

# Enhancing Preschoolers' Online Learning through Digital Storybooks in Brunei Darussalam

## Abstract

In this 21<sup>st</sup> century, a digital storybook is one of the innovative educational strategies that may be used for online learning to engage preschool children in deep and meaningful learning. Research examining the use of digital storybooks for online learning found that it had a beneficial impact on preschool children's learning attitudes. This research also looks at the level of learning engagement when the digital storybook is utilised for online learning. In addition, this research will investigate the challenges of employing a digital storybook for preschool children's online learning. This study used a qualitative research method to acquire the essential data for the research aims. Only four preschool children aged between 5 and 6 were chosen as research participants throughout two research cycles. The results indicated that employing a digital storybook for preschool children's online learning has changed their views toward learning, making it more enjoyable. This is because the digital storybook includes animation and sound. Furthermore, the study revealed that preschool children were more focused and attentive in their learning, allowing them to answer the questions about the lesson's content in the digital storybook without any assistance. Other than that, this research also revealed the difficulties when utilising digital storybooks for preschool children's online learning. Overall, the research has given insight into the use of digital storybooks for preschool children in Brunei Darussalam during the second wave of the COVID-19 pandemic.

**Keywords:** Digital storybook; Online learning; Preschool Children; Brunei Darussalam

## INTRODUCTION

Brunei Darussalam's National Education System for the 21<sup>st</sup> century known as '*Sistem Pendidikan Negara Abad ke-21 (SPN21)*' acts as the enforcement to achieve one of the main goals in *Wawasan Brunei 2035*. This will make Brunei's people well-educated and highly skilled according to the top international standards (Ministry of Education, 2013). As part of the planning, the ministry has set a strategy to manage and invest in early childhood education to move towards *Wawasan Brunei 2035* (Ebil & Shahrill, 2023; Zakir, 2023). Early childhood education curriculum prioritises the development of preschool children's socio-emotional, personality, cognitive, numeracy, and literacy, including mastering reading, writing, arithmetic, and Information and Communication Technology (ICT). These developments are crucial in expanding preschool children's basic skills and preparing them for formal education from Year 1 onwards. However, due to the current outbreak of the infectious disease known as COVID-19, the country has experienced diversity in a traditional setting in education. This has caused the preschool's teaching and learning to be done remotely i.e., online learning. Dhawan (2020) described online learning as an educational tool that makes the teaching and learning experience more flexible, creative and student-centered using technological devices and the internet connection.

Under this circumstance and to adapt to the latest changes in the Brunei education system, the teacher-researcher (i.e. the first author) has researched using ICT-related learning tools such as digital storybooks. This research aims to further the teacher-researcher's understanding of the implementation of the digital storybook for preschool children's online learning. According to Prasetya and Hirashima (2018), the utilisation of ICT in education should be included at the early childhood education level to expose preschool children to the 21st-century learning experience. The utilisation of ICT in learning was in line with Brunei's new education system (SPN21) and the strategy to strengthen the integration of ICT in the curriculum. On the other

hand, the digital storybook is a powerful learning tool that combines digital media with narrated audio-text, resulting in interesting animated stories that are useful for preschool children's early literacy learning (Boase, 2008; Oakley, 2011). Moreover, using ICT-based learning material such as digital storybooks can stimulate learning and make the children more engaged during class while improving technological use in the classroom (Bus et al., 2015; Huda et al., 2017; Khotimah & Wahyu, 2020; Abu Bakar et al., 2023).

Therefore, in this research, the teacher-researcher has created digital storybooks that focus on children's literacy learning to find out the results of the three research questions in this research paper. Furthermore, during the pandemic, it was an appropriate time to implement a learning approach of using digital storybooks to improve their literacy skills via online learning. Apart from that, it was also to nourish the preschool children with 21<sup>st</sup> Century learning adventure thus making them adapt to online learning and preparing them for many upcoming challenges. Hence, this research will use the digital storybook to focus on preschool children's online learning experience.

Preschool education in Brunei is considered the academic foundation before preschool children start their formal education from Year 1 onwards (Zakir, 2023). One of the expected outcomes from the foundation year is for the preschool children to build on their literacy skills. According to Rose (2006) and Morrisroe (2013), literacy is the combination of listening, speaking, reading and writing, which is very important for lifelong learning. However, during the teacher-researcher's school placement as a teaching practitioner, there was an unpredictable situation happened, such as the outbreak of COVID-19 that has caused the education system in Brunei to be done remotely. In the first year of the pandemic, there was a disruption in the education system due to the closure of school which resulted in no proper continuation of learning at school for a while. Due to this situation, the teaching and learning happening in school has moved to online learning which happened at home.

However, some preschool teachers, especially senior teachers are still unable to implement ICT in their teaching. Some were still using the old method of teaching literacy which is by using printed storybooks and the books recommended by the curriculum known as '*Bacalah Anakku*'. Therefore, the teacher-researcher felt the need to explore a different method of teaching literacy through online learning for preschool children. Biancarosa and Griffiths (2012) stated that using technology can enhance the excitement of learning literacy apart from helping to build the skills and knowledge for early literacy. It corresponds to the SPN21 policy that emphasises ICT in teaching and learning in school (Ministry of Education, 2013). Although several research studies have been conducted on the use of digital storybooks in the classroom, the teacher-researcher felt compelled to research this pedagogy because no research has been conducted in Brunei on the use of digital storybooks in preschool education, particularly for online learning.

This study examines how digital storybooks affect preschoolers' online learning in government-funded institutions. Brunei has not performed adequate research on digital storybooks for online learning, especially during the second wave pandemic. Moreover, because SPN21 encouraged the teachers to implement ICT in teaching, this

research may function as a medium for interested teachers to explore the use of ICT and digital elements as part of the teaching and learning tools to improve online learning in early childhood education and also how digital storybooks can engage the preschool children during online learning. Furthermore, this study may benefit other researchers to gather data and give them critical insights regarding the challenges that may arise when using digital storybooks as online learning tools.

### Theoretical Framework

The learning theory in this research is based on Lev Semyonovich Vygotsky's (1978) zone of proximal development theory, which was defined as "the distance between the actual developmental level as determined by independent problem-solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more peers" (Vygotsky, 1980, p. 86). The illustration of the theory can be seen in Figure 1 below, which was retrieved from Khan (2018).

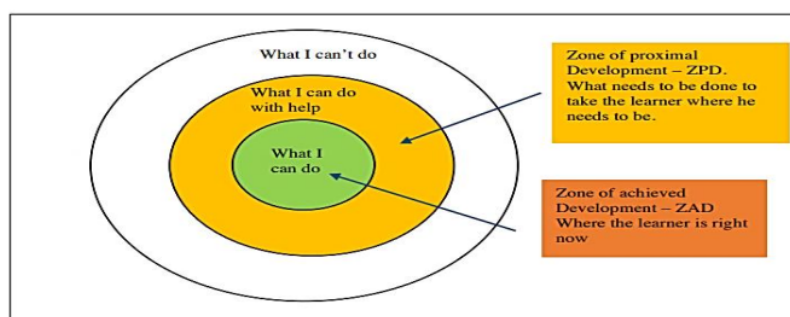


Figure 1. Vygotsky's (1978) zone of proximal development theory model

Concerning this research, the theory discusses the differences between the preschool children's literacy learning situation during the closure of school and the likelihood of the continuation of the literacy classes with the help of external conditions. The first circle represents what the preschool children are unable to perform or require support. For this research, it refers to the situation where preschool children weren't able to do their literacy learning at school due to the closure of school during the pandemic.

The second circle represents the zone of proximal development in which the teacher-researcher used digital storybooks as the learning tool to help the preschool children learn literacy for their online learning. Aside from that, parents' and teachers' engagement was limited to external conditions, such as guiding and assisting preschoolers in accessing online learning at home. Finally, after the preschool children have reached the goal in the zone of proximal development, the gap between the circumstances before and after the strategy execution will narrow, resulting in the zone of achieved development (refer to the third circle).

The research has two limitations which are; 1) Time constraint, and 2) Small sample size. The first limitation was a limited time frame to conduct the research between mid-October 2021 and November 2021, as permitted by the Ministry of Education,

Sultan Hassanah Bolkiah Institute of Education and the school's principal. The second limitation was unavoidable because of time constraints and the lack of access to online learning equipment at home which resulted in some preschool children only attending the first cycle and others just attending the second cycle. Only four preschool children had fully attended both cycles when the research was conducted, and thus were chosen as research participants.

### **Previous Studies on Digital Storybooks**

There are multiple studies related to the digital storybook. A compilation study done by Demirbaş and Şahin (2020) found that the top three results from using digital storybooks in Turkey are; (1) it can increase children's motivation and higher-order thinking skills to solve problems, (2) it promotes opportunity for the teachers and children to integrate ICT or multimedia technologies into the classroom and (3) it enhances the effectiveness of lesson interaction, active participation and enjoyment in learning. Moreover, the study in the USA by Bernard (2015) looked at digital storybooks as an instructional tool for learning it can help boost children's confidence and interest in a particular topic and also make the learning more relevant. In Indonesia, Khotimah and Wahyu (2019) have found that using digital storybooks is another way for children to develop new skills and learning strategies, especially in this technological era. It could help children to be more motivated, engaged, and able to understand the lesson better. This is agreed by a recent study done in Indonesia by Rahiem (2021) where the findings revealed that even though the children did not create the digital storybook, utilising it to teach the lesson has made the children more intrigued, attentive, and interested, as well as encouraged them to share their opinions and experiences. In terms of flexibility, according to Prasetya and Hirashima (2018), a digital storybook can be accessed using any digital device and can be used anytime and anywhere easily.

On the other hand, several studies mention the difficulties and disapproval of using digital storybooks. For instance, Bus et al. (2015) and Veronica et al. (2015) have considered the digital storybook as a distractor because the researchers still believed that children should spend more time reading using traditional printed books rather than the digital storybook. According to Bus et al. (2019), children may be distracted from the contents of the multimedia story which could flood them with irrelevant cognitive sensory from its visual and auditory. Other than that, Xu et al. (2019) have looked at digital storybooks as ineffective learning tools for young children due to their animated page-turning instruction. The page-turning speed might not be appropriate for children who struggle to need support in literacy development. For this reason, the digital storybook should be created developmentally appropriate according to the children's level to facilitate children's literacy learning in a playful and enjoyable context (Abdul-Ameer, 2014).

Aside from that, Marsh et al. (2017) and Anisimova (2020) have explored the challenges faced by the teachers. It was discovered that many teachers still lack self-confidence, ICT support, ICT resources, ICT skills, and IT expertise, making it difficult for these teachers to create and implement the use of digital storybooks in their lessons. Therefore, to overcome the challenges, Foelske (2014) has suggested teachers be offered training programs on how to utilise ICT-related teaching-learning resources such as digital storybooks efficiently and strategically so that the children may gain



the maximum advantages and information from them. The addition of the Technological Pedagogical Content Knowledge (TPACK) theory, can help the teachers to integrate technology into the lesson by creating a digital storybook full of content knowledge which is suggested by Robin (2008).

### **Research Objectives and Research Questions**

The objectives of the research are: 1) To explore how does the use of digital storybook influence the preschool children's online learning; 2) To find out the preschool children's engagement on using digital storybook during online learning; and 3) To examine the possible challenges when using digital story for online learning.

Meanwhile, the research questions are: 1) How does the use of digital storybook influence the preschool children's online learning?; 2) What are the preschool children's engagements on using digital storybook during online learning? And 3) What are the challenges arise when using digital storybook for online learning?

## **LITERATURE REVIEW**

### **Digital Storybooks**

In this 21<sup>st</sup> century, most children are already exposed to various types of gadgets such as mobile phones, iPads, tablets, computers and video games. Therefore, it is best to introduce and apply ICT-related learning methods to preschool children to help them with their learning. One learning method that preschool children can do is by using digital storybooks. According to Prasetya and Hirashima (2018), a digital storybook is a form of ICT implementation for storytelling that is presented by using attractive features such as pictures, animations, audio, video and texts that can produce educative content for preschool children. The content of a digital storybook is usually around 2 to 10 minutes only, which can be created by several programs such as Microsoft Photo Story, Microsoft PowerPoint, iMovie, Windows Moviemaker and Scratch (Bernard, 2015). This is supported by Choo et al. (2020) who agreed every digital storybook was designed by a storyteller using multimedia methods to create a storyline which has animation and sound to make it interesting. Demirbaş and Şahin (2020) also imposed that a digital storybook is a transition from a traditional printed book to a digital screen on which the structure is all about visual reading and expression. Other than that, its special effects could make the story of the lesson more exciting, coherent, entertaining and theatrical (Rahiem, 2021). Digital storybooks can be used across the curriculum such as science, mathematics, English, social studies, history and many other subjects as suggested by Foelske (2014). It may be concluded from this literature that digital storybooks can be useful in early childhood education.

### **Online Learning**

Digital storybooks possess certain characteristics that enable their implementation in online learning environments. Online learning is referred to as the inclusion of technologies over computer networks to impart education so that learners can do asynchronous learning (Dhull & Sakshi, 2017). As a result of COVID-19, many researchers have studied the impact of incorporating online learning. Online learning does provide positive effects towards children's learning as Ismail (2017) stated online

learning is adaptable and may enhance children's ICT-based learning experiences while also allowing parents to keep a close eye on their children's progress. Although online learning encourages independent learning and is very convenient in terms of place and time, it also limits the interaction between teachers and children which is not advisable because human interaction is essential for children's development as agreed by Ferri et al. (2020). In addition, online learning is exposed to many distractions (Anshari et al., 2017; Belgica et al., 2020; Gillick & Magoulas, 2020). For example, environmental distraction (such as noise, and family interruption) and digital distraction (such as mobile phones, tablets, computers, digital games, and internet platforms).

Moreover, Siddiquei and Kathpal (2021) have looked into the challenges both teachers and children face. Their study stated that teachers had difficulty in adapting to the transition of online learning from offline learning because they needed to change their teaching style and made an extra effort in teaching preparation. Also, there was barrier in communication between teachers and children. As for the children, they faced problems in terms of learning readiness, technical skills, class participation and also internet issues. Correspondingly, another study by Ashraf et al. (2021) found that the transposition of face-to-face learning to online learning has resulted in different learning experiences. In their survey of 550 children, only 33.3% of children felt comfortable doing online learning because 88.5% of the children felt they struggled due to lack of gadgets and internet access, which made them experience improper interaction and engagement with the teacher.

Additionally, Belgica et al. (2020) have looked at the technological factors in online learning. According to their study, some children could not afford to have electronic devices such as mobile phones, laptops and tablets and also the unavailability of internet data. As mentioned earlier, the children faced with environment and digital distraction has caused them to show lower concentration during the lesson. As a result, children continue to prefer face-to-face learning because it enables social connection, is more pleasurable, interesting, and simple to comprehend which allows them to obtain direct assistant from teacher and classmates. Nevertheless, even though online learning can experience many problems and limit the learning process, the teacher can still provide effective learning strategies to ensure that the learning process is still engaging, interactive, more student-centred and flexible (Dhawan, 2020). Online learning is another way to move forward in formal education in times of uncertainties such as the pandemic COVID-19 (Shahrill et al., 2021). Hence, both teachers and children do need to adapt themselves to the new norm in teaching and learning.

## **METHODOLOGY**

### **Research Framework of the Study**

The framework of this study is action research. According to Naughton and Hughes (2008), action research is a process that can generate changes through several phases of 'think-do-think' in a circular process. In addition, action research in preschool education is used to associate with reflection and enquiry that can give the teacher predominance to improve the practice (Guerra & Figueroa, 2018). The use of action research in this study is to investigate the effect of using digital storybook towards the

preschool children's online learning. Therefore, the action research cycle utilised for this research was adapted from Kemmis (2006) as shown in Figure 2.

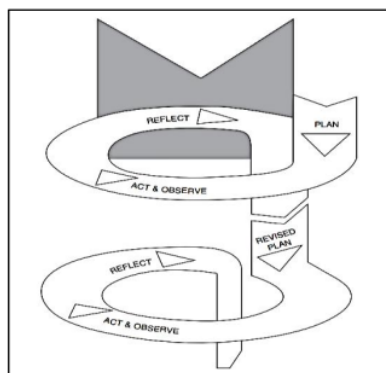


Figure 2. Kemmis (2006) action research cycle process

As seen in Figure 2, the action research has two set of cycles: plan, action, observe and reflect. The explanation for each term is summarised from Kemmis et al. (2004): Plan – To recognise the action to be taken by taking into consideration about the effects involve; Act – To implement the action planning into practice; Observe – To document the effects of the actions; and Reflect – To recall and evaluate the action on the process.

The actual research took place for about two to four weeks to complete two cycles of action research which was conducted from October to November. Both cycles were conducted using online learning platform known as Zoom since it was preferable by the preschool children and the parents or guardian of the preschool children.

For the first step in Cycle 1 which was the planning process, the teacher-researcher has identified the problem situation in order to prepare strategy to be implemented to solve the research questions. The teacher-researcher has already properly planned on the data collection method and the data collection tools. Secondly was the action process where the teacher-researcher has made necessary action and intervention required in order to gather and analyse the research data. At this point, the teacher-researcher used selected data collection. Thirdly, in order to explore and understand the preschool children's reaction, interaction and engagement and results of using digital storybook, the teacher-researcher proceeded to the third process, which was using online observation, semi structured interview and reflective journal as a form of the research assessment. Lastly was the evaluation, reflection and interpretation of the results in Cycle 1 in order to make appropriate decisions and to make some improvement throughout the Cycle 1 process.

After the process of revising in Cycle 1, the planning process in Cycle 2 happened after several amendments have been revised or made by the teacher-researcher, which in this research, it was the additional digital content in the digital storybook. It was hoped that by conducting two research cycles, the research data collected would be richer and more insightful.

## Research Design



This research is focusing on qualitative research method which aims to explore the use of digital storybook for preschool children's online learning and also to understand the preschool children's engagement towards the use of digital storybook for their online learning. Other than that, it was also to find out the challenges emerged when using the selected learning tool during the online learning. The selection of qualitative research method was because the teacher-researcher wanted to explore and find out the actual feelings of human thought and real opinions on which in this study is focusing on the preschool children.

According to Silverman (2020), the purposes of qualitative research are to understand the experience of the people by having empathetical skills and to get the access of the contents in people's head by conducting semi structured interviews and focus groups. In addition, qualitative research method can also be used to analyse reflective journals, documents, government reports, website, diaries and media articles (Hammarberg et al., 2016).

The initial selection of participants was five preschool children aged between 5-6 years old who are in the same preschool. The recruitment participants were mixed and based on the availability of the online learning platform from the preschool children's side such as good internet connection and Zoom application. However, during the research only four participants were able to attend both online learning in Cycle 1 and Cycle 2.

Three data collection methods were used throughout the study. The first one was online observation. According to Ciesielska et al. (2017), observation is the most diverse classical research method on which it gives the researcher the capability to collect data about many practices. In this research the teacher-researcher used online observation to understand and investigate the preschool children's reaction and engagement towards the use of digital storybook for online learning including how it has influenced the preschool children's online learning. Figure 3 below shows the example on how the teacher-researcher did the online observation on the preschool children during the online learning.



Figure 3. Teacher-researcher is observing the preschool children's online learning

Secondly, in order to further study the preschool children's influence and feedback on using digital storybook for their online learning, the teacher-researcher has conducted



semi structured interviews with the selected preschool children. Even though Adams (2015) considered this method as time consuming, it is also the most suitable for researchers who want to get the thoughts of individuals. Therefore, in this research, this method was very suitable for the teacher-researcher to get in-depth understanding of the participants' perspective or opinion by asking both close-ended and open-ended questions to the selected preschool children. Figure 4 below shows the semi structured interview session with one of the preschool children using Zoom application.

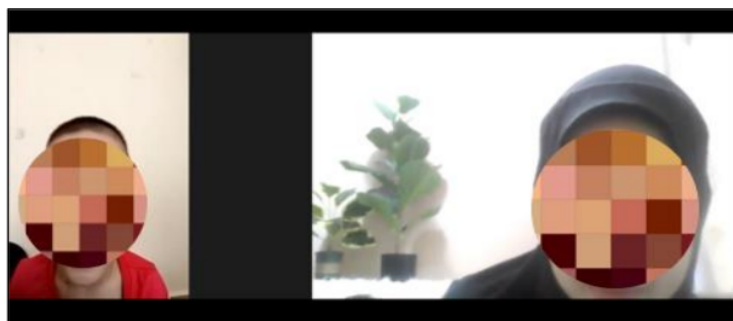


Figure 4. *Semi structured interview session using Zoom application*

Thirdly, the teacher-researcher used reflective journals to support and improve the overall research by recording all the details and events that occur during the lessons. Moreover, it helped to aid in answering the research questions of this study. According to Johnson (2012), using reflective journal is useful as it helps to track down and document the teacher-researcher's thoughts and findings in relation to the research. Zulfikar and Mujiburrahman (2017) also agreed that reflective journals can help the teachers to increase the awareness and improve their overall practices in class. Figure 5 below shows the teacher-researcher doing one of the reflective journals by looking at the details that occur during the lesson. By using the above-mentioned data collection methods, the teacher-researcher hopes to get more accurate and reliable data that will make this research more valid.

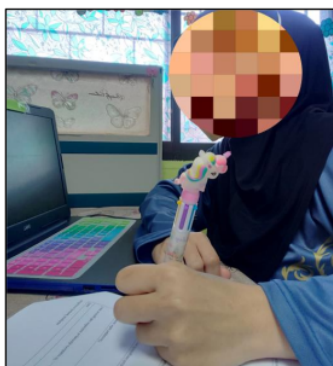


Figure 5. *Teacher-researcher in action doing the reflective journal*

The right selection of data instruments can lead to reliable answers for the research questions (Adosi, 2020). For this research, the teacher-researcher used an established

'observation checklist' adapted from Richard (2009) during online observation process (refer to Appendix 1). The online observation checklist criteria was based on the preschool children's engagement during lesson. For the semi structured interview, a list of interview questions in accordance to the preschool children's level was used (refer to Appendix 2). The questions for the semi structured interview were asked through an online platform using the Malay language to ensure the preschool children understand the questions being asked. The last instrument used was a reflective journal (refer to Appendix 3). Nguyen Thanh Nga (2006) agreed that reflective journal is an effective tools to improve students learning and teachers' knowledge and pedagogy. Therefore, the teacher-researcher believes that by having reflective journal, it would be more useful to assist in collecting data besides to fill in any gaps in data findings.

The collected data from using online observations, semi structured interviews and reflective journals that are used to address the research questions were analysed using thematic analysis. According to Clarke and Braun (2014), thematic analysis is a method for recognising and analysing patterns and themes to explain the meaning in qualitative data. In this research, the six phases of thematic analysis by Braun and Clarke (2006 cited in Clarke & Braun, 2013) was utilised as guidelines to help the teacher-researcher to recognise patterns and themes in the data and to make links that are associated to the research questions of this research. The six phases of thematic analysis are (1) to become familiar with the data, (2) to generate codes to describe the content, (3) to search for theme or pattern, (4) to review the theme or pattern, (5) to define the theme or pattern and (6) to write up report.

### **The Validity and Reliability**

For the validity of this research, the teacher-researcher used triangulation method by collecting multiple theories, methods and observation. According to Noble and Heale (2019), this method will include interviews, online observations and also field notes. In order to validate the instruments, teacher-researcher will use visual /online recording as supplementary to the data collected during online class observation and interview session. This was because it can aid in reviewing any missing data or outcomes during the online observation and interview session. Apart from that, field notes will be used to record the semi structured interview data. Research showed that, field notes are the best options to be used in order to reduce the possibility of losing data and memories from the interviews and research process (Tessier, 2012). On the other hand, in order to enhance the reliability, the teacher-researcher has requested the teacher-research's supervisor to check the content of digital storybook and semi structured interview questions to ensure that they are enough and simple according to the preschool level for the research to be conducted.

### **Ethical Considerations**

Prior to conducting this research, ethics approval was sought from the Faculty and the school principal. To keep the anonymity of the participants, pseudonyms names were used throughout the research and any information and data collected throughout the research will not be disclosed. All information and data collected are stored confidentially in the teacher-researcher's laptop that is protected with lock password and will be deleted few months after the submission.

## Contribution to the Body of Knowledge

This research will be very useful for the teachers or researchers to study on how ICT based learning which is digital storybook can be used for preschool children's online learning. It also contributes to the idea of using digital storybook for online learning as an approach to enhance the preschool children's literacy skills.

## RESULTS AND DISCUSSION

For this research, two digital storybooks were created for learning literacy. The findings were collected during the second wave of the COVID-19 pandemic situation in Brunei, where the preschool children were instructed to do online learning at home.

### The Influence of Digital Storybook towards Preschool Children's Online Learning

Research question one focuses on the influence of digital storybook towards preschool children's online learning. During the research findings, it was found that using digital storybook for preschool children's online learning could be done during the pandemic situation. One main theme was identified from the findings, which is 'Attitudes towards the use of digital storybook for online learning'.

#### Main Theme 1: Attitudes towards Online Learning

In this main theme, the research finding is referring to the preschool children's way of feelings towards the use of digital storybook for their online learning. The findings lead to two sub-themes which are, 1) Fun and excitement, and 2) Easy and practical.

##### Sub-Theme 1.1: Fun and Excitement

Sub-theme 1.1 looks at the preschool children's interest, enthusiasm and positive attitude when using digital storybook for their online learning. The findings are based on the item found in the observation checklist with the sub-theme "Fun and excitement: Student exhibit interest, enthusiasm and show positive attitude" in Appendix 1. In addition to these findings were from the observation notes and the semi structured interview which will be discussed further. Table 1 below shows the results from the observation checklist for Cycle 1 and Cycle 2 respectively. In order to supplement the score results, the observation notes focusing on the characteristics of 'Fun and excitement' for both cycles are displayed in Table 2.

Table 1. Summary result table for 'Fun and excitement'

Participants	Cycle 1	Cycle 2
Child 1	High	Very high
Child 2	Low	High
Child 3	High	High
Child 4	Medium	Medium

Table 2. Observation notes focusing on 'Fun and excitement'

Cycle 1	Cycle 2
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Child 1 seemed to be very focus but didn't show any enthusiasm at the beginning. Only shown interest after few minutes when the sounds of the toys are being played. Child 1 also showed positive attitude throughout the learning.	Child 1 was very enthusiastic at the beginning, following the movement of the dance. Child 1 also portrayed positive behaviour and interest towards the learning until the end.
Child 2 didn't express any interest, enthusiasm nor positive attitude. Child 2 only sit still and focus on the digital storybook when played.	Child 2 showed interest only during the dancing part but didn't smile. Child 2 has less expression but has shown positive attitude throughout the online learning.
Child 3 had shown interest towards the online learning. Child 3 smiled at times and showed positive behaviour during the online learning.	Child 3 has shown interest and positive attitude towards the learning especially during the dance part and when the flower bloomed. The first few minutes and towards the end, Child 3 looked very enthusiastic and smiled.
Child 4 looked positively focus, interested on the learning but lack of enthusiasm.	Child 4 has shown interest towards the storyline especially the dance activity. Even when Child 4 was distracted in the middle of the learning, Child 4 has conveyed positive attitude throughout the online learning. Only until the end, Child 4 looked very restless and has less energy.

Other than that, teacher-researcher has also interviewed the preschool children to find out how the digital storybook has influenced their interest during their online learning at home. Table 3 below shows the interview question and excerpt answers from Child 1 to 4 for question 3a.

Table 3. *Answers for the interview questions on Q3a*

Interview question	Participants	Answers
Q3a. Do you like learning using digital storybook?	Child 1	"Yes, I like it because there are sound and animated pictures".
	Child 2	"Yes, because the song is nice and it is fun".
	Child 3	"Yes, it is fun. I like the cartoons".
	Child 4	"Yes, because it is fun to learn".

The findings for sub-theme 1.1 shows that there is some development in term of the score in 'fun and excitement' observation checklist where Child 1 and Child 2 have shifted one step ahead, whereas Child 3 and Child 4 stayed at the same level. Also, from the teacher-researcher observation, the preschool children exhibit more interest and enthusiasm in Cycle 2 compared to Cycle 1. When reflected in the teacher-researcher's reflective journal, it was discovered that the addition of music and dance contents in the digital storybook have contributed to the elevation of the preschool children's positive attitudes.

#### ***Sub-Theme 1.2: Easy and Practical***



Sub-theme 1.2 was obtained after analysing the preschool children's answers during the semi structured interview session when the preschool children were asked regarding their perspective and views on using digital storybook for their online learning. Table 4 below shows the interview question and excerpt answers given by Child 1 to 4 for question 3b.

Table 4. *Answers for the interview questions Q3b*

Interview question	Participants	Answers
Q3b. Do you find it easy to do online learning using digital storybook?	Child 1	"Yes, because I can study at home".
	Child 2	"Yes, because I can study on my own if there's no class".
	Child 3	"Yes, because I can watch it all over again at home".
	Child 4	"Yes, because there are video and audio at the book (digital storybook)".

However, despite the conclusive results and findings above, the preschool children were also asked what they didn't like about the digital storybook. Therefore, Table 5 below shows the question and the excerpt answers given by Child 1 to 4 for question 3d.

Table 5. *Answers for the interview questions Q3d*

Interview question	Participants	Answers
Q3d. Can you tell me if there is anything you don't like about digital storybook?	Child 1	No, but I want more cartoon in the story.
	Child 2	The volume is low and I don't want the story to be too long.
	Child 3	Nothing, but I want to add many-many cars in the story.
	Child 4	No.

The findings for sub-theme 1.2 shows that the preschool children considered that it was easy to use digital storybook for their online learning. Child 1, Child 2 and Child 3 favour the use of digital storybook because of its flexibility to learn at home according to their own pace and time, while Child 4 advocate the digital storybook due to its video and audio. At the same time, Child 1, Child 3 and Child 4 stated that there was nothing they don't like about the digital storybook but requested for more cartoons in the story. Only Child 2 stated that the volume of the audio was too low and wanted to shorten the time length of the story.

### *The Discussion for Research Question One*

Research question one is to find how does the use of digital storybook influence the preschool children's online learning. In this research, it was found that the use of digital storybook has affected preschool children's learning attitudes. Richardson (1996) referred attitudes as a mental or physiological condition that serves as the basis and consequence of behaviour as a result of emotional, cognitive and behavioural

tendencies that have formed as a result of earlier experiences. For the current investigation, preschool children's attitudes were assessed through their behaviour and feelings while utilising digital storybook for online learning. As a result, preschool children considered the use of digital storybook as easy and practical for them to do online learning at home. This disclosure has positively influenced preschool children's attitudes to be more enthusiastic, excited and had fun during their online learning. In the same way, this proves digital storybook is a positive digitalisation of traditional printed book as mentioned by Demirbaş and Şahin (2020). In contrast, Bus et al. (2015) still considered digital storybooks to be a distraction and believe that printed storybooks are superior to digital storybooks.

In Cycle 2, the teacher-researcher has included additional contents of music and dance activity. It was to compare the differences between Cycle 1 and Cycle 2, which resulted in a more stable result. The findings in this research is consistent with the findings of Choo et al. (2020) and Rahiem (2021), who discovered that using animation, sound, and special effects in a digital storybook can make the lesson more interesting, entertaining, and coherent, resulting in the preschool children's positive attitude. Moreover, the findings also showed that the preschool children prefer to use digital storybook for their online learning because it gave them the pleasure to do asynchronous learning. According to Kim (2020), asynchronous learning is when children are able to participate in their own learning and set their own time, location, and pace. Prasetya and Hirashima (2018) also stated that digital storybook could be access using any digital devices anywhere and anytime. This is consistent with the findings in this research where the preschool children considered digital storybook to be easy, practical, entertaining, and fun to use, which reflects preschool children's positive attitudes during the online learning.

### **Preschool Children's Engagements on Using Digital Storybook during Online Learning**

Research question two focuses on the preschool children's attentiveness when using digital storybook during their online learning. Two main themes were gathered during the research analysis, which are: 1) Attentiveness towards learning and 2) Confidence towards learning.

#### ***Theme 2: Attentiveness Towards Learning***

In this theme, the teacher-researcher is referring to the preschool children's level of attention during the online learning when using the digital storybook. Two sub-themes were extracted under this theme, which are; 1) Focus in learning and 2) Positive body language.

##### ***Sub-Theme 2.1: Focus in Learning***

Sub-theme 2.1 is observing the preschool children's consistency in focus throughout the online learning when using the digital storybook. The findings for sub-theme 2.1 were based on the item found in the observation checklist in Appendix 1 with the sub-theme "Consistent focus: The student is focused on the learning using digital storybook with minimum disruptions". Other than that, teacher-researcher's observation note and reflective journal will also contribute to the findings of sub-

theme 2.1, on which all will be discussed further. Table 6 below shows the results from the observation checklist for Cycle 1 and Cycle 2. Meanwhile, the observation notes made by the teacher-researcher during Cycle 1 and Cycle 2 are shown in Table 7.

Table 6. *Summary result table for 'Focus in learning'*

Participants	Cycle 1	Cycle 2
Child 1	Very high	Very high
Child 2	Very high	Very high
Child 3	High	High
Child 4	High	High

Table 7. *Observation notes focusing on 'Focus in learning'*

Cycle 1	Cycle 2
Child 1 was very focus throughout the online learning with very little distraction from Child 1's siblings. Her eyes were focus to the digital storybook being played. Child 1 was seen smiling at minute 5 and minute 8.	Child 1's expression and eyes were focused on the digital storybook. Only distracted a few times by the sibling and then back to focus again.
Child 2 was very focus. Very concentrate with no distraction at all. The eyes are attracted to the digital storybook being played.	Child 2 has no disruptions throughout the learning. Eyes are fixed.
Child 3 were distracted at first, feeling shy. After 4 mins the digital storybook being played, Child 3 was able to sit and concentrate throughout the learning with his/her head nodding and mouth mimicking the words.	Child 3 was focused. Distracted by sibling at minute 4 and minute 6. Eyes are attracted to the digital storybook.
Child 4 were focus throughout the online learning. Child 4 was distracted at minute 7 and back to focus afterwards. Child 4 was seen repeating some words from the digital storybook.	Child 4 was focused throughout the online learning. Distracted towards the end, yawning.

Apart from that, teacher-researcher also used reflective journals to support the findings on which below is the excerpt from the teacher-researcher's reflective journal.

"Digital storybook really could help the preschool children to become more focus in their online learning at home but with the condition it should not be too long to make it less boring that may cause inconsistent focus for the preschool children" (Reflective Journal Entry #1).

The findings for sub-theme 2.1 indicated that during the online learning, the preschool children have shown great focus in learning which allowed the teacher-researcher to put all of them in the range of high and very high. However, during the observation on both cycles, Child 1, Child 3 and Child 4 were distracted in between but continued to focus again afterwards whereas Child 2 was noticed to be very concentrated

throughout the learning with no disruption at all. Other than that, the teacher-researcher has noted that the content of the digital storybook should not be made too long in order for the preschool children to be persistently focus throughout the learning.

### ***Sub-Theme 2.2: Positive Body Language***

Sub-theme 2.2 looks at the preschool children's body gestures whether they exhibit positive or negative body postures and movement throughout the online learning. The findings for this sub-theme were based on the item found in the observation checklist in Appendix 1 under 'Positive body language: Student exhibit body postures that indicate he or she is paying attention to the digital storybook', observation note and teacher-researcher's reflective journals. The observation checklist results for Child 1 to 4 in both cycles are presented in Table 8. The observation notes recorded by the teacher-researcher during Cycle 1 and Cycle 2 are presented in Table 9.

Table 8: *Summary result table for 'Positive body language'*

Participants	Cycle 1	Cycle 2
Child 1	High	Very high
Child 2	Very high	Very high
Child 3	High	Very high
Child 4	High	High

Table 9. *Observation notes focusing on 'Positive body language'*

Cycle 1	Cycle 2
Child 1 sat still most of the time throughout the online learning. The body posture looks very comfortable and only moved a bit from the initial position to push the sister when being disturbed.	Child 1 looked shy at first but followed the instruction at the beginning of the digital storybook to dance along. Child 1 looked happy and excited. Child 1 behaved well and sat still throughout the online learning.
Child 2's body posture looks very stiff with no distraction at all throughout the online learning. Only his head nodded sometimes.	Child 2's body posture still looked very stiff throughout the online learning with no distraction at all. Child 2 was also able to follow all the dance and body movement and very attentive.
Child 3 sat still throughout the online learning. Heads nodded to certain part of the digital storybook.	Child 3 looked very excited throughout the online learning. Child 3 also able to follow the dance movement looked very energetic and positively involved throughout the online learning.
Child 4 sat still most of the time, only shown little distraction at minute 7 that made Child 4 to stretch him arm. Then sat still again afterwards with his head nodded to certain part of the digital storybook.	Child 4 also shown positive body language throughout the online learning. Able to follow the instruction such as dance along and looked very excited. Only towards the end, the body posture looked restless but his eyes were still focused to the digital storybook.



Furthermore, the excerpt by the teacher-researcher from the reflective journal focusing on sub-theme 2.2 is given below.

“There is a slight change between Cycle 1 and Cycle 2. In Cycle 2, the preschool children appeared to be more engaged, focus and exhibit positive body language. The difference from Cycle 1 was the addition of music and dancing activity as instructed in the digital storybook. The preschool children were very excited and involved in the activities given” (Reflective Journal Entry # 3).

Generally, the findings for sub-theme 2.2 shows that in Cycle 1, Child 1, Child 3 and Child 4 scored ‘high’ but shifted to ‘very high’ in Cycle 2 whereas only Child 2 has persistent results of ‘very high’ in both cycles. The findings are consistent with the observation notes where in Cycle 1, the preschool children have shown positive mannerism and attitudes with slight distractions throughout the online learning. Nevertheless, in Cycle 2, all of the preschool children were able to follow the dance action and expressed positive body movement. Only Child 4 portrayed tired body language towards the end. Teacher-researcher also noted in the reflective journal that the addition of music in the digital storybook has contributed a great impact towards the preschool children’s positive body language’.

### ***Theme 3: Confidence Towards Learning***

In this theme, the findings are to find out how confidence the preschool children were with their online learning. Two sub-themes emerged from this theme, which are 1) Verbal participation and 2) Task completion.

#### ***Sub-Theme 3.1: Verbal Participation***

Sub-theme 3.1 is to find out the preschool children’s verbal participation after the online learning to understand their level of confidence with their answers from their online learning when using the digital storybook. The findings for sub-theme 3.1 were based on the item in the observation checklist in Appendix 1 with the sub-theme “Verbal participation: Student express thoughtful ideas, reflective answers, and questions relevant or appropriate to learning” and also the reflective journals made by the teacher-researcher. Table 10 below shows the summary results from the observation checklist on verbal participation for Child 1 to 4. Additionally, the observation scores are further backed up by the teacher-researcher’s reflective journal in both cycles and the excerpts of the reflective journals are displayed in Table 11.

Table 10. *Summary result table for ‘Verbal participation’*

Participants	Cycle 1	Cycle 2
Child 1	Very High	Very high
Child 2	Very High	Very high
Child 3	High	High
Child 4	Very high	Very High

Table 11. *Reflective journal notes by the teacher-researcher*

Cycle 1	Cycle 2
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It was hard at first to extract answers from the preschool children in sentences. I had to play around with the questions to make them understand the questions. In Cycle 1, all the preschool children were able to answers the questions on what they have learnt within the time given. I am very satisfied with the outcome of their learning as they have achieved the learning objectives for that day. I believe that by using digital storybook for preschool online learning can help them to study with confidence even without the present of the teacher during the lesson.” (Reflective Journal Entry # 4)

The interviewing techniques get better this time as the preschool children have already familiar with and understand how interview works. In Cycle 2, the preschool children were able to answers the questions correctly with confidence. Only Child 3 forgot the answer to one of the questions given. Overall, the way they projected their answers when being asked has proved their utmost confidence towards online learning by using digital storybook.  
(Reflective Journal Entry # 5)

The findings for sub-theme 3.1 reveal that Child 1, Child 2 and Child 4 have consistent results of ‘very high’ while Child 3’s result has shifted from ‘high’ in Cycle 1 to ‘very high’ in Cycle 2. Moreover, from the teacher-researcher’s reflective journal, it was found that in Cycle 1, the teacher-researcher had difficulty in making the preschool children understand the questions given to them verbally because they were not familiarised with the interview procedure. Despite that, all the children were able to answers the questions given, on which the questions are related to the content of the digital storybook. Also based on the reflective journal, the preschool children’s verbal participation gets better in Cycle 2 because the preschool children are already familiar with the interview procedure which allows the preschool children to answer all the questions with more self-confidence.

### ***Sub-Theme 3.2: Task Completion***

Sub-theme 3.2 looks at the tasks given at the end of their online learning. The task was to identify and response to some literacy questions related to the story line in the digital storybooks shared. It is to find out whether the preschool children would be able to understand and answers the questions given to them. The findings for this sub-theme are gained from the semi-structured interviews and teacher-researcher’s reflective journal. Table 12 below shows the interview questions and excerpts in Cycle 1 from Child 1 to 4 for questions 2b and 2d. Meanwhile, Table 13 shows the interview questions and excerpt answers in Cycle 2 for questions 2h and 2i.

Table 12. Interview questions and excerpts in Cycle 1 for Q2b and Q2d

Interview questions	Participants	Answers
Q2b. Can you tell me the names of the toys mentioned in the digital storybook?	Child 1	“Robot, doll, teddy bear, plasticine, drum, piano, helicopter”
	Child 2	“Doll, helicopter, teddy bear, drum, plasticine, robot, piano”
	Child 3	“Doll, robot, teddy bear, plasticine, piano, drum”
	Child 4	“Robot, piano, plasticine, drum, doll, teddy bear and helicopter”
	Child 1	“Yes, piano, drum, helicopter and robot”

Q2d. Can you identify the toys with music in the digital storybook?	Child 2	"Robot, drum, piano, helicopter... I have robot and helicopter at home too"
	Child 3	"Helicopter... robot... piano... drum"
	Child 4	"Robot, piano, plasticine and drum"

Table 13. Interview questions and excerpts in Cycle 2 for Q2h and Q2i

Interview questions	Participants	Answers
Q2h. Can you name all the plant's parts in the digital storybook?	Child 1	"Yes, stem, sunflower, leaf and roots. That's all"
	Child 2	"Sunflower, stem, roots and leaf"
	Child 3	"Flower... sunflower... leaf, stem and roots"
	Child 4	"There are sunflower, leaf, roots and stem"
Q2i. Can you tell me the function of roots?	Child 1	"Absorb the water...so the flower is healthy"
	Child 2	"To give food and drink to the plant"
	Child 3	"No...I forgot"
	Child 4	"Give water to the roots so that the sunflower can grow"

<sup>1</sup> The excerpt from the teacher-researcher's reflective journal for the sub-theme 'Task completion' is given below.

"I was surprised to learn that the preschool children were able to remember most of the details in the digital storybook in both Cycle 1 and Cycle 2. I am very positive that even when there's no physical presence of the teacher, using digital storybook for online learning can assist and make the preschool children do their online learning confidently which make them able to complete their tasks and answers the questions given to them regarding the lesson." (Reflective Journal Entry # 6).

The findings for the sub-theme 3.2 show that during both cycles, Child 1, Child 2 and Child 4 have consistent scores of 'very high' while Child 3 scored only 'high' in both cycles. The difference between the scores were due to the answers given by the preschool children where if they managed to answer everything correctly, they will be taken note as 'very high' for their task completion. Other than that, the overall findings on teacher-researcher's reflective journal reflected that the preschool children were able to complete their task by giving the correct answers even by learning from the digital storybook without the physical presence of the teacher.

### **Discussion on Research Question Two**

Research question two is to find what are the preschool children's engagements on using digital storybook during online learning. According to Martin and Bolliger (2018), children's engagement could escalate the feeling of enjoyment and fulfilment which leads to the improvement on children's learning performance and lessen the sense of boredom and isolation. In this research, it is to find the level of preschool children's engagement during online learning so the teacher-researcher could examine preschool children's feelings and action during online learning.

Based on the findings in this current research, it was revealed by using digital storybook, preschool children were able to be attentive towards their online learning.

Durães (2018) described attention as the first step in the learning which involve the cognitive process of focusing on one part of the environment while ignoring others. Therefore, in this research, the reason for the attentiveness were due to the features in the digital storybook where it has pictures, animation, audio and video which can produce attractive educative content for the preschool children, which is agreed by Prasetya and Hirashima (2018). Moreover, Dalila (2018) agreed that being attentive in learning is critical to ensure that the children are paying attention and comprehend what they are learning because it will affect the learning outcome. This explains the outcome of their learning focus and positive body movement where they scored high and very high in this present study.

The current research also found that the use of digital storybook has assisted the preschool children to be confidence towards their online learning. According to Sander and Sanders (2006), confidence referred to the capacity to carry out a series of acts that, if carried out, will result in a specific result. Other than that, the researchers also stated that confidence is an important factor in education because it will create learning independence and allows children to do better than their normal performance. This is in line with the findings in this current study where it was revealed that even though there is no teacher being presence physically during the literacy class but using the digital storybook itself has positively improved the preschool children's confidence level in learning literacy. This might be due to the features of the digital storybook where the elements make it easy to be implemented for online learning. Hence, preschool teachers need to ensure that the contents in the digital storybooks are developmentally appropriate enough and easy to understand by the preschool children. This is because designing a developmentally appropriate practice teaching and learning materials could support the preschool children in achieving developmentally and educationally significant learning goals (Sanders & Farago, 2018).

As reported by Rahiem (2021) and Wahyu (2019), who discovered that even though the preschool children didn't make the content of the digital storybook, but just by being focus, watch and listen to the lesson content in the digital storybook, it could help the children to be more motivated, engaged and able to understand the lesson better. Thus, in order to evaluate preschool children's understanding, semi structured interviews were conducted to explore the preschool children's real knowledge and confidence in online learning. Moreover, Kaleci (2019) has emphasised the need in assessing the knowledge and confidence of children's online learning since the learning situation is different from physical classroom learning. As a result, the preschool children in this study were capable of understanding the literacy lesson and successfully answer the questions presented to them based on the contents in the digital storybooks shared.

Moreover, by incorporating the Lev Semyonovich Vygotsky (1978)'s zone of proximal development theory, the use of digital storybook has helped the preschool children to be able to learn their literacy lesson without the actual presence of the literacy teacher which has made them to be confident in their online learning and understand the literacy lesson at their own pace and time, with or without the guidance of their parents or guardian at home. Therefore, this suggest that the use of digital storybook for preschool children's online learning could help to improve preschool children's



learning engagement which lead to an enhancement in their learning attention learning confidence, participation and task completion.

### ***Possible Challenges when Using Digital Storybook during Online Learning***

Research question three focuses on investigating the possible challenges that the preschool children and teacher might have encountered throughout the use of digital storybook during the online learning. Two main themes were identified from the findings which are, 1) Challenges in preschool children, and 2) Challenges in teaching and learning. The illustration of the theme and the sub-themes for the third research question are shown in Figure 9 below.

### ***Theme 4: Challenges in Preschool Children***

In this theme, the research finding is referring to the challenges encountered by the preschool children during the online learning when using the digital storybook. Two sub-themes were identified under this theme, which are: 1) Children's learning environment, and 2) Limited online learning resources.

### **Sub-Theme 4.1: Children's Learning Environment**

Sub-theme 4.1 is looking at the learning surrounding that the preschool children have experienced during the online learning while using the digital storybook. The findings for this sub-theme were based on the semi structured interview session with the preschool children and also teacher-researcher's reflective journal. Table 14 below shows the interview question and excerpt answers from Child 1 to 4 for question 3g.

Table 14. *Answers for the interview questions Q3g*

Interview questions	Participants	Answers
Q3g. What challenges do you face when using digital storybook for online learning?	Child 1	"Sometimes my sister and my younger sibling followed and disturbed me studying"
	Child 2	"My mother said if there is no internet data, it is difficult to study"
	Child 3	"It is boring at home. No friend. My younger sibling always disturbed me"
	Child 4	"Nothing"

Moreover, in order to support the findings above, below is the excerpt from the teacher-researcher's reflective journal regarding 'children's learning environment.

"I've seen differences when the preschool children study at school and study at home. In school, the children were very disciplined and has little distraction but when at home, some of them were disturbed by their siblings. I also heard shouting and crying noises at the background which is very disturbing when the preschool children are learning" (Reflective Journal Entry # 7).

The findings for sub-theme 4.1 exposed that during their online learning at home, they have faced several distractions from their surrounding such as family members and also internet issue. The findings found that Child 1 and Child 3 have the challenge of being distracted by their siblings whereas Child 3 has the difficulty in term of getting

a consistent internet connection, i.e. from the mobile data. Other than that, from the teacher-researcher's reflective journal, it was written that learning environment of some preschool children was very noisy.

#### ***Sub-Theme 4.2: Limited Online Learning Devices***

Sub-theme 4.2 was also obtained from the semi structured interview session with the preschool children when asked regarding the availability of their online learning devices at home. Table 15 shows the interview questions and excerpts of the answers from Child 1 to 4 for questions 1a and 3h.

Table 15. *Answers for the interview questions Q1a and Q3h*

Interview questions	Participants	Answers
Q1a. Do you have devices to do online learning at home? If yes, can you tell me the devices that you always used?	Child 1	"Yes, mother's phone.... for playing game"
	Child 2	"Yes, iPad and telephone"
	Child 3	"Yes, mother's phone"
	Child 4	"Yes, telephone and sometimes laptop"
Q3h. Do you always have access at home to do online the learning? Or do you face any difficulties?	Child 1	"Sometimes mother lend me her phone. Sometimes not.... because sister is using that telephone too"
	Child 2	"My mother said if there is no internet data, it is difficult to study"
	Child 3	"If my mother is at work, I can only use the phone after she comes home" and "If my mother is using the phone, it is difficult for me to do online learning. Sometimes, my little sibling is using the phone too"
	Child 4	"Mother always let me borrow her phone if she's at home. She won't get mad"

Furthermore, to comprehend the finding above, the excerpt below was taken from teacher-researcher's reflective journal regarding this matter.

"During Cycle 1, only 8/14 preschool children attended the online learning and during Cycle 2, only 7/14 attended the online class in the morning. Those who did not attend the class was because their parents are working and also other siblings are using the handphone, laptop or other devices typically used for their online learning, said the parents." (Reflective journal Entry # 8).

Based on the findings above, it was discovered that the preschool children have limited online learning devices to do their online learning. During the research, it was found that the preschool children do have at least one learning device such as mobile phones, iPad or laptop to do their online learning even though it was not owned by them. In the research, Child 1 and Child 3 mentioned that they need to share the mobile phone with the other family members, while Child 2 has the limitation on the internet data. Also written in the teacher-researcher's reflective journal was the reason for the other preschool children who couldn't attend the online classes in Cycle 1 and Cycle 2 was due to same reasons as mentioned earlier and also due to their parents are at work.

### *Theme 5: Challenges in Learning and Teaching*

In this theme, the finding is referring to the barrier in interaction between teacher and preschool children when using digital storybook for online learning. One sub-theme was generated under this theme which is 'Lack of social interaction'.

#### *Sub-Theme 5.1 Lack of Teacher-Children Interaction*

Sub-theme 5.1 looks at the interaction between the teacher and preschool children during the online learning with the used of digital storybook, and the findings below was obtained from teacher-researcher's reflective journal.

"When compared using digital storybook in physical learning and online learning, there are differences. When the digital storybook is used for online learning, there was barrier in communication and interaction between teacher and preschool children. This was because during online learning, the preschool children could not ask questions directly at that time or when the digital storybook was being played due to the microphone was muted to avoid distraction for other preschool children." (Reflective journal Entry # 9).

From the findings on the sub-theme 5.1, it was discovered that there was a barrier in term of social interaction between the teacher and the preschool children. It was reflected in the teacher-researcher's reflective journal where during the online learning, there was limitations in communication and interaction due to the software system of muting and unmuting the microphone in the Zoom application.

### *Discussion on Research Question Three*

Research question three was to investigate the challenges that may have arisen when using the digital storybook for online learning. Despite the fact that online learning is flexible and can enhance the preschool children's ICT learning experience (Ismail, 2017), there are few challenges revealed in this current research. Simultaneously, Barrot et al. (2021) mentioned that online learning challenges may vary in terms of the type and the scope especially during the COVID-19 pandemic. This is relevant to the current research situation where it was also conducted during the COVID-19 pandemic situation.

One of the challenges found in this current research is related to the preschool children's learning environment. According to Ado (2015), learning environment consists of the learning arrangement, climate, air quality, learning facilities and other factors that may have direct and indirect effects on the children. In this current research, the learning environment is referred to the home environment where the preschool children conducted their online learning. The research revealed that the interference of the family members and the noise disturbance during online learning have contributed as one of the challenges faced by the preschool children at home. Gillick and Magoulas (2020) reported similar findings in their research where they found that online learners are constantly distracted by their surroundings, affecting their total attention span and causing them to lose track of their learning goals. Thus, it is important to find a very suitable learning environment during online learning at home to avoid learning distraction and improve concentration. Moreover, the

importance of learning environment was mentioned by Usman and Madudili (2019) as essential because it can affect the overall quality of the learning process.

The second challenge that the preschool children have faced during online learning was limited online learning devices. The online learning devices refer to a set of mobile computers such as mobile phones, laptops, tablets, personal digital assistant and also e-book readers (Sung et al., 2016). In this current research, it was revealed that even though all of the preschool children have access to do their online learning using their parent's mobile phones, iPad or laptop, eventually the access are considered limited. This is because a few needs to share the same online learning devices with their siblings and some will only able to use the online learning devices when a parent is at home. Other than that, the current research also found that internet limitation is also one of the main problems for online learning. This is in accordance with a survey conducted by Ahmed and Ullah (2021), who discovered that most children struggled to do online learning due to the lack of digital devices and internet connection. Belgica et al. (2020) also discovered the same problems in their research. This discovery lead to the third challenges found in this current research.

The third challenge of doing online learning using the digital storybook for the preschool children is the lack of teacher-children interaction. According to the recent study by Sason and Kellerman (2021), there are two types of teacher-children interaction for effective learning which are; (1) Affective dimension, which is develop by the feeling of security and positive learning experience and (2) Support dimension, which is the support given by the teacher to facilitate and help the children in their learning. This precise synergy between the teacher and preschool children is very important for the preschool children's development (Ferri et al., 2020).

However, in this current research, it was reflected that the use of digital storybook during the online learning may lessen the effect of the interaction and support from the teacher. This finding is corresponding with the research from Ferri et al. (2020), who found that online learning limits the interaction between teacher and children. This happens because of the change in the teaching-learning style to accommodate the current situation thus hindering face-to face interaction and limits the communication between the teacher and the preschool children. According to Zhang et al. (2004), Teacher and children cannot have one-to one and personal assessments of knowledge and confidence in online learning environment. In this current research, online learning has pushed the teacher to change the teaching-learning style to accommodate the current learning situation. Moreover, according to Rosenberg (2001), the physical classroom atmosphere is not the same as an e-learning environment, which is agreed by the teacher-researcher when conducting two research cycles. However, Dhawan (2020) defended that despite the problems, teachers could still provide effective learning strategies that are engaging, interactive, student-centred and flexible.

One problem faced due to the lack of interaction between teacher and preschool children were the issue in giving instruction in between the lesson. During this research, teacher-researcher found few preschool children's microphone were still unmuted. Due to this, teacher-researcher needs to request the preschool children to mute their microphone when the digital storybook was being played to avoid any noise distraction for other children. This however may have caused the preschool



children to have detrimental effect in their learning process due to misinterpreting the content of the lesson especially for the low ability children. These problems reflected the research from Gillick and Magoulas (2020) and Belgica et al. (2020), where they mentioned that online learning is exposed to many distractions.

In spite of the challenge in term of the interaction, the findings in this current research also proved that the use of digital storybook can make the children understand the lesson better even though without the interaction with the teacher. Hence, to ensure learning efficacy of utilising a digital storybook for online learning, the preschool teacher must make sure that the digital storybook's contents, such as the storyline, audio, voice projection, video, animation, narrated words and music are properly done according to the preschool syllabus in order to minimise all of the issues when using the digital storybook for online learning.

## CONCLUSION

Overall, this research has given insight into the use of digital storybooks for preschool children's online learning during the second wave of COVID-19 pandemic in Brunei. According to the findings, using digital storybook for preschool children's online learning has significantly influenced preschool children's attitudes and engagement towards their learning. It was found out that the digital contents in the digital storybook such as the animation and sound have contributed towards the preschool children's enjoyment and attentiveness during online learning. As a result, the preschool children demonstrated better focus on completing the task and also showed more positive body language. This is indicated by the children's willingness to complete the task given and attempting to answer the questions related to the content found in the digital storybook shared. Moreover, the findings showed that digital storybook is advantageous in teaching literacy for online learning. Aside from that, this research also found several challenges faced by the preschool children and teacher-researcher during the online learning, which affected their overall learning experiences. Preschool children have experienced challenges such as an uncomfortable learning environment (such as noise distraction and interference from family members) and having restricted digital devices due to sharing of online learning devices with other family members. These issues prevented the children from participating during online learning. On the other hand, teacher-researcher felt that online learning has affected the teaching and learning style and the level of interaction between teacher-researcher and preschool children. Due to the teaching and learning experience during online learning, teacher-researcher would rather teach using the digital storybook in a physical classroom. The teacher-researcher's preference is intended to decrease the number of distractions and challenges that come with online learning.

The implications of this study relate to the use of digital storybook for preschool children's online learning, more specifically during the second wave COVID-19 pandemic in Brunei. Prior to the research, preschool children were not able to physically attend and continue their literacy classes due to the closure of school. However, throughout the intervention research, using digital storybook to continue the teaching and learning of literacy was practicable. This research proves that using the digital storybook for online learning has positively influenced the preschool

children's learning performance including improving their learning attitudes, learning attentiveness and confidence in learning. It was also revealed in this research that using digital storybook for preschool children's online learning has resulted in them to understand the literacy lesson thus able to confidently answer the questions related to the contents in the digital storybook shared. Despite that, the findings of this research signals those in the early childhood field of the effectiveness of using the digital storybook for preschool children's online learning in Brunei. In addition, this research also signals the need of providing training programs to preschool teachers in Brunei on how to utilise ICT related teaching and learning resources and how to create digital storybooks efficiently. Other than that, the research findings also gave insight into the challenges of using digital storybooks during online learning for those who are in the early childhood field. Thus, this study revealed the needs of providing a conducive teaching and learning environment so it will help to provide a positive teaching and learning experience especially during remote learning.

## RECOMMENDATION

This research indicates that using the digital storybook during preschool children's online learning are favourable by the preschool children. Hence, there are some further recommendations for future research. Firstly, even though qualitative research allows small sample size to study people's behaviours, thoughts and experiences, future studies should employ larger sample size in order to strengthen the overall research results so it would be more accurate and reliable. Secondly, since this research focuses on examining the use of digital storybook during online learning, future studies should examine more on other areas in using digital storybook such as using the digital storybook in a physical classroom or focus on specific literacy area such as preschool children's vocabulary development, listening skills or reading skills. Thirdly, future researchers should also take into consideration for all the challenges mentioned in this research such as limited online learning devices, unsuitable learning environment and lack of teacher-children's interactions before conducting any research relating to this topic as it will help them to reduce the obstacles for future research. Fourthly, since the teacher-researcher creates the digital storybooks for the current research, teacher-researcher would recommend for those future researchers to examine and do extensive research by allowing the preschool children to create their own digital storybook in the future. Lastly, teacher-researcher would like to suggest that future researchers to cover any features, concerns, or information that teacher-researcher might have overlooked in her research due to time constraint. By doing so, it would result to a more thorough investigation on the use of digital storybook for preschool children.

## Author Contributions

Conceptualisation, methodology, formal analysis, investigation, writing—original draft preparation, NANHY; supervision, validation and final editing, ZZ. All authors have read and agreed to the published version of the manuscript.

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## Conflict of interests

The authors declare no conflict of interest.

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