Article

Digital assessment and evaluation practices in teacher education: A study of institutions offering teacher education programs in Anambra state

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Abstract: This study investigates digital assessment and evaluation practices among lecturers in institutions offering teacher education programs in Anambra State, Nigeria. A quantitative research design was adopted, employing a structured questionnaire to collect data on lecturers' demographics, utilization of digital assessment tools, perceived benefits and challenges, and factors influencing adoption. The questionnaire, validated for reliability using the Cronbach Alpha method ($\alpha = 0.88$), was distributed to 110 lecturers selected through convenience sampling. Data analysis included t-tests to examine differences in digital assessment practices based on demographic variables. Ethical considerations were addressed, ensuring participants' informed consent and confidentiality. The study sheds light on the current landscape of digital assessment practices in teacher education, offering insights for improving pedagogical approaches and enhancing educational outcomes in Anambra State.

Keywords: digital assessment; evaluation practices; teacher education; institutions; teacher education

1. Introduction

Digital assessment involves the use of technology to evaluate students' learning outcomes and progress. It encompasses various methods such as online quizzes, computer-based tests, and digital portfolios. Digital assessment offers benefits such as immediate feedback, flexibility in assessment formats, and the ability to collect and analyze data for informed decision-making [1]. However, challenges such as the digital divide and concerns about validity and reliability persist. Despite these obstacles, digital assessment holds promise for enhancing teaching and learning by promoting active engagement, personalized feedback, and data-driven instruction [2].

Digital evaluation refers to the process of using digital technologies to assess and analyze various aspects of educational programs, projects, or initiatives. It encompasses the collection, analysis, and interpretation of data related to student performance, program effectiveness, and learning outcomes using digital tools and platforms [3,4]. Digital evaluation methods include the use of online surveys, data analytics software, learning management systems, and other digital assessment tools to gather and analyze information [5]. Digital evaluation offers advantages such as scalability, real-time monitoring, and the ability to track progress over time. It enables educators, administrators, and policymakers to make data-informed decisions, improve program effectiveness, and enhance student learning experiences.

Digital assessment and evaluation practices have become increasingly prominent in teacher education programs, offering opportunities to enhance teaching and learning processes. Digital assessment and evaluation encompass a range of methods and tools that leverage technology to assess students' learning outcomes and evaluate their

academic progress. These practices include online quizzes, digital portfolios, computer-based tests, and automated grading systems [6,7]. One of the primary benefits of digital assessment is its potential to provide immediate feedback to students, allowing for timely intervention and personalized learning experiences [8]. Moreover, digital assessment tools offer flexibility and accessibility, enabling educators to assess students' knowledge and skills in diverse formats and settings [9].

Teacher education refers to the process of preparing individuals to become educators, typically through formal programs offered by colleges, universities, or other educational institutions. These programs aim to equip prospective teachers with the knowledge, skills, and competencies needed to effectively teach and support student learning in various educational settings [10]. Teacher education programs typically include coursework in pedagogy, educational psychology, curriculum development, classroom management, and subject-specific content knowledge. In teacher education programs, digital assessment and evaluation practices play a crucial role in preparing future educators for the demands of 21st-century classrooms. These practices not only enhance the efficiency of assessment processes but also facilitate the development of digital literacy skills among pre-service teachers [11]. By incorporating digital assessment tools into their coursework, teacher education programs can better align their curricula with the evolving needs of the digital age.

However, despite their numerous benefits, digital assessment and evaluation practices in teacher education are not without challenges. One of the primary concerns is the digital divide, which refers to disparities in access to technology and internet connectivity among students and educators [12]. In regions with limited technological infrastructure, implementing digital assessment practices can be challenging, potentially exacerbating inequalities in educational outcomes. Additionally, concerns about the validity and reliability of digital assessment methods persist, particularly regarding issues such as cheating and security breaches [13]. Educators must carefully consider these challenges when designing and implementing digital assessment strategies in teacher education programs.

Despite these challenges, the integration of digital assessment and evaluation practices in teacher education holds significant promise for improving pedagogical outcomes and preparing future educators for the digital age. By leveraging technology effectively, teacher education programs can enhance assessment practices, promote active learning, and foster critical thinking skills among pre-service teachers [14]. Moreover, digital assessment tools offer opportunities for educators to collect and analyze data on students' learning outcomes, informing instructional decision-making and promoting evidence-based teaching practices.

1.1. Statement of the problem

Institutions offering teacher education programs in Anambra State are increasingly integrating digital assessment and evaluation practices into their curricula. However, there is limited research on the current landscape of digital assessment and evaluation practices in these institutions, including the extent of their adoption, the perceived benefits and challenges, and the factors influencing their implementation. The problem of poor digital assessment and evaluation practices in teacher education

arises from various factors including inadequate training, limited access to technology, resistance to change, infrastructure deficits, insufficient policy support, and pedagogical challenges. These issues hinder the effective integration of digital tools into teacher education programs, compromising educators' digital literacy skills and impeding innovative teaching and learning. Addressing these challenges requires comprehensive training, improved access to technology, a culture of innovation, and supportive policies.

By overcoming these obstacles, teacher education programs can better prepare educators to utilize digital assessment and evaluation practices effectively, ultimately enhancing the quality of education provided to students. Consequently, there is a gap in understanding how digital assessment and evaluation practices are being utilized in teacher education programs in Anambra State and their impact on teaching and learning outcomes. Addressing this gap is essential for informing evidence-based practices and promoting the effective integration of digital technologies in teacher education.

1.2. Theoretical framework

The study was anchored on Constructivist Theory pioneered by Jean Piaget and further developed by Lev Vygotsky, asserts that learners actively construct their own understanding and knowledge of the world through experiences and reflection. Emerging in the early 20th century, this theory emphasizes the importance of hands-on, experiential learning and the role of social interaction in cognitive development. Central tenets of constructivism include the idea that learning is an active process of constructing meaning, that learners bring prior knowledge and experiences to new learning situations, and that learning is facilitated through authentic, real-world tasks and collaborative activities.

In the context of digital assessment and evaluation practices in teacher education institutions in Anambra State, Nigeria, Constructivist Theory suggests that assessments should focus on students' ability to construct their own understanding of educational concepts using digital tools. Assessments might involve tasks such as creating digital portfolios, developing multimedia presentations, or participating in online discussions where students engage with authentic educational content and collaborate with peers. Evaluations would emphasize not just the final product, but also the process of learning, including students' ability to reflect on their experiences and integrate feedback from both peers and instructors. This approach aligns with constructivist principles by promoting active, experiential learning and leveraging digital tools to enhance student engagement and understanding.

1.3. Objectives

1) To investigate whether gender significantly influences digital assessment and evaluation practices in the educational setting.
2) To assess the impact of varying years of experience on digital assessment and evaluation practices among educators.

3) To explore potential differences in digital assessment and evaluation practices between educators with a background in science and those with a background in arts.

1.4. Hypotheses

1) The digital assessment and evaluation practices do not significantly differ based on gender.
2) There is no significant difference in digital assessment and evaluation practices based on varying years of experience.
3) There is no significant difference in digital assessment and evaluation practices between educators with a background in science and those with a background in Arts

2. Methodology

This study adopts a quantitative research design. A structured questionnaire was developed to collect data from lecturers across various institutions offering teacher education programs in Anambra State. In Anambra State, institutions like Nwafor Orizu College of Education, Anambra State College of Education, and Federal College of Education (Technical) Umunze offer teacher education programs. Additionally, Chukwuemeka Odumegwu Ojukwu University, and Nnamdi Azikiwe University provide undergraduate and postgraduate education degrees. These institutions play a vital role in preparing educators through programs like Nigeria Certificate in Education (NCE) and degrees, fostering academic excellence, research, and practical experiences.

The questionnaire comprised both closed-ended and Likert-scale items to gather information on lecturers' demographics, utilization of digital assessment tools, perceived benefits and challenges, and factors influencing adoption. The instrument's reliability was verified using the Cronbach Alpha method, resulting in a coefficient of 0.88. This indicates strong internal consistency within the questionnaire, affirming its reliability in accurately measuring the intended variables. A convenience sampling technique was employed to select 110 lecturers from different institutions offering teacher education programs in Anambra State. Lecturers were chosen based on their availability and willingness to participate in the study. The questionnaire was distributed electronically to the selected lecturers via email and social media platforms. Participants were provided with detailed instructions on how to complete the questionnaire and were assured of the confidentiality of their responses. A deadline for questionnaire submission was set to ensure timely data collection.

The collected data were analyzed using t-tests to test hypotheses related to the utilization of digital assessment tools and techniques among lecturers. Specifically, t-tests were conducted to compare means and determine whether there were significant differences in the adoption of digital assessment practices based on demographic variables such as gender, years of teaching experience, and academic rank. Ethical considerations were carefully addressed throughout the study. Participants were informed about the purpose of the research, their voluntary participation, and the confidentiality of their responses. Informed consent was obtained from all participants

prior to their involvement in the study.

3. Results

The frequency distribution summary in **Table 1** reveals insights into the sample's demographic variables. Gender distribution shows 44 males (40.0%) and 66 females (60.0%), indicating a slight female majority. Regarding Years in Services, there's an even split with 55 individuals (50.0%) having > 10 years and 55 (50.0%) < 10 years. In terms of Discipline, 44 individuals (40.0%) belong to science, while 66 (60.0%) are in Arts. This suggests a higher representation of females, an equal distribution across years of service, and a larger presence in the Arts discipline. Overall, the sample comprises a diverse mix across these demographic categories.

Table 1. Frequency distribution summary for demographic variables.

		Frequency	Percent	Valid Percent	Cumulative Percent
	Male	44	40.0	40.0	40.0
Valid	Female	66	60.0	60.0	100.0
	Total	110	100.0	100.0	
	> 10 years in services	55	50.0	50.0	50.0
Valid	< 10 years in services	55	50.0	50.0	100.0
	Total	110	100.0	100.0	
	Science	44	40.0	40.0	40.0
Valid	Arts	66	60.0	60.0	100.0
	Total	110	100.0	100.0	

Research Hypothesis 1: The digital assessment and evaluation practices do not significantly differ based on gender.

Table 2 presents a comparison of means between male and female groups regarding digital assessment and evaluation practices. The mean score for males is 62.36 with a standard deviation of 15.15, while for females, it is 63.74 with a standard deviation of 15.99. The *t*-calculated value is 0.45, lower than the *t*-critical value of 1.66, with a *p*-value greater than 0.05. Therefore, we fail to reject the null hypothesis. It suggests that there is no significant difference in digital assessment and evaluation practices between genders, supporting the hypothesis that these practices do not vary significantly based on gender.

Table 2. Comparison of means between male and female groups.

Gender	N	mean	SD	DF	*t*-Cal	*t*-Crit	*p*-value
Male	44	62.36	15.15				
				108	0.45	1.66	0.05
Female	66	63.74	15.99				

Research Hypothesis 2: There is no significant difference in digital assessment and evaluation practices based on varying years of experience.

Table 3 compares means based on years in service for digital assessment and

evaluation practices. Individuals with more than 10 years of service have a mean score of 64.97 and a standard deviation of 14.83, while those with less than 10 years have a mean score of 59.40 and a standard deviation of 14.63. The calculated *t*-value is 1.98, exceeding the critical *t*-value of 1.66, with a *p*-value less than 0.05. Thus, we reject the null hypothesis. There is a significant difference in digital assessment and evaluation practices based on varying years of experience, indicating that experience level influences these practices.

Table 3. Comparison of means based on years in service.

Years in services	N	mean	SD	DF	*t*-Cal	*t*-Crit	*p*-value
> 10 years in services	55	64.97	14.83				
				108	1.98	1.66	0.05
< 10 years in services	55	59.40	14.63				

Research Hypothesis 3: There is no significant difference in digital assessment and evaluation practices between educators with a background in science and those with a background in Arts

Table 4 compares means between educators with backgrounds in Science and Arts regarding digital assessment and evaluation practices. The mean score for science educators is 39.05 with a standard deviation of 15.67, while for Arts educators, it is 53.71 with a standard deviation of 20.47. The calculated *t*-value is 4.2, exceeding the critical *t*-value of 1.66, with a *p*-value less than 0.05. Hence, we reject the null hypothesis. There's a significant difference in digital assessment and evaluation practices between educators with backgrounds in science and those in Arts, suggesting that disciplinary background influences these practices.

Table 4. Comparison of means between disciplines.

Discipline	N	mean	SD	DF	t-Cal	t-Crit	p-value
Science	44	39.05	15.67				
				108	4.2	1.66	0.05
Arts	66	53.71	20.47				

4. Discussion

The findings suggests that there is no significant difference in digital assessment and evaluation practices between genders, supporting the hypothesis that these practices do not vary significantly based on gender. The assertion that digital assessment and evaluation practices do not significantly differ based on gender is supported by recent research findings. For instance, a study by Darmaji et al. [8] found no significant gender differences in students' perceptions of digital assessment tools' effectiveness. Similarly, Ogunbodede et al. [12] observed comparable utilization rates of digital evaluation methods among male and female educators in Nigeria. In contrast, a study by Orji et al. [13] identified slight variations in the types of digital assessment tools preferred by male and female students but concluded that these differences were not statistically significant. Additionally, findings from a related study by Adewale et al. [14] indicated similar levels of satisfaction with digital assessment platforms among

male and female teachers in Nigerian schools. Overall, these findings align with the assertion that digital assessment and evaluation practices do not significantly differ based on gender, highlighting the need for gender-neutral approaches in implementing educational technologies.

The findings indicates that experience level significantly influences digital assessment and evaluation practices. For instance, a study by Falchikov [5] found that educators with more than ten years of experience tend to employ traditional assessment methods, while those with less experience utilize digital tools more frequently. Similarly, Gaafar [1] observed a significant correlation between years of experience and the utilization of digital assessment platforms, with novice educators showing greater proficiency in digital assessment practices. In contrast, Abuhassna et al. [15] found no significant difference in digital assessment practices based on experience level, suggesting that other factors may also play a role in educators' adoption of digital technologies. Additionally, findings from a related study by Salameh et al. [16] indicated that experienced educators may demonstrate greater resistance to integrating digital assessment tools into their teaching practices due to familiarity with traditional methods. Overall, these findings underscore the complex relationship between experience level and digital assessment practices, highlighting the need for further research to explore this dynamic.

The study found a significant difference in digital assessment and evaluation practices between educators with backgrounds in science and those in Arts. Watts et al. [17] found that educators from science disciplines tend to employ more quantitative assessment methods, such as online quizzes and simulations, whereas those from Arts disciplines prefer qualitative assessment tools like essays and portfolios. Similarly, Quarati and Raffaghelli [18] observed a significant correlation between disciplinary background and the use of digital assessment platforms, with science educators demonstrating higher proficiency in utilizing technology-enhanced assessment methods. In contrast, Tang et al. [19] found no significant difference in digital assessment practices between educators with Science and Arts backgrounds, suggesting that other factors may also influence assessment practices. Additionally, findings from a related study by Viljoen [20] indicated that disciplinary background may impact educators' perceptions of digital assessment platforms, with science educators expressing more favorable attitudes towards technology integration. Overall, these findings highlight the importance of considering disciplinary background when designing and implementing digital assessment practices in educational settings.

5. Conclusion

In conclusion, our study on digital assessment and evaluation practices in teacher education programs in Anambra State reveals several important findings. Firstly, there is a significant difference in digital assessment and evaluation practices based on varying years of experience among educators, indicating that experience level influences the utilization of digital tools in assessment. Secondly, there is also a significant difference in digital assessment practices between educators with backgrounds in science and those in Arts, suggesting that disciplinary background plays a role in shaping assessment practices. These findings underscore the importance

of considering educators' experience level and disciplinary background when designing and implementing digital assessment strategies in teacher education programs. Additionally, our study highlights the need for targeted interventions to support educators in utilizing digital tools effectively across different contexts.

The study underscores how educators' experience and disciplinary background shape digital assessment practices. To bolster teacher education in Anambra State, several key recommendations emerge. Firstly, instituting comprehensive training programs is crucial, equipping educators with the skills to seamlessly integrate digital tools into teaching and assessment. Secondly, there's a pressing need for infrastructure enhancement to ensure widespread access to technology, facilitating the adoption of digital assessment methods across educational institutions. Clear guidelines and policies must be formulated to provide educators with support and direction in implementing digital assessment practices consistently. Moreover, fostering a culture of collaboration among educators is essential for sharing best practices and fostering innovation. Lastly, further research is imperative to delve deeper into the effectiveness of digital assessment practices within Anambra State's educational landscape, providing evidence-based insights for continuous improvement.

Conflict of interest: The author declares no conflict of interest.

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