Jurnal Pendidikan Humaniora, 10(01), 2022, 35–43
ISSN: 2442-3890 (online) | ISSN: 2338-8110 (print)
DOI: 10.17977/um011v10i12022p35-43

The Development of E-Portfolios Model for Value-Added Assessment for Pre-Service Teacher Education

Lamberthus J. Lokollo[1]*, Arman[2]
[1]Department of Non-Formal Education, Universitas Pattimura, Ambon, Indonesia
[2]Department of Elementary Teacher Training Program, Universitas Muhammadiyah Pringsewu, Lampung, Indonesia
*Correspondence author, e-mail: arman@umpri.ac.id

Paper received: 03-10-2021; revised: 10-12-2021; accepted: 05-01-2022

Abstract: E-portfolios have emerged as highly effective tools for students to document and showcase their learning journey comprehensively, from its inception to its culmination. Unlike traditional paper-and-pencil assessments, e-portfolios empower students to demonstrate their actual knowledge, attitudes, and skills acquired throughout their learning process. In this article, we delve into the development of an innovative e-portfolio-for value-added assessment model designed specifically for pre-service teacher education. The research was conducted using the ADDIE model, involving the participation of three experts and a diverse group of students, including 87 students from the Non-formal Education Program at Universitas Pattimura, Ambon, and 122 students from the Elementary Teacher Training Program at Universitas Muhammadiyah Pringsewu, Lampung. To gather comprehensive data, questionnaires and checklists were employed, and the analysis encompassed both qualitative and quantitative methods. The study's findings unequivocally demonstrated the effectiveness of the e-portfolio model in assessing students' learning achievements, as well as tracking and measuring their progress throughout the educational journey. Moreover, the e-portfolio model proved instrumental in diagnosing deficiencies and areas requiring improvement. These outcomes provide valuable insights and recommendations for the application of the developed assessment model within these institutions.

Keywords: e-portfolios, digital assessment, value-added assessment, pre-service teacher education

1. Introduction

Electronic portfolios (e-portfolios) have gained popularity as a valuable tool for assessing learning in today's educational landscape. Traditional assessments often fail to evaluate core competencies of the twenty-first century, such as critical thinking, cooperative learning, scientific reasoning, and problem-solving skills. Consequently, it has become essential to shift towards using technology that allows students to demonstrate their competencies and balance traditional assessments.

The goal of assessment extends beyond merely judging students' learning achievements; it should also aim to critically evaluate the effectiveness of teachers' instruction (Llewellyn, 2013). Technology tools like e-Portfolio software enable teachers to collect evidence of students' learning, particularly as many e-Portfolio platforms are web-based and support the integration of multimedia elements. A study by Slade and Downer (2020) found that e-portfolios not only equip students with the necessary skills to utilize technology effectively but also provide a structure for planning their future career progression, meeting professional competency requirements, and fostering lifelong learning. Additionally, research by Harapnuik and Thibodeaux (2020) indicates that e-portfolios promote learner autonomy, while Song (2021) highlights their role in fostering self-directed learning. Furthermore, e-portfolios contribute to the development of students' reflective thinking (Gikandi, 2019) and promote collaboration among peers while simultaneously collecting evidence of students' academic accomplishments

(Polka, Rossi, Huber, & Oliverio, 2021). Another study by Douglas, Peecksen, Rogers, and Simmons (2019) reported that students who engaged in experiential learning using e-portfolios exhibited higher levels of confidence compared to those who did not.

Assessment has become an integral part of modern education, assuming a progressively significant role in shaping teaching and learning practices. In this context, it is imperative for teachers to not only excel in delivering course content but also to possess proficient assessment skills. Assessment should be regarded as a fundamental professional competency that every teacher should cultivate. According to Brookhart and Nitko (2015), assessment can be defined as a systematic process that utilizes various tools and techniques to gather information about student learning, thereby granting teachers valuable insights into their students' progress. By acknowledging assessment as a professional competency, educators can enhance their ability to effectively evaluate and address the diverse learning needs of their students. A comprehensive understanding of assessment empowers teachers to create and administer assessments that accurately gauge students' understanding, skills, and abilities. Through this process, teachers can identify areas of strength and areas requiring improvement, allowing for targeted instructional strategies to be implemented. Moreover, possessing assessment expertise equips teachers with the ability to interpret assessment data critically. They can analyze the collected information to gain insights into the effectiveness of their teaching methods and curriculum, enabling them to make informed instructional decisions. By employing a variety of assessment tools and techniques, such as formative assessments, summative assessments, and performance-based assessments, teachers can obtain a holistic understanding of their students' progress and adjust their teaching approaches accordingly.

Furthermore, assessment competence fosters a culture of continuous improvement in education. By regularly assessing student learning, teachers can identify learning gaps and tailor their instruction to meet individual student needs. Additionally, assessments enable teachers to monitor the effectiveness of their teaching strategies and make necessary adjustments to optimize learning outcomes.

In educational institutions, pen and pencil tests have traditionally been the most common form of assessment. However, due to their nature, these assessments are limited in evaluating higher-order thinking skills. They are not sophisticated or productive enough to assess complex skills such as innovation, problem-solving, critical thinking, and collaboration—the very skills characteristic of the twenty-first century (Care and Kim, 2018). E-portfolios, on the other hand, offer a relatively new approach to assess these skills through value-added assessment, making them an extremely powerful tool for determining teacher effectiveness and recognizing student growth (Kennedy, Peters, and Thomas, 2012). E-portfolios provide a promising avenue for assessing learners' growth and development, with an emphasis on using them as authentic instruments for demonstrating growth over time (Pike, 2011).

An e-portfolio is an invaluable resource in today's digital age, serving as a dynamic and comprehensive collection of evidence that showcases students' academic growth and accomplishments. This digital repository, often accessed and managed online, combines the principles of performance assessment with the reflective practice of students. With its inherent flexibility, the e-portfolio becomes a powerful tool for enhancing student learning and promoting meaningful feedback tailored to each individual (McMillan, 2014). The advantages of utilizing e-portfolios in educational settings are manifold. Firstly, they allow for a longitudinal

perspective, enabling students to document their learning journey over time. By archiving their best work and tracking their progress, students gain a tangible representation of their development, empowering them to recognize their achievements and identify areas for further improvement. Furthermore, e-portfolios exert a positive influence on students' learning experiences by fostering motivation and engagement. The active involvement in curating their digital portfolios promotes a sense of ownership and pride in their work, encouraging them to strive for excellence. The process of selecting and reflecting upon their accomplishments also cultivates critical thinking skills, self-assessment abilities, and metacognition, empowering students to become lifelong learners. Moreover, e-portfolios cater to the diverse learning needs and preferences of individual students. As a versatile medium, they accommodate various types of evidence, such as written assignments, multimedia projects, artwork, and presentations. This flexibility enables learners to showcase their talents and strengths in ways that resonate with their unique abilities and learning styles. Additionally, e-portfolios facilitate clear communication of students' learning progress to various stakeholders, including parents, teachers, and other members of the educational community. By providing a comprehensive and easily accessible overview of students' achievements, strengths, and areas for growth, e-portfolios promote transparency, collaboration, and constructive dialogue among all involved parties. In conclusion, e-portfolios represent a valuable and multifaceted approach to assessment and student development. Their ability to capture the journey of learning, foster motivation, promote reflective practices, accommodate individual differences, and facilitate collaboration make them an indispensable tool in modern education. By embracing the power of e-portfolios, educators can empower students to take ownership of their learning, nurture their skills, and embark on a path of lifelong growth and success (Waugh and Gronlund, 2013).

2. Method

The primary objective of this research is to enhance and develop an e-portfolio-for value-added assessment model for pre-service teacher education. To achieve this goal, the study adopted the ADDIE (Analysis, Design, Development, Implement, and Evaluation) framework proposed by Branch (2009), which is widely recognized in research and development endeavors. The development of the e-portfolio-for value-added assessment model comprised three fundamental phases. The first phase, the analysis phase, involved conducting a comprehensive literature review to establish a conceptual framework and perform a needs analysis. This phase encompassed two distinct groups: 45 students from the Non-formal Education Program at the University of Pattimura, Ambon, and 80 students from the Elementary Teacher Training Program at the University of Muhammadiyah Pringsewu, Lampung. The research data for this phase were collected using a questionnaire and subsequently subjected to quantitative analysis. In the second phase, the Design and development phase, the focus shifted towards the creation of prototype models and the formulation of guidelines for implementing the e-portfolio-for value-added assessment model. This phase aimed to design a practical framework that could effectively support the assessment process. The third phase, the implement and formative evaluation phase, involved field testing the developed model in the intended setting, followed by a thorough review and revision process. During this stage, the model was evaluated by three experts to gauge its effectiveness and applicability. Additionally, one-on-one evaluations were conducted with three students, while a small group evaluation involved nine students. Finally, a field trial was carried out, encompassing a total of 30 students. Data collected in this phase were obtained through checklists and questionnaires, which were analyzed both qualitatively and quantitatively. By following the ADDIE framework and

conducting extensive analysis, design, development, implementation, and evaluation processes, this research aimed to refine and advance the e-portfolio-for value-added assessment model in the context of pre-service teacher education. The valuable insights obtained from the diverse range of participants and experts involved in this study will contribute to the ongoing enhancement and optimization of teacher education practices.

3. Results and Discussion

3.1 Need Analysis

The need analysis phase is concerned with gathering information regarding current assessment practices and their alignment with assessment principles.

Table 1 Students perception on fulfilment of assessment principles

Indicators	Average Score	Criteria
Assessments motivate students improve learning methods	2.85	Fair
Asessments promote students to do self-reflection.	3.01	Fair
Assessments are oriented to continuous learning	2.55	Fair
Assessments reflect the student's ability during the learning process	2.75	Fair
Assessments are based on learning contract	4.03	Good
Assessments are free from the influence of subjectivity	2.46	Poor
Assessment are carried out with clear procedures and criteria	2.75	Fair
Assessments instruments are easily to be understood.	3.94	Good
Assessment procedures and results can be accessed by all stakeholders.	3.51	Good
Assessment techniques, instruments, criteria, indicators, and the weight of the assessment are informed at the beginning of the lecture.	3.99	Good
Assessment techniques, instruments, criteria, indicators, and weight in line with learning contract	3.94	Good
Lecturers provide feedback and opportunities to question the results of the assessment to students	3.25	Good
Assessment processes and results are shown in an accountable and transparent manner.	3.06	Fair
Learning assessments are carried out using various techniques	3.27	Good
Learning processes assessments are carried out in the form of portfolios or design work.	2.06	Poor

Table 1 vividly depicts the outcomes of student assessments, shedding light on the current state of the ongoing learning assessment. Regrettably, it becomes evident that the existing assessment framework has failed to effectively motivate students to enhance their learning abilities and foster a culture of self-reflection regarding their educational journey. Moreover,

this assessment approach has been widely criticized for its lack of objectivity in accurately describing students' true competence. While the instruments, criteria, indicators, and assessment weights were initially communicated and agreed upon by both lecturers and students at the onset of the course, the implementation of these assessments has proven to be monotonous and devoid of variation, thus impeding its effectiveness. Additionally, the assessment framework has fallen short in providing constructive feedback to students, further exacerbating the challenges they face in improving their academic performance.

A recurring concern raised by students is the lack of transparency surrounding the assessment process. They express a strong desire for a clearer understanding of how their performance is evaluated and how the assessment outcomes are derived. This lack of transparency has created a sense of frustration and hindered students' ability to gauge their progress accurately. Addressing these shortcomings is crucial to establishing a more robust and effective assessment system. By incorporating diverse and innovative assessment methods, we can create a learning environment that truly engages and motivates students to strive for improvement. Moreover, providing timely and constructive feedback is pivotal in enabling students to identify their strengths and weaknesses, empowering them to take ownership of their learning journey.

To enhance transparency, it is imperative to establish clear and well-defined assessment criteria, ensuring that students have a comprehensive understanding of the expectations set forth. Regular communication between lecturers and students regarding the assessment process, including the rationale behind decisions made, will foster a greater sense of trust and engagement. By reforming the existing assessment practices, we can create an environment where students feel supported, encouraged, and inspired to pursue continuous growth and development. This not only benefits the students themselves but also contributes to the overall improvement of the learning outcomes within the educational institution.

3.2 Design and Develop

The research and development study resulted in an e-portfolio-for value-added assessment model as visualized in figure 1.

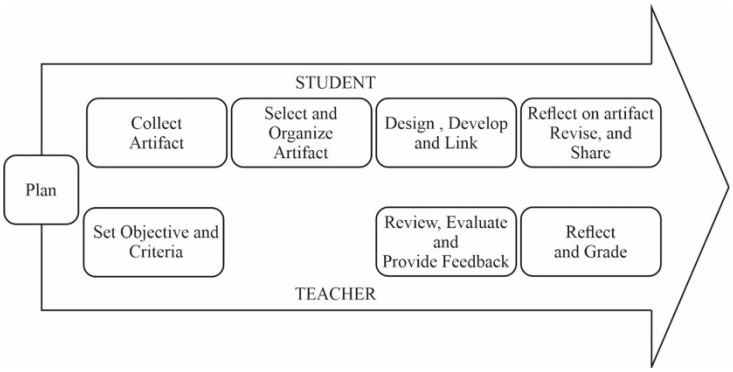

Figure 1. E-portfolio For Value-added Assessment Model for Pre-service Teacher Education

The e-portfolio model implemented in this context utilizes Google Site as the platform, providing students with complete ownership over their portfolios. The e-portfolio initiative unfolds through a systematic process, commencing with the planning stage, where both teachers and students collaborate to outline the desired outcomes of the portfolio. The teacher's crucial role in this model involves establishing the learning objectives and competencies that students should demonstrate through their portfolio products. Furthermore, the teacher sets clear criteria encompassing the format, content, and allotted time frame for completing the portfolio.

To construct their portfolios, students embark on a journey of collecting artifacts that align with the designated learning objectives. These artifacts can take various forms such as text, images, sound, video, or multimedia elements. Once gathered, students proceed to curate and organize their collected artifacts based on predetermined topics and themes established during the initial planning phase. This process facilitates a coherent and structured representation of their learning experiences.

Following the organization stage, students proceed to design and develop their e-portfolios. They leverage the features and capabilities offered by Google Site to craft visually appealing and engaging portfolios. Once completed, students share the link to their e-portfolio with the teacher, who plays a pivotal role in providing feedback. This feedback serves as valuable material for students' reflection and facilitates the revision of their portfolio products. By engaging in this iterative process of receiving feedback and making revisions, students enhance the quality and depth of their portfolios.

Finally, after incorporating feedback and revisions, students arrive at the final version of their e-portfolio product. They share this product with the teacher for grading, which is conducted based on the predetermined criteria established earlier in the process. This comprehensive assessment ensures that students' portfolio products align with the intended learning objectives and competencies, thus enabling a fair evaluation of their achievements.

3.3 Formative Evaluation

The formative evaluation stage encompasses a comprehensive array of tests aimed at refining and enhancing the prototype model. These tests comprise expert reviews, one-on-one assessments with students, small group evaluations, and large group tests. Notably, during the large group test, three experts meticulously scrutinize the prototype model to ensure its efficacy. The outcomes of this expert assessment are meticulously documented and presented in Table 2, providing a tangible overview of their invaluable insights and recommendations. This multifaceted evaluation process serves as a vital foundation for the ongoing development and optimization of the prototype, fostering its evolution into a robust and user-centric solution.

Table 2. The Result of Experts Review on Developed Value-Added Assessment Model

Aspect	Expert 1	Expert 2	Expert 3
Storage Capacity	4.10	3.22	3.97
Collaboration Opportunities	3.85	3.14	4.35

Ease of Use	4.10	3.25	4.10
Cost	3.75	4.30	4.50
Availability of support	4.29	3.50	4.27
Attractiveness	4.04	3.75	3.85
Average	**4.02**	**3.53**	**4.17**

The expert's review, as depicted in Table 1, reveals that the prototype model developed has achieved commendable ratings in terms of its performance. With the valuable insights gained from the expert review, necessary revisions were implemented to further refine the model. Subsequently, the formative evaluation advanced to subsequent stages, including one-to-one interactions with learners, small group evaluations, and finally, a comprehensive field trial. The purpose of the field trial was to gauge students' perspectives on the developed model, and the resulting data have been visually represented in Figure 2, providing a clear representation of the acquired information.

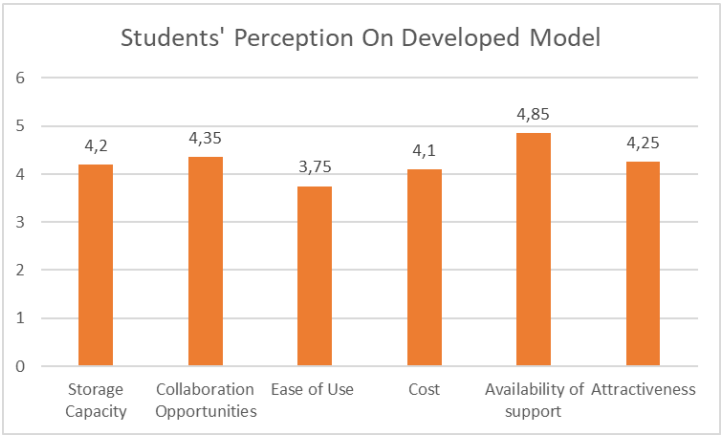

Figure 2. Students' Perception on Developed E-Portfolio-For Value-Added Assessment Model

Based on the compelling data presented in Figure 2, it is evident that the overall model developed surpasses expectations, meeting the criteria for both good and very good performance. These findings are further reinforced by a comprehensive series of formative evaluations, establishing the feasibility of the value-added assessment model. Therefore, it is unequivocally established that this model holds great potential to be employed as an effective assessment tool in both educational institutions. The robust evidence gathered supports the notion that this model is not only reliable but also has the capacity to yield meaningful insights into the assessment process, benefiting both educators and students alike.

Assessment serves a crucial role in education, extending beyond merely measuring student achievement. It should also encompass a critical evaluation of teacher instruction. The incorporation of technological tools, such as e-Portfolio software, enables teachers to gather evidence of student learning. Slade & Downer (2020) highlight that e-Portfolios not only equip students with essential technological skills but also offer a framework for planning their future career growth. Research by Alajmi (2019) and Dray & Howells (2019) reveals the benefits of e-Portfolios, including promoting goal articulation, fostering self-monitoring and self-assessment,

providing feedback, and guiding students in devising effective strategies to achieve their objectives.

E-Portfolios are invaluable in collecting and assessing student work that demonstrates mastery of learning objectives. By combining performance appraisal principles with student self-reflection, e-Portfolios become a powerful tool for enhancing student learning. While standardized tests and various assessment methods are common in schools, they should not instill fear in students. Exams can induce anxiety, even among high-achieving students (Kennedy, Peters, & Thomas, 2012). Through a series of formative evaluations, the e-portfolio-based assessment model developed meets all criteria and can be implemented effectively in educational institutions.

4. Conclusion

The utilization of e-portfolios as a value-added model assessment is an exceedingly potent approach to ascertain teacher effectiveness and acknowledge student growth. E-portfolios offer a considerably more promising avenue for evaluating learners' development and progress, with a specific emphasis on their use as an authentic instrument for showcasing growth over an extended period. The findings of this research substantiate that the developed e-portfolio model for value-added assessment has successfully met all the criteria necessary for an e-portfolio-based assessment model. Therefore, it can be readily implemented for assessing learning in pre-service teacher education across various institutions.

By employing e-portfolios, teachers can effectively capture and document students' accomplishments, providing a comprehensive view of their growth over time. These electronic portfolios not only showcase the final outcomes but also highlight the process of learning and development. The interactive nature of e-portfolios enables students to engage in self-reflection and self-assessment, fostering a deeper understanding of their own progress and areas for improvement. Moreover, e-portfolios allow for the integration of multimedia elements, such as videos, presentations, and samples of student work, which enriches the assessment process and provides a more holistic representation of learners' abilities.

One of the remarkable advantages of using e-portfolios as an assessment tool is their flexibility in accommodating diverse learning styles and individual strengths. Students can curate their portfolios to reflect their unique interests, talents, and aspirations, thus enabling a personalized and student-centered approach to assessment. Additionally, e-portfolios facilitate ongoing feedback and dialogue between teachers and students, promoting a collaborative learning environment that enhances the educational experience.

In conclusion, e-portfolios present an innovative and powerful method for evaluating teacher effectiveness and recognizing student growth. Their ability to capture, document, and showcase learners' development over time, along with the flexibility they offer in accommodating diverse learning styles, makes them an ideal tool for assessment in pre-service teacher education. The implementation of e-portfolios-based assessment models in educational institutions can lead to more comprehensive and authentic evaluations, ultimately contributing to the continuous improvement of both teachers and students.

References

Alajmi, M.M. (2019). The impact of E-portfolio use on the development of professional standards and life skills of students: A case study. *Entrepreneurship and Sustainability Issues*, 6 (4), 1714-1735.

Brown, G. T. (2017). *Assessment of student achievement*. Routledge.

Care, E., & Kim, H. (2018). Assessment of twenty-first century skills: The issue of authenticity. *Assessment and teaching of 21st century skills: Research and applications*, 21-39.

Douglas, M. E., Peecksen, S., Rogers, J., & Simmons, M. (2019). College Students' Motivation and Confidence for ePortfolio Use. *International Journal of ePortfolio*, 9(1), 1-16.

Dray, K., & Howells, K. (2019). Exploring the Use of E-Portfolios in Higher Education Coaching Programs. *International Sport Coaching Journal*, 6 (3), 359-365.

Gareis, C. R. & Leslie W. G. (2015) *Teacher-Made Assessments: How to Connect Curriculum, Instruction, and Student Learning*. Second Edition New YorK: Routledge

Gikandi, J. W. (2019). Promoting competence-based learning and assessment through innovative use of electronic portfolios. In *Handbook of Research on Promoting Higher-Order Skills and Global Competencies in Life and Work* (pp. 181-208). IGI Global.

Harapnuik, D. & Thibodeaux, T. (2020). Factors that Contribute to ePortfolio Persistence in an Online Program. In D. Schmidt-Crawford (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 1106-1111). Online: Association for the Advancement of Computing in Education (AACE).

Kennedy, K., Peters, M., & Thomas, M. (2011). *How to use value-added analysis to improve student learning: A field guide for school and district leaders*. Corwin Press.

McMillan, J. H. (2014). *Classroom assessment: Principles and practice for effective standards-based instruction*. Pearson.

Pike, G. R. (Ed.). (2011). *Assessing the Generic Outcomes of College: Selections from assessment measures* (Vol. 7). John Wiley & Sons.

Polka, W. S., Rossi, R. J., Huber, T. M., & Oliverio, M. J. (2021). Promoting Social Learning in Higher Education: A Case Study of Ph. D. E-Portfolios. In *eLearning Engagement in a Transformative Social Learning Environment* (pp. 22-43). IGI Global.

Slade, C., & Downer, T. (2020). Students' conceptual understanding and attitudes towards technology and user experience before and after use of an ePortfolio. *Journal of Computing in Higher Education*, 32(3), 529-552.

Song, B. K. (2021). E-portfolio implementation: Examining learners' perception of usefulness, self-directed learning process and value of learning. *Australasian Journal of Educational Technology*, 37(1), 68-81.