E-Portfolio as an Early Childhood Assessment Tool in Kindergarten

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A B S T R A K

Ragam jenis asesmen yang ada pada tingkat satuan PAUD memerlukan suatu inovasi dalam memenuhi tuntutan zaman. Pengamatan lapangan banyak dijumpai bentuk asesmen portofolio masih bersifat manual sehingga tidak terdokumentasi dengan utuh. Penelitian ini bertujuan untuk mengembangkan perangkat asesmen anak usia dini berbasis e-portofolio pada satuan PAUD. Jenis penelitian ini yaitu pengembangan. Metode penelitian yang digunakan adalah research and development (R&D) dengan model 4D. Penelitian ini hanya sampai pada tahap develop. Instrument yang digunakan uji kelayakan media, dan uji praktikalitas. Subjek uji dalam penelitian ini adalah guru TK yang berjumlah 20 guru. Produk yang dihasilkan telah melalui tahap validasi oleh 3 ahli materi dan 3 ahli media. Metode yang digunakan untuk mengumpulkan data adalah wawancara dan kuesioner. Instrumen yang digunakan dalam mengumpulkan data adalah kuesioner. Teknik analisis data yang digunakan adalah analisis deskriptif kualitatif dan kuantitatif. Hasil penelitian yaitu hasil pengolahan uji kelayakan materi diperoleh hasil 90 % dan media 91,67%. Disimpulkan perangkat e-portofolio valid dan dapat digunakan, sedangkan untuk uji praktikalitas diperoleh hasil 85,86% yang berarti perangkat praktis untuk digunakan.

A B S T R A C T

The various types of assessments that exist at the PAUD unit level require innovation to meet the demands of the times. In field observations, it was found that portfolio assessment was still manual, so it needed to be fully documented. This study aims to develop an early childhood assessment tool based on an e-portfolio in PAUD units. This type of research is development. The research method used is research and development (R&D) with a 4D model. This research only reached the development stage. The instrument used is the media feasibility test and the practicality test. The test subjects in this study were 20 kindergarten teachers. The resulting product has been validated by 3 material experts and 3 media experts. The methods used to collect data are interviews and questionnaires. The instrument used in collecting data is a questionnaire. The data analysis technique used is descriptive qualitative and quantitative analysis. The research results, namely the processing of the material feasibility test, obtained results of 90% and the media 91.67%. It was concluded that the e-portfolio device is valid and can be used, while for the practicality test, the results obtained were 85.86%, which means the device is practical to use.

1. INTRODUCTION

One way to give birth to a superior and quality generation is by providing education from an early age because 0-8 years of children grow and develop, known as the golden age (Idris et al., 2022; Nisak et al., 2022; Tanu, 2019). Child potential at this golden age can be developed through the provision of education in early childhood education (Aulia & Amra, 2021; Karwati, 2016; Mualim & Saputra, 2021; Nuha & Munawaroh, 2022; Saleha et al., 2022). The skills and abilities of teachers in managing learning correlate with fluency in implementing learning in early childhood education (Kurnia & Nasrudin, 2022;

Warmansyah et al., 2022). Every teacher should evaluate children's learning outcomes (Damayanti et al., 2018; Wulandani & Putri, 2022).

The strategic position of assessment in Early Childhood Education services is part of the body of teaching (the structure of learning) so its implementation is absolute. This is because of the assessment of 1 of 3 essential elements, elements of planning and implementation (Hasanah & Deiniatur, 2020; Kemala & Rohman, 2021; Rudolph et al., 2019). The assessment process in early childhood education covers all aspects of child development, including holistic (holistic) knowledge, attitudes, and skills (Hartati & Zulminiati, 2020; Sari & Setiawan, 2012). The principle of playing while learning and learning while playing is a special characteristic of early childhood learning so the assessment given to children also has its peculiarities because it differs from the way of assessment in primary and secondary school education units (Mulyanti & Bayan, 2022; Safitri et al., 2023; Zahro, 2015).

One of the assessment techniques carried out in the the early childhood education is the portfolio (Krisnadina Lopo et al., 2020; Saleha et al., 2022). The portfolio is a collection of continuous assessment results based on records of information got by the teacher during the learning process and a collection of children's work (Juhanda et al., 2015; Saleha et al., 2022). In addition, portfolios can also help teachers improve methods and strategies. Less effective learning is used during the learning process (Maulina & Hazilina, 2022). Implementing portfolio assessment is one of the effective ways to conduct assessments in early childhood education (Badrudin et al., 2022; Beckers et al., 2016). Portfolio is an assessment technique that is used by teachers because it can summarize child development. However, an obstacle that often arises in early childhood education is the lack of understanding of teachers about the application of portfolio-based assessment (Laela et al., 2023; Suyadi, 2017; Wahyuni et al., 2023).

Based on observations and interviews with early childhood teachers in several cities and regencies of West Sumatra province (Padang, Pariaman, Tanah Datar), got information that portfolio assessment is still manual by collecting data from children's work to be included in a book. Other facts are that the assessment of child development is carried out outside of learning hours and is not documented. In addition, sufficient space is needed for the collection of each child's work. Documents that have been stored for a long time will be discarded and there is no digitization process for authentic child development, so when needed again, it is difficult to find the data. With conventional methods like that, the work of students will not be well documented. The impact is that the student development portfolio is not structured.

This was also stated in research explaining that portfolio assessment in the conventional form has drawbacks, such as requiring extra time to carry out the assessment and requiring adequate document storage from one study group Wulan (Edy et al., 2019; Wulan, 2020). In addition, based on the research revealed that traditional portfolio assessment requires teachers to have more attention, must be patient and diligent to collect the results of children's work/assignments, sequence them, and must be able to analyze and make interpretations of the document data collected (Juhanda et al., 2015; Suarsana et al., 2018).

To overcome problems in the field, the researchers present an innovation in digital-based portfolio service tools known as e-portfolios. Technological developments have a positive impact on the world of education to carry out innovations by integrating technology into assessments that can be as e-portfolios (assessments using electronic portfolios) (Beckers et al., 2016; Masluhah & Afifah, 2022). With technological facilities, you can create online portfolios so that a collection of children's work and observation notes on children's development can be structured and well-digitized (Edy et al., 2019; Fety & Meini, 2020). Therefore, it is possible to develop well information services in the world of early childhood education in an electronic form portfolio. The development of a digital portfolio as a learning assessment tool can help cover the shortcomings of the previous paper-based portfolio (Suarsana et al., 2018; Taufiq et al., 2020). Likewise, the results of comparative research, found that electronic portfolios produce accurate and well-documented data (Cadd, 2012; Periadi et al., 2018).

Electronic portfolios can help collect various assignments (Cadd, 2012; Gede, 2018). The research state that digital portfolio assessment is more effective in collecting individual work and assignments from children (Knauf, 2017; Suyadi, 2017). Other research states that the development of e-portfolio as an instrument for student assessment is an effective assessment instrument (Beckers et al., 2016; Nurhayati & Sumbawati, 2014). The results of another study stated that the use of technology in teaching that was integrated with the assessment of learning processes and outcomes was proven to increase the effectiveness process and student learning outcomes. Traditional portfolio assessments take up a lot of space and time-wasting so they can be made effective by converting the assessment into an electronic portfolio assessment

From previous research studies, the use of e-portfolios provides various benefits in minimizing the use of paper, space, and place, as well as producing accurate and digitized assessment data. However, the research that has been studied is still limited to Education Units other than Early Childhood Education.

Electronic-based portfolio research is still rare and conventional. Therefore, the novelty of this research is that there is a touch of portfolio digitization in electronic form that can be accessed anywhere and on computers or mobile devices it making it easier for teachers to conduct assessments in Early Childhood Education. Therefore this research will produce an e-portfolio-based early childhood assessment tool.

2. METHOD

This study uses Research & Development (R & D). Research R&D is a process for developing and validating products in Education. The steps in the research process comprise studying related research findings, developing products based on the findings, conducting research testing, and revising it to correct deficiencies found in the testing phase. In R&D research, this cycle is repeated until the test data field shows the product fulfills the objectives to be achieved. The development model refers to the 4D model, which comprises four stages, define, design, develop, and disseminated. In this study only up to the development stage. The test subject in this study were teachers in several district/city kindergartens in West Sumatra totaling 20 teachers. Product trials were carried out using an e-portfolio-based early childhood assessment tool to make it easier for teachers to make assessments of children using electronic media. The resulting product has gone through the validation stages by 3 material experts and 3 media experts. The methods used to collect data are interviews and questionnaires. The instrument used in collecting data is a questionnaire. The research instrument in the development of the e-portfolio-based early childhood assessment tool is used to evaluate and determine the feasibility of the assessment tool developed by the Instrument, which is developed into three groups. First, a feasibility test instrument for material experts. Second, a feasibility test instrument for media experts. Third, a feasibility test instrument for the practicality of assessment tools. The technique used for data analysis is descriptive qualitative and quantitative analysis.

3. RESULT AND DISCUSSION

Result

This development research was carried out to develop an e-portfolio-based early childhood assessment tool in PAUD Units in West Sumatra. This development research was carried out through 3 stages,: 1) the Definition Stage, 2) the Design Stage, and 3) Development Stage. The define stage is carried out by establishing and defining the needs in early childhood assessments in the PAUD Unit. This stage is carried out through several steps are analyzed, including: This was done by interviewing several TK/RA/PAUD teachers in three districts/cities in West Sumatra. Based on the results, information was got about the assessment carried out in schools, including the assessment comprising three forms, the rating scale assessment, the work, and anecdotal notes. Implementing the assessment for all these aspects is still manual by collecting data on the results of the work, and records of children's development achievements by entering them into a folder that contains the name of each child. Another fact is that portfolios which are used as tools for assessing children's development are sometimes carried out outside of learning hours and are not documented. In addition, sufficient space/land is needed for the collection of each child's work. Not to mention the hassle seen from educators who state that documents that have been stored for a long time will just be thrown away and there is no digitization process of authentic documents of students, so when needed, it is difficult to retrieve these documents. With conventional methods like that, the assignments of students will not be well documented. The impact is that student portfolios are not structured. With the condition that the assessment of children's assessments is still conventional, it is necessary to present an innovation in digital-based portfolio service tools or known as e-portfolios.

Based on the analysis of early childhood assessment tools in the PAUD Unit, the researchers found several weaknesses: 1) here are many types of assessments in PAUD and all of them are done manually and are collected every day per child, so it takes up a lot of paper; 2) The number of assessment files as manuals is difficult for teachers to recapture when receiving semester report cards. Based on the results at the definition stage, the next stage is the design stage. This stage is carried out to design an e-portfolio-based early childhood assessment tool that was developed. Some steps taken at the design stage are: 1) Prepare assessment aspects, assessment approach, early childhood assessment components, assessment procedures, PAUD assessment strategies, PAUD assessment standards, implementation basis, and assessment mechanism for Permendikbud no 137 of 2014 (SN-PAUD); 2) Prepare sources or references for designing e-portfolio-based AUD assessment tools; 3) The e-portfolio is designed using web-based software development methods, this is to allow applications to continue to grow in the future.

The e-portfolio-based early childhood assessment device in the early childhood unit is designed to be accessible on a PC or Notebook and also on all types of Android-based mobile phones, therefore the device can be accessed anywhere to make it easier for teachers to input assessments. Cover is the initial

display of the e-portfolio-based early childhood assessment tool. Homepage page serves as the initial menu to enter according to the teacher's needs to input assessments on the dashboard page of the application. Here there is a kind of brief information regarding the number of students, the number of teachers and the number of study groups. Student identity menu contains data about children including name, place of birth, date of birth, gender, address, NPSN, etc. In this menu the teacher can input the child's data base. Teacher Database Page contains data related to the teachers who teach at the TK/RA/PAUD, which can be inputted by the school operator including Name, NUPTK, gender. On this page selected according to the homeroom teacher per study group.
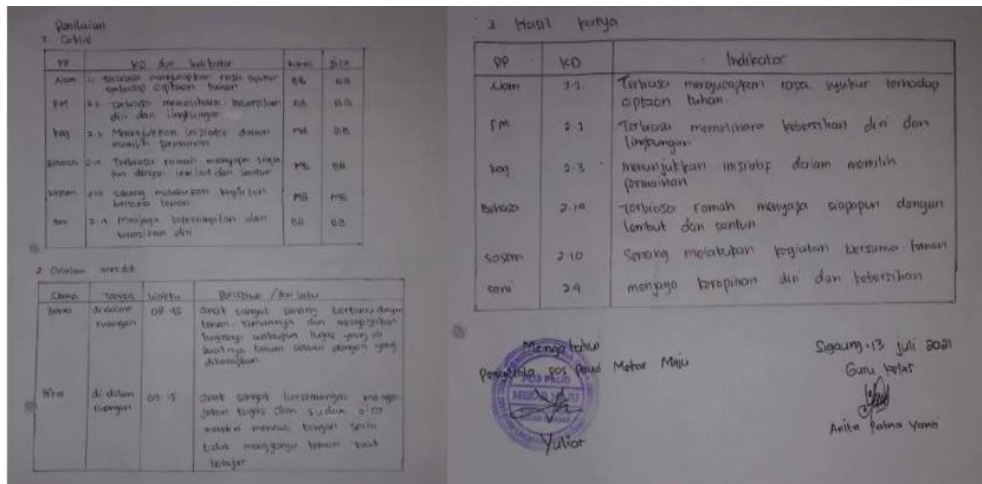

Figure 1. Examples of Forms of Child Development Assessment

School Data page contains the school's identity, name, address, and school logo. Master Date page is about the academic year. school operators can choose according to their needs (school year), study groups and the curriculum used at school. Child growth data page contains menus for the growth and development of children. Growth includes height, weight and head circumference etc. Meanwhile, children's development includes children's character and worship, religious and moral development. Daily Report contains the results of student assessments in one day, namely the overall value of student data, both data from developmental observations, work results and anecdotal notes. Weekly Repor contains a recap of student assessments every day and is summarized into weekly grades, and can be printed to see the child's progress for all aspects of development and all types of assessments.

Rating scale is about child development and is assessed against four criteria (Not yet developed, Starting to Develop, Developing as expected, and Developing very well. Monthly Report contains a monthly recap of student development results, which includes all aspects of development and all types of student assessments derived from weekly assessments. Semester module contains a recap of semester student assessments derived from monthly assessments. Here you can see the progress of students from the first day to the end of the semester. The development report covers all areas of child development based on the Core Competencies and Basic Competencies in the assessment in kindergarten. The results of developing an e-portfolio-based early childhood assessment tool in the PAUD Unit are presented in Figure 2.
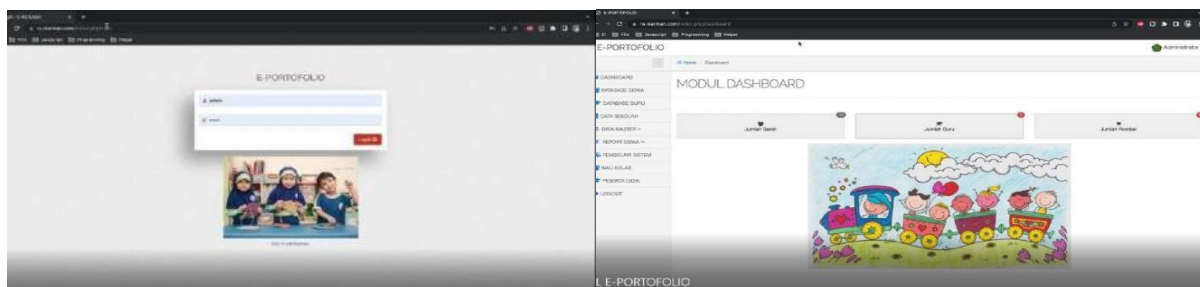

Figure 2. Developing an E-Portfolio-Based Early Childhood Assessment Tool

Development Stage. The e-portfolio-based assessment tool that has been designed is then validated by experts consisting of three experts. Description of validation results by material experts. Material expert validation data is presented in Table 1.

Table 1. Description Of Validation Results by Material Experts

Aspects of assessment	Indicator	%	Description
Content Eligibility	Completeness of Content and Purpose	83%	Very Valid
		100%	Very Valid
		83%	Very Valid
		100%	Very Valid
	Instructional Quality	100%	Very Valid
		92%	Very Valid
		83%	Very Valid
		83%	Very Valid
Serving Eligibility	Language and Typology	92%	Very Valid
		75%	Valid
		92%	Very Valid
	Material Presentation	92%	Very Valid
		92%	Very Valid
	General View	83%	Very Valid
		92%	Very Valid
		92%	Very Valid
	Conclusion	**90%**	**Very Valid**

Based on Table 1 above, the results of material expert validation on the e-portfolio-based early childhood assessment tool obtained an average value of 90% (Very Valid). This validity emphasizes the feasibility of content (Complete of Content and Objectives, Quality of Instruction) and Feasibility of Presentation (Language and Typology, Presentation of Materials, General Appearance). Description of validation results by media experts Media validation is done by filling out an assessment validation sheet that has been prepared by the research team which consists of 4 aspects of the assessment, namely Functional, Usability, Efficiency, and Portability aspects. Based on data analysis, the results of the media expert's validation of the e-portfolio-based early childhood assessment tool obtained an average value of 90.74 (Very Valid).

This validity emphasizes Functional, Usability, Efficiency, and Portability.After the product went through the validation stages by material and media experts and improvements were made based on expert advice and input, then the product was tested in a large group consisting of 20 teachers by distributing teacher response questionnaires to the e-portfolio-based AUD assessment tool that had been developed. Data on the results of teacher practice in using e-portfolio tools are presented in Table 2. Based on Table 2 above, it can be seen that the e-portfolio that has been developed is categorized as very practical to be used by teachers as an Early Childhood assessment tool with an overall average of 85.86 (Very Practical).

Table 2. Description Practicality of E-Portofolio by TK/RA/PAUD Teachers

Assessment Criteria	Assessment			
	Count	Score	Average	Description
Easy to use	557	640	87,03	Very Practical
Interesting	266	320	83,13	Very Practical
Efficient	276	320	86,25	Very Practical
Total	1099	1280	85,86	Very Practical

Discussion

Based on research and development of an e-portfolio-based early childhood assessment tool, shows the validity and feasibility of the results of trials by early childhood education experts and trials on PAUD teachers. The results of the questionnaire that have been reviewed by early childhood education experts state that the PAUD e-portfolio shows a value of 88.54%, so the qualifications are very valid. The results of the questionnaire from the e-portfolio system design/media expert were 91.67% which also means that it is very good in its development qualifications. The results of questionnaires from PAUD practitioners were

85.86%, meaning that e-portfolios can be a digital-based assessment tool for children's development that is easy and practical to use.

The results got from the validation of experts and practitioners (PAUD teachers) show that the e-portfolio meets the valid and practical criteria to be usedas expected in its use for assessment tools in early childhood education units. E-portfolio functions to record, store, describe and display the processes and results of children's developmental achievements in digital form (Gelfer et al., 2004; Knauf, 2017; Suarsana et al., 2018). The manual provides procedures for conducting a complete e-portfolio on early childhood development assessments in early childhood education units (Lam, 2015; Suyadi, 2017). The research states that e-portfolios offer more benefits to children and educators than conventional assessment methods, including the progress of children's development, which can be tracked (Beckers et al., 2016; Cadd, 2012; Edy et al., 2019). Technology allows early childhood educators to store children's portfolios electronically, known as e-portfolios. The e-portfolio-based assessment tool for early childhood assessment was developed using a web-based application. Its flexible nature can be accessed by any device and using any operating system as long as it is connected to the internet and has a browser in it (Masluhah & Afifah, 2022; Wulandari et al., 2021).

E-portfolios are a convenient way to store children's portfolios and have many advantages over conventional assessments (Masluhah & Afifah, 2022; Wulandari et al., 2021). Implementing an e-portfolio-based eqarly childhood education information system requires technical and operational readiness from educators. The teachers of early childhood education need to prepare a set of computers with scanners and use a convenient internet connection (Gonadi, 2017; Knauf, 2017). Teachers as e-portfolio users are expected to be able to take advantage of technological devices to digitally record the processes and results of children's work, and enter these recordings into the e-portfolio device (Beckers et al., 2016; Sanjaya, 2021). To answer the challenges of the 21st century, educators are expected to improve their competence in line with the changing world (Lam, 2015; Wulandari et al., 2021). In this case, e-portfolios can be one of the innovations for conducting authentic assessments in technology-based early childhood education institutions.

4. CONCLUSION

The e-portfolio is declared valid and practical so that it can be an innovation in early childhood assessment tools in early childhood education. Teachers can store data on child development quickly, accurately, and precisely because they use a database internet-based that is easily accessed by teachers using smartphones or laptops. E-portfolio is an alternative for teachers in overcoming problems and ways conventional methods of assessment of child development that are often encountered in the field.

5. ACKNOWLEDGE

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