
5	What are the benefits you perceive: a. for students with dyslexia attending virtual educational therapy sessions online and b. for educational therapists teaching online?	Perception
6	What are the challenges you perceive a. for students with dyslexia attending virtual educational therapy sessions online and b. for educational therapists teaching online?	Perception
7	Share with me one or two examples of successes you have experienced with your student receiving lessons in the virtual environment. What factors contribute to those successes?	Experience and Perception
8	Share with me one or two examples of challenges you or your student have experienced during lessons in the virtual environment. What factors contribute to those challenges?	Experience and Perception
9	Identify areas which you, as an individual educational therapist and DAS, as an organisation, can make online delivery more effective for both students and educational therapists (administration, content knowledge/skills etc.)	Perception
10	Can you describe some of your learning experiences throughout the online delivery period?	Experience
11	Are there any more thoughts/feelings you would like to share before we conclude the interview?	Experience/ Perception

This semi-structured interview was designed to capture the perceptions and experiences of educational therapists engaged in online instruction with dyslexic students. Commencing with direct inquiries about each participants' tenure in the field and their IT knowledge, this approach aimed to establish essential demographic information, promoting a deeper understanding of how backgrounds might influence their experiences and perceptions. The introductory questions also served as rapport-building, fostering a comfortable environment to facilitate the flow of the subsequent core, open-ended questions. Concluding the interview, the final question provided participants with an opportunity to contribute additional insights and express their concluding thoughts on the subject.

Table 3: Demographics of Participant in Pilot Interview

Participants' pseudonym	Gender	Years in DAS	Prior Teaching Background	IT Background
Xander	Male	13	More than Twenty years teaching English in mainstream school	No

The development of interview questions drew upon established guidelines for research interviews (Bolderstone, 2021; Castillo-Montoya, 2016) and insights derived from prior studies exploring educators' perspectives and experiences (Anderson et al., 2019; Crouse et al., 2016; Rice et al., 2018; Sorenson, 2019). Before engaging with the study's participants, the researcher conducted a pilot interview with a colleague, and the colleague's background information can be found in Table 3. This pilot interview served the dual purpose of addressing practical concerns that might arise during subsequent research stages, in line with the recommendations of Van Teijlingen and Hundley (2002), and honing interviewing techniques. Notably, Castillo-Montoya (2016) underlined the role of pilot interviews in enhancing the overall interview process and identifying any issues or limitations in the interview design, an approach in alignment with Kvale's perspective (2007).

The pilot interview proved instrumental in shaping a more refined interview guide, facilitating better estimations of interview duration, and informed improvements, such as the introduction of an additional question (question 11, as shown in Table 2) and the incorporation of prompts to elicit comprehensive participant responses. Furthermore, the insights from the pilot interview led to adjustments in the interview structure, including rephrasing and sequencing of questions, ultimately contributing to a more effective and polished interview process. Importantly, this preparatory pilot interview also allowed the researcher to enhance their interviewing skills and gain greater comfort with the conversational flow.

Following the pilot interview, the main interviews with all ten participants were conducted successfully and video-recorded using Google Meet. Although there was a brief internet disconnection during one interview session, it was promptly resolved, and the interview was completed within an hour. Subsequently, all interviews were transcribed and organised in QSR International's NVivo 12 software, released in March 2020, to facilitate systematic analysis. Participants were duly informed about the recording and storage of each session. Furthermore, it is essential to note that all data collected will be retained for a minimum of three years following the research's completion, after which it will be digitally disposed of, in adherence to data retention and disposal protocols.

Data Analysis

The study employed a six-stage thematic analysis by Braun and Clark (2006) to extract significant themes from the interviews. The analysis aimed to address the research questions by identifying recurring patterns and central themes within the data. This systematic approach ensured a comprehensive understanding of the educational therapists' experiences.

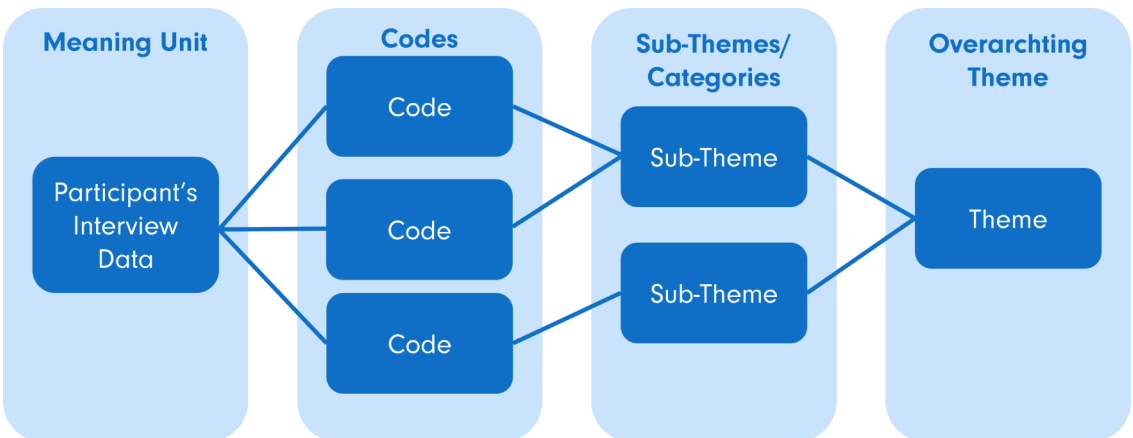

Figure 2. Data analysis process

Figure 2 shows the data analysis process. The first stage involved data familiarisation, achieved through transcription, multiple readings of transcripts, and highlighting recurring issues. The second stage focused on initial code development using NVivo software, which involved the creation of codes based on participants' words (in vivo codes). An inductive approach was employed, resulting in 96 nodes (codes) by the end (Vaismoradi et al., 2016).

In the third stage, themes were identified as the researcher reviewed and observed codes that cohesively fit together, such as those related to technological challenges. In

the fourth stage, themes were reviewed and refined to ensure they accurately represented the coded data. The fifth stage included the naming and fine-tuning of themes and subthemes to maintain clarity and explicit interrelationships. An example illustrating the evolution from participant data to a theme is provided in Appendix A. Finally, the sixth stage involved reporting the thematic findings and data interpretation to demonstrate the analysis's value and validity to the reader.

Ethical considerations

To protect the privacy and anonymity of the participants, a pseudonymous approach was applied throughout data collection, ensuring that their true identities remained undisclosed. All data, including recordings and transcriptions, were meticulously stored on an external hard drive, safeguarded with a password accessible exclusively to the researcher. These records were further encased in password-protected files. The external hard drive is securely housed in a drawer accessible solely to the researcher. During interviews, participants received explicit assurance that there were no definitive right or wrong answers, and all shared information and data were treated with the utmost confidentiality.

Results and Findings

This section presents the thematic findings and data interpretation in alignment with the study's objectives: 1) exploring how educational therapists conduct virtual educational therapy sessions with dyslexic students, and 2) examining the benefits and challenges of educational therapists engaging in virtual educational therapy with dyslexic students. We will also introduce the key themes and subthemes that emerged during our inductive thematic analysis. Four overarching themes, each containing two to five subthemes, were identified. These themes are as follows:

1. Advantages of virtual educational therapy,

2. Challenges of virtual educational therapy,

3. Perceived success factors and conditions for effective virtual educational therapy, and

4. Post-effects of educational therapy on educational therapists.

The benefits of virtual educational therapy are encapsulated in Theme 1, while the drawbacks are detailed in Theme 2. Theme 3 highlights the insights shared by educational therapists regarding success factors and conditions for effective virtual educational therapy. Lastly, Theme 4 explores the transformative after-effects experienced by educational therapists due to their engagement in virtual educational

therapy. Throughout our presentation of findings, relevant quotes from the interviews are included, attributed to educational therapists by their respective initial pseudonyms (as shown in Table 1).

Table 4: Three overarching themes and related subthemes that emerged from the analysis.

Theme 1: Benefits of virtual educational therapy	**Theme 2: Challenges of virtual educational therapy**
Subthemes 1.1 Self-directed learning 1.2 Flexibility and convenience 1.3 Useful online tools	**Subthemes** 2.1 Technological challenges 2.2 Dyslexia-related challenges 2.3 Lesson delivery challenges 2.4 Physical and digital distractions at home 2.5 Managing behaviours, attention span and students' engagement
Theme 3: Perceived success factors and conditions for an effective virtual educational therapy	**Theme 4 : After-effects of educational therapy for educational therapists**
Subthemes 3.1 Students and educational therapists' adaptability 3.2 Keeping them engaged 3.3 Number of students, age and ability 3.4 Support from stakeholders	**Subthemes** 4.1 Negative after-effects for educational therapists 4.2 Positive after-effects for educational therapists

Theme 1: Benefits of virtual educational therapy

Educational therapists, despite their initial concerns about online therapy, acknowledged several inherent benefits of conducting virtual educational therapy with dyslexic students. They emphasised these advantages during the interviews.

1.1 Self-directed learning

The findings indicated that an online environment facilitated self-directed learning. Students not only developed phonics and language skills but also problem-solving, technical, and research skills. Educational therapists observed that students embraced their learning autonomy and exercised independence in the online setting.

> *"They enjoy this freedom online, do research, and then come back 15- 20 minutes later to share what they found. That was a very good experience, it empowers them also to learn independently, and it teaches them to source for information out there." – H*

> *"I think being online, definitely they will have more access to certain tools and I would encourage, I'll encourage them also not just to copy everything, but if they need to find out more about something and then sure they can go ahead and use whatever they have to help them to learn, I mean at least they're taking ownership of their own learning." — E*

Educational therapists noted that online education had a positive impact on students' writing abilities. In the online setting, students could focus on the content of their writing without being overly concerned about structure, spelling, or grammar. Unlike face-to-face sessions where students spent time on spelling, online tools like Grammarly allowed students to concentrate on other aspects of literacy, giving therapists more opportunities to address various literacy skills.

> *"In terms of writing composition, because that class has one who is very weak in spelling, technically they're not supposed to use autocorrect and such, but when we do writing, it actually helps him be more motivated to write because the spelling has been checked for him. We're working more on, for example, more ideas for his writing and a bit more grammar because he doesn't have worries about his spelling". – J*

> *"For certain cases, it's even faster, especially for writing tasks, they type, they love it the topics we discuss we get to go on the spot, Google, show videos, read the articles, search for news articles"— H*

These feedbacks indicated that students found writing tasks easier in the online environment, thanks to the availability of helpful applications for structuring and spelling. Consequently, they could focus more on the content of their writing, minimising concerns about structure and spelling.

The online platform offered educational therapists access to a plethora of resources for planning and organising their classes. They could choose from a wide array of both free and paid materials available on the internet, all while tailoring their selections to the

specific needs and objectives of their students. This included access to articles on current events, interactive games and quizzes, short movies, videos, and a diverse range of reading materials. Moreover, it was convenient for the therapists to distribute lesson content to their students.

> *"It's easy for me to send information to my students, especially, you know, like with things like Google Classroom and all that right, I have like a collection of resources there. For example, if my topic today is composition writing for robbery, right? I can I can upload like what 4-5 model compositions for them to take a look and comment on, and then I can give real-time feedback." — I*

> *"For certain cases, it's even faster, especially for writing task, they type, they love it, the topics we discuss we get to go on the spot, Google, show videos, read the articles, search for news articles and there's one activity that they each had a theme, I think it was a practice for oral, so they had to search for articles so it was more of an independent work and it is very successful."— H*

According to several educational therapists, certain students find online learning more engaging and invest greater effort compared to traditional face-to-face lessons. These students take pride in their work and strive for an aesthetically pleasing presentation. They personalise elements such as font styles and colors to suit their preferences.

> *"I can feel that they are very proud about their work when they want to add in pictures on their compo writing pieces, they want to add pictures, they even want to know how to change the font colour, the page colour, because when I show when I share my screen, I normally don't use the white Google document as white, I will usually change it to either a light grey or a very light yellow like very pale yellow, or very pale blue. So I keep changing the colours, and I also changed the font colours as well, so they want to know how they can do that because they want their work to look nicer." — I*

> *"I can see that for some students at it really works, I have two students who were quite tasked avoidance during a physical lesson but suddenly online lesson they're active, and he's on the chair, he didn't even move around and the girl whom I cannot engage is a secondary school kid so she was busy, ahmm..because she likes the IT stuffs so she was tidying up my worksheet for me. For some kids it actually works because they find joy in IT." – J*

1.1 Flexibility and convenience

The transition to online learning provided flexibility and convenience, eliminating tardiness and absences. Previously, DAS remediation classes began after a full day of in-person school, leaving students physically weary when they arrived at the DAS center.

However, the move to virtual educational therapy alleviated these challenges. Students no longer had to commute, reducing fatigue and enhancing their focus.

> *"We definitely have 100% attendance, so that's what I like about online learning. Yeah, even if let's say they were to go somewhere, then they can still be online virtually via, you know, using their phone."— B*

Handwriting issues are frequent among students with dyslexia (Gosse and Van Reybroeck, 2020). Students' inability to write clearly, legibly, and in an organised manner made it difficult for educational therapists to decipher their handwriting. It was convenient for educational therapists when students typed their work in an online setting; the work produced was legible, and students were less frustrated as they did not struggle with the physical aspect of writing.

> *"My P5 student, he has motor issues in terms of writing and grasping the pencil so when he writes a composition in class he has a lot of difficulty of physically writing, he finds it very tiring to write and he doesn't read back his work at all but when we go online, writing a composition using the vocab words he actually keep reading back and keep editing and keep adding information and this is very very good." – G*

> *"So those with poor handwriting sometimes we have a problem trying to read what they've written, but when they type, it's like ok, now I can understand your handwriting."— C*

Online learning proved to be a time and cost-efficient alternative for both students and educational therapists. According to the therapists, it significantly reduced the time lost in commuting and curtailed associated expenses. Additionally, the online platform streamlined the process of collecting lesson evidence and capturing screenshots when students exhibited misbehavior or deviated from the norm. This recording capability not only facilitated quality checks but also simplified grading procedures.

1.3 Useful online tools

Various valuable online tools were explored by educational therapists during the lockdown, aimed at assisting dyslexic learners. These tools included speech-to-text and text-to-speech applications, Google Meet with real-time transcription and captions, along with Google Docs and Google Slides. The chat function in Google Meet served as a useful tool for communication and spelling. Game-based learning platforms like Kahoot!, Quizlzz, and Quizlet were also well-received, offering a more engaging and motivating learning experience for students who struggled in traditional environments. Additionally, educational platforms like Google Classroom, Classkick, YouTube, Nearpod, Padlet, and ScreenCastify were noted for their educational value.

"Another benefit could be, the online tools, I notice that there are a lot out there so you can you can really tap on it you can tap on those online tools so I would say because of the range of online tools, you get to explore different ways of delivering the lessons." —A

"That function, which I found quite useful, and I think it is actually a must for special needs students, is the Google document has the speech to text function so this, this was especially useful when you know you when we're doing reading comprehension or even worksheets with instructions." —I

Theme 2: Challenges of virtual educational therapy

In addition to the benefits, the educational therapists in this study also discussed the challenges they faced when transitioning to online lessons, especially at the start of the pandemic lockdown. These challenges fell into five subthemes under the main theme of "Challenges of virtual educational therapy." The difficulties they encountered encompassed technical issues, dyslexia-related challenges, executing lessons effectively, managing distractions at home, and handling students' behavior, attention span, and engagement.

2.1 Technological challenges

Internet connectivity is a critical factor for the smooth operation of online classes, affecting both educational therapists and students. Unfortunately, some educational therapists and students lacked reliable high-speed internet, leading to various technical challenges. Given that educational therapists are not IT experts, they often had to resort to trial and error to address unexpected technical problems, which ranged from slow internet connections to hardware and software issues. This situation left them feeling helpless, as students could not always articulate their technical issues clearly.

"We didn't anticipate all these issues that can happen in their homes, like for example we teach them how to go to Google Meet and then we taught them how to join, logged in with their DAS email account and all that right? But we didn't show them how to toggle between the share screen and the home screen, we also didn't realise there would be problem so when they went back home, then some have iPads, some don't have iPads, some have lap top, some don't have lap top, don't have this, don't have that right? Then it became like a different problem altogether." – I

Some students from low-income backgrounds received laptops, but these devices often had faulty components, like cameras, audio, or keyboards. While these may appear minor, they led to significant technical issues and distractions during lessons, including echoes and background noises that impacted the overall learning experience.

2.2 Dyslexia-related challenges

Educational therapists face a challenge in providing instructions to dyslexic learners during online classes. They are unsure whether to use verbal or written instructions, as both approaches can overwhelm students with information. Students are required to remember a new email address and password, and, since DAS classes occur at least once a week, most therapists create WhatsApp groups to send reminders to students and parents about class timings.

> *"I think because there is a lot of instructions, the method of giving instruction or the mode of giving instructions, I mean yes, they can read but it's like, it's a word doc right? I mean there are so many things on that thing, so you don't want it to get too wordy but at the same time you don't want to say too many things, but at the same time you want them to know how to navigate independently." — F*

> *"Instructions are important for the kids, I also think that because they are dyslexic it's not easy to process, I think, scaffolding is much harder, it seems as if they forgot about everything." — F*

Educational therapists noted the challenges that students faced when trying to access the online platform with their newly created Gmail accounts and assigned passwords. These issues were more pronounced when students used iPads or mobile phones, requiring additional time and effort from therapists to address.

> *"So, we would schedule the online lesson using the Google Meet. The initial, the first few lessons was a challenge because our students are having problems trying to get on it, logging in, password, things like that. Some students have problem logging in from (different devices), they're not using laptop, especially if they're using whether the phone or iPad then they have a lot of problems, that, the initial logging in problems took a couple weeks to iron out." — C*

> *"Another challenge would be that. Not everyone (students) is tech-savvy; it's also understandable because at their age, I mean, when I was nine or ten, I might not have known how to log into Gmail and everything and use all the different tools." — E*

2.3 Lesson delivery challenges

Online differentiation presented challenges for educational therapists working with students of varying abilities. High-achieving students often completed their tasks quickly, leading to idle time. Offering additional assignments sometimes made students feel penalised for their efficiency. Immediate feedback during online sessions could be

overheard by all students, unlike in face-to-face interactions where therapists could discreetly provide feedback.

> *"I think the one of the biggest challenge is differentiation. So when you have a class with different capabilities ah, the very fast ones will finish very fast and then he just wait. Online is very difficult to gauge. Some days they're fast, some days they're slow. So some days the fast ones will wait, some days the slow ones will take forever and then the class cannot complete what we want to do." — C*

> *"There was suddenly a need to differentiate because of the students' pacing." — F*

Online sessions made it difficult for educational therapists to observe facial and physical cues and assess students' comprehension effectively. They expressed concerns that learning goals, like spelling, were not adequately met and might have even regressed.

> "*I think it defeats the purpose for the whole therapy because the therapy is supposed to make them like accustomed when is it B, when is it D for example. They can be googling, typing with spell check, so it kinda defeats the purpose, for me." — G*

Finally, educational therapists employed various methods for conducting their online lessons, with a common use of Google Meet for video conferencing. However, the way students' work was shared and graded varied. Some used Google Docs to share and mark worksheets in real-time, while others relied on email, asking students to print out worksheets. Marking via Google Docs was found to be more convenient, while assessing handwritten answers from physical worksheets, especially with suboptimal camera quality, presented challenges.

2.4 Physical and digital distractions at home

Educational therapists faced challenges in maintaining students' focus on their tasks at home. Despite efforts to create a conducive learning environment, distractions persisted. Some students had disruptive home surroundings, while others succumbed to digital diversions, and there were instances where students were unable to use their microphones due to background noise. A comfortable home setting sometimes led to students being overly relaxed during lessons, even lounging on their beds.

> *“This class is very hard going. We have people coming in half an hour late for class; the cam is on, they're still on their bed, Saturday morning, on their sofa, we can see them lying down, in a cross-leg position, can see their phones beside, you can hear the TV, you can see they're not comfortable turning on the camera." — H*

> *"It's very disruptive to the flow of the lesson, for those who have a decent home environment they are too comfortable, they're on the bed." — F*

Dyslexic students already face challenges with focus and concentration. Additional distractions in an online class may hinder their learning and worsen their condition over time. Once educational therapists lose the students' attention to these distractions, regaining their focus on the lesson becomes a significant challenge.

> *"I think in terms of distraction, it's really, really very, very hard, we're talking about distraction in terms of environment, in terms of their, their focus level, engagement level, I think it's really beyond our control, I cannot make that you only click on the Meet button and not other button, I cannot, I cannot make that happen. So, these are the things that are beyond our control." – G*

2.5`Managing students' behaviours, attention span and engagement

The ten interviewed educational therapists, each with an average of seven years of experience teaching dyslexic learners at DAS, have encountered students with behavioral challenges previously. However, managing such challenges online presents a distinct set of difficulties.

> *"It's quite difficult, you have to teach her and then sometimes mid-way ,if she, if she's really disengaged she will start, she will start throwing tantrums, mute herself and then turn off the video, yeah that kind of thing, yeah I don't know , as a teacher I feel that when engaging students online right, I don't have, how do I say, the sense of control, it's not, it's not there." — I*

When pupils are uncooperative or exhibit behavioural outbursts, educational therapists were lost on what to do, especially if they log out of the video conference. Educational therapists needed to continue with the lesson without the challenging student. For students who have their parents or guardians with them, educational therapists could seek their help, but students are by themselves most of the time.

> *"A student has some behavioral issues he's not able to maintain focus online so anytime he asked me a question and if I were to directly answer him, that's fine, but if I were to divert my attention to something else he will be online searching, Google search this, Google search that, YouTube this, YouTube that." – G*

Not all students possess the self-discipline and motivation required to independently engage in hour-long sessions. Some students, especially younger ones, benefit from supervision and parental support to stay engaged with the lesson.

"I had to stop him from saying anything because he is affecting the overall mood of the class and he's putting his classmates down but I couldn't effectively do it because he was talking louder than me, he was, just practically shouting into the laptop, then I had to mute him and every time I mute him he will unmute himself so I got him out of the class." – I

"So, he is very hyper and he has a lot of attention need yeah so his mom has to be around patrolling making sure he is paying attention otherwise bring the cane around that kind of thing so it's very difficult for me to engage him." – G

Theme 3: Perceived success factors and conditions for an effective virtual educational therapy

3.1 Students and educational therapists' adaptability

Despite the numerous challenges faced by educational therapists, many of them remained optimistic. They expressed the belief that online teaching and learning can be effective under certain conditions. According to the educational therapists in the study, the flexibility of both students and themselves was a key factor in making online learning successful. Additionally, students' individual personalities and learning styles also played a significant role, as some of them mentioned.

"I think live interaction is important for dyslexic students, I think, to me the biggest difference between live and online lesson in the profile and personality of the students and on the bigger picture the profile of the class itself yeah so, yes so let's talk about personality first, even within the class you will find that some are comfortable, more comfortable than others using online, those who are very shy I think they're at a disadvantage." — H

"Certain students like IT and certain student doesn't, it's back to the individual? It's not because of their dyslexia per se? Because each student has different, different personalities." — J

Furthermore, students who actively engaged and communicated with the educational therapist received more feedback and appeared to benefit more from the lessons than their more reserved peers. It seemed that students who readily embraced the new online platform and enjoyed working digitally might have derived similar benefits as they did in face-to-face lessons. Throughout the process, students also acquired new digital skills, such as changing Google document backgrounds, using multiple fonts, and presenting their work on various digital platforms. This indicates that students valued learning these new skills and took pride in their work.

> *"I really liked it and I can feel that they are very proud about their work when they want to add in pictures on their compo writing pieces, they want to add pictures, they even want to know how to change the font colour, the page colour." – J*

Certain lesson components were challenging to conduct effectively online, but educational therapists adapted their teaching methods to address this issue. While adjusting their procedures, they maintained the same underlying pedagogical approaches used in face-to-face classes, striving to make the lessons as multisensory as possible.

> *"So instead of the sound drill, because I think sound drill is it was quite hard to do it online because sometimes you say the 'th' sound and they can't hear and went "repeat, repeat we cannot hear" so it was it was quite hard. So, I tried to do it in a different way. So, the letters were already there. So they just had to like, you know, cut it out and then have it paste . Thinking along the lines of the multi-sensory approach, the cutting and pasting can trigger, some form of learning. Yeah so, I think that helped them. Better as compared to like the sound drill yeah. So, it was a different approach" — E*

> *"So, for example, like Google Docs when you teach like new concept like phonograms, although it's not multisensory, you can get them to type 3 times and I will insist that the instruction will be like 'you need to type instead of copy and paste'. Try to have the multisensory aspects (in the lesson) so that they (students) can retain it (concept) better" — J*

3.2 Keeping them engaged

Educational therapists found that students' continued interest and engagement were evident when students wanted to prolong the lesson after its conclusion or demonstrated strong retention of concepts during gamified activities. The use of gamified learning platforms contributed to higher student engagement and attentiveness. Incorporating visual stimuli like animations, memes, and GIFs further enhanced student engagement, making the lessons more enjoyable and engaging.

> *"So when I use animation in my Google Slides , I found that my students were more engaged, more engagement, more attentive compared to the beginning times when I didn't use the animation." – I*

> *"For Google Slides, I think what's really necessary is things like the animation panel because of students looking at very static, non-moving things, especially when the teacher is yakking on right? Sometimes they get disengaged because they're not seeing anything interesting on the screen and then I'm just sitting there, talking and talking so*

> *I realised that when I have animation like you know I have circles flying down to highlight specific things that I'm saying, or you know pictures that you know, especially gif pictures that are very, very relatable, gif pictures, then I realise that they are really paying attention." — I*

Many educational therapists noted that students displayed higher engagement on weekends when they had no prior school commitments compared to weekdays. On weekdays, students had to attend their regular school classes online, and by the time they joined DAS classes, some experienced digital fatigue from prolonged screen time.

3.3 Number of students, age and ability

Educational therapists in this study suggested that the feasibility of online learning is influenced by factors such as the number of students, their age, and their ability. They typically conducted lessons with four to five students simultaneously, allowing for more effective one-on-one communication. Larger groups made it challenging to provide immediate feedback. The therapists found that older students, with their greater proficiency in handling digital devices and enhanced digital skills, could describe technical issues and navigate online platforms more easily. Additionally, students with stronger literacy skills adapted better to the online learning environment. Overall, these factors were perceived as facilitators for successful online lessons.

> *"I think is very beneficial for my upper sec students, they are at the Band C level and I think online learning, number 1, they are comfortable with it and so they do churn out the work, actually the same quality (compared to physical), so the maturity level must be there."—H*

> *"So, let say I have a MLP class that is all secondary and above, like upper secondary is even better rights? And they know their devices so well, right? Then I think I don't mind online MLP class for that group because they can, if they have a problem. They also know how to describe the problem to me instead of saying 'I don't know'." – I*

3.4 Support from stakeholders

Educational therapists largely credit the success of online teaching to the support of various stakeholder groups. They maintain close communication with parents, especially those of younger students, to ensure that students attend online sessions punctually. During the circuit breaker, many parents were working from home, allowing them to actively support online learning. Some parents, particularly those with students displaying challenging behaviors, even sat alongside their children during lessons. The DAS EdTech team played a vital role in providing comprehensive support to the therapists. They shared numerous resources, offering guidance on lesson delivery, worksheet templates,

and digital content. Educational therapists found instructional videos demonstrating the use of specific technological tools and applications to be highly beneficial.

> *"We have been given a lot of support. I am ..I don't know how they do it, every week they come out with something. I'm truly appreciative, although I didn't have time to look at all of it, but I did find something that is suitable. I like the part where the team actually showed videos on how to do things because they make it easier for people like me to learn." — J*

> *"I think DAS send those weekly email, EdTech right? Those are useful, I think it will also help to, there's so many resources, I think we also want to find one that works um so more may not be better in that sense ,right? So, DAS can collectively decides on one or two that really works and then do a demo on it." – H*

Theme 4: After-effects of educational therapy for educational therapists

The theme encapsulates the consequences of virtual educational therapy for educational therapists. During the first half of 2020, students and educational therapists engaged in two months of virtual educational therapy, followed by an additional one and a half months in the latter half of the year. This experience had distinct effects, with some therapists highlighting positive outcomes and others acknowledging negative impacts.

4.1 Negative after-effects

While the primary duty of educational therapists is providing educational therapy to their students, they indicated that virtual educational therapy sessions required them to assume additional roles. In addition to fostering literacy and language development, they found themselves acting as mentors, communicators, and, in some instances, IT support. The majority of educational therapists possess minimal to no IT training and were thrust into this new role without alternative options. The absence of extensive IT support left them to address technical challenges independently.

> *"I still think that DAS should support our colleagues by having ICT personnel on standby dedicated just for certain programs for certain periods of time when we are doing the online lessons. Someone who the teachers can immediately go to during distress" – I*

Educational therapists voiced worries about the potential impact of online lessons on both students' and their own mental and physical well-being. There is a call for increased awareness and support from DAS for the well-being of educational therapists. Some educators conducted three consecutive classes in a single day, resulting in six hours of screen time. This prolonged sitting had physical implications for educational therapists. Teaching online proved to be mentally and physically draining.

"Honestly if you had back to back classes, it's very, very, tiring. It's mentally and physically exhausting, I mean for younger people I guess like you, are OK yes OK but for like older people like us right, you sit for more than 2 hours, honestly right after CB, I've been getting a lot of backaches, a lot! Sitting for long stretches for long hours it may not be healthy? So there has to be you have to stagger the classes? So, I guess you cannot have like back to back for for such prolong periods is very unhealthy and I think for students also I think 2 hours is quite a stretch for some students" — A

"When I say 6 hours session, so our session is a solid six hours. No break in between. So very, very tired. So I think yeah, online classes next time if we really did it, I think for sanity, sanity of teachers. 6 hours class in a day is not something I would advise. — C

4.2 Positive after-effects

The experience of teaching online has motivated educational therapists to explore innovative ways to improve students' virtual educational therapy. This exposure has provided them with a platform to experiment with new technological tools, apps, and teaching methods. As a result, educational therapists have gained confidence in conducting online lessons and have taken the initiative to find ways to make the online teaching experience engaging, enjoyable, and effective for their students.

"That was the first application that I actually explored all of my own so yeah, I was quite proud of myself for that, this CB (circuit breaker) right, is a very steep learning curve definitely but you become more comfortable, and gradually become more confident user of tech tools." — A

"I guess the urge for the EdT to actually read up more on how to actually make their lessons more fun and interesting, so you, at the same time you're equipping yourself with IT knowledge. You're always thinking on how to make your lessons interactive you know, using what kind of apps, tools online? So, so there's much more curiosity involved. Now you will feel more engaged to learn more about IT stuff to apply them in your lesson delivery." — A

Educational therapists experienced mutual learning with their students, especially in the realm of technology. As they ventured into the new teaching platform, there were instances where students played a role in teaching them how to perform specific tasks online. Given that students are digital natives, their familiarity with technological devices allowed them to share their expertise in using these tools, highlighting the collaborative nature of the learning experience.

"Most of the students are very IT savvy. So, they take to this online thing like ducks to water. They can even tell you what they can do with it, or how they would add some

> *features or change some of the documents that I've sent them. It's quite interesting, so I'm also learning from them. " — C*

In addition to enhancing their tech proficiency, this experience solidified the idea that remote teaching is feasible, despite its challenges. As a result, educational therapists are optimistic about their ability to continue virtual educational therapy in the future. Some even proposed a regular schedule of at least one virtual therapy session per term.

DISCUSSION

The advantages of virtual educational therapy will be the first topic of discussion. One of the benefits mentioned was; that a self-directed learning environment may be fostered in an online setting. Educational therapists shared that students take charge of their learning and can exercise a degree of freedom when they are online, for example sourcing out information on the Internet by themselves. This benefit can apply to both dyslexic and non-dyslexic learners. From the literature, we learn that there is a lack of self-discipline and motivation for online learning (Gilbert,2015; Gorbunovs et al., 2016; Sorensen,2015). Meeter et al. (2020) discovered that students perceived online education to be less gratifying than on-campus education and that their motivation had waned due to the school closure. On the contrary, according to the findings of this study, educational therapists perceived that students are motivated to learn as they take control of their learning and explore certain components and functions of online learning themselves, which is commendable.

For most educational therapists, the most appealing feature of online learning is its flexibility and convenience. This finding corroborated Murders' (2015) and Allday and Allday's (2011) findings that college students with learning disabilities value the ease and flexibility offered by online classes. For educational therapists, flexibility meant students could get to the class via different platforms (laptops, iPads, mobile phones). In contrast, in Murders' (2015) study, college students with learning difficulties meant flexibility of schedule afforded by online classes. Students at the DAS do not have the flexibility of schedule as classes are fixed at specific timing and conducted synchronously. The flexibility experienced by the educational therapists was possible since the entire transition to online was unprecedented, and there was no precise blueprint (from DAS) for how the online session should proceed other than everyone would be using Google Meet as the video conferencing platform. The conveniences of online learning mentioned in the findings, such as learning from the comfort of one's own home, cost-effectiveness, and less time spent commuting, are comparable to those of typical online lessons, not just for dyslexic learners. Another convenience mentioned in the findings was that educational therapists found work produced by students legible. Students are less frustrated as they do not struggle with the physical aspect of writing. On the other hand, the issue with handwriting is a double-edged sword. After returning to a physical class, educational therapists noticed that the students' handwriting had

deteriorated. Educational therapists claimed that students had forgotten how to write after being compelled to type their work for an extended period of time. According to an Ofsted (2022) report on the pandemic's ongoing effects and education recovery in schools, school closures throughout the epidemic had a negative impact on students' knowledge and skills, including writing stamina. The usage of apps such as Text-to-speech (TTS) and Speech-to-text (STT) are reported to be beneficial to learners with dyslexia; however, only one of the educational therapists interviewed recommended and used these applications. As students, especially the younger ones, are still developing their reading, writing, and spelling skills, it is possible that using these applications will be detrimental to them in the long run. Students attended educational therapy lessons to build on these skills; using the applications appears to be counterproductive to the original goal. This does not imply that TTS and STT are not beneficial for students with dyslexia, but they are unlikely to be practical while students are still developing reading and spelling skills.

To learn effectively through an online system, students with dyslexia must understand the inner workings of numerous software programs, which creates a high learning curve. Educational therapists reported challenges of students logging in to Google Meet and navigating through multiple learning platforms (Google Classroom, Classkick, Kahoot!). In this study, the challenges of online learning corresponded with Habib et al.'s (2012) findings; dyslexic students have a range of challenges while interacting with virtual learning environments (VLEs), including connecting with numerous systems concurrently. Students need to know their devices and which apps to use for which class. For example, most schools in Singapore use the video conferencing app Zoom and the online learning portal, Student Learning Space (SLS), for home-based learning. For students attending classes at the DAS, the video conferencing platform (Google Meet) differed from their daily norm. To improve engagement, some of the educational therapists experimented with additional Google Suite products, such as Jamboard, Google Slide, and Google Classroom. QuizIzz and Kahoot!, two popular online quiz generators, are often accessed. An extensive selection of online teaching and learning applications is readily available. Each has its own set of advantages and disadvantages, and they should be utilised in accordance with their respective strengths and limitations. When selecting a website to share with their students, educational therapists must ensure that the site is not cluttered with too many pages and overly-busy design features, which might confuse students on which section they should concentrate on. Students with dyslexia may get overwhelmed if too many apps are introduced. Educational therapists are highly encouraged to stick to a few apps and use them consistently, giving the student ample time to get attuned to the apps' technical aspects and navigate through them.

Apart from the typical reading, spelling and writing difficulties, students with dyslexia also face memory retention and organisational skills problems (BDA,2010). Based on these symptoms, it is plausible to expect that some students with dyslexia may have significant challenges in several areas of their participation during virtual educational

therapy. As in the findings, educational therapists stated that students have difficulties toggling between windows, applications and browsers. At the same time, they need to focus on their given work and listen to the instructions of the educational therapists concurrently. When a dyslexic learner who struggles with working memory is presented with a large number of instructions or information without adequate time to absorb what they need to do with the knowledge, it is possible that some of this information may be forgotten. Educational therapists may need to pace their online sessions appropriately to avoid overwhelming learners and ensure that they have adequate time to digest what was taught. Additionally, picking up the right digital tools and applications that work for an individual student is crucial.

The subsequent discussion revolves around the perceived success factors and conditions for an effective online lesson. One of the perceived success factors is 'Keeping them engaged'. Students' brains develop stronger connections when they are exposed to audio and visual stimuli. Introducing new concepts to dyslexic learners in this manner facilitates their learning, engages them and keeps them interested (Manasa et al., 2020). Before online learning, some educational therapists were already employing manipulatives and technology-aided tools to help dyslexic students learn. When the lesson went online, all educational therapists got to try out multiple apps and multimedia learning platforms to see which suited their dyslexic learners and could engage them best. Educational therapists perceived this as one of the ways that make online lessons effective. Students' engagement with online learning resources is greatly influenced by the visual design and aesthetics of the contents (Reyna, 2020). Educational therapists made full use of available applications online, which are helpful and suitable for dyslexic students. They created digital worksheets which are more engaging by using more creative visuals like animations, gifs, and memes to capture students' attention and engagement. Gamification is an efficient method of improving student engagement (Looyestyn et al., 2017), and engagement will enhance knowledge retention (Tosco, 2015). Gamified activities have been associated with the students' increased intrinsic and extrinsic motivation (Nieto-Escamez and Roldán-Tapia, 2021). Educational therapists in this study believe that gamified activities improved students' engagement. Hence even though the preparation to gamify certain activities took a little more time, most of them did try it out to capture students' interest and engagement.

Additionally, the majority of educational therapists cited students' age and ability as factors that facilitate online teaching better. It was shared that secondary school students (aged 13 to 17) faced lesser challenges during virtual educational therapy than primary school students (aged 7 to 12) as they are more familiar with the technicalities involved in online learning. An essential component regarded by educational therapists to have contributed to the effectiveness of online education is stakeholders' support. This resonates with the literature that family or guardian support is crucial for learners with disabilities to adapt to distant learning (Greer et al.,2014, Forteza-Forteza et al.,2021,

Patretto et al.,2020, Sorenson, 2019). Parent-teacher collaboration and communication are crucial for virtual educational therapy.

The last theme from this study's findings is the after-effects of online learning on educational therapists. The negative after-effects are health-related, while the positive after-effects are related to the teachers' beliefs. We will discuss them more in the next section.

RECOMMENDATIONS

Educational therapists in this study mentioned health and mental well-being as one of the negative after-effects of the online teaching experience. Over 80% of teachers reported that their work during the COVID-19 outbreak had a negative effect on their mental health (Ang, 2021). Of those surveyed, more than half (62 per cent) reported that their physical health had deteriorated as well. DAS as an organisation can explore ways to support staff's mental health and well-being. During the online teaching, some educational therapists have 6 hours of back to back teaching. This is not healthy mentally and physically too. Better planning of class schedules can be done at the management level. While conducting lessons, some educational therapists face technological challenges or students' behavioural problems; having a dedicated IT personnel to assist them in their time of distress might also be helpful.

Support from colleagues personally and professionally was reported to be one of the perceived success factors for an effective virtual educational therapy. Educational therapists shared that they had benefitted from the resources shared by the EdTech team. Hence creating online learning resources might be a beneficial idea. Videos demonstrating the operation of specific technological tools or applications could be compiled on a platform and made accessible for all educational therapists.

Using SAMR model as a framework to improve virtual educational therapy
Currently, there is no standardised approach to delivering virtual educational therapy. Educational therapists have individually adapted their methods to cater to the specific needs of dyslexic students, utilising various online teaching and learning tools. To assist in this process, the SAMR framework can be a valuable tool for educational therapists to evaluate the suitability of online teaching and learning applications. The SAMR model classifies online learning into four categories based on complexity and transformative potential: substitution, augmentation, modification, and redefinition. Each category represents a different approach to content delivery during a lesson:

a. **Substitution:** Worksheet is uploaded in Classkick or Google Docs, simply digitising the task, with no functional change.

b. **Augmentation:** The worksheet is uploaded in Google Classroom, with an attached link to videos for students to watch. Additional use of technology is included and applied.

c. **Modification:** A self-recorded video of introduction of concept by an educational therapist and how to use resources on the website. In modification, multimedia and collaboration are used to redesign parts of the whole activity to enhance student learning.

d. **Redefinition:** Physical QR codes or augmented reality are created and used with physical worksheets. Technology is being utilised to develop new tasks and activities that were previously impossible to implement in a typical classroom setting.

In the study, most educational therapists predominantly employed the substitution and augmentation approaches within the SAMR model. It is important to note that SAMR represents a spectrum, and redefinition is not necessarily the superior approach. Mere integration of technology into activities may not significantly enhance the learning experience. However, strategically modifying activity content to address current and future learning needs can significantly improve educational outcomes for all students. The findings from this study highlight that one of the key success factors in virtual educational therapy is "keeping students engaged." The SAMR model can serve as a guide for educational therapists to consider the role of technology in maintaining student engagement within an online platform. One positive outcome of virtual educational therapy for educational therapists is increased motivation to explore methods for enhancing online student learning, potentially leading to greater integration of technology in future instructional designs for virtual educational therapy.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The present study has several limitations. Firstly, the findings may have limited applicability beyond the context of educational therapists from DAS. As the study exclusively involved this group of participants, generalising the results to educators or therapists working in different settings may not be warranted. Moreover, the study's sample size was relatively small due to scheduling constraints, with only ten educational therapists interviewed out of approximately 250 working across 14 different centers. Therefore, the data may not be representative of the broader community of teachers supporting dyslexic learners in local mainstream schools and programs.

Another limitation pertains to the familiarity of the settings and peer interviews. Conducting research within a familiar environment and engaging in peer interviews has advantages and drawbacks. On the positive side, there is a lack of culture shock or confusion regarding the setting, which can foster trust and rapport with participants,

leading to richer and more meaningful responses. Additionally, it allows the researcher to assess the accuracy and honesty of the responses. However, the researcher must navigate multiple roles during the interviews, including that of a researcher and a colleague. This role ambiguity could lead to potential misinterpretations of the interviewee's data. Furthermore, pre-existing friendships with participants could introduce conflicts. Engaging in self-reflective processes becomes crucial for mitigating role conflicts.

Lastly, the study's potential was limited by the inability to observe how educational therapists conducted virtual educational therapy. Observing lessons could have provided deeper insights into the challenges and successes of virtual educational therapy. However, due to time and logistics constraints, this aspect was not included in the study.

While this study provides valuable insights, it also opens the door to various possibilities for further investigation. Future research could consider including the perspectives of dyslexic learners themselves, delving into their experiences with online learning during school closures, their preferences, and the challenges they encountered. Moreover, DAS offers a range of programs beyond the Main Literacy Programme (MLP), and analysing different programs may shed light on which content is more suitable for online learning. Additionally, the study revealed the impact on the mental health and well-being of educational therapists, suggesting the need to explore similar concerns among children and adolescents undergoing virtual educational therapy during the pandemic in future research.

CONCLUSION

The onset of the COVID-19 pandemic disrupted daily routines for students and educational therapists at the DAS, necessitating a sudden shift to virtual educational therapy sessions. Existing literature emphasises the overall benefits of online learning for students with special educational needs, yet it often overlooks the unforeseen difficulties that both instructors and students may face in adapting to an unplanned online teaching environment. This study provides valuable insights into the strategies employed by educational therapists in delivering virtual educational therapy.

During this transition, educational therapists encountered a spectrum of challenges, encompassing technological hurdles, dyslexia-related concerns, issues related to lesson delivery, as well as physical and digital distractions and behavioral management. It is noteworthy that despite these challenges, all the educational therapists expressed a positive outlook on online learning. While acknowledging that online platforms may not be the most ideal for dyslexic learners, they underscore the significance of age and technological proficiency in rendering virtual educational therapy feasible. The consensus among educational therapists is that online education will persist as a significant component of the future learning landscape.

Rather than rejecting online education outright, educational therapists are motivated to explore innovative approaches that can enhance the effectiveness of virtual learning for dyslexic students. This commitment reflects a proactive stance in overcoming challenges and making virtual educational therapy more conducive for dyslexic learners.

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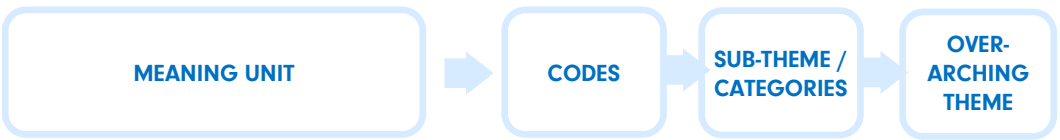
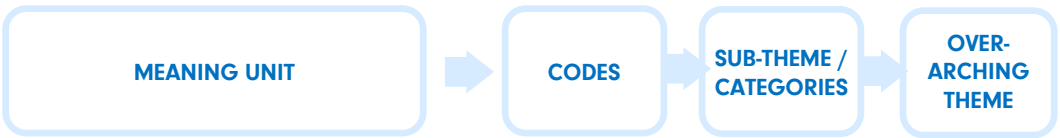
APPENDIX — Example of transcripts with code, subtheme and theme



MEANING UNIT	CODES	SUB-THEME/ CATEGORIES	OVERARCHING THEME
"We didn't anticipate all these issues that can happen in their homes, like for example we teach them how to go to Google Meet and then we taught them how to join , logged in with their DAS email account and all that right but we didn't show them how to toggle between the share screen and the home screen, we also didn't realise there would be problem so when they went back home, then some have ipad, some don't have ipads, some have lap top some don't have lap top, don't have this , don't have that right?"	Unanticipated tech issues. Knowledge to navigate online with different apps and devices	Technological challenges	CHALLENGES OF ONLINE TEACHING AND LEARNING
I think because there is a lot of instructions, the method of giving instruction or the mode of giving instructions, I mean yes , they can read but it's like, it's a word doc right? I mean there are so many things on that thing, so you don't want it to get too wordy but at the same time you don't want to say too many things, but at the same time you want them to know how to navigate independently. Instructions is important for the kids, I also think that because they are dyslexic it's not easy to process (all given instructions).	Too many instructions	Dyslexia-related challenges	



MEANING UNIT	CODES	SUB-THEME/ CATEGORIES	OVERARCHING THEME
"I think the one of the biggest challenge is the. Yeah. Differentiation. So when you have a class with different capabilities ah, the ones who are very fast, will finish very fast and then he just wait, just wait" "You can't talk over one another so it's just I'm talking, listen, do it ,let's take turns talking and we just constantly just waiting for our turn (to talk)"	Waiting time	Lesson delivery challenges	CHALLENGES OF ONLINE TEACHING AND LEARNING
"I think in terms of distraction, it's really really very very hard, we're talking about distraction in terms of environment, in terms of their, their focus level, engagement level, I think it's really beyond our control, I cannot make that you only click on the Meet button and not other button, I cannot, I cannot make that happen. So these are the things that are beyond our control."	Surrounding distraction	Physical and digital distractions at home	
"It's quite difficult, you have to teach her and then sometimes mid way ,if she, if she's really disengaged, she will start throwing tantrums, mute herself and then turn off the video, yeah that kind of thing, yeah I don't know , as a teacher I feel that when engaging students online right, I don't have, how do I say, the sense of control, it's not, it's not there."	Managing behaviours online	Managing students' behaviours, attention span and engagement	