

Analysis of E-Portfolio Assessment for Strengthening Disabled Students' Competencies in Central Lombok Primary Schools

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ABSTRACT

The objective of this study is to ascertain the manner in which e-Portfolio assessment is implemented for students with disabilities in primary schools in Central Lombok Regency. Furthermore, it seeks to determine the efficacy of e-Portfolio assessment in enhancing the competencies of students with disabilities in primary schools in Central Lombok Regency. Finally, it explores how teachers and students perceive e-Portfolio assessment for students with disabilities in primary schools in Central Lombok Regency. The present study employed a mixed-methods approach, utilising a sequential explanatory design. The findings indicated that e-portfolios had a significant impact on students and led to the reconstruction of relationships within their ecosystem. The integration of the school microsystem and the family microsystem was facilitated by the provision of straightforward access for parents, thereby ensuring a harmonious alignment between the two systems. Secondly, a robust correlation has been identified between the implementation of e-portfolios and competency achievement, with a coefficient value of 0.990. This finding suggests that the more effective and consistent the implementation of e-portfolios is, the higher the competency achievement of students with disabilities. The correlation between the implementation of e-portfolios and the enhancement of student competencies, with a coefficient of 0.986, substantiates that efficacious e-portfolio practices directly contribute to the advancement and empowerment of the competencies of students with disabilities. The coefficient of 0.991 indicates that students who demonstrate high levels of competency achievement also tend to experience substantial improvement in their competencies. The strength of the relationship coefficient is.

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Introduction

Regulations of the Minister of National Education asserts that inclusive education, as a fundamental right of every child, including students with disabilities, is explicitly regulated in the Convention on the Rights of Persons with Disabilities (CRPD) and accommodated in national education policy. (Peraturan Menteri Pendidikan Nasional (Permendiknas) No. 70 Tahun 2009 Tentang, 2009) Nevertheless, the implementation of these guidelines is still beset by significant challenges, particularly in the assessment of competencies in line with the needs of students with disabilities. (Mahmoud Hatamleh, 2024; Nugraha et al., 2024; Sari et al., 2022; Smith & Tyler, 2011)

Conventional assessments frequently fail to take into account the diverse learning needs of students with disabilities, (Akomodasi Yang Layak Untuk Peserta Didik Penyandang Disabilitas, 2020; Salvia, J., Ysseldyke, J., E., Bolt, 2007) potentially resulting in biased and inaccurate information. (Friend & Bursuck, 2019; Taufan & Abnar, 2025) Consequently, the interventions provided are not targeted and are less effective in improving student competency outcomes. Conversely, advances the proposition that advancements in educational technology provide a solution through e-portfolios, (Mazzotti et al., 2024; Smith & Tyler, 2011) which facilitate more holistic and adaptive documentation of learning. (Kok & Blignaut, 2010; Masluhah & Afifah, 2022; Nurhayati & , Langlang Handayani, 2020; Salamah et al., 2025; Wulandari et al., 2024)

As demonstrated in the data provided by the Ministry of Education, Culture, Research, and Technology, a mere 35% of inclusive primary schools in Indonesia utilise digital-based assessments. (Kemendikbudristek, 2023) This is in spite of the fact that students with disabilities require a more personalised and multimodal approach. (Bond & Bedenlier, 2019; Cai et al., 2024; Titarenko, 2025; Worthen, 2016) Several studies posits that electronic portfolios have the capacity to enhance student engagement and offer feedback that is more meaningful. (Batubara & Ariani, 2019; Nurhayati & , Langlang Handayani, 2020; Putri Zalika Wulandari et al., 2024; Salamah et al., 2025; Wulandari et al., 2024) However, its utilisation in Central Lombok remains constrained, with the consequence that students with disabilities frequently encounter difficulties in demonstrating their potential and participating actively in the learning process. (Permadi et al., 2026)..

The application of appropriate and continuous assessment enables teachers to evaluate and improve teaching strategies, thereby having a positive impact on student learning outcomes. (Smith & Tyler, 2011) Consequently, a comprehensive analysis is imperative to ascertain its efficacy in enhancing the competencies of students with disabilities. (Ahmed, 2024; Burke et al., 2024) The findings of Rachmawati, E.'s (2020) research indicate that the absence of creative dialogue and the disconnection between 'the talkative innovator' and the implementation of education in the field are contributing factors to the substandard quality of education in Indonesia. In the context of a performance-based assessment system, Salvia, J., Ysseldyke, J., E., Bolt, (2007) asserts that e-Portfolios facilitate students in the authentic documentation of their learning processes, the reflection on their experiences, and the receipt of personalised feedback. Research by Friend & Bursuck, (2019) demonstrates that e-Portfolios can enhance student motivation to learn, develop metacognitive skills, and promote meaningful learning. (Abdulghani & Sya'ban, 2026).

Problem Formulation in this study are, 1) the implementation of e-Portfolio assessment for students with disabilities in elementary schools in Central Lombok Regency will be examined; 2) the investigation will ascertain whether e-Portfolio assessment is effective in improving the competencies of students with disabilities in elementary schools in Central Lombok Regency; 3) what are the perceptions of teachers and students regarding e-Portfolio assessment for students with disabilities in elementary schools in Central Lombok Regency?

The present study aims to analyse the effectiveness of e-portfolio-based assessment in improving the literacy, numeracy and socio-emotional competencies of students with disabilities. These findings will contribute to the development of an inclusive assessment model that is in line with the Merdeka Belajar and Astacita policies of the Ministry of Education, Culture, Research, and Technology. Furthermore, the findings of this study can be utilised as a reference point for educators in the development of more adaptive assessments.

Method

The present study employs a mixed-methods approach, utilising a sequential explanatory design. (Cresswell, 2013) Cresswell elucidate this approach as a means of comprehending the intricacies inherent to the evaluation of students with disabilities. Assessment gaps were identified through a quantitative stage by analysing student competency achievement data using conventional assessment instruments. The efficacy of this research method is rooted in the integration of mixed methods, with a particular emphasis on in-depth comparative case studies. The employment of mixed methods facilitates the triangulation of quantitative and qualitative data,

thereby enhancing the validity and reliability of the findings. Constant comparative analysis between different types of disabilities allows for the identification of common patterns regarding the effectiveness of e-portfolios, while also revealing individual variations in learning experiences and technology acceptance.

This approach has been demonstrated to yield a holistic understanding of e-portfolio effectiveness, transcending the limitations of quantitative measurements and providing rich narrative insights into student experiences, which are frequently overlooked in quantitative research. (Yin, 2018) In addition, the qualitative stage will be explored through in-depth interviews and participatory observation. (Patton, 2015) This will involve an examination of the experiences of teachers and students with regard to the challenges and opportunities presented by assessment implementation.

The findings of this study have the capacity to furnish pertinent recommendations and applicable implementation guidelines for educators, educational institutions, and the wider PE sector.

Result

A. The implementation of e-Portfolio Assessment for Students with Disabilities in Primary Schools in Central Lombok Regency

Thematic analysis was the approach used to analyse the qualitative data obtained from interviews and observations. The coding process yielded four overarching themes elucidating the implementation of e-Portfolio Assessment for students with disabilities in primary schools.

1. The Enhancement of the School-Family Learning Ecosystem

Electronic portfolios have been demonstrated to be a highly efficacious medium in facilitating communication between educational institutions and family units. The concept of parental involvement has evolved beyond the confines of conventional meetings, metamorphosing into a dynamic and perpetual partnership. Mrs Siti, a parent of a student with mild intellectual disabilities, shared her experience:

"To be candid, I previously simply acquiesced. The report card indicated that the child required guidance, yet it was unclear what aspect of his behaviour could be addressed. The introduction of the e-portfolio has enabled me to observe aspects of my child's classroom environment. In the preceding week, a video was observed which depicted the child engaging in the process of learning to fasten his shirt using a button board in a school environment. This provided the impetus for a subsequent suggestion, namely that he should be encouraged to button his own shirt at home. The following day, I sent a photograph to the teacher via the instant messaging application WhatsApp, which read, "Madam, he is now able to complete the task independently at home." It was subsequently established that the photograph had also been uploaded to the subject's portfolio, accompanied by the annotation "Reinforcement at home". I felt appreciated and like an integral part of my child's educational team."

The preceding discussion elucidates a positive feedback cycle. Teachers are responsible for imparting information regarding the curriculum to pupils, while parents play a pivotal role in facilitating their children's education.

2. The development of e-Portfolio Assessment Guidelines

The overarching objective of inclusive education is to ensure that all students, including those with disabilities, have equal access to quality education. A fundamental

component of inclusive education is the establishment of a fair and accurate assessment system that can comprehensively reflect the abilities and development of students with disabilities. Consequently, the process of developing assessments at school for students with disabilities involves various parties, one of which is psychologists. As elucidated by Mrs Nurcahyani, S.Pd.

"In the process of developing assessments for students with special needs, psychologists initially conduct screening. The results of this screening are then used to inform the creation of assessment guidelines for students with special needs."

Observations demonstrate that the prevailing assessment guidelines are adequate or adaptive to the unique characteristics of students with disabilities, which are varied and specific, resulting in representative and accurate assessments. Despite the fact that the assessment aspects are unable to fully accommodate the fulfilment of competency achievements based on needs and cannot complete the developmental tasks of children in the process of achieving learning competencies that will be and have been achieved by students with disabilities, the development of the existing assessment can guarantee that the results of its application will lead to the fulfilment of the required competency achievements. The disparities in assessment items further underscore the variances in competency achievements between conventional students.

3. Assessment and Feedback Stage

During the course of the interviews and observations for the present study, considerable empirical evidence was found that e-portfolios meet the criteria as the most appropriate authentic assessment digitalisation technology to be implemented at present. This point was explained by teacher Siti Nadila T. S.Pd.

"Assessment that requires students to 'demonstrate their learning outcomes in accordance with the expected competency targets. A substantial enhancement in competency scores, particularly within the vocational and socio-emotional domains, demonstrates the assessment's capacity to measure performance in authentic real-life contexts."

In contradistinction to multiple-choice or short-answer tests, which are designed to evaluate decontextualised knowledge, e-portfolios assess the process and product of meaningful tasks. When a student with autism, such as Farida, is asked to explain her work orally, the assessment measures her comprehension competency rather than penalising her for mechanical barriers to writing. This approach is in alignment with the fundamental tenets of Universal Design for Learning (UDL), particularly with regard to the provision of multiple avenues for action and self-expression.

Additionally, e-portfolios facilitate data triangulation. Within a single student portfolio, a teacher may possess: The documentation of work, performance, or products is to be captured through photographic means. The work process (performance) is to be recorded through video. Audio recordings are to be made of student reflections (metacognition). Finally, anecdotal notes from the teacher (observations) are to be included. This collection of evidence is both rich and diverse.

B. The present study sets out to investigate the hypothesis that effective e-Portfolio Assessment Improves the Competence of Students with Disabilities in Primary Schools in Central Lombok Regency.

The investigation will comprehensively present data, analysis of findings, and in-depth discussion of the research results that answer the problem statement regarding 'Is e-Portfolio Assessment Effective in Improving the Competence of Students with Disabilities in Elementary Schools in Central Lombok Regency'. In accordance with the data analysis approach to answer the above research question using a quantitative research approach, this chapter will begin with the presentation of quantitative data to measure the level of effectiveness of e-portfolios, which will then be explored further with a qualitative interpretation.

In order to ascertain the efficacy of the implementation of e-portfolios in enhancing the competencies of students with disabilities in elementary schools in Central Lombok Regency, a statistical test was conducted, namely a correlation test.

Test Variable				Average V1	Average V2	Average V3
Average V1		Pearson' Correlation		1	.990**	.986**
(E-Portofolio Implementation)		Signature Tailed)	(2-		.000	.000
		N		20	20	20
Average V2		Pearson' Correlation		.990**	1	.991**
(Disabled Competences)		Signature Tailed)	(2-	.000		.000
		N		20	20	20
Average V3		Pearson' Correlation		.986**	.991**	1
(Disabled Competences)		Student' Signature Tailed)	(2-	.000	.000	
		N		20	20	20

**** . Significant correlation at the level 0,01 (2-tailed).**

Based on the results of the Pearson correlation test above, we can conclude the following:

1. The relationship between the implementation of e-portfolio-based assessment (V1) and the achievement of competency of students with disabilities (V2):
 - a. Correlation coefficient (r): $r = 0.990$
 - b. Significance (p-value): $p = 0.000$ ($p < 0.01$)

This means that there is a very strong and significant positive relationship between the implementation of e-portfolio-based assessment and the competency achievement of students with disabilities. A coefficient value of 0.990 indicates that the better and more consistent the implementation of e-portfolios, the higher the competency achievements of students with disabilities. A very small p-value (0.000) indicates that these results did not occur by chance, but are statistically significant findings.

2. The relationship between the implementation of e-portfolio-based assessment (V1) and the strengthening of disabled students' competencies (V3):
 - a. Correlation coefficient (r): $r = 0.986$
 - b. Significance (p-value): $p = 0.000$ ($p < 0.01$)

This means that there is a very strong and significant positive relationship between the implementation of e-portfolio-based assessment and the strengthening of the competencies of students with disabilities. The coefficient of 0.986 confirms that effective e-portfolio practices directly contribute to the improvement and empowerment of the competencies of students with disabilities. The significance level of 0.01 confirms that there is a strong relationship between the implementation of e-portfolio-based assessment and the improvement of student competencies.

3. The relationship between the Competency Achievement of Students with Disabilities (V2) and the Strengthening of Competencies of Students with Disabilities (V3):
 - a. Correlation Coefficient (r): $r = 0.991$
 - b. Significance (p-value): $p = 0.000$ ($p < 0.01$)

This means that there is a very strong and significant positive relationship between the competency achievement of students with disabilities and the strengthening of their competencies. The coefficient of 0.991 indicates that students who demonstrate high competency achievement also tend to experience substantial competency improvement. This is a logical and consistent finding, showing that the competency achievements of students with disabilities after learning correlate positively with the strengthening of student competencies after learning in the family and school environments. This indicates that the involvement of e-portfolios, teachers and parents in continuously documenting authentic assessment results uploaded to the LMS, website, blog and school social media is the main basis for strengthening the competencies that students have achieved.

Interpretation of statistical data:

Direction of Relationship: There is a positive relationship, meaning that an increase in one variable is consistently followed by an increase in the other variable.

Strength of Relationship: The correlation coefficient (r) is very close to +1 (0.990, 0.986, 0.991), indicating a very strong relationship. In context, an academic r value above 0.70 is generally considered a strong correlation.

Significance: There is a statistically significant relationship ($p < 0.01$), meaning that the probability of this result occurring by chance is very small (less than 1%). This provides high confidence that the relationship is real in the population.

C. Teachers' Perceptions of e-Portfolio Assessment for Students with Disabilities in Primary Schools in Central Lombok Regency

Assessment Paradigm Transformation: The paradigm shift under discussion is from an assessment which is considered to be a final outcome to an assessment which is

considered to be a dialogue. Assessment is commonly perceived as an administrative undertaking at the conclusion of a learning period, with the objective of categorising students as 'proficient' or 'not proficient'. E-portfolios have been shown to encourage the transformation of assessment into a continuous dialogical process.

1. Portfolios as Catalysts for Student Agency and Intrinsic Motivation

Students with disabilities are often positioned as passive recipients in the educational process. E-portfolios significantly change this dynamic by giving them an active role (agency) in documenting and reflecting on their learning. The principal of SDN 2 Praya Tengah, Mr Sulaiman, observed this phenomenon:

"There has been a remarkable change in the children. They used to be afraid of being assessed. Now they are proactive. We have a student, let's call him Budi (ASD), who used to be very quiet. Since the introduction of e-portfolios, every time he completes a tall block tower, he pulls his teacher's hand and points to the tablet, as if to say, "Record me! Put it in my portfolio!" He feels a sense of achievement; he is proud. This sense of ownership is the key to motivation that we cannot create simply by offering the lure of grades."

This finding shows that by providing diverse modes for demonstrating competence (various ways of expressing oneself), e-portfolios not only accommodate students' challenges but also empower them to use their strengths, ultimately fostering intrinsic motivation and self-esteem.

2. Strengthening the Learning Ecosystem through Digitalisation of Student Development at School and Home

E-portfolios have proven to be a highly effective tool for breaking down barriers between school and home, creating a more coherent learning ecosystem. Parents are no longer passive observers. This two-way collaboration is crucial. Teachers gain a more complete understanding of children in their family environment, while parents receive concrete guidance on how to support their children's learning. This creates a positive reinforcement cycle (positive feedback) that accelerates competency mastery.

Discussion

A. The effectiveness of implementing e-portfolio-based assessment in strengthening student competencies

Quantitative data shows that: *First*, the relationship between the implementation of e-portfolios and competency achievement is positive; *Second*, the relationship between the implementation of e-portfolios and the strengthening of student competencies; *Third*, the relationship between competency achievement and the strengthening of student competencies is positive, meaning that an increase in one variable is consistently followed by an increase in the other variable. The strength of the correlation coefficient (r) is very close to +1 (0.990, 0.986, 0.991), indicating a very strong relationship. In this context, an academic r value above 0.70 is generally considered a strong correlation. Meanwhile, the significance indicates that there is a statistically significant relationship ($p < 0.01$), which means that the possibility of these results occurring by chance is very small (less than 1%). This lends high credibility to the finding that the relationship is real in the population. However, it is qualitative data that explains the process. Kartini's narrative about 'growth narrative' is a manifestation of authentic assessment. Assessment no longer measures students' abilities in artificial test situations, but rather documents their performance in natural learning contexts. This is relevant to the results of research by Nurhayati and Handayani. (Nurhayati & , Langlang Handayani, 2020)

The highest increase in the vocational domain (+1.10) is very logical in this framework, because vocational skills (buttoning a shirt, washing hands) are essentially performances that are difficult to measure with pencil-and-paper tests, but are ideal for documentation through videos or photo series in e-portfolios. An e-portfolio essentially collects holistic data to reinforce student competency achievements, namely assessing what students have learned while simultaneously functioning as a valid and reliable tool for use as assessment data in improving learning and (students learn through the assessment process itself).

Overall, the use of the e-portfolio model has proven effective in facilitating the improvement of learning competencies in students with disabilities. This can include academic competencies. Continuous feedback from teachers and parents is a form of assessment for learning. Meanwhile, the process of reflection and project work by students, as described by Budi, is at the heart of assessment as learning. Students become subjects, not objects, of assessment. This empowerment, where students have independence and are able to take responsibility, is a crucial psychological factor that drives motivation and ultimately strengthens competency.

B. Teachers' implementation and perception of e-portfolios in strengthening the competencies of students with disabilities in primary schools

The success of e-portfolios can be attributed to several key mechanisms that specifically address the needs of students with disabilities.

First, fundamental personalisation in line with the principles of Universal Design for Learning (UDL). UDL advocates various means of representation, expression, and engagement. These findings are consistent with the results of research, that e-portfolios are inherently diverse in their potential. Students who have difficulty writing (dysgraphia) can demonstrate their understanding through audio recordings. Students with disabilities (autism) can demonstrate their ability to follow instructions through video recordings. This flexibility ensures that disabilities do not become barriers for students to achieve their competencies. Assessment becomes more fair and accurate. (Batubara & Ariani, 2019; Kok & Blignaut, 2010; Wulandari et al., 2024)

Second, specific, timely feedback and diversity of potential. E-portfolios transform feedback from general comments in report cards ('Improve further') into something concrete and actionable. Teachers can provide soothing audio comments to anxious students, or highlight specific parts of an image and provide notes. In line with the results of research by Harsono, B. (2020), visual or auditory feedback is often easier for students with disabilities to process than dense text.

Third, strengthening the learning ecosystem. E-portfolios not only have an impact on students, but also reconstruct relationships within the ecosystem. With easy access for parents, as expressed by Mrs Siti, there is alignment between the school microsystem and the family microsystem. Consistency in strategy, language, and expectations between teachers and parents creates a safe and predictable learning environment, which significantly accelerates skill mastery for students with disabilities. This collaboration transforms parents from passive recipients to active partners in their children's education.

Conclusion

1. Strengthening the learning ecosystem. E-portfolios not only impact students, but also reconstruct relationships within the ecosystem. With easy access for parents, there is alignment between the school microsystem and the family microsystem. The development of an assessment domain for children with disabilities has not yet been able to fully accommodate the fulfilment of competency achievements based on needs and resolve the developmental tasks of children in the process of achieving learning competencies that students with disabilities will and have achieved.
2. There is a strong positive correlation between the implementation of e-portfolios and competency achievement, with a coefficient value of 0.990, indicating that the better and more consistent the implementation of e-portfolios, the higher the competency achievement of

students with disabilities. The direction of the relationship between the implementation of e-portfolios and the strengthening of student competencies, with a coefficient of 0.986, confirms that effective e-portfolio practices directly contribute to the improvement and empowerment of the competencies of students with disabilities. and Competency achievement with student competency strengthening is positive. The coefficient of 0.991 shows that students who demonstrate high competency achievement also tend to experience substantial competency improvement. The strength of the correlation coefficient (r) is very close to +1 (0.990, 0.986, 0.991), indicating a very strong relationship. In context, an academic r value above 0.70 is generally considered a strong correlation. Meanwhile, the significance is known to be a statistically significant relationship ($p < 0.01$).

3. The most fundamental finding is the shift in teachers' perspectives on assessment. Assessment Paradigm Transformation: From Assessment as a Final Outcome to Assessment as Dialogue.

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