

## **Exploring Early Childhood Pre-service Teachers' Challenges, Opportunities, and Prospects in Implementing Developmentally Appropriate Practices in Online Practicum**

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### **Abstract**

Teaching practicum in early childhood education (ECE) is usually carried out in physical classrooms, where pre-service teachers (PSTs) can plan, observe and carry out activities that promote children's active learning, and where meaningful, developmentally appropriate practices (DAP) take place. Unfortunately, due to the COVID-19 pandemic, PSTs are forced to carry out their teaching practice in virtual classrooms. This study explored early childhood (EC) PSTs' online practicum experiences and their implementation of DAP. In-depth semi-structured interviews were carried out with 8 PSTs. Thematic analysis was used to derive themes that answered research questions. The findings identified some major challenges faced by PSTs, which included difficulty with lesson planning, implementing fair assessments, managing online classes, limited teaching strategies, as well as limited student engagement and social interaction. The findings also showed that with extra effort and creativity, PSTs were able to implement DAP and manage their limitation. Findings confirmed that PSTs improved their digital skills, adapted well to online lessons, and were satisfied with their overall practicum experiences. Based on the findings, this study recommends higher institutions that train EC teachers incorporate courses that educate trainees on the effective implementation of DAP in virtual classrooms, and design coursework to assess PSTs' technological, pedagogical, content knowledge and skills. Besides, PSTs also need to collaborate with parents to assist with children's online learning.

*Keywords:* Online practicum, developmentally appropriate practices, early childhood education, digital skills, challenges

### **INTRODUCTION**

The COVID-19 pandemic has brought about substantial and abrupt changes to every facet of our life. The field of education especially has seen compulsory temporary closure of all educational organisations around the globe. Educators of all levels, from early childhood through tertiary institutions have experienced the forceful move from

face-to-face teaching and learning activities toward online teaching and learning modes. This move was a critical step in ensuring that the delivery of teaching and learning continues, without neglecting the welfare of students. Although teachers are growing accustomed to this unplanned shift in classroom practices, research has indicated that pre-service teachers (PSTs), on the other hand, face challenges in carrying out their professional training or practicum virtually (e.g., Bulawat, 2021; Farzaana & Azlina, 2021; Nurfaradilla et al., 2020). It is worth mentioning, however, that the impact of online teaching and learning on pre-service teachers' professional competencies may be predictable to some extent. This is mainly because the practice of distance learning and the challenges faced by teachers and students associated with it is not something new in educational organisations and has been reported in studies worldwide (e.g., Bulawat, 2021; Champa et al., 2020; Farzaana & Azlina, 2021).

The practicum component is considered an important element in teacher training programmes as it provides professional experiences to budding teachers and assists them in learning to apply significant concepts, integrating theories and practices about teaching and learning in the real classroom (Bulawat, 2021; Wikstrom et al., 2006 as cited in Sathappan & Gurusamy, 2020). In Malaysia, the duration of practicum can vary depending on the programme and nature of the curriculum outlined by the educational organisation concerned. However, according to the Education Programme Standards guideline (MQA, 2014), the delivery of practicum, internship, and other professional experiences can be appropriately sequenced at various points in the programme, ensuring the experiences gained prepare the scholars to be competent teachers. The implementation of online practicum can be especially challenging among early childhood PSTs. This is mainly because early childhood educators are expected to be a significant influential factor in reinforcing Developmentally Appropriate Practices (DAP) through repetitive engagement with young children (Hegde & Hewett, 2020).

The National Association for the Education of Young Children (NAEYC) defines DAP as *“methods that promote each child’s optimal development and learning through a strength-based, play-based approach to joyful, engaged learning”* (NAEYC, 2020, p. 5). Among other practices, teachers of young children play with, talk and sing to, do fingerplays, frequently read to children, and carry out other forms of practices to help children achieve their full potential across all domains of development. Similarly, early childhood PSTs' ability to model such practices is an essential factor for ensuring qualified and well-prepared early childhood educators (Alghamdi & Ernest, 2019). However, as stated earlier, since the spread of the pandemic, educational organisations have begun implementing practicum using the online platform as this could be the only means for pre-service teachers to fulfil course requirements and gain the much-needed teaching experience to graduate on time. This essentially also means that early childhood pre-service teachers who undergo practicum experiences are expected to model DAP regardless of the teaching and learning mode of delivery. The present study seeks to understand how PSTs implemented DAP during their online practicum and the challenges they faced (if any).

NAEYC has outlined six Professional Standards and Competencies for Early Childhood Educators (NAEYC, 2019) which we now presume are practices that are expected to be adapted by PSTs to suit online learning environments in early childhood centres. The standards cover the educators' ability to - use knowledge of child development and learning in context to create a caring community of learners (in this case,

in an online space); engage in reciprocal partnerships and connections with parents; observe, document, and assess children's development and learning in assessment practices; teach to enhance each child's development (in this case, online learning experiences); understand and use content areas to plan and implement an engaging (online learning experience designed to meet curriculum goals that are important and meaningful for children, and finally, demonstrate professionalism as an early childhood educator that pulls forward the knowledge, skills, and dispositions that early childhood educators need to make decisions that exemplify ethical, intentional, and reflective professional judgment and practice (NAEYC, 2020). These standards and competencies outlined by NAEYC were used as guidelines in this study when generating interview questions and probing into PSTs' implementation of DAP practices during their online practicum. Understanding PSTs' concerns and challenges during their practicum experiences is important because their experiences will become the basis to develop beginner teachers' understanding of teachers' online practices. PSTs in Malaysia had a sense of undergoing the practicum component of their training virtually during the COVID-19 pandemic. Despite the many studies carried out on PSTs' online practicum experiences, the information on challenges faced by early childhood PSTs in implementing DAP during online practicum in Malaysia is scarce. It is hoped that the findings and discussions from this research will be helpful for future planning and improvisation of early childhood teacher training programs.

## Literature Review

Practicum or professional experiences provide budding teachers with a feel of handling students in actual classroom situations, subsequently instilling professionalism and positive attitudes toward teaching practices among future teachers (Sathappan & Gurusamy, 2020). However, a new form of practicum experience began emerging as extensive restrictions and closing down of borders were being implemented worldwide (and nationwide) to curb the spread of the COVID-19 virus (Burns et al., 2020). This new norm provided the teacher education system with unique opportunities to understand the complexities involved in the shift from carrying out teaching practicum in traditional face-to-face teaching environments to virtual ones.

Bulawat (2021) employed a mixed-method study that investigated the challenges pre-service teachers faced in their practicum during the pandemic. Findings highlighted an amalgamation of teaching and personal-related challenges. Among others, it was reported that these teachers' actual teaching experiences were limited only to almost three hours out of the prescribed 18-week practice teaching duration, subsequently limiting their knowledge of the fundamentals such as lesson planning, students' discipline management and not having enough exposure to real teaching experiences. On the other hand, Escobar and Morrison (2020) who explored 27 Chilean pre-service teachers' online practicum experiences in an interpretative study reported that pre-service teachers believed that their unique virtual practicum experience will be able to contribute positively to overcoming future challenges in their teaching careers to a certain extent. However, similar to Bulawat's study (2021), the pre-service teachers did indicate that the lack of direct interaction with learners and the sudden change of setting were among those that most strongly affected their learning process. Similarly, this study seeks to gain an

in-depth understanding of how the limited direct interaction with young children during online practicum had impacted early childhood PSTs' ability to carry out DAP successfully.

Several studies suggested that the knowledge and use of technology posed a potential challenge in virtual classrooms. Almeida and Monteiro (2021) explored the challenges faced by Portuguese higher education institutions concerning online teaching and learning. These researchers stated that at the beginning of the process, one of the challenges that were felt was not all teachers were at the same level of preparation for distance learning. They believed that this was mainly because the shift to online learning was not planned or intentional; hence there was no time for plan and training on the subject and teachers who were not keen on the use of technology in this regard felt lost. Kotowicz (2020), on the other hand, stated that the lack of technical resources to access online classes is a substantial challenge faced by students (Kotowicz, 2020; as cited in Almeida & Monteiro, 2021). Although this situation was mentioned to be less visible in higher education compared to basic education in which about 20% of basic education students do not have the needed equipment at home; it is worth noting that such situations can pose challenges to PSTs because their students who lack technical resources will not be able to attend virtual lessons. Similar to the challenges mentioned above, Norhaili and colleagues (2021) found that limited internet access and the limitations to obtaining and using electronic gadgets by students in Malaysia made the process of online teaching and learning experiences with their students challenging for trainee teachers. Their study revealed that trainee teachers voiced many concerns and challenges when managing students learning during the pandemic. These included students' low attendance rate and engagement during online sessions which may also be due to the lack of technical resources to access virtual lessons. However, it is not clear if early childhood PSTs in Malaysia shared similar concerns and challenges during their virtual practicum experiences.

A recent study concluded that partnership with parents is an essential factor for young learners to experience meaningful virtual learning. Saxena (2021) investigated ECE teachers' perspectives of the significant challenges impeding distance-learning systems in Hong Kong during the COVID-19 pandemic. The researcher strongly suggested that teachers and parents needed to work together when involving young learners in online classrooms as parents will be able to provide the much-needed adult support for children's learning at home. Saxena (2021) reiterated that parents or caregivers are the most appropriate partners to assist young learners who have difficulty participating in online lessons. This is mainly because parents and caregivers have the means to provide children with opportunities to do integrated activities that enhance their communication, collaboration, problem-solving and critical thinking skills as teachers would do in physical, face-to-face classrooms. Nevertheless, it is equally important to educate parents and caregivers about what is suitable for young learners during online lessons. Besides parents must also understand the important roles that they play in encouraging children to learn through process and participation. Given that parental partnerships are considered an important professional standard for early childhood educators and in ensuring the successful implementation of DAP (NAEYC, 2020), the researchers in this study decided to find out through interview sessions how early childhood PSTs were coping in this sense during their online practicum.

Chan (2020) emphasised how researchers have pointed out the importance of school-based mentoring conversations for teacher learning, whether dyadic (pre-service teacher and either mentor or tutor) or triadic (pre-service teacher with both tutor and mentor). Similarly, a systematic review of research on teaching practicum conducted by Lawson and colleagues (2021) revealed that among other issues that emerged during PSTs' practicum experiences are those relevant to mentors, including mentors' role, perceptions of good mentoring, effective quality feedback from mentors and effective cooperation of mentors with pre-service teachers.

Evidence suggests that early childhood PSTs' curriculum should equip student teachers with the needed instructional strategies that enable them to cope with online teaching and learning. A descriptive study by Kim (2020) suggested redesigning early childhood teacher education courses to provide pre-service teachers with opportunities and skills for online teaching during college study, including interacting with children through online medium and also having students reflect on how best to promote development and learning using online communication tools. In a similar vein, Hojeij and colleagues (2021) also emphasised the importance of reflective practices as a fundamental part of teacher education for preparing critical thinking skills among early childhood pre-service teachers. Their findings indicated that reflective practices benefited early childhood teacher-trainees greatly as an important exercise to develop professionally and ethically in their careers and aided the children to develop a good understanding of the subject(s) taught. Kim (2020) reiterated that such experiences during PST's course of study enabled early childhood PSTs to plan and consider future limitations that they may face, prepare for efficient online teaching and learning practices with young children, as well as better meet online practicum demands.

The DAP framework (NAEYC, 2020) outlined the roles that early childhood educators play in guiding young learners to discover new ideas, solve problems and engage in meaningful activities that are essential for children to develop into thoughtful, confident, and independent adult learners. This means that early childhood educators will have to connect with their young learners, form relationships with them, and create opportunities for children to explore their curiosity in seeking knowledge that makes sense to them. Whilst the literature has reported the many unique challenges associated with early childhood teaching and learning in the virtual environment (Timmons et al., 2021; Yamamura & Tsustsui, 2021; Kim 2020), the challenges or extent to which early childhood educators can meet the demands of DAP in online teaching, however, is limited.

Apart from the availability of a wide range of open and free educational technology applications that has surged educators to utilise digital resources for teaching, the pandemic crisis has created a paradigm shift in teaching practices, i.e., from physical to virtual classroom modes. UNESCO (2020) recommended that continuing education via remote and online teaching during the pandemic is crucial. Furthermore, NAEYC and the Fred Roger Centre for early learning (2012) in their joint position statement recommended the use of technology and interactive media in providing optimum learning opportunities for young children's social, emotional, physical, social, and linguistic development. Whilst technology and interactive media for educational experiences are booming, there are concerns about negative outcomes, children's screentime (Appel & O'Gara, 2001; Cordes & Miller, 2000), technology usage, and the need and benefits of online or blended teaching practices for early learners in the post-pandemic phase. Nevertheless, in recent times, many preschools have opted for hybrid teaching

and recorded sessions to support those children absent from classes. Evidence in support of effective online teaching for early learners is still in the infancy stage. Whilst early childhood educators echo the importance of developmentally appropriate teaching and learning practices in a caring and interactive learning environment with tangible materials that are essential for the holistic development of children, the penetration of educational technology applications in early childhood education is undeniable. Moreover, the recent online teaching practices during the pandemic have resulted in a sudden surge in the number of virtual early childhood centres. Therefore, the applicability of DAP in online teaching cannot be ruled out.

Whilst early childhood PSTs are generally trained to apply DAP principles in physical classroom instructions, it is presumed that these PSTs were able to deploy DAP for online teaching by taking into careful consideration the relevant practices. Koşar (2021) highlighted that PSTs have to quit online practicum as they were not prepared to undertake online practicum. In this context, transferable skills play a vital role in adapting to the changes of practicum setting. There is abundant evidence to support how individuals deploy transferrable skills to adapt to new settings (McLuckie & Topping, 2004). Based on this premise, this research is anchored on the notion that PSTs could extrapolate and transfer the set of skills, knowledge, and values that they have acquired during the programme of study to online practicum settings. In this context, it is important to understand how early childhood PSTs employed DAP during their online practicum and the challenges that they encountered in fostering DAP in online teaching environments.

This research is guided by the principles of activity-based learning in early childhood teaching practices and the professional standards and competencies of early childhood educators as recommended by the DAP standards (NAEYC, 2019; 2020). Activity-based learning theory supports the constructivist approach to the learning process, which promotes the learners' construction of new knowledge. Essentially, learners construct new knowledge based on their prior experience and active engagement with the subject, teacher, peers and learning environment (Hein, 1991).

The current study aims to address the following two research questions:

1. What were the challenges experienced by PSTs in implementing DAP during online practicum?
2. How did PSTs implement developmentally appropriate practices during online practicum?

## **Methodology**

### **Sample, sampling technique, and instrument**

This study adopted a phenomenological approach to study the challenges experienced by PSTs in implementing DAP during online practicum. A qualitative approach using in-depth semi-structured interviews was employed in this study. Semi-structured interviews were selected because it is ideal for exploring complex behaviours, opinions, and emotions (Longhurst, 2009) as well as gathering detailed accounts of

'personal experience' in qualitative research (McArdle et al., 2012). Although the researcher/interviewers prepare a list of predetermined questions, the interviews normally emerge in a conversational manner. This allows for an in-depth exploration of the interviewees' comments in order to gain a better understanding of the topic (Scanlan, 2020).

Due to the closure of preschools during the pandemic period in 2021, Bachelor of Early Childhood Education undergraduates at our university in Malaysia were forced to undergo their practicum virtually in order to graduate on time. The current study was carried out to gain an in-depth understanding of the challenges faced by our PSTs during online practicum and to better understand how virtual practicum can be implemented successfully. Interviews were carried out with 8 PSTs undergoing practicum in their final year of studies. They were recruited through purposive sampling techniques based on a set of selection criteria determined by the researchers. The PSTs selected were all in their final year of study, undergoing a fully online practicum for 8 weeks, and had no working experience in the field. The PSTs involved in this study were all females, aged between 22 to 24 years old.

During the practicum period, which was from May to June 2021, these PSTs were assigned as the main teacher, teaching children between 2 to 6 years old. Practicum placements were located in various early childhood centres in Kuala Lumpur and the state of Selangor. The research instrument was an interview protocol that outlined the interview procedure and a set of open-ended interview questions prepared by the researchers. The interview protocol was then refined by researchers before it was sent to a panel of experts for validation. Two senior Early Childhood Education lecturers and one English language lecturer were involved in the process. Based on their feedback, the necessary changes were made in the interview protocol.

### **Data collection procedure**

Prior to the interview, consent forms were sent to PSTs to seek their approval to participate in audio-recorded interview sessions. It is important to record PSTs' actual words as much as possible during interview sessions to ensure that everything said is well-preserved for analysis (Merriam, 1998; Patton, 2002). The online semi-structured in-depth interviews were conducted via Microsoft teams between 18 and 30 August 2021. Probing questions during the interview sessions were used to further clarify PSTs' interpretations, feelings, and opinions about their online practicum experiences. Field notes were taken to record important points from the interviewees' responses. The interviews were conducted in English since all PSTs were well versed in that language. All the interviews were then transcribed to facilitate data analysis.

### **Data analysis**

After the transcription process was completed, the transcripts were sent back to PSTs for member checking. Each of them was asked to check for the accuracy of information and responses. Whenever necessary, further clarifications and/or changes were made to the transcripts. Thematic analysis was then carried out following the

finalisation of interview transcripts. The researchers adapted the six stages of the thematic analysis process as proposed by Braun and Clarke (2019). In the first stage, researchers engaged with and tried to generate meaning from the data informally. Each researcher read through all of the transcripts individually to familiarise themselves with the content and look for ideas and concepts that would help answer the research questions. In the second stage, using an excel form, researchers generated the initial coding that was important to answer the research questions. Then, all of the codes and coded data were compiled. In the next stage, the codes and coded data were organised into themes, followed by the reviewing and refining of the proposed themes. When there was a disagreement about the themes, researchers reverted to checking the codes and relevant data. In reviewing the themes, the researchers made sure that data was not misinterpreted subsequently ensuring that there was a coherent way of addressing the research questions.

## Results

The current study aimed to explore the challenges that early childhood PSTs encountered during their online practicum experiences and how they implemented developmentally appropriate teaching practices. The results are presented based on the research questions and the themes that emerged.

### Challenges faced in implementing DAP

The five themes related to DAP derived from thematic analysis were: 1) difficulty in lesson planning, 2) limited teaching strategies, 3) difficulty in implementing assessment, 4) lack of student engagement, and 5) challenges in managing online classes.

#### Difficulty with lesson planning

Two issues related to lesson planning identified were the limited use of tangible materials and the ability to only focus on limited domains of development when planning a lesson.

*“I didn't really use hands-on materials during my practicum because this required huge efforts from parents to prepare the materials. I personally found it very hard to show them the physical materials, because of the resolution. Another challenge was it was very hard to prompt them to cut out or paste something. They required adult assistance and sometimes the parents were not very patient” (R3).*

*“I did not have enough teaching materials during the online classes. I needed to use sensorial materials, but I didn't think every child had them at home, so I just focused on my PowerPoint slides” (R7).*

As revealed by more than half of PSTs, not only was the use of tangible materials sorely lacking, but PSTs were also not keen to use these materials during their lesson because they assumed that the needed tangible materials were not available at home and

that parents may find it burdensome to prepare them. Another reason was that children could not view the physical materials clearly through the screen due to the low resolution of the laptop camera (R3). Besides, it was difficult for children to use tangible materials during class activities without proper adult assistance (R7). In the end, PSTs resorted to using online-friendly teaching materials such as PowerPoint slides. PSTs also disclosed that they only focused on limited domains of development when planning their lessons. For example, R2 mentioned focusing more on cognitive and language domains as it was difficult for her to carry out activities to enhance children's physical, social and emotional skills via online teaching.

### **Limited teaching strategies**

The findings showed that PSTs used limited teaching strategies in their online lessons. All of them revealed that children lacked hands-on activities during online classes. R6 mentioned that carrying out experiments was a challenging task because it was difficult to get students to prepare the materials needed. Furthermore, the steps shown digitally on the screen were not clear to young learners.

*“Yeah, we didn't have any experiments because it is really hard to demonstrate it in my online class. Not all the experiments can be found on YouTube videos too” (R6).*

Although all the PSTs claimed that they implemented a play-based approach using interactive PPT slides, one of them (R2) highlighted that there was a need to use different methods instead of using PowerPoint slides most of the time.

Most of the PSTs admitted that instructional scaffolding was another way they thought would help guide their children's learning during online lessons, but complained about facing technical problems in this sense. They could not see the children's work on the screen clearly and therefore, it was difficult to identify which child was having an issue understanding the teacher's instruction or needed help.

*“During class activities, I can't tell which student is having an issue with the task or difficulty understanding my instructions, or which student is doing well. It is difficult to see their work from a screen so it becomes very challenging for me to guide them during my lessons” (R6).*

### **3. Difficulty in implementing fair assessment**

Almost all PSTs disclosed that the main challenge they faced was the difficulty to assess children's work online due to parents' interference during the process.

*“Parents did the work for their children. Sometimes children asked their “Kakak” to help do their work” (R1).*

*“Sometimes the parents were telling children the answers before their children had time to think, or the siblings would be there telling them the answers” (R6).*

This situation resulted in the inaccuracy of measuring children's learning outcomes and limited feedback or guidance given to children after assessments. Although PSTs felt that there was an urgent need to communicate with parents about this issue, they seemed uncomfortable addressing their concerns directly to parents. When asked how they overcame the problem, R4 said that she hinted at the matter instead of communicating the problem with the parents directly. Similar to the problem faced during instructional scaffolding, PSTs mentioned that they could not see their students' work on the screen clearly due to low camera resolution or the camera angle was not positioned to capture students' work properly. This was also considered a main technical barrier when conducting online assessments.

### **Lack of student engagement and social interaction**

Half of the PSTs claimed that the lack of student engagement was caused by the unavailability of teaching materials. Additionally, family factors also contributed to this problem as children easily got distracted by family members during the online class. Furthermore, the situation in an online classroom is more challenging because without the teacher's physical presence, it is more difficult to control, motivate and interact with the children.

*“Some of them did not have their materials so they just waited and observed”. These children then became bored and would start losing attention” (R1).*

*“During the online class, the children were unable to listen carefully to what I was saying because they would very easily get distracted by their family members. Maybe their siblings were walking around or talking to them” (R9).*

### **Difficulty in managing online classes**

PSTs also reported difficulty in maintaining children's attention. Some reasons identified were the children's activity preference, behaviour or children being uninterested in the lesson, home environment, the lack of materials and teacher's voice clarity due to technical issues. These can be seen from the responses below.

*“It is hard to maintain children's attention sometimes. Children displayed behaviours such as walking around, lying on the floor, and bringing their toys to play in my virtual classroom” (R7).*

*“Sometimes children find it difficult to hear what I am saying, forcing me to continuously repeat and emphasise my words and sentences” (R4).*

### **Implementing DAP during online practicum**

Despite the challenges faced by PSTs in implementing developmentally appropriate teaching practices, the results showed that PSTs were able to manage their limitations and implement DAP to a certain extent during their online practicum experiences.

### **Planning developmentally appropriate lesson plans**

Most of the early childhood PSTs mentioned that they were able to implement developmentally appropriate lesson plans to a certain extent. For example, ensuring that they planned lessons that focused on a child-centred approach, and that the lessons continuously engaged children during the teaching and learning process. One of the participants (R2) mentioned using the special edition of the National Preschool Standard Curriculum (*Dokumen Penjajaran Kurikulum Prasekolah, Edisi 2, 2020*) published by the Malaysian Curriculum Development Division as a guideline for online teaching and learning in preschool settings. R2 revealed that this document was helpful for planning her interactive online lessons. R9 said she had to be flexible and always be prepared to make changes in her lesson in case an unexpected situation occurred. Despite the difficulty to use tangible materials during online lessons, the participants claimed making extra efforts, being extremely creative, and trying their best to use tangible teaching materials when possible, such as during story-telling, and art and craft activities.

*“I used the Dokumen Penjajaran Kurikulum Prasekolah to help me plan interactive online lessons” (R2). It was very helpful.*

*“Sometimes there can be unexpected situations interrupting my online lesson, So, I was always prepared to make changes during the class to make sure that my students stayed focused and interested in my lesson” (R9).*

### **Online teaching skills and strategies and communication skills**

Despite pedagogical constraints and limited choice of teaching strategies to be employed in online classes, the findings revealed that all PSTs tried their best to use play-based and interactive forms of teaching approaches which they found to be fairly applicable during online lessons. They created online games using interactive PowerPoint slides to improve students’ engagement and learning experiences. Other than that, the PSTs also used demonstrations and questioning techniques, deliberately leading children to participate in class discussions when possible similar to physical classroom settings. A few responses are shown below.

*“I asked more questions during the class to ensure children are always attentive. Sometimes I used games or riddles” (R1).*

*“Whenever possible, I will demonstrate my lesson content to the children using prerecorded” (R9).*

### **The use of informal assessment methods**

Almost all PSTs reported the use of informal assessments in their virtual classrooms. For example, they recapped or concluded their lessons using quizzes, games, and worksheets.

*“I assessed their understanding of my lesson, using different methods, by playing games like Shake and Fall, ...sometimes I used quizzes” (R4).*

It is also worth mentioning that one of the PSTs took the initiative to involve parents in online classroom assessments, by providing child-parent activities and asking the parent to observe and record their child's learning at home. Below is her response:

*“I used some child-parent activity like drawing, craft, a collage that involved the joint participation of the parent and child” (R7).*

### **Building supportive relationships, interaction, and student engagement**

PSTs admitted that it can be very tiring and challenging to keep students attentive and engaged during online lessons. However, more than half of the participants revealed that they used various student engagement strategies to ensure their lessons were interactive and captivating. Below are some of their responses:

*“I would be talking to them about how they spent their days, how they felt that day; what their favourite part of the lesson was, what they want to learn next time and other conversations to ensure they feel comfortable talking during my lessons (R1).*

*“It was getting very interesting because I always shared my screen control with them and they would wait for their turn” (R3).*

PSTs highlighted that the conversations that they had with their student helped them to build close relationships with their students subsequently increasing student engagement in their online lessons. PSTs admitted that it was therefore essential for them to have “small talks”, provide fun warm-up activities, have sharing time; share screen control so children can use the features available on the online learning platform and be engaged throughout the class activities.

### **Online class behaviour management**

Although the data showed that PSTs faced difficulty in managing children's behaviour in online classes, the data also revealed the efforts used by PSTs to guide children's behaviour during lessons. Almost all PSTs used positive reinforcement techniques to do this. For example, giving verbal praises or using the features that are available on the online learning platform, such as a reward system using online charts and virtual stickers.

To deal with very active children, some of the PSTs played a song and encouraged children to dance along or carried out sharing time sessions before starting the class. The PSTs reported talking to a child about his or her behaviour when the child is displaying disruptive behaviour in class. One of the PSTs revealed that she had to inform parents about the child's behaviour and requested that the parents assist with managing their child's behaviour during online classes.

*“The first thing I did was I called their names and maybe I asked them one by one, why they were running around. I had also spoken to some of the parents and*

*asked them to assist me sometimes, like sitting beside their child for a while...” (R7).*

*“I used the reward system with online charts and virtual stickers. These are also very helpful” (R2).*

### **Digital skills**

Interestingly, only one PST mentioned that she struggled with technology integration in her lesson. The other PSTs claimed that the online practicum had further enhanced their digital skills. They admitted that they had to push themselves to learn how to create attractive and interactive PowerPoint slides and fun online games as well as learn how to maximise the use of the features available on online learning platforms to enhance student engagement. Some of their responses can be seen below:

*“I learnt how to create interactive games using PowerPoint and how to use the animations. I don’t think I would have pushed myself to learn how to do these if not for my online lessons” (R5).*

*“I would say that it (online practicum) was actually very helpful to improve my digital skills” (R2).*

The findings above were also consistent with PSTs’ rating of their digital competency at the end of their online practicum, in which 7 of them rated their digital competency as 4 out of 5, and 1 PST rated it as 3 out of 5.

### **Creativity and Adaptability**

Due to the limited teaching resources for online lessons, PSTs have to think creatively when preparing their lessons. As seen from their statements below, PSTs admitted making painstaking efforts to increase their creativity, ensuring their lessons were enjoyable and meaningful for the children.

*“We have to be creative in designing the PowerPoint slides and include games and other enjoyable features. I enjoy preparing the pre-recorded videos even though creating them can be very time-consuming” (R7).*

*“I have to think creatively about how I can achieve the learning goals with limited resources” (R3).*

Despite the challenges, PSTs voiced satisfaction when asked about their overall practicum experiences. They were happy to have had the opportunity to learn how to teach in an online learning environment and to have come to realise the progress they had made at the end of their online practicum. Some of the responses are as follows:

*“I think I adapted well to online teaching”. Come to think of it, I am glad had this opportunity to see how I progressed in online teaching... sometimes I feel that*

*those of us who had to undergo online practicum, maybe the lucky ones ... ha ha ha” (R2).*

*“Come to think of it, online teaching is not a very difficult task after all, but you really have to take it positively, and then you will go on with the flow easily”. You must be willing to make the effort to be creative and go out of your way a little to learn how to teach effectively in an online learning environment” (R4, R5).*

In conclusion, the findings showed that most of the PSTs seemed to view online teaching and learning positively despite the challenges they faced. They claimed that they have adapted well to online teaching practices and that the online practicum has facilitated PSTs’ development of professional skills, especially their digital skills, their ability to work around practising DAP in virtual classrooms, increased adaptability and creativity skills.

## **Discussion**

The directions for the current study emerge from the changing scenario of teaching practices during the pandemic crisis and the unanticipated online internship placements for early childhood teacher trainees. Whilst Developmentally Appropriate Practices (DAP) are recognised as the fundamental standards for holistic learning experiences for children, there are no explicit DAP standards for fostering such experiences in online teaching. Further, PSTs were not trained or had any exposure to online teaching during their period of study. However, PSTs were advised to implement DAP in their online teaching practices. Therefore, this study adopted a phenomenological approach to explore the challenges experienced by PSTs in implementing DAP during online practicum and how they overcome those challenges. This study is based on the premise that PSTs have employed transferable skills in adapting themselves to meet the unprecedented demands of online practicum.

The thematic analysis resulted in five main themes on the challenges faced by PSTs. They were difficulties with lesson planning, choosing appropriate activity-based teaching strategies, conducting a fair online assessment practice, creating and sustaining classroom interactions, and online classroom management. In addition to discussing these themes, the next section discusses the efforts taken by the PSTs in addressing these five areas of challenges. We remind the readers that we have adopted the position statement on DAP from the NAEYC (2020) to gauge the understanding of PSTs' online teaching practices in implementing DAP.

The findings of the current study indicated that PSTs encountered challenges in lesson planning and delivery because they had to take into consideration various aspects in online teaching settings. The current study findings are similar to other studies (e.g., Timmons et al., 2021; Yamamura & Tsustsui, 2021; Kim, 2020). The most pressing challenges experienced were limited or unavailability of tangible learning materials at home, technological issues such as low resolution of laptop and internet connectivity issues, lack of awareness of available open digital resources for lesson planning, and lack of parental support during activity time. Though PSTs exhibited a positive attitude towards developing their digital competency and utilising stimulating online resources

for online teaching, they experienced a lack of time in exploring the available open resources to prepare their online lessons which has further impeded the practice of developmentally appropriate teaching. Apart from this, the constraints involved in conducting hands-on activities in online learning environment hindered preparing lessons for active-based learning. Most of their lessons were designed to focus on specific skills and development, which were of limited scope compared to physical classes.

Moreover, PSTs experienced how online teaching has narrowed the scope of catering to the individual needs of children. Subsequently, this has heightened their awareness to find alternative ways to attend to the individual needs of children. Additionally, PSTs faced challenges in scaffolding children's learning in the online environment, especially when teaching topics that require guided practices and individual attention. Despite the challenges, PSTs were proactive to understand the constraints in online lessons and they have taken efforts to create a child-centred teaching approach using online resources and readily available resources at home. While it is convenient to deliver lessons using available resources in physical classrooms, most PSTs adopted exclusively technology-integrated play-based learning approaches such as interactive PowerPoint, quizzes, online games and other digital resources for optimising online engagement and motivation of children.

As discussed earlier, the findings of this study confirmed that PSTs adapted well to online teaching and they were satisfied with their overall online practicum experiences. It is worth mentioning that PSTs in this study have made considerable efforts to meet DAP requirements in online teaching. Despite the challenges, PSTs were able to skilfully weave in DAP to assist children in the online learning environment. Moreover, PSTs acknowledged that the online practicum experiences improved their digital competency and pedagogical skills significantly. Nevertheless, they consensually agreed that online teaching practices are a potential platform to develop their professional and digital competency.

Besides the challenges associated with lesson planning and teaching methods, practically all PSTs struggled with the lack of children's engagement and interaction in the online learning space. They faced several interferences in arousing and maintaining children's attention and engagement in online classes. Evident were issues such as lack of tangible resources for hands-on activities and active learning; disturbing home environments such as background noise; technical inadequacies of the laptop such as poor video and audio systems, and the unfamiliarity of the virtual environment. The current study findings are aligned with a few studies on online practicum that found PSTs experienced limited interactions with children owing to technological issues and realised the importance of real-time teaching (Babanoglu & Pinar, 2021; Escobar & Morrison, 2020).

Whilst a range of theories supports the importance of physical presence and interaction of teachers and learners for an effective learning process, the support for online learning engagement is still scarce. Moreover, the virtual platform has constraints in mirroring real-time classroom practices and the opportunities for children's holistic development in virtual classroom settings are limited. However, the virtual presence of the teacher and virtual interactions were the norm throughout the pandemic teaching. In this regard, PSTs have taken indispensable efforts to initiate and sustain classroom interactions and to reinforce DAP in online teaching. PSTs demonstrated active interactions with children through small talk to elicit their responses, warm-up activities,

sharing screen control, sharing time and online fun activities, songs, and music and movements. Primarily, PSTs employed behaviourist approaches such as positive reinforcement, verbal praises, and virtual stickers as rewards for managing the behaviour of young children. Additionally, PSTs required the active participation of parents as facilitators in supporting their children's engagement in online classes. Overall, all PSTs unanimously agreed that they need to improve their classroom management skills for online teaching. It is crucial to understand that online teaching demands a set of skills and pedagogical practices that are unique to online teaching, which may not be necessarily effective in physical mode teaching.

Apart from this, conducting an online assessment was another challenge faced by PSTs. Especially formative assessment and timely feedback play a vital role in a reinforced learning process. The outcomes of the current study revealed that PSTs utilised alternative assessment practices such as recall, interactive quizzes, and fun games to gauge children's comprehension of knowledge. Moreover, PSTs relied on parental support in the completion of worksheets and activities assigned to their children (Saxena, 2021). However, a few PSTs encountered parents' intrusion instead of support during the learning and assessment process of their children. Despite unforeseen challenges, PSTs were satisfied with their online practicum experiences, and they were able to demonstrate DAP.

In a similar vein, Osman (2020) contended that teacher trainees have improved their technological and instructional designing skills. While the findings of the current study contradict those of Badawi (2021), who found that e-practicum for EFL student teachers had significantly improved their self-efficacy while their overall performance was ineffective and non-satisfactory. Therefore, he suggested the need for strengthening the e-practicum placement. The current study concludes that online practicum has provided several opportunities to critically evaluate PSTs' digital content knowledge and skills, while it is evident that the early childhood teacher trainee curriculum needs to be revamped to prepare teacher trainees to become pedagogically and technologically competent 21st-century educators.

## **Recommendations**

The current study has put forth five recommendations for the careful application of DAP in online teaching. Firstly, to meet the emerging trend of blended learning in early childhood settings, it is recommended that PSTs acquire the knowledge, values and skills required for online teaching as part of their curriculum. Essentially, the course objectives and assignments should be aimed to prepare digitally competent PSTs. Secondly, it is important to incorporate micro-teaching sessions that are focused on the practice of online teaching and technological skills in order to improve their online teaching skills. This study recommends that higher education institutions rethink teacher training programmes in order to tap into teacher trainees' digital proficiency through responsive and responsible teaching methods. Thirdly, training PSTs in a virtual learning environment could be advantageous for managing and organising classroom activities. Fourthly, to achieve seamless integration of developmentally appropriate activities in online classes, it is equally important that PSTs are trained to create and use digital content for teaching and assessment. Additionally, PSTs need to be aware of the open and digital resources, online

teaching strategies, and online classroom management. Lastly, it is crucial to collaborate with parents in providing quality online education for their children by planning and implementing parental involvement activities that educate them in creating a conducive online learning environment.

## Conclusion

The COVID-19 pandemic has drastically disrupted school programmes around the world, and presented a myriad of challenges and opportunities to the Teacher Education Programmes and pre-service teachers, especially for those students seeking online practicum placements. The findings of this study showed that pre-service teachers have experienced challenges in implementing developmentally appropriate teaching practices in their online practicum that included difficulty in lesson planning, implementing a fair assessment and managing online classes, limited use of active-teaching strategies, lack of student engagement and social interaction. However, the findings also revealed that they were able to implement DAP to a certain extent in those aspects. They have improved their digital skills to a certain extent, adapted well to the online practicum, and they were satisfied with their overall teaching practicum experiences. With improved training from higher education institutions, collaboration with families, and support from early childhood centres, pre-service teachers will be able to achieve much more in the development of their professional competencies.

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