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Efficiency and Effectiveness of Electronic Portfolio on BS Information Technology Practicum Students

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Abstract -This research, conducted at West Visayas State University-Pototan Campus, evaluates the effectiveness of Electronic Portfolios as a reflection tool for Practicum Students in the BS Information Technology program aligned with the university's mission of fostering lifelong learners and community transformation. The study ran from February 6 to March 31, 2023, engaging 40 On-the-Job Trainees. Data collection included qualitative interviews, quantitative Likert scale responses, and pre-test and post-test questionnaires. Results reveal E-Portfolios' high efficiency and effectiveness without significant differences based on gender or practicum grades. A strong correlation exists between efficiency and effectiveness. Portfolios positively impact student performance, fostering creativity, improving language and typing skills, and facilitating self-reflection. This research underscores E-Portfolios' potential as valuable tools in outcome-based education, supporting student learning and achievements while aligning with the university's mission of producing empowered change agents.

Keywords:*electronic portfolio, practicums, Information Technology, Reflection Tool, Outcome-Based Education, Technology Integration, Educational Effectiveness*

1. Introduction

In recent years, education has witnessed a profound transformation driven by the relentless advancement of information technology. This transformation extends beyond the classroom, impacting how students are prepared for their future roles in the professional world. One pivotal innovation in this educational landscape is the Electronic Portfolio, or E-Portfolio, which has gained increasing recognition for its potential to enhance learning, assessment, and professional development.

An E-Portfolio is a digital repository that contains a curated collection of electronic artefacts, including text documents, multimedia files, images, and hyperlinks, typically hosted on web-based platforms. These portfolios are a holistic record of students' academic journey, reflecting their growth, achievements, and competencies. In the context of higher education, E-Portfolios offer a unique blend of assessment and self-reflection, providing students with opportunities to showcase their skills, document their learning experiences, and engage in metacognitive thinking.

E-Portfolios' significance lies not merely in their capacity to store and display artefacts but, more crucially, in their role as tools for authentic assessment and self-directed learning. As students compile evidence of their work and accomplishments, they develop a heightened self-awareness of their strengths and weaknesses, articulate their learning goals, and engage in reflective practices that promote deeper understanding (Lorenzo & Ittelson, 2005).

Furthermore, E-Portfolios have evolved to become interactive learning environments that foster collaboration, peer feedback, and opportunities for publication. This transformation has led to an expanded role for E-Portfolios, encompassing retrospective reflection and prospective planning, creating a dynamic space for learners to set goals and track their progress (Barrett, 2011).

Integrating E-Portfolios into educational programs holds immense potential, particularly in fields like BS Information Technology, where practical experience and skills development are paramount. This research aims to delve into the efficiency and effectiveness of E-Portfolios as a reflective tool for BS Information Technology

Practicum Students. By assessing E-Portfolios' impact on these students' learning experiences and outcomes, we seek to provide insights that can inform pedagogical practices and contribute to the broader discourse on using E-Portfolios in higher education.

2. Literature Review

A well-organized collection of work that highlights knowledge, abilities, values, and accomplishments is known as an e-portfolio. It also includes remarks or exegesis that explain the significance of the artefacts that are displayed (Cooper & Love, 2007).

Electronic Portfolios (E-Portfolios) have emerged as a dynamic and versatile tool in higher education, providing students a platform to showcase their skills, reflect on their learning experiences, and document their academic journey. In the context of BS Information Technology (IT) practicum programs, E-Portfolios have garnered attention as a means to assess and enhance student learning outcomes.

2.1. E-Portfolios and Reflective Practice

E-Portfolios are recognised for their potential to foster reflective practice among students by promoting metacognitive thinking and self-awareness of learning goals (Lorenzo & Ittelson, 2005). In alignment with this, Smith and Lee's (2019) case study in IT education demonstrated that E-Portfolios effectively enhance reflective practice, encouraging students to delve deeper into their learning experiences and outcomes. Furthermore, Barrett (2004) emphasises E-Portfolios' capacity to facilitate critical reflection, enabling students to present their learning evidence and critically analyse and reflect upon it. This multifaceted approach contributes to a more profound level of reflective practice.

Time Savings: ePortfolios can streamline the assessment process by allowing students to compile and organize their work digitally. This saves instructors time that would otherwise be spent collecting and managing physical documents.

Accessibility: Electronic portfolios are easily accessible online, which means students and instructors can access them anytime and from anywhere with an internet connection, reducing the logistical challenges associated with physical portfolios.

Customization: Students can tailor their ePortfolios to reflect their unique skills, experiences, and learning outcomes, allowing for a more personalized and efficient assessment process.

Additionally, E-Portfolios offer a collaborative dimension, as students and instructors engage in meaningful dialogues and provide feedback within the E-Portfolio environment, enriching the overall reflective experience (Batson et al., 2002). These collective insights underscore the versatile role of E-Portfolios in nurturing reflective practice among students across various educational contexts.

2.2. E-Portfolios in IT Education

An excellent instrument for higher education is a well-run e-portfolio programme. With the help of this programme, institutions can conduct real assessments of students' learning, which supports the deeper understanding that teachers desire to see in their pupils (Reynolds, 2007). For subjects requiring the submission of portfolios, an E-portfolio is an excellent alternative that could further develop a student's technological skills when appropriately used.

E-portfolios are not just for showing how students are doing in terms of meeting requirements. In addition to giving teachers a way to monitor students' development from kindergarten through high school and beyond Nelson (2011), they can also give students a chance to express who they are as individuals.

One of the significant advantages of E-Portfolios in IT education is their capacity to promote metacognitive thinking and self-assessment. As Lorenzo and Ittelson (2005) note, E-Portfolios encourage students to reflect on their IT projects, evaluate their coding techniques, and assess their problem-solving strategies. This reflective practice fosters a deeper understanding of IT concepts and the development of critical thinking skills.

Reflection and Learning: ePortfolios encourage students to reflect on their practicum experiences and connect them to their academic coursework. This reflective process promotes deeper learning and a better understanding of the practical application of IT concepts.

Assessment of Multiple Competencies: ePortfolios can showcase a wide range of skills and competencies, including technical skills, problem-solving abilities, teamwork, and communication skills. This comprehensive view of a student's capabilities provides a more accurate assessment.

Feedback and Improvement: Instructors can provide timely and constructive feedback on ePortfolios, fostering a continuous improvement mindset among students. This feedback loop enhances the learning process.

Showcasing Achievements: ePortfolios serve as a professional showcase of a student's work and accomplishments, making them valuable tools for future job interviews and career advancement.

2.3. Assessment of Learning Outcomes

E-Portfolios have emerged as valuable tools for assessing the learning outcomes of practicum students across various educational disciplines. These digital portfolios enable students to systematically collect and present evidence of their experiential learning during practicum placements. As Batson, Coleman, and Chen (2002) described, E-Portfolios offer a structured platform for students to document their achievements, reflect on their experiences, and demonstrate the acquisition of skills and competencies. The ability to incorporate multimedia elements such as text, images, videos, and project artefacts makes E-Portfolios a versatile means of showcasing the breadth and depth of learning outcomes achieved during practicum experiences.

A core element of using E-Portfolios for assessing learning outcomes among practicum students is the emphasis on reflection. E-Portfolios encourage students to engage in critical self-assessment and metacognition. Barrett (2004) underscores E-Portfolios' role in promoting reflective thinking, where students present their achievements and critically analyse their learning experiences. Through this reflective process, practicum students gain a deeper understanding of their personal and professional growth, which is instrumental in assessing the impact of the practicum on their learning outcomes.

2. 4. Comparative Analysis

Everything new should be tested to determine if it serves its purpose for the E-Portfolio. Its efficiency and effectiveness should be tested to determine its importance. Garcia and Patel (2022) conducted a comparative analysis of E-portfolio implementation in IT internships, evaluating their efficiency and effectiveness as assessment tools. Their findings shed light on the potential benefits of E-Portfolios in IT practicum settings.

According to the Buzzetto-More, (2010) results, portfolio projects proved to be beneficial in multiple ways. They assisted students in gaining a deeper understanding of learning objectives (88%), encouraged reflection on their college education (89%), and prompted contemplation of the knowledge and skills they had acquired (91%).Rubrics were utilised in the study to evaluate student e-portfolios that were gathered and assessed in addition to surveys. With the study's findings, the researcher concluded that using e-portfolios is positive.

Additionally, the study by Bryant and Chittum (2013), ePortfolio Effectiveness: A (n Ill-Fated) Search for Empirical Support, which looked into the ePortfolio landscape and tried to find out what evidence there was for the impact of ePortfolio on student outcomes, found that ePortfolio can conceivably make outstanding contributions to student learning when used properly.

Furthermore, the results of the study ITPEA on TEE in Taiwan (MeiChou, 2012), which included 318 participants, showed that e-portfolio acceptance has a significant and direct impact on evaluation effectiveness, and e-portfolio acceptance has an impact on evaluation effectiveness via computer self-efficacy. The acceptance of e-portfolios by the teachers and their self-efficacy with computers fit the influence model and the empirical evidence of evaluation effectiveness.

E-Portfolios have been recognised for their ability to empower student-centred learning. In a study by Jones and Smith (2021), E-Portfolios enabled students to take ownership of their learning experiences during IT practicum, leading to more profound insights and better preparation for the IT profession.

According to the Partnership for 21st Century Skills (2009), these abilities encompass the capacity to enhance and evaluate one's creative pursuits, integrate input and constructive feedback, perceive learning as an iterative process that encompasses failures as integral components of growth, engage in critical reflection on learning experiences, and proficiently employ various forms of media and technology for the organization, evaluation, and communication of information. ePortfolios have the potential to be an effective tool for teaching students these abilities across a variety of fields, according to theoretical justifications and recent research literature (Acker & Halasek, 2008).

This exhaustive literature review underscores the potential of E-Portfolios as valuable tools for assessing and enhancing the learning experiences of BS Information Technology Practicum Students. These studies collectively contribute to a comprehensive understanding of the efficiency and effectiveness of E-Portfolios in this educational context, offering substantial insights for educators and institutions seeking to harness the benefits of this innovative approach.

3. Objectives Of The Study

The primary purpose of this study is to determine the level of efficiency and extent of effectiveness of e-portfolios when used by practicum students as a tool for reflection.

1. What was the overall efficiency level of e-portfolios during respondents' on-the-job training (OJT), both when considering all respondents collectively and when categorizing them by gender and grades?
2. To what extent were e-portfolios effective in respondents' on-the-job training when analyzing all respondents as a whole and when segmenting them by gender and grades?
3. Did a statistically significant difference exist in the efficiency level of e-portfolios during on-the-job training when respondents were grouped based on gender and grades?
4. Was there a statistically significant difference in the effectiveness of e-portfolios during on-the-job training when respondents were categorized by gender and grades?
5. Was there a significant relationship between the efficiency and effectiveness of e-portfolios?
6. How did the utilization of e-portfolios impact students' academic performance during their on-the-job training?

3.1. Null Hypothesis

1. No statistically significant disparity was observed in the efficiency levels of e-portfolios during respondents' on-the-job training, regardless of whether they were categorized by gender or grades.
2. There was no substantial discrepancy in the effectiveness of e-portfolios during on-the-job training when considering all respondents collectively and when grouping them based on gender or grades.

3.2. Theoretical Framework

Constructivism was the theoretical foundation for this study. Constructivism is a theory that describes how humans learn via observation and empirical research. It claims that people build their knowledge and comprehension of the world via reflection and experience. When learning anything new, one must make it fit with their preexisting beliefs and knowledge, either by revising those beliefs or by dismissing the new material as unimportant. In any case, every individual actively creates their own knowledge. To accomplish this, one needs research, inquire, and evaluate the information that is necessary.

The constructivist approach to classroom learning implies the use of various alternative instructional strategies. In its most comprehensive sense, it generally involves inspiring students to actively participate in learning activities, such as experiments and real-world problem solving, to enhance their knowledge. Subsequently, students are encouraged to reflect on and articulate how their comprehension is developing. The instructor plays a pivotal role in understanding students' pre-existing ideas and tailors the learning activities to both acknowledge and build upon them. Students employed an active technique in this study,such as an e-portfolio. To document and reflect on their daily learning from their practicum, the students used an E-portfolio.
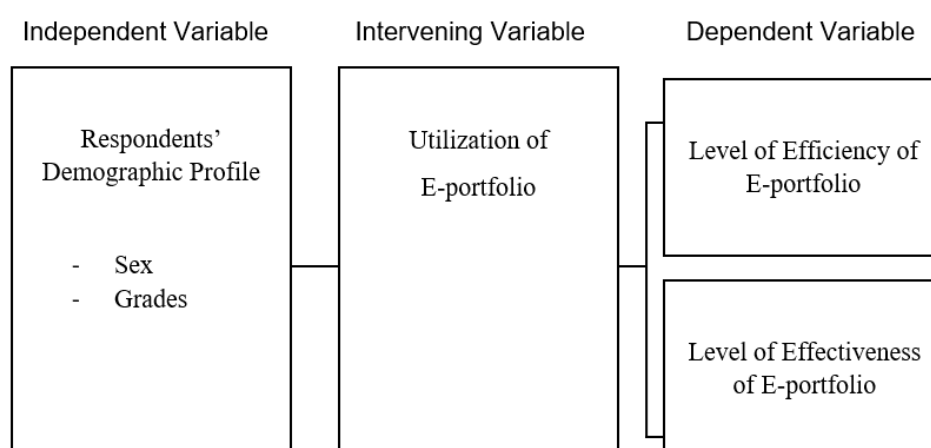
3.3. Research Paradigm

Figure 1. Diagram illustrating how the independent, intervening, and dependent variables are related.

4. Methodology

4.1. Purpose of the Study and Research Design

The purpose of this study was to determine the level of efficiency and effectiveness of e-portfolios in the students' OJT. This study was conducted between February 6, 2023, to March 31, 2023.

A descriptive survey and qualitative design were used for this study's research design. According to Fraenkel and Wallen (2006), a descriptive survey entails posing the same questions to a large number of people via mail, phone, or in-person. The independent variables were the respondents' demographic profile, including their sex and grades. The dependent variables, on the other hand, were the efficiency and effectiveness of e-portfolios in the students' OJT.

4.2. Respondents of the Study

The study respondentswere selected from the senior practicum students of BS Information Technology of West Visayas State University-Pototan Campus. Thirty students were chosen as participants in the study. Two class sessions and follow-up sessions for eight consecutive weeks were done to introduce the e-portfolio to the selected participants.

The researchers utilised the purposive sampling method as the sampling technique of this study. The researchers chose this method since not all students could attend sessions on e-portfolios-this is why the students were sent out for their practicum. Thus, only those students whose practicum venue is near the school could attend the sessions; hence, only those selected as study participants.

Table 1.Distribution of Respondents

Category	N	%
Sex		
Male	9	30%
Female	21	70%
Grades:		
Very Good	2	6.67%
Outstanding	2	6.67%
Highly Outstanding	21	70%
Excellent	5	16.67%
Entire group	30	100%

4.3. Data Gathering Instrument

This instrument was composed of two parts. The first part was the questionnaire wherein the profile of the respondents, such as the sex and grades of the participants, was asked. These data were used as the independent variables of the study. The second part was the instrument proper, wherein the level of efficiency and effectiveness was asked. On the opposite side was the five-point Likert scale the participants were asked to choose for the researchers to identify the efficiency and effectiveness of the E-portfolio. Since this instrument was crucial because it will be the data source for the research, it must undergo content validation. It was submitted to the selected jurors, experts in research and information technology, to validate the instrument for content validation. After the validation of the instrument, the researchers incorporated the suggestions into the final copy of the instrument.

Permission was asked from the campus administrator and the school's director to conduct the pre-test; after permission was granted, the corrected instrument was distributed to the participants for the pre-test for the instrument's reliability. The corrected instrument was distributed to thirty (30) students who joined the sessions but were not selected as participants in the study. After gathering the answered instrument, it was tabulated and underwent content validity. Using the SPSS,Cronbach alpha was computed from the data tabulated. According to Fraenkel and Wallen (2006),the instrument was considered reliable since the generated result of the Cronbach alpha was 0.867. Five participants were asked to participate in an interview and focus group discussion to determine further the efficiency and effectiveness of the e-portfolio from the student's point of view.

4.4. Data Gathering Procedure

After the instrument was found reliable and valid, a letter was submitted to the school director of Information Technology and the campus administrator. After the permission was granted, the instrument was distributed to the selected participants. They were given ample time to answer the instrument, as they were assisted in case

they could not understand the instructions. After the instrument was answered, it was gathered, tabulated and analysedusing descriptive and inferential statistics.

4.5. Data Processing and Statistical Treatment

Utilising SPSS, or the Statistical Package for Social Sciences, the data collected from the respondents was tabulated and analysed. Using this programme, a variety of statistical approaches might be utilised to address the study's issues.

This study employed both descriptive and inferential statistical methods to analyze the data collected from the participants. Descriptive statistics, specifically frequency, percentage, and mean, were utilized in the analysis. Frequency and percentage were employed to provide a comprehensive profile of the participants, while the mean was used to assess the degree of efficiency and effectiveness.

For the interpretation of the mean in the level of efficiency, the following scale was used:

Scale	Description
4.21-5.00	Very Highly Efficient
3.41-4.20	Highly Efficient
2.61-3.40	Efficient
1.81- 2.60	Moderately Efficient
1.00-1.80	Least Efficient

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Scale	Description
4.21-5.00	Very Highly Effective
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In this study, inferential statistics were employed, specifically non-parametric tests, due to the nature of the data collected from the respondents, which consisted entirely of nominal and ordinal variables based on the study's instruments and variables. According to Broto (2008), non-parametric tests are suitable for handling nominal and ordinal data.

The Mann-Whitney U test was used when comparing two independent groups. This test serves as a non-parametric alternative to the t-test for independent samples, as noted by Pallant (2004). In this study, the Mann-Whitney U test was employed to determine whether there was a significant difference in the efficacy and efficiency of the e-portfolio when respondents were divided into gender-based groups.

Conversely, the Kruskal-Wallis H Test served as the non-parametric substitute for one-way analysis of variance (ANOVA). It allowed for the comparison of various variables across three or more groups, as explained by Pallant (2004).

Furthermore, the study utilized Spearman's rho Rank Order Coefficient of Correlation to ascertain the presence of a significant relationship between the level of efficiency and the level of effectiveness of the e-portfolio.

A.   For finding the significant difference and significant relationshipscale:

p<.05   Significant

p>.05   Not significant

B.   For determining the strength of the relationship

Correlation Value	Degree of Relationship
less than +0.20	Slight correlation
+0.21 to +0.40	Low correlation
+0.41 to +0.70	Moderate correlation
+0.71 to +0.90	High correlation
+0.91 to +1.00	Very high correlation

5. Results And Discussions

5.1. Level of Efficiency of E-portfolio on the OJT of the Students

Table 2 reveals the efficiency level of e-portfoliosin the OJT of the students. It is shown in the table that the level of efficiency of e-portfolios on the OJT of the students, when taken as a whole, is "Very Highly Efficient" (M=4.5, SD=0.603).

When the respondents were grouped according to age, both male and female respondents considered e-portfolios to be "Very Highly efficient", but between the two,the male got the highest mean (M=5.58, SD=0.893). In contrast, the female got the lowest mean (M=4.46, SD=0.495).

Moreover, when the respondents were grouped according to grades, three out of four groups, namely very good, highly outstanding and excellent, rated the e-portfolio as "Very highly efficient". In contrast, only one group, the outstanding group, rated the e-portfolio as "highly efficient". Out of the four groups, students with excellent grades got the highest mean (M=4.48, SD=0.53), described as "Very highly efficient", while students with outstanding grades got the lowest mean (M=3.93, SD=0.106) and described as "highly efficient."

Table 2. Level of Efficiency of E-portfolio on the OJT of the Students

As a whole	N	Mean	SD	Description
	30	4.5	0.603	Very Highly Efficient
Sex				
Male	9	4.58	0.893	Very Highly Efficient
Female	21	4.46	0.495	Very Highly Efficient
Grades				
Very Good	2	4.7	1.414	Very Highly Efficient
Outstanding	2	3.93	0.106	Highly Efficient
Highly Outstanding	21	4.44	0.445	Very Highly Efficient
Excellent	5	4.48	0.53	Very Highly Efficient

Scale:

Scale	Description
4.21-5.00	Very Highly Efficient
3.41-4.20	Highly Efficient

2.61-3.40	Efficient
1.81- 2.60	Moderately Efficient
1.00-1.80	Least Efficient

5.2. Level of Effectiveness of E-portfolio on the OJT of the Students

Table 3 showed that the level of effectiveness of e-portfolios on the OJT of the students, when taken as a whole, was "very highly effective" (M=4.5,SD=.426).When grouped according to sex, though both groups rated e-portfolio as "very highly effective, again, it was the male group who got the highest mean (M=4.54, SD=0.386) while the female group got a mean of (M=4.47, SD=0.448).In grouping the respondents according to their grades, all four groups rated e-portfolios "highly effective". However, out of the four groups, students with excellent grades got the highest mean (4.69, SD=0.419), while those with outstanding grades got the lowest mean (M=4.38, SD=0.672).

Table 3. Level of Effectiveness of E-portfolio on the OJT of the Students

	N	Mean	SD	Description
As a whole	30	4.5	0.426	Very Highly Effective
Sex				
Male	9	4.54	0.386	Very Highly Effective
Female	21	4.47	0.448	Very Highly Effective
Grades				
Very Good	2	4.55	0.212	Very Highly Effective
Outstanding	2	4.38	0.672	Very Highly Effective
Highly Outstanding	21	4.45	0.435	Very Highly Effective
Excellent	5	4.69	0.419	Very Highly Effective

Scale:

Scale	Description
4.21-5.00	Very Highly Effective
3.41-4.20	Highly Effective
2.61-3.40	Effective
1.81- 2.60	Moderately Effective
1.00-1.80	Least Effective

5.4. Significant Difference in the Level of Efficiency of E-portfolio on the OJT of the Students

Table 4a shows the Mann-Whitney U test results, which were used to find the significant difference in the level of efficiency of the e-portfolio on the OJT of the students when respondents were grouped according to their age. Results revealed that the significance (p) of 0.569 is greater than .05 (.569>.05). Thus, it means that no significant difference exists between the two groups.

Table 4a. *Mann-Whitney Results on the Significant Difference in the Efficiency Level of E-portfolio on the OJT of the Students when the respondents were grouped according to sex.*

Category	U	Significance	Interpretation
Level of efficiency	86	0.569	not significant

scale:

p<.05	Significant	
p>.05	not significant	

Table 4b shows the Kruskal-Wallis Test results, which were used to find the significant difference in the level of efficiency of the e-portfolio on the OJT of the students when respondents were grouped according to their grades. Results revealed that the significance (p) of 0.187 is more significant than .05 (.187>.05). Thus, it means that no significant difference exists between the four groups.

Table 4b. Kruskal Wallis Results on the Significant Difference in the Efficiency Level of E-portfolio on the OJT of the Students when the respondents were grouped according to grades.

Category	df	Chi-square	Significance	Interpretation
Obedience to the ordinance	3	4.802	0.187	not significant
scale:				
p<.05	significant			
p>.05	not significant			

5.5. Significant Difference in the Level of Effectiveness of E-portfolio on the OJT of the Students

The results revealed that the significance value (p) of 0.66 was more remarkable than its significant level, 0.05. This finding means that no significant difference occurred in the level of effectiveness of e-portfolios on the OJT of the students when the respondents were grouped according to their sex.

Table 5a. When respondents were divided into sex-based groups, the Whitney Results showed a significant difference in the level of effectiveness of the students' online portfolios during their on-the-job training.

Category	U	Significance	Interpretation
Level of efficiency	89	0.66	not significant
scale:			
p<.05	Significant		
p>.05	not significant		

Table 5b revealed the results on the significant difference in the level of effectiveness of e-portfolios on the OJT of the students when the respondents were grouped according to grades. It is shown in the table that the significance (p), which is 0.699, was greater than 0.05, which is the significant level that was used in the study. This result means that no significant difference existed in the level of effectiveness of e-portfolios on the OJT of the students when the respondents were grouped according to grades.

Table 5b. Kruskal Wallis Results on the Significant Difference in the Level of Effectiveness of E-portfolio on the OJT of the Students when the respondents were grouped according to grades.

Category	df	Chi-square	Significance	Interpretation
Obedience to the ordinance	3	1.428	0.699	not significant
scale:				
p<.05	significant			
p>.05	not significant			

5.6. Significant Relationship Between the Level of Efficiency and Effectiveness of E-portfolio on the OJT of the Students.

The results revealed that a significant relationship existed between the level of efficiency and the level of effectiveness of e-portfoliosin the OJT of the students. Furthermore, the value of the coefficient of correlation, which is 0.814, signifies a high correlation between the level of efficiency and level of effectiveness of e-portfolios on the OJT of the students.

Table 6. Spearman Rho Results on the Significant Relationship Between the Level of Efficiency and Level of Effectiveness of E-portfolio on the OJT of the Students.

	N	r_s	Degree of Relationship	significance	Interpretation
Level of Efficiency and Level of Effectiveness	30	0.814	High correlation	0.00	significant

Scale:

A.   Significance

p<.05	Significant
p>.05	not significant

B.   Strength of Relationship

Correlation Value	Degree Of Relationship
less than ±0.20	Slight correlation
±0.21 to ±0.40	Low correlation
±0.41 to ±0.70	Moderate correlation
±0.71 to ±0.90	High correlation
±0.91 to ±1.00	Very high correlation

5.7 Effects of E-Portfolio on the Performance of the Students in Their OJT

A focused interview on how e-portfolios affect the performance of the students on the OJT revealed the following results:

Student 1:

BS Information Technology Fourth Year student, WVSU-PC

"Even though I am an IT student, I have not experienced an E-Portfolio, so I am excited to start working on it. E-Portfolio has helped me to enhance my skills and document my experiences. AnE-Portfolio is an efficient and effective tool for developing the student's innate talent. It has also given me confidence as I perform my duties as an On-the-Job-Trainee."

E-portfolios can be utilised for a variety of objectives, some of which may change as students advance through their programmes. This individual intentionally began their e-portfolio journey with a focus on self-discovery and self-expression, primarily within the "about me" section of their e-portfolio. Subsequently, they proceeded to engage in conversations about their academic and learning objectives with their family. Finally, they emphasized the professional aspect of their learning journey by showcasing some of their most significant work, which served as a reflection of their notable achievements and personal growth over time.

Student 2:

BS Information Technology Fourth Year student, WVSU-PC

"It was the first time I had posted a website summary of my works and ideas. I had the opportunity to learn about the skills I should be studying in college through the e-portfolio experience, and I discovered ways to monitor my progress. The experience was enjoyable for me because it gave me a sense of professionalism. It was originally difficult for me because I had never been taught how to consider the results of talents. IT WAS VERY USEFUL in determining the kinds of information, abilities, or skills I had gained via volunteer work or internship experiences."

"I have had a lot of interesting events, but I was unsure of their significance or how they related to one another. I can now recognise themes and patterns in the work I've been doing and how everything fits together. It everything makes sense; there has always been a purpose to the job I've been doing. I also recognise that my identity and my job both represent me."

This student discusses the integration of learning—"how things fit together"—as a result of their reflection and electronic portfolio. She also mentions her developing self-awareness and assurance in her ability to function well in many contexts.

Student 3:

BS Information Technology Fourth Year student, WVSU-PC

"Now that I am more knowledgeable about the software used to create Web sites, I have made the decision to use my e-portfolio to showcase and highlight all of the abilities I have acquired throughout my time at WVSU-PC. Overall, my e-portfolio shows that I'm a professional who is focused on the future and has a lot of ambitions to pursue."

"I've improved my technical knowledge and learnt how to communicate my seriousness about learning and commitment to hard work. The many parts of my electronic portfolio helped me grasp the key aspects of who I am and how I perceive myself in the now and in the future. I now have a better understanding of who I want to be and how I can achieve my goals because to my experience with e-portfolios. It is a gathering place for motivated and inventive IT students."

6. Conclusions

In conclusion, the findings of this study led to several key conclusions. Firstly, the null hypothesis suggesting no significant difference in E-Portfolios' efficiency based on gender or grades among the students during their OJT was accepted. This result indicates that, in terms of efficiency, E-Portfolios perform consistently across different gender and academic performance groups. Similarly, the null hypothesis concerning E-Portfolios' effectiveness based on gender or grades was also accepted, signifying that E-Portfolios are equally effective for all students in enhancing their OJT experiences. However, it's important to note that the null hypothesis was rejected, asserting no significant relationship between the efficiency and effectiveness of E-Portfolios on the respondents' OJT. This finding suggests that while E-Portfolios may exhibit consistent efficiency and effectiveness across different student groups, a significant interconnection existsbetween these two dimensions, emphasising the intertwined nature of efficiency and effectiveness in the context of E-Portfolios during OJT.

7. Recommendations

Drawing from the insightful findings of this study, several recommendations emerge that can significantly contribute to optimisingstudents' learning experiences. Educators should proactively incorporate technology, such as E-Portfolios, into their teaching methodologies. The study's results affirm the high efficiency and effectiveness of E-Portfolios, emphasising their potential as powerful tools for facilitating student learning. Secondly, teachers should underscore the importance of technology literacy, particularly in E-Portfolios, by educating students about its role in efficient time management. Equipping students with the skills to harness E-Portfolios for time-sensitive tasks can enhance their academic and professional development. Lastly, it is recommended that E-Portfolios be introduced not only to students undergoing OJT but also to all students who are required to write reports or reflections on their daily academic activities. By integrating E-Portfolios into broader aspects of education, students can cultivate digital competencies and reflective practices that will benefit them throughout their academic journey and future careers.

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