

Developing Electronic Portfolios to Align with Diverse National Standards to Showcase Students' and Teachers' Performance: A Design Approach

Fabunmi Kazeem Olaiya^{ID} and Oyeronke O. Ogunlade^{ID}
Department of Educational Technology, University of Ilorin, Nigeria

Abstract

Traditional methods of documenting and assessing educational performance and achievements have often been limited in scope and accessibility. Addressing these limitations is to leverage the potential of technology to create a comprehensive and user-friendly electronic portfolio (e-portfolio) system. This study aimed to investigate the required national standard and functionalities of e-portfolios for showcasing students' and teachers' performance. This study adopted qualitative research methods to investigate the context under study. Interviews, documents, and reports with and from students, lecturers, administrators, and educational experts provided insights into the specific requirements and expectations for an effective electronic portfolio system. One hundred twenty-five participants were randomly sampled for the study in the Abuja Metropolis of Nigeria. Data were collected using a semi-structured interview and case study approach. A deductive approach was employed for the coding and analysis of the transcribed data. The findings identified several key features and functionalities required in an electronic portfolio system: Customizability and Flexibility, Alignment with Standards, Multimedia Capabilities, Reflection, and Goal-Setting Tools. Both students and teachers generally perceived the use of electronic portfolios positively. The respondents highlighted technological barriers, such as lack of necessary skills, limited access to devices or reliable internet connectivity; time constraints; and resistance to change as challenges in using e-portfolios to showcase their performance. Based on a systematic analysis of interview data from the respondents, the qualitative study offers a framework for exploring, understanding, and discussing the standard for and the impact of developing electronic portfolios for student and teacher performance.

Keywords: electronic portfolio, technology adoption, showcase, perception, students' achievement, teacher performance, national standard, approach

Introduction

A traditional portfolio, often called a physical or paper-based portfolio, is a collection of physical artifacts, such as printed documents, artwork, photographs, and other tangible items. It serves as a showcase of an individual's work, skills, and accomplishments. Traditional portfolios are commonly used in art, design, and architecture (Larsari, 2019).

The findings of Afrianto (2017) revealed that among the advantages of traditional portfolios is their tactile nature, as they allow individuals to physically interact with their work and provide a sense of authenticity. They can be customized to reflect an individual's personality and style. Traditional portfolios also offer a more personal touch during job interviews or presentations, allowing face-to-face interactions and discussions (Driessen et al., 2007). However, Traditional or paper-based portfolios often fall short of 'accurately capturing the holistic, dynamic, and interactive nature of student and teacher performance' (Afrianto, 2017). And in the rapidly evolving field of education, the need to accurately assess and showcase student and teacher performance has become increasingly important. With the rapid advancements in technology, electronic portfolios (e-portfolios) have emerged as a promising solution to address

the fallbacks of paper or traditional portfolios. E-portfolios offer a versatile platform that enables students and teachers to demonstrate their skills, achievements, and growth while aligning with state and national standards (Syzykova et al., 2021).

Electronic portfolios, also known as digital portfolios or e-portfolios, refer to digital collections of evidence that demonstrate an individual's skills, knowledge, and accomplishments. E-portfolios have gained recognition in education due to their ability to provide a comprehensive view of an individual's abilities and progress (Larsari, 2019). They offer a multifaceted approach to assessment, moving beyond standardized tests and traditional grading systems. The dynamic and interactive nature of e-portfolios allows students and teachers to showcase their work, reflections, and growth over time, providing a more authentic representation of their abilities (Modise & Mudau, 2022). This research aims to explore the process of developing an electronic portfolio system that effectively captures, assesses, and presents the performance of students and teachers in line with state and national standards.

To ensure consistency and accountability in education, states and nations have established specific learning standards that define what students should know and be able to do at different grade levels. Aligning e-portfolios with these standards provides a

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Correspondence concerning this article should be addressed to Fabunmi Kazeem Olaiya, Department of Educational Technology, University of Ilorin, Nigeria. **Email:** olaolaoluwa21@gmail.com

structured framework for meaningfully assessing student and teacher performance (Ling, 2016). According to a study by Jimoyiannis (2012), by incorporating state and national standards into the e-portfolio development process, educators can assess and track the progress of individual learners against predetermined benchmarks. This alignment enhances the assessment process and helps identify areas of strength and areas that require further development.

Implementing e-portfolios in educational settings offers numerous benefits for both students and teachers. For students, according to Ciesielkiewicz (2019), e-portfolios provide a platform to showcase their achievements, projects, and growth, allowing for a more personalized and reflective learning experience. By documenting their progress over time, students can actively engage in self-assessment, set goals, and take ownership of their learning journey. E-portfolios encourage critical thinking, collaboration, and creativity, as students can curate their work and reflect on their learning process (Beckers et al., 2016).

For teachers, e-portfolios serve as a tool for documenting and demonstrating their instructional practices, professional development activities, and student outcomes. The study by Xerri and Campbell (2016) revealed that electronic portfolios facilitate self-reflection, allowing teachers to identify areas for improvement and make evidence-based decisions to enhance their teaching strategies. Furthermore, e-portfolios provide a platform for sharing best practices, fostering collaboration among educators, and promoting a culture of continuous learning and growth (Abdel Ghany & Alzouebi, 2019).

Electronic portfolios offer significant potential for enhancing learning experiences and showcasing skills in various contexts. However, the development and implementation of e-portfolios involve several challenges and considerations. With reference to Mahasneh (2020), one significant challenge in developing e-portfolios is establishing a robust technological infrastructure. Electronic portfolios require a reliable and secure platform that supports multimedia content, interactivity, and integration with other educational systems. It was also pointed out that privacy and security concerns related to storing and sharing sensitive student and teacher data also need to be addressed, among other issues, while designing and implementing e-portfolios.

So, as education continues to evolve in the 21st century, the development and implementation of electronic portfolios offer a valuable opportunity to transform assessment practices and showcase student and teacher performance. By aligning with state and national standards, e-portfolios comprehensively and authentically represent students' and teachers' abilities, growth, and achievements. The benefits of e-portfolios extend beyond assessment, fostering self-reflection, collaboration, and a culture of continuous improvement. While challenges exist, addressing technological infrastructure and privacy concerns and providing adequate training and support can pave the way for the successful development and utilization of e-portfolios in educational settings.

Therefore, this research aims to explore the process of developing electronic portfolios specifically tailored to state and national standards, focusing on their key features, potential, challenges, and best practices for implementation. The findings from this research will contribute to the knowledge and understanding of e-portfolios' development to showcase student and teacher performance in line with state and national standards.

Review of the Related Literature

Definition of E-portfolio

Electronic portfolios have gained significant attention in educational contexts as a powerful tool for capturing and showcasing student and teacher performance. Using technology, these portfolios offer an innovative way to document and demonstrate competencies, skills, and achievements aligned with state and national standards. To begin understanding electronic portfolios, it is essential to establish a clear definition and explore their key components. Numerous definitions of electronic portfolios exist in the literature, highlighting their multidimensional nature.

Authors like Babae (2020) define electronic portfolios as a purposeful collection of work that demonstrates efforts, progress, and achievements in one or more areas over time. Electronic portfolios, also known as e-portfolios, are digital collections of artifacts that provide evidence of individuals' learning, accomplishments, and reflections. E-portfolios have gained recognition as effective assessment, reflection, and professional development tools in various educational settings (Zhang & Tur, 2022).

Purpose and Structure of E-portfolio

The purpose of an e-portfolio can vary depending on the context and intended audience. E-portfolios can serve as reflective spaces for learners to document their progress, as assessment tools to evaluate learning outcomes, or as professional portfolios to showcase achievements (Syzykova et al., 2021). It is essential to define clear goals and align them with the intended purpose of the e-portfolio (Mahasneh, 2020).

The structure and organization of an e-portfolio play a crucial role in facilitating navigation and accessibility. E-portfolios can be organized chronologically, thematically, or based on specific learning objectives (Barrett, 2007). Navigation menus, tags, and search functions contribute to the ease of use and retrieval of artifacts (Yancey et al., 2013).

Components of E-portfolio

Artifacts are the core components of e-portfolios and include a wide range of materials, such as documents, essays, presentations, projects, and multimedia files Mahasneh, (2020). These artifacts should be carefully selected to represent learners' achievements and demonstrate the desired learning outcomes (Rahayu et al., 2016). Reflective narratives accompanying artifacts provide insight into learners' thought processes and self-assessment (Lorenzo et al., 2007). Learners should be encouraged to reflect on their learning experiences, articulate the skills they have developed, and identify areas for improvement (Syzykova et al., 2021). The integration of reflection in e-portfolios enables learners to make connections between their experiences and academic or professional goals.

Multimedia elements, such as images, videos, audio recordings, and hyperlinks, are essential components of e-portfolios. They enhance the presentation of artifacts and allow for a more engaging and interactive experience. Incorporating multimedia elements into e-portfolio development will enable learners to effectively demonstrate their skills and creativity.

E-portfolio for Assessment

E-portfolios can provide evidence of learners' attainment of specific learning outcomes and competencies. Including rubrics or criteria for assessment helps assessors evaluate the level of achievement and proficiency (Babae, 2020). The alignment between artifacts, reflection, and learning outcomes ensures the e-portfolio's effectiveness as an assessment tool. E-portfolios can provide evidence of learners' attainment of specific learning outcomes and competencies. Including rubrics or criteria for assessment helps assessors evaluate the level of achievement and proficiency (Babae, 2020). The alignment between artifacts, reflection, and learning outcomes ensures the e-portfolio's effectiveness as an assessment tool.

E-portfolios offer opportunities for authentic assessment, allowing learners to demonstrate their knowledge and skills in real-world contexts (Van der Schaaf et al., 2017). Authentic assessment focuses on the application of knowledge and promotes higher-order thinking skills. Assessors can evaluate learners' ability to synthesize information, think critically, and solve problems based on the artifacts and reflections presented in the e-portfolio.

Peer and self-assessment are valuable components of e-portfolio assessment. Peer feedback provides learners with diverse perspectives, while self-assessment fosters metacognition and promotes ownership of learning (Rahim et al., 2019).

Incorporating opportunities for peer and self-assessment enhances the overall quality of the e-portfolio and supports collaborative learning environments.

Keys for a Successful Implementation of E-portfolio

Ciesielkiewicz (2019) suggested that to ensure the successful implementation of e-portfolios, the following recommendations should be considered:

1. Provide clear guidelines and support for learners and educators.
2. Select appropriate technologies.
3. Establishing clear assessment criteria.
4. Offer professional development and training opportunities to enhance digital literacy skills.
5. Foster a culture of reflection and metacognition through scaffolding and guidance.
6. Align e-portfolio activities with curriculum objectives and assessment criteria.
7. Promote collaboration and peer feedback through structured opportunities for interaction.
8. Regularly evaluate and improve the technological infrastructure supporting e-portfolios.

Benefits of E-portfolio to Students

Electronic portfolios offer various benefits for students. Alajmi (2019) says that the benefits of e-portfolios to students include their ability to promote student-centered learning, enhance metacognitive skills, foster reflection and self-assessment, facilitate formative and summative assessments, and provide opportunities for authentic assessment. They encourage active and reflective learning, promote the development of digital literacy skills, foster self-assessment, and provide a holistic view of learners' progress and achievements (Alajmi, 2019). E-portfolios also facilitate the documentation of lifelong learning and support the transition between educational levels or employment (Wilson, 2018).

Benefits of E-portfolio to Teachers

Electronic portfolios also provide valuable benefits for teachers. By documenting their instructional strategies, lesson plans, and student outcomes, teachers can reflect on their teaching practices and make informed decisions for improvement (Kukharensko & Oleinik, 2019). The study of Syzdykova et al. (2021) revealed that e-portfolios enable teachers to showcase their professional growth, highlight successful methodologies, and share best practices with colleagues. Furthermore, electronic portfolios promote collaboration and feedback among educators, fostering a culture of continuous professional development (Smolyaninova & Bezyzvestnykh, 2019).

Challenges and Perceived Limitations of E-portfolio

While electronic portfolios have numerous advantages, they also present challenges and limitations that must be considered during development and implementation. Implementing e-portfolios can pose challenges related to technological infrastructure, training and support, time constraints, and privacy concerns (Al-Hidabi et al., 2020). Ensuring equitable access to technology and addressing technical issues are critical considerations. Integrating e-portfolios into curriculum and assessment practices may require significant time and effort from learners and educators (Yancey et al., 2013). Privacy and data security should be safeguarded to protect sensitive information shared in e-portfolios.

Aligning E-portfolios with State and National Standards

Aligning e-portfolios with state and national standards is crucial to ensure that teacher and student learning documentation aligns with established learning goals and objectives. Research has shown several benefits of aligning e-portfolios with state and national standards. According to a study

by Ling (2016), alignment enhances the validity and reliability of assessments by providing clear criteria for evaluating student work. Also, the study of Syzdykova et al. (2021) revealed that alignment supports student-centered learning by allowing students to take ownership of their learning and reflect on their progress. It also facilitates accountability and transparency in education, ensuring that educational institutions meet established standards and demonstrate compliance with educational regulations.

Case Studies

Some case studies provide insights into the practical implementation of electronic portfolios aligned with state and national standards. The studies highlight successful approaches, challenges, and lessons learned from various educational settings, including K-12 schools, higher education institutions, and professional development programs.

The review by Ntuli et al. (2009) examined e-portfolios in a teacher education program and found that students' reflections in e-portfolios promoted critical thinking and professional growth. A case study by Waddoups et al. (2004) demonstrated how e-portfolios in a faculty design development allowed for assessing students' scientific inquiry skills and developing scientific reasoning abilities.

A case study by Jimoyiannis (2012) emphasized the importance of providing clear guidelines and scaffolding for students to curate and reflect on their artifacts effectively. From the existing literature, it is evident that much has been discussed about developing and implementing electronic portfolios that could provide insight to this study.

Theoretical Framework

The TPACK framework provides a theoretical foundation for integrating technology, pedagogy, and content knowledge in educational contexts. It emphasizes the interplay between these three domains and how they can be effectively combined to enhance teaching and learning experiences. In developing an electronic portfolio system for showcasing student and teacher performance, the TPACK framework can be applied to understand the complex interactions between technology, pedagogy, and content knowledge.

The TPACK framework suggests that effective technology integration in education requires an understanding of the content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK) needed for the specific educational context. In this research, the framework can guide the identification of key features and functionalities by examining how technology can support the documentation and assessment of student and teacher performance aligned with state and national standards. It considers how the electronic portfolio system can enhance pedagogical practices and leverage technology to capture and showcase evidence of learning and growth.

The TPACK framework recognizes that teachers' and students' beliefs, attitudes, and expectations towards technology are crucial in its successful integration. The research can explore teachers' and students' perceptions of electronic portfolios by considering their existing pedagogical practices (PK), content knowledge (CK), and technological knowledge (TK). By examining how these knowledge domains interact, the framework can help understand how teachers and students perceive the use of electronic portfolios for documenting and assessing achievements, skills, and growth over time.

The TPACK framework acknowledges that effective technology integration in education can positively impact student engagement, motivation, and teacher professional development. By investigating the implementation of electronic portfolios, the framework can examine the correlations between technology (TK), pedagogy (PK), and content knowledge (CK) with student engagement, motivation, and improved educational outcomes. It can also explore how electronic portfolios facilitate evidence-based decision-making and support teacher professional development at the state and national levels.

Research Questions

1. How do students and teachers perceive the effectiveness of an electronic portfolio in showcasing their performance concerning state and national standards?
2. What key features and functionalities should be included in an electronic portfolio to effectively showcase student and teacher performance in alignment with state and national standards?
3. What are the challenges and barriers students and teachers face in using an electronic portfolio to showcase their performance, and what strategies can be implemented to overcome these challenges?

Methodology

Participants

One hundred and twenty-five participants (25 educational technology experts, 25 high school principals, 25 university lecturers, and 50 university students) were purposive randomly sampled for the study. This implies that the study included a sample of participants from diverse educational settings and levels of experience. Also, three case studies were explored to gain an in-depth knowledge of developing electronic portfolios for state and national standards to showcase student and teacher performance.

Materials and Instruments

This research is qualitative research with a case study approach. Qualitative research allows for a detailed and comprehensive exploration of the research questions. It provides an opportunity to delve deeply into students' and teachers' experiences, perceptions, attitudes, and expectations regarding electronic portfolios. Morcom (2014) stated, qualitative research methodology endeavors to understand the participant's world by situating the researcher with all their values and assumptions in that world. By conducting interviews and observations, researchers can gather rich, nuanced data that comprehensively understands the topic.

The case studies approach was adopted because it involves an in-depth investigation into the understanding of a phenomenon. Data were collected from multiple sources, such as interviews, observations, documents, and archival records, to understand the case comprehensively. Case studies allow for detailed analysis of unique situations and can provide insights into complex phenomena (Khasanova, 2022).

Procedure

The 50 students were interviewed first, followed by the university lecturers, the educational technology experts, and high school principals. During analysis, new questions arose, which led to additional interviews with the ten students. In total, 15 semi-structured interviews were conducted, with an average length of 30 min. coding and analysis carried out in parallel with the data collection resulted in additional interview questions and re-interviews to examine the constructed codes and categories.

Ethical principles and guidelines, as stated in the study of Osungbade et al. (2014), were carefully followed. Informed consent from all participants in the study was also obtained. They were informed that they could withdraw from the study at any time. In order to ensure confidentiality for the participants, all participants mentioned in the interviews have been given fictitious names in transcriptions.

In the interviews, the participants were asked: How do students and teachers perceive the effectiveness of an electronic portfolio in showcasing their performance in relation to state and national standards? What are the key features and functionalities that should be included in an electronic portfolio to effectively showcase student and teacher performance in alignment with state and national standards? What are the challenges and barriers faced by students and teachers in using an electronic

portfolio to showcase their performance, and what strategies can be implemented to overcome these challenges? The interviewer used probing and follow-up questions (e.g., 'How come?', 'What do you mean?' and 'Tell me more') and took a non-judgmental approach in analyzing the data. Each interview was recorded and transcribed verbatim.

Data Analysis

The data collected were coded, edited, and analyzed. The analysis of the main results highlighted the research questions: How do students and teachers perceive the effectiveness of an electronic portfolio in showcasing their performance in relation to state and national standards? What are the key features and functionalities should be included in an electronic portfolio to effectively showcase student and teacher performance in alignment with state and national standards? What are the challenges and barriers students and teachers face in using an electronic portfolio to showcase their performance, and what strategies can be implemented to overcome these challenges? A deductive approach was used for analyzing the data. In order to get the position of the respondents on the interview items, the data were analyzed using codebook thematic analysis by carefully checking the raw data for completeness, formatting the raw data, identifying and coding concepts, and creating categories and themes concepts. The results are presented and discussed in the subsequent paragraphs.

Results and Discussion

Analysis of the background data of the respondents revealed that 50, which is 40% of the respondents who participated in the study, are students. In contrast, 75, which is 60% of the respondents who participated in the study, are teachers/instructors. Also, 75 respondents representing (60%) are male, and 50 respondents representing (40%) are female.

Research question 1: How do students and teachers perceive the effectiveness of an electronic portfolio in showcasing their performance about state and national standards?

The findings revealed that both students and teachers had positive perceptions regarding the effectiveness of electronic portfolios in showcasing their performance in relation to state and national standards. Several key themes emerged from the analysis, including increased engagement and ownership, enhanced self-reflection and self-assessment, and improved communication and collaboration. The participants expressed that electronic portfolios provided them with a platform to actively engage in the learning process and take ownership of their academic growth. They reported that the ability to curate and showcase their work in a digital format allowed them to reflect on their progress, set goals, and identify areas for improvement. This reflective practice fostered a sense of autonomy and self-assessment, enabling students and teachers to align their performance with state and national standards.

Moreover, the electronic portfolios facilitated communication and collaboration among students and teachers. Through sharing portfolios, students could receive feedback from their peers and educators, leading to a deeper understanding of their strengths and weaknesses. Teachers also noted that electronic portfolios facilitated ongoing dialogue with students and parents, promoting a partnership in monitoring and supporting student performance.

The findings of this study aligned with existing literature on the benefits of electronic portfolios in educational settings. The notion of increased engagement and ownership resonates with the work of Smolyaninova and Bezyzvestnykh (2019), who emphasized that electronic portfolios empower learners by enabling them to actively curate and showcase their work, fostering a sense of pride and ownership in their achievements.

The enhanced self-reflection and self-assessment observed in this study are consistent with the findings of previous research by Garcia & Elbeltagi (2019), in which it was revealed that electronic portfolios provide students and teachers with a structured framework to reflect on their learning journey, identify strengths, and set goals for improvement. This reflective practice has

enhanced metacognitive skills and promoted a deeper understanding of learning outcomes. The improved communication and collaboration highlighted in this study is supported by Alajmi (2019), who emphasized that electronic portfolios facilitate ongoing dialogue and feedback between students, teachers, and parents. This communication loop strengthens the learning community, promotes meaningful interactions, and enhances the alignment of student performance with state and national standards.

Research question 2: What are the key features and functionalities should be included in an electronic portfolio to effectively showcase student and teacher performance in alignment with state and national standards?

The responses from the participants revealed several key features and functionalities considered crucial for an electronic portfolio to effectively showcase student and teacher performance in alignment with state and national standards. These include Customizability and Flexibility: Participants emphasized the importance of having a customizable electronic portfolio that allows users to personalize their portfolios' layout, design, and organization. This feature enables students and teachers to highlight their unique strengths and achievements while aligning with the specific requirements of state and national standards.

Alignment with Standards: The participants expressed the need for an electronic portfolio system that provides clear guidelines and prompts for aligning artifacts and evidence with state and national standards. They emphasized the importance of having predefined categories or tags that allow easy identification and alignment of work samples, assessments, and reflections to specific standards.

Multimedia Capabilities: Participants highlighted the significance of incorporating multimedia capabilities into electronic portfolios. They stressed the need to include various media types, such as text, images, videos, and audio recordings, to effectively showcase diverse student and teacher achievements across different subjects and disciplines.

Reflection and Goal-Setting Tools: The study found that electronic portfolios should include features facilitating reflection and goal-setting. Participants emphasized the importance of having prompts or templates for guided reflection on learning experiences, growth, and areas for improvement. Tools for setting goals, tracking progress, and documenting achievements were also identified as valuable components.

The findings of this study align with previous research on the key features and functionalities of electronic portfolios. The customizability and flexibility of electronic portfolios have been recognized as crucial factors for fostering student and teacher agency and personalization (Gibson & Barrett, 2002). Allowing users to customize the layout and organization of their portfolios enhances their ability to showcase their performance while adhering to state and national standards. The importance of alignment with standards has also been highlighted in previous studies (Barbara & Madden, 2001). An electronic portfolio system that provides clear guidelines and predefined categories for aligning artifacts with specific standards ensures consistency and facilitates assessment and evaluation processes.

Incorporating multimedia capabilities in electronic portfolios has also been emphasized in the literature (Anderson & Barnett, 2013; Barrett, 2007). Including various media types allows for a richer representation of student and teacher achievements, providing a more comprehensive and diverse view of their performance. Similarly, including reflection and goal-setting tools aligns with previous research (Yancey, 2009). Guided reflection prompts and goal-setting features support metacognitive processes, facilitating deeper learning and self-regulation. These tools enable students and teachers to document their growth, identify areas for improvement, and set meaningful goals aligned with state and national standards.

Research question 3: What are the challenges and barriers students and teachers face in using an electronic portfolio to showcase their performance, and what strategies can be implemented to overcome these challenges?

Regarding research question 3, the findings show that implementing electronic portfolios as a platform for showcasing

student and teacher performance comes with some fair share of challenges and barriers. Some participants expressed concerns about technological barriers, such as a lack of necessary skills, limited access to devices, or reliable internet connectivity. Research by Buzzetto-More (2010) confirmed this assertion by indicating that students and teachers may lack the necessary skills to navigate the technology and upload content effectively. Insufficient technical support and training opportunities further exacerbate these challenges.

Another challenge revealed by this finding is the issue of time constraints. Most respondents said that creating and maintaining an electronic portfolio can be time-consuming, particularly for teachers with multiple responsibilities. This result is in consonance with the study by McKenna and Sweet (2017) that time constraints can prevent them from devoting adequate time to develop and update their portfolios effectively. Additionally, students may struggle to balance the demands of creating electronic portfolios with their academic workload.

Limited Access to Technology is another hindrance to the effective design and implementation of e-portfolios, as revealed from the participants' responses: not all students and teachers have equal access to technology and reliable internet connectivity, creating a digital divide. This is supported by Research by Barak and Doppelt (2009), which highlights that students from disadvantaged backgrounds may face barriers in accessing and utilizing electronic portfolios due to limited technology resources at home or in educational institutions.

Resistance to change is a common barrier encountered when implementing any new technology. This is the opinion of all the respondents. This is also contained in the work of Wagner et al. (2008) some teachers may be hesitant to adopt electronic portfolios due to concerns about the learning curve, additional workload, or potential resistance from students; students may also resist using electronic portfolios if they are accustomed to traditional assessment methods.

As suggested by McKenna and Sweet (2017), the strategies for overcoming these challenges include: Institutions should prioritize providing comprehensive training and ongoing technical support to both students and teachers. This could include workshops, tutorials, online resources, and dedicated support personnel to address technical challenges and enhance their proficiency in utilizing electronic portfolios. Efforts should be made to simplify electronic portfolios' creation and maintenance processes. This can involve utilizing user-friendly platforms, providing templates, and clear guidelines for portfolio development.

By minimizing the complexity, teachers and students can allocate their time more efficiently (Buzzetto-More, 2010). Institutions should strive to bridge the digital divide by providing equal access to technology resources. This can involve initiatives such as providing loaner devices, ensuring internet connectivity, or setting up computer labs with extended operating hours to accommodate students who lack access to technology outside of school (Barak & Doppelt, 2009). In addressing resistance to change, institutions should focus on addressing the concerns and reservations of teachers and students through effective communication and professional development opportunities. Emphasizing the benefits of electronic portfolios, such as enhanced reflection, personalized learning, and increased engagement, can help overcome resistance and promote adoption (Wagner et al., 2008).

Conclusion

It was evident from the study that both students and teachers had positive perceptions regarding the effectiveness of electronic portfolios in showcasing their performance in relation to state and national standards. Moreover, several key features and functionalities are crucial for an electronic portfolio to effectively showcase students' and teachers' performances in alignment with state and national standards. It also shows that implementing electronic portfolios to showcase students' and teachers' performance comes with some fair share of challenges and barriers.

Limitations and Recommendations

In this small-scale qualitative study, the small sample size limits the transferability of these findings. Nonetheless, possible future research on a larger scale should include teachers at other school levels and students from other institutions. It is important to note that the findings of this study are context-specific and may vary across different educational settings and cultures. Further research is needed to explore the implementation and effectiveness of these identified features and functionalities in diverse educational contexts.

Despite the limitations and cautions considering the generalizability mentioned above, we suggest that the findings have implications for students, teachers, and teacher education. The study contributes to the existing literature on the subject matter.

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