Advancing Teacher Evaluation: E-Portfolio Development

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Abstract: E-portfolios are increasingly common in developed countries, with over half of colleges and universities offering e-portfolio-based learning. This study aims to enhance the quality of education in vocational high schools (SMK) in Tangerang district by using e-portfolio-based assessments to evaluate and improve teacher performance. The result is an e-portfolio assessment instrument, accessible via a website, for both teachers and students. The development model employed is the ADDIE model (Analyze, Design, Development, Implementation, and Evaluation). Tools used in this study include validation sheets, project scores, and response questionnaires. Based on expert and user validations, the assessment instrument received a score of 86.00%, categorizing it as 'very valid'. The reliability analysis showed an average reliability coefficient of 0.783, which is considered high. To improve the quality of education in vocational high schools (SMK) in Tangerang Regency, it is recommended to use e-portfolios to evaluate and improve teacher performance. The inputs and indicators for developing teacher performance should be managed by an application that is user-friendly and comprehensive, covering everything from activities to evaluations. Therefore, the e-portfolio application was created to enhance teacher performance and facilitate the evaluation process.

INTRODUCTION

Teachers are individuals who impart knowledge in areas aligned with their expertise. A person is recognized as a teacher when they possess the requisite academic qualifications and competencies, typically acquired through formal teacher training. The core of teaching lies in the capacity to educate and shape the trajectory of national development, highlighting the teacher's pivotal role in advancing the nation. The fundamental contribution of teachers in achieving national educational objectives is well acknowledged.

Teachers are recognized as educators and deemed professional when they possess the qualifications and competencies required for the subjects they teach. A professional teacher is defined by their ability to effectively plan, implement, and evaluate learning outcomes, fulfilling the core responsibilities of an educator (Kamal et al., 2021). To qualify as a professional teacher, certain professionalism components must be met, including: 1) a commitment to students during teaching and learning activities; 2) mastery of the subject matter; 3) integrity in monitoring student learning outcomes through various evaluation methods; 4) comprehensive thinking about all learning activities; and 5) adaptability within a
professional learning community. This framework emphasizes that a clear job description is essential for teachers, as their primary role is to facilitate student success. Teacher performance, encompassing achievements, work results, and conduct in educational tasks, is essential to a school's success and aligns with their duties and responsibilities in achieving educational goals in formal settings (Setiawan et al., 2021).

One form of evaluation that can facilitate performance improvement is the use of a portfolio. This approach aligns with the learning principles of the Merdeka Belajar curriculum and is deemed effective for enhancing academic achievement (Nadana & Sari, 2023). However, this research attempts to develop e-portfolios to make teacher performance more effective and efficient.

E-portfolios aim to simplify the collection and storage of teacher performance data by digitizing the process, eliminating the need for physical documents typically used in manual appraisals. Simplifying and accelerating data collection, teachers can effortlessly incorporate evidence of performance, such as video recordings of lessons, photos of activities, or digital teaching materials. Additionally, e-portfolios can seamlessly integrate with various technology tools and platforms, including learning management systems (LMS), online learning applications, and automated assessment tools. This integration fosters a cohesive ecosystem that supports both the learning process and comprehensive teacher assessment.

The utilization of e-portfolios for assessing teacher performance represents a novel approach. While e-portfolios have commonly been employed in evaluating teacher success, this particular application in performance assessment is a unique focus of research. Previous studies have utilized e-portfolios to assess teacher success (Al-Hawamdeh et al., 2023; Braddock, 2018; Ciesielkiewicz, 2019; Franco-Bayas et al., 2020; Kundre, 2021; Likhushina & Radchenko, 2021; Mudau & Van-Wyk, 2022; Nafik et al., 2020; Prihandoko et al., 2020; Rezai et al., 2022; Riojas-Cisneros et al., 2022; Rodriguez et al., 2022; Yang et al., 2020). The findings indicated a notable enhancement in the learning outcomes of teachers who adopted e-portfolios with a teacher-led conference approach.

Previous attempts have been made by Mahasneh (2020) to develop a student e-portfolio model and determine student attitudes towards the model; however, little research has been conducted on using e-portfolios for teacher performance assessment. Instead, Formative Assessment theory has gained prominence, focusing on offering feedback and intervention throughout the teaching and learning journey to enhance both teacher comprehension and student achievement. The primary goal of formative assessment is to furnish teachers with insights into learning strengths and weaknesses, enabling them to refine and adapt their instructional practices accordingly during the learning process (Yang et al., 2020).

The e-Portfolio, as a digital tool, offers convenience in evaluating teacher performance. Serving as a digital repository, it encapsulates diverse documents and evidence of a teacher's performance over a specified period. Employing e-Portfolios for assessing teacher performance yields several notable advantages (Likhushina & Radchenko, 2021). One of the primary advantages of e-Portfolios is their accessibility. Being accessible online enables teachers to manage and retrieve their performance documents from any location and at any time. This diminishes constraints on information access and facilitates easier organization and storage of performance data, enhancing efficiency for teachers (Braddock, 2018).
Unlike traditional learning media that aim to facilitate the learning process, e-Portfolios specifically support the evaluation of teacher performance. E-Portfolios make it easy for teachers to collect and display concrete evidence of their performance efficiently. They can upload various materials such as lesson plans, teaching methodologies, examples of student outcomes, learning projects, and teacher assessments. By functioning as an evidence-based learning tool, e-Portfolios facilitate a more objective and precise assessment process. Moreover, e-Portfolios foster self-reflection among teachers. Through this process, educators can evaluate their teaching approaches, pinpoint areas of strength and weakness, and devise strategies for improvement. Such self-reflection aids in the continual development and enhancement of the quality of education they deliver (Mudau & Van-Wyk, 2022; Prihandoko et al., 2020).

Drawing from the identified research gap in teacher performance appraisal, e-Portfolios emerge as a potent tool for conducting ongoing evaluations of teacher performance. The data and evidence gathered within e-Portfolios can serve as crucial components in the evaluation process, offering insights that inform teacher professional development initiatives. Consequently, e-Portfolios play a pivotal role in enhancing accountability, transparency, and the overall quality of learning within the educational setting.

METHOD

This research uses the Research and Development (R&D) method, a research technique that aims to design a particular product and assess its success rate (Bozeman, 2013). The R&D approach is employed to develop specific products and assess their effectiveness. This research adopts the ADDIE model (Analyze, Design, Development, Implementation, Evaluation) as a framework for its implementation. Ratnathatmaja and Sujana (2022) elucidate that the ADDIE Model is a structured approach devised to address issues pertaining to learning materials and devise solutions that align with existing needs and characteristics. This model delineates systematic steps in the problem-solving process for developing learning resources. In other words, the ADDIE model significantly aids teachers in crafting efficient and effective instructional products, irrespective of the type of instructional product being created (Herawan et al., 2022). The ADDIE model comprises five steps: Analysis, Design, Development, Implementation, and Evaluation. This model is widely adopted in development research due to its systematic approach and defined set of steps and procedures.

The culmination of the research is a product in the form of an e-portfolio, which can serve as an evaluation tool and enhance teacher performance through implementation using the ADDIE model. ADDIE follows an iterative design process, where the formative evaluation outcomes of each stage may prompt a revisit to the preceding stage. The flow diagram of this study is presented in Figure 1.

Figure 1. The ADDIE Model.
RESULT AND DISCUSSION

The use of e-portfolios is increasingly common in developed countries. More than half of colleges and universities in the United States currently provide some form of e-portfolio-based learning (Eynon et al., 2014). An e-portfolio, short for electronic portfolio, is a collection of digital artifacts representing an individual, group, community, organization, or institution (Hidayati et al., 2019). By using web formats, teachers can collect and continue to develop their work without limitations. The flexible capabilities of the web format allow teachers to create portfolios that reflect their efforts, development, and abilities. These teacher portfolios include collections of work that reflect their achievements in different contexts and periods and illustrate the use of key skills. This web-formatted portfolio is known as an e-portfolio, with the initial application shown in Figure 2.

![Figure 2. E-Portfolio Display.](image)

With these advantages, e-portfolios have become an effective tool in supporting teacher development and technology-oriented learning. E-portfolios encourage teachers to reflect on their learning experiences through various features that allow them to express these experiences. E-portfolios are also an effective form of assessment in encouraging teachers to hone skills that cannot be adequately assessed by traditional assessments, such as higher-order thinking, communication, and collaboration (Bidin, 2017). This suggests that assessment with e-portfolios can be used to encourage the growth of generic skills in teachers through self-reflection and the learning experiences they document in their portfolios. This is one of the significant added values of e-portfolios in supporting professional development and more comprehensive assessment. The second step presents a page of activities to be carried out by the teacher and then assessed using the e-portfolio, as shown in Figure 3.
Figure 3. Activity, Assignment and Assessment Pages.

Through the utilization of e-portfolios, teachers gain the capability to compile and present diverse evidence of their performance, including completed projects, creative works, reflective insights on learning, and other pertinent evidence (Yuliah, 2020). Implementing e-portfolios as an evaluation tool offers benefits by providing a comprehensive view of teacher development across various facets of teaching and learning. This research builds upon the framework of previous studies conducted by Alshawi & A. Alshumaimeri (2017), which have explored the effectiveness of e-portfolios as an evaluation instrument and provided positive evidence indicating its favorable impact on the teacher learning experience. These findings bolster the foundation of this research.

The developed instrument proves valuable not only for evaluating teacher performance but also for application in the functional promotion process. By storing data meticulously and orderly through e-portfolios, the documentation process for functional promotion becomes more streamlined. The data and evidence of teacher performance documented within the e-portfolio can be repurposed as the foundation for applying for functional promotion. This ensures a robust and transparent basis for assessing whether a teacher meets the requisite criteria for promotion. Such an approach contributes to enhancing fairness and objectivity in the teacher promotion process.

The development process commences with a concept review, followed by preliminary observation for a preliminary study, resulting in the creation of an e-portfolio prototype. This prototype undergoes validation testing by experts to assess its validity. If deemed relevant by the experts, the prototype is then subjected to wider testing. However, if suggestions and improvements are proposed by experts or practitioners, adjustments will be made in accordance with these suggestions before proceeding with broader trials. The objective is to ensure that the developed e-portfolio serves as a practical and effective tool in supporting teacher performance evaluation.

Based on the analysis results of the validity value of the e-portfolio assessment instrument, which included validation by two lecturers as expert validation and one SMK teacher in Tangerang as user validation, it is classified as highly valid. The findings of the expert validation analysis of the e-portfolio-based project assessment instrument are detailed in Table 1.
Table 1. Validation Results.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Average</th>
<th>Percentage</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct</td>
<td>3.92</td>
<td>80.00</td>
<td>Valid</td>
</tr>
<tr>
<td>Novelty</td>
<td>4.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. User Validation Data Results.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Average</th>
<th>Percentage</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>4.70</td>
<td>92.00</td>
<td>Very Valid</td>
</tr>
<tr>
<td>Language</td>
<td>4.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the analysis results, it is evident that the validity criteria are at a quite valid level. This is due to the fact that developing e-portfolio assessment instruments necessitates high-specification computers/laptops, along with expensive operational equipment such as computers/laptops and internet networks. However, the cost is proportional to the speed of laptop performance. Higher laptop specifications result in faster performance, which is advantageous as it accelerates tasks (Rustandi & Rismayanti, 2021). Following expert validation, the e-portfolio-based project assessment instrument underwent refinement for user validation. The results of user validation are presented in Table 2. According to Table 2, the e-portfolio-based project assessment instrument achieves a very valid level of validity. This aligns with the findings of Sinensis & Firdaus (2018), whose research on test instrument development obtained a score of 92% in the very valid category. Thus, based on the user validation data, it is evident that the e-portfolio-based project assessment instrument is highly valid.

This implementation stage aims to determine the reliability of the e-portfolio assessment instrument through assessment data during the e-portfolio development process, starting from the planning, implementation, presentation, and report stages. This is conducted through the response questionnaire of SMK teachers in Tangerang. The practicality of the e-portfolio assessment instrument obtained from the teacher response questionnaire can be seen in Table 3.

Table 3. Teacher Response.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Average</th>
<th>Percentage</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>3.67</td>
<td>91.67</td>
<td>Strongly Valid</td>
</tr>
<tr>
<td>Time</td>
<td>3.00</td>
<td>75.00</td>
<td>Strongly Valid</td>
</tr>
<tr>
<td>Scoring</td>
<td>3.50</td>
<td>87.50</td>
<td>Strongly Valid</td>
</tr>
<tr>
<td>Applicable</td>
<td>3.33</td>
<td>83.33</td>
<td>Strongly Valid</td>
</tr>
</tbody>
</table>

Based on this data, the practicality of the assessment instrument is demonstrated through the response questionnaire. The response questionnaire was administered to SMK teachers in Tangerang after the conclusion of teaching activities. Priyanto (2016) asserts that the practicality of a test serves as an indicator of the quality of a measuring instrument, determining whether it is deemed satisfactory or not. In Table 3, the teachers' responses regarding the aspects of ease of administration yielded a score of 91.67%, time management scored 75.00%, ease of scoring obtained 87.50%, and ease of interpretation and application achieved 83.33%. These high scores indicate that the teachers found the assessment instrument to be practical and user-friendly in most aspects.

The ease of administration score of 91.67% suggests that teachers found the
process of implementing the assessment straightforward and manageable, minimizing disruptions to their teaching activities. A time management score of 75.00% indicates that while the assessment was generally efficient, there is still room for improvement to ensure it fits seamlessly within the limited time available during teaching sessions. The ease of scoring at 87.50% reflects that teachers were able to quickly and accurately assess student performance using the instrument, which is crucial for timely feedback and intervention. Lastly, the ease of interpretation and application score of 83.33% signifies that teachers were able to understand and utilize the assessment results effectively to inform their teaching practices and support student learning.

The final result of this research is a product in the form of an e-portfolio, developed as an e-portoqu application, which can be implemented as a tool to evaluate and improve teacher performance using the ADDIE model. This model includes the stages of Analysis, Design, Development, Implementation, and Evaluation, ensuring a comprehensive approach to developing the e-portfolio. The e-portoqu application allows for continuous monitoring and assessment of teacher performance, facilitating ongoing professional development and improvement. By systematically applying the ADDIE model, the development of the e-portfolio model is structured and iterative, allowing for adjustments and enhancements based on feedback and evaluation at each stage. This ensures that the final product is robust, effective, and aligned with the needs of teachers and the educational objectives of the institution.

CONCLUSION

Based on the data collected during the implementation stage, subsequent analysis, and discussions outlined in the previous chapter, several key conclusions emerge: (1) the e-portfolio development assessment instruments are classified within the very valid category; (2) the reliability of these instruments in enhancing teacher performance is rated highly; and (3) the practicality of employing e-portfolio development assessment instruments as evaluation tools is deemed highly robust. To improve the quality of education in Vocational High Schools (SMK) in Tangerang Regency, it is recommended to use e-portfolios as a means to evaluate and improve teacher performance. The inputs and indicators for developing teacher performance should use an application that facilitates ease of use and can comprehensively cover all aspects, from activities to evaluation. Therefore, the e-portfolio application was created, serving as a tool to improve teacher performance and streamline the evaluation process.

REFERENCES


