

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

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## ABSTRAK

**Abstract:** E-portfolios have been shown to be particularly effective in providing opportunities for students to tell their learning journey of their learning from beginning to end. In contrast to paper-and-pencil-based assessments, e-portfolios allow students to demonstrate the more actual knowledge, attitudes, and skills that they acquired in their learning process. This article describes the development of an e-portfolio-for value-added assessment model for pre-service teacher education. The research employed the ADDIE model and involved three experts and 87 students of Non-formal Education Program Universitas Pattimura, Ambon and 122 Elementary Teacher Training Program Universitas Muhammadiyah Pringsewu, Lampung. Data were collected through questioners and checklists and were analysed both qualitatively and quantitatively. The result of this study showed that e-portfolios model was effective in asses students' learning achievement, tracking, and measuring students' progress as well as diagnosing deficiencies that require improvement. This study offer recommendation regarding the application of the developed model of assessment in these institutions.

**Abstrak:** E-portofolio telah terbukti sangat efektif dalam memberikan kesempatan kepada siswa untuk menceritakan perjalanan belajar mereka dari awal sampai akhir. Berbeda dengan penilaian berbasis kertas dan pensil, e-portofolio memungkinkan siswa untuk menunjukkan pengetahuan, sikap, dan keterampilan yang lebih aktual yang mereka peroleh dalam proses belajar mereka. Artikel ini menjelaskan pengembangan model penilaian e-portofolio-untuk nilai tambah untuk pendidikan guru prajabatan. Penelitian ini menggunakan model ADDIE dan melibatkan tiga ahli dan 87 mahasiswa Program Pendidikan Nonformal Universitas Pattimura, Ambon dan 122 Program Keguruan Dasar Universitas Muhammadiyah Pringsewu, Lampung. Pengumpulan data dilakukan melalui kuesioner dan checklist serta dianalisis secara kualitatif dan kuantitatif. Hasil penelitian ini menunjukkan bahwa model e-portofolio efektif dalam menilai prestasi belajar siswa, melacak dan mengukur kemajuan siswa serta mendiagnosis kekurangan yang perlu diperbaiki. Kajian ini menawarkan rekomendasi mengenai penerapan model penilaian yang dikembangkan di lembaga-lembaga tersebut.

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Electronic portfolios (e-portfolios) has become popular today as a tool for assessing learning since traditional assessment such as traditional assessment are not normally assessed the core competency of twenty century skills such as critical thinking, cooperative learning, scientific reasoning, and problem-solving skills Thus, a shift toward the use technology that best respond to have students demonstrate their competencies becomes essential to balance traditional assessments.

The goal of assessment is not only to make judgments regarding students' learning achievement it also should aimed to make critical judgement of the effectiveness of the teacher's instruction (Llewellyn, 2013). Utilization of technology tools like e-Portfolio software allow teachers for collecting evidence for students' learning as many e-Portfolio platforms are web-based, which makes possible the use of multimedia elements. Slade, C., & Downer, T. (2020) found that learning with e-portfolio is not only gives students foundations for using a technology tool that will support their practice, it also provides a structure for planning their career progression in the future, professional competency requirements and basis for lifelong learning. It also revealed that using e-portfolios promote learners' autonomy (Harapnuik. & Thibodeaux, 2020), foster self-directed learning (Song, 2021), and develop students' reflective thinking (Gikandi, (2019). In addition, e-portfolios promote promotes collaboration among peers while simultaneously collecting evidences of student's academic accomplishments (Polka, Rossi, Huber, & Oliverio, 2021).

Douglas, Peecksen, Rogers, & Simmons (2019) reported that students who had participated in an experiential learning using e-portfolios have higher level of confidence than those who had not. Assessment is playing an increasingly central role in education. Teachers must be as proficient in the area of assessment as well as teaching course materials. Assessment also should be viewed as a professional competency that every teacher have. Brookhart, Anthony J. Nitko (2015) define assessment as the process of using tools and techniques to collect information about student learning. In short, it is the way teachers see their students' learning.

In educational institutions, pen and pencil test is the most common form of traditional assessment. Due to its nature, this form of assessment can evaluate learning based on lower order thinking skills. not more sophisticated or productive to assess complex skills as twenty-first century skills that include innovation, problem solving, critical thinking and collaboration. (Care and Kim, 2018). A relatively new approach to assess these skills is value-added assessment using e-portfolios, an extremely powerful tool for determining teacher effectiveness, recognizing student growth (Kennedy, Peters, and Thomas, 2012). E-portfolios provides a much more promising avenue for assessing learners' growth and development with an emphasis on using e-portfolios as the most authentic instrument for demonstrating growth over time (Pike, 2011).

e-Portfolio is a digital collection of evidence, often stored and managed online that combine principles of performance assessment with student self-reflection. It is a powerful tool to improve student learning. With its flexibility inherent e-portfolios possible to individualize assessment so that meaningful feedback to each student can maximized (McMillan, 2014). Portfolios have a number advantages: (1) shows students' learning progress over time, (2) focus on students' best work provides a positive influence on learning, (3) enhance motivation, (4) foster self-assessment skills, (5) encourages reflective learning, (6) provides for individual differences, (7) provides clear communication of learning progress to students, parents, and others, and (8) fosters teacher-student collaboration in the teaching-learning-assessment process (Waugh, and Gronlund, 2013).

## METHOD

The purpose of this research is to develop an e-portfolio-for value-added assessment model for pre-service teacher education. The study of research and development employed ADDIE (Analysis, Design, Development, Implement, and Evaluation) (Branch, 2009). The development of e-portfolio-for value-added assessment model consists of three main phases. First, the analysis phase, includes literature review to develop a conceptual framework and needs analysis. This phase involved 45 students of the Non-formal Education Program of University of Pattimura, Ambon and 80 students of the Elementary Teacher Training Program at the University of Muhammadiyah Pringsewu, Lampung. The research data of this phase was obtained through a questionnaire and analyzed quantitatively. Second, the Design and development phase, refers to the development of prototype prototypes and writing guidelines for implementing e-portfolio-for value-added assessment model. Third, implement and formative evaluation phase, refers to field testing in the setting where it will be used, and revision. At this stage, the resulting model was reviewed by three experts, Furthermore, a one-on-one evaluation was carried out with three students, while, a small group evaluation involved nine students, and field trial involved 30 students. The research data of this phase was obtained through a checklist and questionnaire and was analyzed both qualitatively and quantitatively.

## FINDING

### Need Analysis Result

The need analysis stage is concerned with gathering information about ongoing assessment practices and their conformity with assessment principles.

**Table 1. Students' perception on fulfilment of assessment principles**

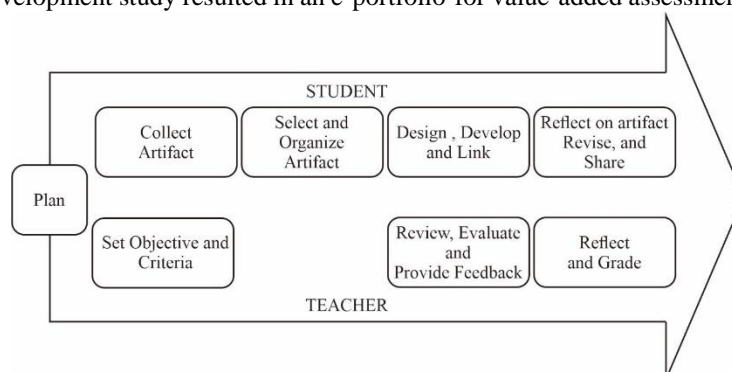
Indicators	Average Score	Criteria
Assessments motivate students improve learning methods	2.85	Fair
Assessments promote students to do self-reflection.	3.01	Fair
Assessments are oriented to continuous learning	2.55	Fair
Assessments reflect the student's ability during the learning process	2.75	Fair
Assessments are based on learning contract	4.03	Good
Assessments are free from the influence of subjectivity	2.46	Poor
Assessment is 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

Indicators	Average Score	Criteria
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 illustrates that based on student assessments, the learning assessment that has been going on so far has not motivated students to improve learning and encouraged students to self-reflect on their learning process. The assessment is also considered not objective and describes their real competence. Although the instruments, criteria, indicators, and assessment weights have been informed at the beginning of the lecture and agreed with the lecturers and students in the lecture, the implementation of the assessment has not been carried out in a varied manner and does not provide feedback. Students are also complained complaining about assessment transparency.

### Design and Develop Result

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



**Figure 1. e-portfolio-for value-added assessment model for pre-service teacher education**

In the model, the e-portfolio is developed using Google Site and it is fully owned by the students. The e-portfolio initiative begins with the planning stage, where the teacher and students planning on the portfolio product to be produced. The teacher's role in this model is to set the learning objectives and competencies that must be mastered by students which are shown in their portfolio products. In addition, the teacher also sets the criteria that must be met, including the format, content, and time limit given to complete their product portfolio. The construction of a portfolio by students begins by collecting artefacts that are relevant to the learning objectives in the form of text, images, sound, video, or multimedia. The artefacts that have been collected are then selected and organized based on the topics and themes that have been planned at the beginning of the meeting. Next, students design, develop their e-portfolios and share the link with the teacher to be. Next, the teacher gives feedback on the students' portfolio products as their material for reflection and revision. The final result of the product is then shared to be graded based on predetermined criteria.

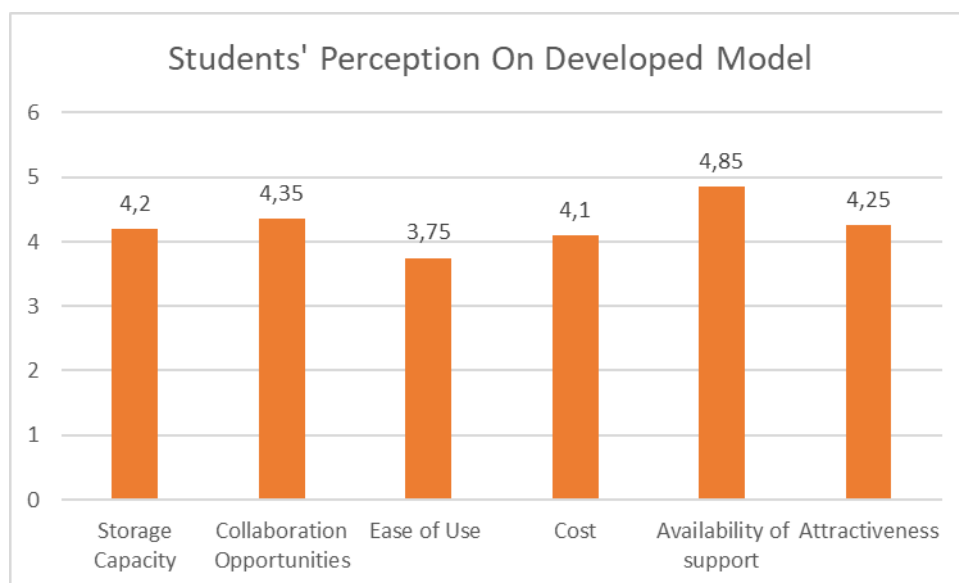
### Formative Evaluation Result

The formative evaluation stage contains a series of tests which include expert review, one-on-one test with students, small group test and large group test. In a large group test involving three experts to test the prototype model developed, the results of the expert assessment are presented in table 2.

**Table 2. The result of expert's reviews on developed of 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 results of the expert's review in table 1 show that overall, the prototype model developed is at good and very good criteria. After revisions were made based on the results of the expert review, the formative evaluation was continued to the next stage: the one-to-one with learners, small group evaluation and field trial. The field trial was conducted to determine students' perceptions of the developed model, data were obtained as visualized in figure 2.



**Figure 2. Students' perception on developed e-portfolio-for value-added assessment model**

Based on the data in Fig. 2, the overall model developed is in good and very good criteria. Thus, the whole series of formative evaluations shows that the value-added assessment model developed is feasible to be used as an assessment model in both institutions.

## DISCUSSION

Assessment should not only aim to assess student achievement but should also aim to make a critical assessment of the effectiveness of teacher instruction. Utilization of technological tools such as e-Portfolio software allows teachers to collect evidence for student learning. According to Slade & Downer (2020) learning with e-portfolios not only provides students with a basis for using technological tools that will support their practice, but also provides a structure for planning their future career advancement. Alajmi, (2019), Dray & Howells. (2019), found that learning and assessment using e-portfolios can: (1) Encourage students who articulate their learning and self-development goals, (2) incorporate self-monitoring and self-assessment of their learning progress and guide them for self-reflection, (3) provide feedback and encourage the use of feedback to inform students' future goals, (4) encourage students to articulate appropriate strategies to achieve their goals,

E-portfolio essentially collects and evaluates student work products that demonstrate mastery of learning objectives. The ability of e-portfolios to combine the principles of performance appraisal with student self-reflection becomes a powerful tool to enhance student learning. Standardized tests and many forms of assessments have become a regular part of the school's instructional program. Nonetheless, tests and assessments should not cause fear in the hearts of the students. For most students, exams are a necessary evil in schools that exams can cause even the best students to freeze, a phenomenon known as "exam anxiety as it is stated Kennedy, Peters, and Thomas, 2012). The whole series of formative evaluations of this research showed that the value-added assessment model developed has met all the criteria for an e-portfolios-based assessment model and can be implemented in both institutions.

## CONCLUSION

Value-added model assessment using e-portfolios, an extremely powerful tool for determining teacher effectiveness, recognizing student growth. E-portfolios provides a much more promising avenue for assessing learners' growth and development with an emphasis on using e-portfolios as the most authentic instrument for demonstrating growth over time. The finding of this research showed that developed e-portfolios model for value-added assessment has met all the criteria for an e-portfolios-based assessment model, and can be implemented for pre-service teacher education learning assessment in both institution

## REFERENCES

- Llewellyn, D. (2013). *Teaching high school science through inquiry and argumentation*. Corwin Press.
- 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.
- Care, E., & Kim, H. (2018). Assessment of twenty-first century skills: The issue of authenticity. In *Assessment and teaching of 21st century skills* (pp. 21-39). Springer, Cham.
- 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., & Grant, L. W. (2015). *Teacher-made assessments: How to connect curriculum, instruction, and student learning*. 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, April). Factors that Contribute to ePortfolio Persistence in an Online Program. In *Society for Information Technology & Teacher Education International Conference* (pp. 1090—1095). 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. (2001). Classroom assessment. *Principles and practice for effective instruction*. Boston: Ed Allyn and Bacon.
- Pike, G. R. (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.
- Gronlund, N. E. (1998). *Assessment of student achievement*. Allyn & Bacon Publishing, Longwood Division, 160 Gould Street, Needham Heights, MA 02194-2310; tele.