

DIGITAL PORTFOLIO IN EARLY CHILDHOOD EDUCATION DURING THE COVID-19 PANDEMIC: A NEED ANALYSIS

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Abstract

An effort to provide contextual teaching and learning practices that accommodate children's requirements for future success is critical. However, to capture their learning in the meaningful way is still limited, especially during the COVID-19 pandemic. This paper aims to explore the need of early childhood teachers to use digital portfolio as part of documenting and celebrating children's learning. This paper is a need analysis which is an initial stage of Research and Development using a descriptive quantitative method. The eleven teachers filled some questionnaire and did interview regarding how information technology can be used to navigate children's learning during the pandemic. The results showed that teachers need to discover a model to create a portfolio using information technology that can be easily deliver during online learning. An effective software will help them documenting and analyzing children's development through their works and activities. As a result, the teachers need to understand and improve their skills to use technology in creating online portfolios that parents and children can work collaboratively to the teachers. Another aspect that they have to understand is what indicator should be put on the portfolio-based assessment, such as what needs to be included in a portfolio and how to create an effective design in displaying children's works and activities.

Keywords: digital portfolio; Early Childhood Education; teacher competence; COVID-19

INTRODUCTION

The nature of children learning in early age is to be involved in various activities. In Early Childhood Education and Care (ECEC), teacher constructs different types of activities to stimulate children development. These activities are captured to both assess children's development and as part of reflection to plan further activities that are suitable for them (Maureen, van der Meij, & de Jong, 2020).

Generally, the learning process in ECEC is done through face to face interaction in the classroom. Children's learning processes need guidance from adults (parents and teachers) and interaction with their peers (Alvestad & Sheridan, 2015; Schulz, 2015). To provide this, teachers have complex roles to plan, do and evaluate their teaching practices in order to stimulate five (5) aspects of development. These aspects consist of religious and moral values, language, cognitive, social emotional, and physical motor (Maryani, 2020).

One important stage is to assess children's development and communicate with their parents. Assessment is the process of observing, recording, and documenting what children do, and how they do it as the basis for various educational decisions that affect children (Harun, Hanif, & Choo, 2021). Through the assessment process, teachers can interpret various data taken from children's activities through a holistic approach that emphasizes the continuity

of their growth (Wulandari & Purwanta, 2020). Based on these observations, teachers can design learning programs according to the interests, strengths, and needs of children. Learning programs that are planned and structured according to the child's developmental profile will stimulate the potential of children to become competent children. The assessment is conducted not only looking at the final result of what the child has done but also looking at the process of how the child engages with their activities related to developmental aspects.

However, at the end of December 2019, the world was shocked by the COVID-19 outbreak that is still spreading today. The COVID-19 pandemic has changed human life, one of which has experienced significant changes in the education system. Officially, the government of the Republic of Indonesia issued Circular Letter through the Minister of Education and Culture of the Republic of Indonesia. The letter is No. 4 of 2020, stating the implementation of education policies in the time of emergency because of the massive spread of Corona Virus Disease (COVID-19) which stipulates that since March 24, 2020, the learning process has officially been conducted at all levels of education (Jajat Sudrajat, Agustin, Kurniati, & Karsa, 2021), including early childhood education that has to be done from home through an online learning system to prevent the increase in the spread of COVID-19.

The COVID-19 pandemic has forced teachers, parents and especially children to make significant changes in

learning, one of which is in reporting children's learning outcomes. The strategy that can be done is to involve parents and technology in planning, learning and reporting various aspects of development. The role of parents is very crucial to bridge the online learning that takes place at home with the teacher. While technology is the media and tools used to realize online learning, which can be accessed anywhere and anytime, for example the Zoom meeting application, WhatsApp, Google Meet, Google Classroom and other online applications (Hardiyanti, Ilham, & Ekadayanti, 2020).

To support the process of reporting children development aspects during the COVID-19 pandemic, it can be done by applying pedagogical documentation. A holistic assessment process can be implemented by adopting a documentation pedagogy which is defined as an effort to create an open and visible learning process in ECEC, to promote children's participation in learning. In addition, Dahlberg, Moss, and Pence, (2007) articulate pedagogical documentation as a process that involves teachers to reflect on their practice in a holistic and democratic manner. At the same time, documentary pedagogy notes the relevant context and content of children's words, works and dialogues, as elements that build their knowledge (Buldu, 2010).

Documentation pedagogy improves the quality of teaching and learning in ECEC (Thornton & Brunton, 2015). Records of ongoing child activity create opportunities for teachers to reflect, share, and discuss issues with colleagues and parents, so they can interpret and build on evidence-based practice. By collecting evidence and data on children's learning, both children and teachers can review and construct their own meaning-making processes, explore their curiosity, questions and doubts, and reflect on their daily activities (Fleet, Patterson, & Robertson, 2020). Simultaneously, it also emphasizes the requirement that a teacher be reflective and responsive to the planning of children's activities. Teachers' competence to translate evidence of children's learning enriches their practice and increases their accountability and professionalism (Löfgren, 2017).

Creating visible learning by connecting children's schools and homes is a common use of documentation pedagogy. Turner and Wilson (2010) note that documentation offers more opportunities to enhance teacher-family partnerships, potentially creating meaningful moments in a child's learning journey. At the same time encouraging new perspectives on children in relation to the introduction of the identity, uniqueness and capabilities of children. These new insights were significantly influenced by teachers' efforts to create visibility in teaching and learning (Mardell, Rivard, & Krechevsky, 2012). Creating visible learning is essential for fully recognizing children's interests and ideas. This leads to fun learning, so children become interested in learning when their voices are heard, respected and supported. Children's perspectives should be the starting point for planning activities, giving them

the opportunity to choose or plan the type of learning they wish to participate in. Open discussion between teacher and children results in each group learning more about the other group, and leads to more effective collaborative planning and learning.

One example of the application of documentation pedagogy is to create a portfolio. Portfolios are often used to collect photos, anecdotes, diaries, children's works, including stories that can be shared to encourage dialogue about learning. Arndt and Arndt and Tesar's (2015) research emphasize that the stories in the portfolio can construct children's learning in a positive way, through the inclusion of children's ideas, opinions and experiences. Photos and copies of children's work are narratives written from the point of view of the teacher, child or family to maintain the originality of the story. These narratives connect children with their families and schools by sharing their culture and stories in a sustainable way over the long term. This portfolio can be the right solution because it provides opportunities for teachers, parents and children to create meaningful stories so that they become ideas for further learning. However, the portfolios that have been used so far are only paper-based or only written conventionally (Hooker, 2017; Sudihartinih & Rachmatin, 2020). This makes it difficult for teachers, people and children to connect with each other, so changes need to be made in the form of digital portfolios.

Therefore, supporting the visible aspects of child development and learning as well as assist in reporting learning activities during the COVID-19 pandemic can be using digital portfolio. Photos and copies of children's work are narratives written from the point of view of the teacher, child or family to maintain the originality of the story. These narratives connect children with their families and schools by sharing their culture and stories in a sustainable way over the long term. This digital portfolio can be the right solution because it provides opportunities for teachers, parents and children to create meaningful stories so that they become ideas for further learning (Harun et al., 2021). As a result, the current research as part of research and development is unpacking these processes through proposing digital portfolios as a means of improving the practices of assessing children development aspects in ECEC during the COVID-19 pandemic.

METHOD

To best describe the need of digital portfolio in ECEC education, this study used a Research and Development (R&D) approach. It examines the understanding of ECEC teachers about technology and especially digital portfolio and how they are going to implement digital portfolio in children's learning. The stages and procedures in conducting this research used Dick, Carey & Carey's (1990) Instructional Development Model. The steps will be implemented in ADDIE activities (Analysis, Design, Development, Implementation, and Evaluation). This

research is the initial stage of the five steps above, that focuses on a need analysis.

Participants

The subjects in this study were preschool teachers at PAUD Damhil Gorontalo. The research data was obtained by using questionnaires and structured interviews with the eleven teachers to examine their needs in documenting children's learning using digital portfolio during the COVID-19 pandemic. The results of the research are reported in the form of descriptive statistics, namely by displaying statistical data and explanations of the data.

Data Collecting Technique

In this initial analysis, data were taken from teachers who filled a questionnaire online that consists of 15 point. Besides that, researchers also conducted an interview which was addressed to some of the teachers who were willing to be interviewed. Furthermore, the data was collected through a survey and interview involving spoken and written data collection. The survey aimed to investigate the knowledge, beliefs, and skills using digital literacies to document children's learning. While interview was used to deepen the analysis of the study.

Data Analysis Technique

All information is taken and collected from the online questionnaire. All data were reduced and displayed in line with the aim of this initial research. The result has shown in the simple display of statistical data. Additionally, to get a deep knowledge of the result, the result of interview is shown in the theme of this research to grasp clear understanding of the issue.

In short, the data was analyzed by:

1. Sending all questionnaire to the teacher through google form
2. Taking all the result of questionnaire from the participants
3. Identifying, classifying and grouping the result of the questionnaire
4. Interviewing preschool teachers who are willing to get more understanding of the result.
5. Reducing the data and displaying the data that is relevant to the research.

RESULTS

In order to understand the need of digital portfolio to be implemented in this school, the researchers provide a questionnaire consist of 15 closed-ended questions and follow up with individual interview to some teachers to clearly articulate their thoughts and further discuss the role of digital portfolio in their classroom. From the questionnaire, information on the socio-demographic character of preschool teachers was obtained which can be seen in table 1.

Table 1. Socio-demographic character of preschool teachers

Characters	
Age	
≤30 year	8.3%
31-40 year	25%
41-50 year	58.3%
≥51 year	8.4%
Sex	
Female	100%
Male	-
Teaching duration	
≤5 year	50%
6-10 year	-
≥11 year	50%

From the table 1, it is depicted the socio-demographic of the teachers who work at this preschool. This shows that the age of teachers is dominantly around 41 to 50-year-old, while their teaching duration is around less than 5 years and more than 11 years. All teachers who participate are women.

- a. teachers' competency in technology and communication with family during the COVID-19

The eleven preschool teachers filled the questionnaire regarding how their ability to utilize the digital devices and apps in order to deliver learning during the COVID-19 pandemic. At the same time, how they navigate the devices to communicate with families about their children learning and development as shown in the table 2.

Table 2. The use of technology in children's learning during the COVID-19 pandemic

Role of technology in documenting children learning is really important.	
Strongly agree	72.7%
Agree	27.3%
Disagree	-
Strongly disagree	-
The ability to use technology appropriately in learning has increased teacher's professionalism.	
Strongly agree	81.8%
Agree	18.2%
Disagree	-
Strongly disagree	-
Teacher utilizes technology to regularly communicate children's learning and assessment with families.	
Strongly agree	63.6%
Agree	36.4%
Disagree	-
Strongly disagree	-

Table 2 informs several points regarding the importance of technology in helping and navigating children's learning in the COVID-19 pandemic era. First, teachers find that technology is helpful to document children's learning

through pictures and video with the score 72.7% strongly agree and 27.3% agree. Second, teachers feel that the knowledge and skills to use technology in learning is a part of their professionalism with majority saying strongly agree (81.8%) and agree (18.2%). Third, through technology, about 63.6% of teachers strongly agree that they can actively communicate to the families about children's learning and assessment while 36.4% agree.

b. teachers' ability on providing authentic assessment and documenting children's learning

Providing authentic assessment through documenting children's learning is part of creating meaningful learning. Therefore, table 3 shows teachers' understanding about documentation and assessment.

Table 3. Teacher's ability to document and assess children's learning

Teacher can assess children's development through documenting their art works.	
Strongly agree	63.6%
Agree	36.4%
Disagree	-
Strongly disagree	-
Teacher can choose the suitable methods to document children's learning in an authentic way.	
Strongly agree	54.5%
Agree	45.5%
Disagree	-
Strongly disagree	-
Teacher can develop flexible indicators that fit with the situation to assess children's development	
Strongly agree	36.4%
Agree	45.5%
Disagree	18.2%
Strongly disagree	-

In the table 3, it is shown that teachers are able to document children's learning through various method such as art works, which is 63.6% (strongly agree) and 36.4% (agree) respectively. Next, 54.5% of teachers strongly agree and 45.5% agree that they can provide suitable methods to document children's learning in authentic way. Meanwhile, only 36.4% strongly agree that they can develop flexible indicators that fits with the situation to assess children's development, 45.5% agree and 18.2% disagree.

c. teachers' understanding on digital portfolio using apps

In order to create digital portfolio, teachers are asked about their understanding and experiencing using digital portfolio. At the same time, it also examines their engagement with different type of digital application to create portfolio.

Teacher know how to implement portfolio assessment in ECEC.	
Strongly agree	63.6%
Agree	36.4%

Disagree	-
Strongly disagree	-
Teacher know about digital portfolio assessment in ECEC	
Strongly agree	9.1%
Agree	81.8%
Disagree	9.1%
Strongly disagree	-
Portfolio is usually used to collect children's pictures, art works, where teachers can write notes and stories that stimulate conversation about the learning.	
Strongly agree	36.4%
Agree	63.6%
Disagree	-
Strongly disagree	-
Teacher know some digital applications for digital portfolio.	
Strongly agree	-
Agree	9.1%
Disagree	45.5%
Strongly disagree	45.5%
Teacher want to learn some digital applications for digital portfolio.	
Strongly agree	81.8%
Agree	9.1%
Disagree	9.1%
Strongly disagree	-

Teachers have answered that 63% of them strongly agree that they know how to implement portfolio as an assessment method in ECEC and 36.4% agree. However, the number of teachers who are strongly agree for knowing digital portfolio assessment in ECEC has dropped to 9.1%, agree 81.8% and disagree about 9.1%. In terms of understanding that portfolio is used to collect children's pictures, works and a collection of stories and notes, it is about 36.4% stating strongly agree and 63.6% agree. Then about 45.5% teachers state that they strongly disagree, 45.5% disagree and only 9.1% agree by the statement that they know some digital applications for digital portfolio. Furthermore, around 81.8% of teachers is strongly agree to learn some digital applications in order to create digital portfolio, 9.1% agree and 9.1% disagree.

Besides, the data taken from questionnaire, researchers also interviewed some teachers regarding the implementation of documentation and their eagerness to learn further about digital portfolio. The results of this interview will be elaborate in the discussion session. This data also will be used to further research in terms of digital portfolio.

DISCUSSION

The implementation of documentation in the Damhil preschool before the COVID-19 pandemic focused on displaying children's works, such as their drawings and worksheets. These works then put in the walls, cupboard

and other places where children and their families can see it.

Displaying children's art aims to encourage and appreciate their efforts. Children's drawings, clay-work, writing and other artistic expressions should be taken seriously so they feel confident and free to express their learning. If documentation panels record the process, art works reveal the product (Harun et al., 2021). Further, documentation of group projects can create meaningful experiences (Mertala & Koivula, 2020). These projects can include tasks such as taking photos to record the details of a local competition and then reporting to the classroom. Here, the teacher can be a partner and help children achieve their potential. Their accomplishments at these types of activity can reveal how children create their own narratives and enable others to acknowledge their communication skills (Knauf, 2015; Rintakorpi, 2016).

However, the pandemic COVID-19 has forced them to creatively to adapt with the situation. All teachers consistently consider that the use of information, communication and technology (ICT) is very important in documenting children's activities during the COVID-19 pandemic. This is needed because the teaching and learning process in conducting in the distant mode. The change has pushed them to expand their knowledge on using technology and find other methods to support children's learning during the pandemic (WHO, 2020). In addition, they stated that the ability to operate ICT is considered pivotal in improving the competence of ECEC teachers. The competence is not only to deliver teaching process, but also to consistently build and deliver communication with parents by sending children's work through technology as a platform.

The use of ICT can be used to support learning and assessment of child development during the COVID-19 pandemic. The ICT knowledge can help teachers can conduct documentation activities onto digital based as they shown in the questionnaire. The teachers cooperate with the parents, providing the desired material then, the parents send a video to the teacher showing the child singing, coloring and doing other activities. Initially, teachers are only using the *Whatsapp* application in the process of exchanging information. However, this practice is limited in terms of providing clear depiction of children's learning and assessment because it does not provide description of the activities. It reveals a limited understanding of the value of ICT and its application to enable providing children's active roles in constructing their learning during the COVID-19 pandemic (Boland & Mortlock, 2020). Therefore, it is essential to choose methods that pay attention to the assessment objectives to be achieved and its potential to value children's learning. Each method used must be able to provide maximum data or information regarding the assessed aspects, methods of observation, documentation and interviews or conversations with children.

Furthermore, teachers are familiar with the activities of documenting children's learning and assessing children's development through their work. They need to conduct an authentic assessment of the child's development. Authentic assessment should reflect children's learning that demonstrates what they are able to do in relation to what they have been involved. The assessment should be conducted in the child's normal environment. Assessments should reflect everyday relationships and experiences and this should be done in natural situations and settings, both in the classroom or at home when the child is active (Hooker, 2017; Kazakova, 2020) Importantly, determining the indicators of progress to be achieved in the assessment criteria is essential. Teachers can design indicators of development to be achieved but teachers should not be fixated on the design of achievement indicators of development that have been set. The teacher must observe, record all developmental achievements that arise when children are active in all situations.

Teachers' knowledge of portfolio assessment is good, but its application is still lacking. Texts, photos, transcripts of conversations, audio tape, video, drawings, and other media make learning visible to children, teachers, parents, and the public. Through a portfolio as part of pedagogical documentation, learning can be presented differently (Picchio, Di Giandomenico, & Musatti, 2014). This practice helps children to understand their own learning and create meaning-making. Primarily, when pedagogical documentation is displayed that fits at children's eyes level or in an easily accessible portfolio format where children can contribute and make sense of their learning, it can act as a learning provocation for children, providing them with a visual recollection and collection of their own ideas and activities.

Importantly, digital portfolio also involves children's learning stories to contribute to their own ideas and selected photos to upload. At the same time, this type of documentation allows teachers to create digital portfolio at anytime, anywhere that fits with the situation to work from home during COVID-19. Another essential point is that digital portfolios enhances collaboration between teachers, parents and families during the COVID-19. This opens collaboration that cannot be done in the paper-based portfolios (Harun et al., 2021; Hooker, 2017). This is mentioned by teachers that they frequently communicate through the WhatsApp for sharing all information about children's learning, however, it is not adequate to provide formative assessment for them. In brief, the needs to provide digital portfolio is essential to support the practices of assessment that is flexible and comprehend to children development aspects.

CONCLUSION

This study is a part of research and development (R&D) which focuses on understand the needs of teachers to provide documentation approach that combine technology

during the COVID-19 pandemic. It shows that teachers are eager to understand and improve their skills in using technology in creating online portfolios that can be accessed during distance learning due to the COVID-19 pandemic. They need an understanding of portfolio-based assessment indicators, such as what needs to be included in a portfolio. Another important aspect of portfolio is to build communication, the teachers must communicate the results of the assessment to parents or caregivers using simple language that is easily understood by parents. The goal is to build a shared commitment to improve children's development.

Teachers need to choose a design that places children's work in an online portfolio. The more sources of information used, the more reliable the data, therefore teachers should combine several different sources of information when drawing conclusions about children's developmental needs through digital portfolio. For example, asking parents or child caregivers means that the assessment is conducted comprehensively, observations must be made on various children's activities and continuously carried out to see the development of a child as a whole.

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