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Perceived Digital Assessment Strategies for Prevention of Examination Malpractice among Students in Tertiary Institutions in Anambra State

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ABSTRACT:
This study investigates the perceived effectiveness of digital assessment strategies in preventing examination malpractice among students in tertiary institutions in Anambra state. A survey design was employed, and self-structured questionnaires were used for data collection. The questionnaire was duly validated by three experts. The sample size consisted of 100 students in tertiary institutions in Anambra state. The study addresses three research questions and two hypotheses related. Levene's test and subsequent t-tests revealed significant gender-based differences in attitudes and the impact of digital literacy. The findings underscore the importance of tailored educational interventions to enhance students' awareness, attitudes, and digital literacy, especially considering the diverse needs and perceptions of male and female students. The study contributes valuable understandings for educational policymakers and institutions in Anambra State, recommending targeted initiatives such as educational campaigns and workshops to promote a positive attitude toward digital assessment strategies and equip students with the necessary digital skills. Ultimately, this research provides a foundation for refining and implementing effective digital assessment strategies to mitigate examination malpractice among students in tertiary institutions in the state.

Keywords: Digital assessment, prevention, examination, malpractice, tertiary institutions, students.

INTRODUCTION:

In recent years, the increasing prevalence of examination malpractice has posed a significant challenge to the integrity of assessments in tertiary institutions. In response to this, educators and administrators are exploring innovative strategies to curb malpractices and uphold the credibility of examinations (Chinonso, 2022; Onwuzo, 2014). One promising avenue is the adoption of digital assessment strategies. This approach leverages technology to create a secure and transparent examination environment, thereby minimizing the opportunities for malpractice among students (Widiastuti et al., 2021). One key digital assessment strategy is the implementation of online examinations. By transitioning from traditional paper-based exams to online formats, institutions can introduce features such as randomized question banks, time restrictions, and secure online platforms. These measures make it more difficult for students to engage in traditional forms of malpractice, such as smuggling cheat sheets into the examination hall or copying from neighboring peers (Conrad & Openo, 2018).

Moreover, the use of plagiarism detection tools can be instrumental in preventing malpractice during digital assessments. These tools scan students' submissions for similarities with existing content available online, in academic databases, or within the institution's own records (Phyo et al., 2023). This not only deters students from resorting to plagiarism but also promotes a culture of academic honesty and originality. Biometric authentication is another digital strategy gaining traction in the prevention of examination malpractice. Implementing biometric identification systems during examinations ensures that the person taking the exam is indeed the registered student. This technology can include fingerprint scans or facial recognition, providing a robust layer of security to the examination process (Clarke et al., 2023). To further enhance the integrity of assessments, some institutions are incorporating artificial intelligence (AI) into the examination process. AI algorithms can analyze patterns of behavior during online exams, flagging anomalies that may suggest potential malpractice. For instance, excessive eye movement, frequent gaze shifts, or irregular typing patterns can be indicators that warrant closer scrutiny. While not foolproof, these AI-driven monitoring systems add an additional layer of vigilance to the prevention of malpractice (Qureshi et al., 2022).

Additionally, the introduction of open-book examinations within a controlled digital environment is gaining popularity. Rather than discouraging the use of resources, this approach embraces it but within specified parameters. Students can access textbooks or online materials during the exam, but the questions are designed to evaluate their understanding and analytical

skills rather than memorization (Onwuzo, 2014). This shift in focus not only reduces the incentive for traditional forms of malpractice but also encourages a deeper understanding of the subject matter. The motivation for undertaking a comprehensive study on perceived digital assessment strategies for the prevention of examination malpractice among students in tertiary institutions in Anambra State is rooted in a confluence of critical factors that demand attention and intervention (Chinonso, 2022). The persistent prevalence of examination malpractice within Anambra State's tertiary institutions sets the stage for an urgent need for proactive measures. Traditional examination methods have proven susceptible to various forms of malpractice, including cheating, plagiarism, and collusion among students. Such practices not only compromise the fairness and validity of assessments but also erode the credibility of the educational system as a whole (Adigun et al., 2015). The recognition of this existing challenge underscores the motivation to explore and implement innovative solutions.

For instance, a study by Adigun et al., (2015) revealed alarming statistics, with 65% of students in Anambra State admitting to participating in different forms of examination malpractice. These numbers illuminate the severity of the issue and emphasize the imperative for a comprehensive examination of strategies to mitigate malpractices effectively (Gie & Fenn, 2019). Additionally, the slow adoption of technological advancements in assessment methods within Anambra State becomes a focal point for motivation. In the face of rapid global technological evolution, many tertiary institutions in the state still rely heavily on traditional assessment formats. This slow adoption not only limits the educational landscape's capacity to harness the benefits of modern technology but also leaves these institutions vulnerable to the drawbacks of manual examinations, which are often associated with increased opportunities for malpractice. A study by Okoli and Onyeagba (2018) emphasized the technology gap, indicating that despite global trends favoring increased technology adoption in education, Anambra State's tertiary institutions are yet to fully embrace these advancements, thus exposing them to continued risks of examination malpractice.

A notable gap in the existing literature lies in the lack of research specifically addressing the perceptions of educators and students regarding the potential effectiveness of digital assessment strategies (Yuniarti et al., 2022; Dharavath et al., 2013). Understanding the attitudes, concerns, and expectations of these key stakeholders is crucial for the successful implementation of any preventive measures. The absence of such research signifies a critical knowledge gap that this study aims to fill. For example, Egbue and Mathias (2013) identified this gap in their study, emphasizing the need for in-depth exploration into the perceptions of educators and students in Anambra State regarding the role of digital assessment in preventing malpractice. The need to tailor solutions to the unique context of Anambra State becomes a motivating factor. Anambra State possesses distinctive cultural, socio-economic, and educational characteristics that may influence the dynamics of examination malpractice. Existing research often takes a broad, national perspective, neglecting the specific nuances of the state. Therefore, this study aims to contribute to a nuanced understanding of these contextual factors and how they might impact the successful adoption of digital assessment strategies.

Nazzal et al., (2021) highlighted the significance of considering local contexts in educational interventions, suggesting that a one-size-fits-all approach may not be suitable for addressing examination malpractice in Anambra State. Hence, the adoption of perceived digital assessment strategies holds great promise in preventing examination malpractice among students in tertiary institutions. By leveraging technology, institutions can create a more secure and transparent examination environment, thereby upholding the integrity of assessments and promoting a culture of academic honesty.

Research Objectives:

- Evaluate the Awareness of Digital Assessment Strategies:
- Examine Students' Attitudes Toward Digital Assessment Security Measures:
- Investigate the Impact of Digital Literacy on Assessment Integrity:

Hypotheses:

- There is no significant difference in students' attitudes toward digital assessment security measures between male and female students.
- There is no significant difference in the impact of digital literacy on assessment integrity between male and female students.

METHODS:

This study focused on exploring the perceived digital assessment strategies for prevention of examination malpractice among students in tertiary institutions in Anambra state. The research design chosen for this study was a survey design, which allowed the researchers to gather data from a large number of participants efficiently. The participants in this study comprised of students in tertiary institutions in Anambra state drawn from Nnamdi Azikiwe University (UNIZIK) – Awka, Chukwuemeka Odumegwu Ojukwu University (COOU) – Uli, Federal Polytechnic, Oko, Anambra State Polytechnic (ANSPOLY) – Mgbakwu, Nwafor Orizu College of Education – Nsugbe, Federal College of

Education Technical, Umunze. To collect information from the participants, self-structured questionnaires were distributed using Google survey. This method was chosen to provide respondents with busy schedules the flexibility to complete the questionnaire at their convenience. To ensure the validity and relevance of the questionnaire's content, the researchers sought input from three professionals in the field of Measurement and evaluation, who validated the questionnaire. Additionally, the reliability of the instrument was assessed using Cronbach's coefficient alpha. The researchers found the questionnaire to have adequate dependability, with a reliability coefficient of 0.84. The sample or research unit for this study was the main source of data, and information was directly gathered from this sample. A total of 100 teachers responded to the online survey. In the data analysis process, the researchers employed various statistical techniques. To evaluate demographic data, frequency counts and percentages were used. Mean and standard deviation were calculated to assess the research questions, and t-test was conducted to test the hypotheses. The Levene's test assesses the equality of variances in different groups of data. The methodology involves calculating the absolute deviations of individual data points from their group means, then comparing the average absolute deviations across groups.

RESULTS:

Table 1: Frequency distribution of respondents based on Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	14	14.0	14.0	14.0
	Female	86	86.0	86.0	100.0
	Total	100	100.0	100.0	

In Table 1, the frequency distribution of respondents is presented based on gender. Of the total 100 respondents, 14 (14%) are male, and 86 (86%) are female. The valid percent column indicates the percentage of each gender within the valid responses. The cumulative percent shows the running total of valid percentages, reaching 100% with the inclusion of both male and female respondents.

Table 2: Descriptive statistics for extent to which students in tertiary institutions are aware of digital assessment strategies designed to prevent examination malpractice

	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Some students comprehend the importance of anti-cheating measures, while others may exploit vulnerabilities in systems.	3.88	.477	-4.899	.241	26.091	.478
Awareness depends on educators' communication about the purpose and effectiveness of digital assessment security measures.	3.91	.429	-5.237	.241	28.603	.478
Students might be knowledgeable about plagiarism detection tools, prompting more cautious and original work submission.	3.96	.243	-6.685	.241	47.662	.478

Understanding encryption and secure online test platforms can influence students' awareness of potential misconduct consequences.	2.28	1.393	.261	.241	-1.839	.478
Tech-savvy students may exploit gaps in digital assessment security, challenging the effectiveness of preventive measures.	2.17	1.264	.439	.241	-1.515	.478
Valid N (listwise)						

Table 2 presents descriptive statistics on students in tertiary institutions' awareness of digital assessment strategies. Mean scores indicate varying awareness levels: highest for plagiarism tools (3.96), followed by educators' communication (3.91) and anti-cheating measures (3.88). Understanding encryption scores lower (2.28), suggesting limited awareness. Figures such as standard deviation reveal variability around means. Negative skewness in most cases suggests a distribution leaning towards higher awareness. Kurtosis indicates the data's peakedness. For a comprehensive understanding, figures like 26.091 (anti-cheating), 28.603 (communication), 47.662 (plagiarism), -1.839 (encryption), and -1.515 (tech-savvy) should be considered. Overall, results emphasize the need for improved awareness strategies.

Table 3: Descriptive statistics for the attitudes and perceptions of students in tertiary institutions regarding the security measures incorporated into digital assessments for preventing examination malpractice

	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Students generally appreciate secure digital assessments, recognizing the need to uphold academic integrity online.	3.80	.550	-3.040	.241	9.445	.478
Some view security measures positively, feeling protected and confident in the fairness of assessments.	3.74	.597	-2.755	.241	8.445	.478
Others may perceive security as intrusive, raising concerns about privacy and hindering their exam experience.	2.14	1.172	.413	.241	-1.378	.478
Students may find biometric authentication reassuring, appreciating the personalized security it brings to digital assessments.	3.30	.882	-1.352	.241	1.300	.478

The perception of secure online assessments depends on students' digital literacy and familiarity with technology.	3.00	.853	-.798	.241	.316	.478
Students may see anti-cheating tools positively if they believe they contribute to a level playing field.	1.34	.768	2.056	.241	2.854	.478
Concerns about technical glitches or malfunctions in security measures can influence negative perceptions.	3.32	.737	-1.208	.241	1.927	.478
Valid N (listwise)						

Table 3 outlines descriptive statistics for students in tertiary institutions' attitudes toward security measures in digital assessments. The mean scores reveal positive overall attitudes (3.80), with students acknowledging the importance of upholding academic integrity online. Some students feel secure and confident in assessment fairness (3.74), while others find security intrusive, expressing privacy concerns (2.14). Biometric authentication is generally appreciated (3.30), but perceptions depend on students' digital literacy (3.00). Anti-cheating tools receive mixed views, with some seeing them as contributing to fairness (1.34) and concerns about technical glitches influencing negative perceptions (3.32). These findings highlight the nuanced perspectives shaping students' attitudes towards digital assessment security.

Table 4: Descriptive statistics for the level of digital literacy among students in tertiary institutions influence the integrity and success of digital assessment strategies in preventing examination malpractice

	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
High digital literacy empowers students to navigate secure assessments confidently	2.27	.908	-.153	.241	-1.127	.478
Adequate digital literacy fosters understanding of security features, reducing unintentional breaches during digital assessments.	3.02	.710	-.891	.241	1.642	.478
Students with advanced digital skills are less likely to resort to malpractice, valuing fair evaluation.	3.16	.762	-.979	.241	1.306	.478
Digital literacy programs that emphasize ethical behavior online strengthen students' commitment to assessment integrity.	1.58	1.084	1.489	.241	.487	.478

Students with limited digital literacy may feel overwhelmed, impacting their performance in secure digital assessments.	3.32	.737	-1.208	.241	1.927	.478
Advanced digital literacy promotes adaptability to evolving assessment technologies, ensuring continued effectiveness in prevention.	2.72	.965	-.372	.241	-.768	.478
Insufficient digital skills can lead to unintentional breaches, necessitating ongoing support and education.	2.78	.786	-.989	.241	.816	.478
High digital literacy supports the effectiveness of preventive measures against preventing examination malpractice	2.46	.904	-.633	.241	-.868	.478
Valid N (listwise)						

Table 4 provides descriptive statistics on the influence of digital literacy among students in tertiary institutions on the integrity and success of digital assessment strategies. Mean scores indicate that high digital literacy (2.27) empowers students to navigate secure assessments confidently. Adequate digital literacy (3.02) fosters understanding of security features, reducing unintentional breaches. Students with advanced digital skills (3.16) are less likely to engage in malpractice, valuing fair evaluation. However, limited digital literacy (3.32) may lead to feeling overwhelmed and impacting performance. Advanced digital literacy (2.72) promotes adaptability to evolving technologies, ensuring ongoing effectiveness. Overall, high digital literacy supports the success of preventive measures against examination malpractice.

Hypothesis 1: There is no significant difference in students' attitudes toward digital assessment security measures between male and female students.

Table 5: Independent Samples Test for difference in students' attitudes toward digital assessment security measures between male and female students

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	4.963	.029	4.139	78	.000	2.92857	.70748	1.52008	4.33706
Equal variances not assumed			7.038	54.646	.000	2.92857	.41609	2.09458	3.76256

Table 5 shows the independent Samples Test for difference in students' attitudes toward digital assessment security measures between male and female students. The Levene's test reveals unequal variances, and the subsequent t-test for equality of means indicates a significant difference ($p < 0.05$) in students' attitudes toward digital assessment security measures between male and female students. With equal variances assumed, the t-statistic is 4.139, and with unequal variances not assumed, it is 7.038. Both scenarios lead to a rejection of the null hypothesis, providing strong evidence that attitudes differ significantly between male and female students regarding digital assessment security measures.

Hypothesis 2: There is no significant difference in the impact of digital literacy on assessment integrity between male and female students.

Table 6: Independent Samples Test for difference in the impact of digital literacy on assessment integrity between male and female students

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	5.824	.018	3.737	98	.000	3.17940	.85088	1.49086	4.86794
Equal variances not assumed			7.173	57.803	.000	3.17940	.44324	2.29210	4.06671

Table 6 shows the independent Samples Test for difference in the impact of digital literacy on assessment integrity between male and female students. The Levene's test indicates unequal variances, and the subsequent t-test reveals a significant difference ($p < 0.05$) in the impact of digital literacy on assessment integrity between male and female students. Whether assuming equal or unequal variances, the t-statistics are 3.737 and 7.173, respectively. In both cases, the null hypothesis is rejected, suggesting a significant divergence in the impact of digital literacy on assessment integrity between male and female students.

DISCUSSION AND RESULTS:

Table 2 showcases descriptive statistics elucidating students in tertiary institutions' awareness of digital assessment strategies to combat examination malpractice. Mean scores unveil varying awareness levels, with the highest observed for plagiarism tools (3.96), followed by educators' communication (3.91) and anti-cheating measures (3.88). However, a notably lower awareness is evident for encryption (2.28), signaling limited understanding in this aspect. Standard deviation figures emphasize variability around means, and negative skewness in most cases indicates a distribution leaning towards heightened awareness. Comparatively, research by Clarke et al., (2023) and Phyo et al., (2023) found similar trends in awareness among university students regarding plagiarism tools. In contrast, Qureshi et al., (2022) study reported higher mean scores for students in tertiary institutions' awareness of encryption techniques. The observed kurtosis values (e.g., 47.662 for plagiarism) point to peaked data distributions. This aligns with the findings of Zaksaitė (2022), who noted similar peakedness in awareness data related to anti-cheating measures. In a related study on technology literacy, Bhandari et al. (2023) noted negative skewness comparable to our encryption scores. However, the need for heightened awareness aligns with findings by Cosi et al., (2020), emphasizing the importance of comprehensive strategies to address gaps in students' awareness of digital assessment tools.

Table 3 provides understandings into students in tertiary institutions' attitudes and perceptions regarding security measures in digital assessments. Overall, mean scores suggest positive attitudes (3.80) toward maintaining academic integrity online. Some students feel secure and confident in assessment fairness (3.74), while privacy concerns arise for those finding security measures intrusive (2.14). Biometric authentication generally receives appreciation (3.30), contingent on students' digital literacy (3.00). Anti-cheating tools yield mixed views, seen by some as contributing to fairness (1.34), while technical glitches raise concerns (3.32). Fattah et al., (2023) reported similar positive attitudes among university students toward digital assessment security, emphasizing the importance of academic integrity. In contrast, findings by Mutimukwe et al., (2022) highlighted more pronounced privacy concerns among

students in tertiary institutions, indicating divergent perceptions regarding security measures. In a related study on biometric authentication, Dharavath et al., (2013) found analogous appreciation among students, aligning with our reported mean scores. However, differences in digital literacy influencing perceptions echo the findings of Nazzal et al., (2021), who noted varying attitudes based on technology familiarity. The subsequent analysis in Table 5, employing Levene's test and t-test, reveals significant differences in attitudes between male and female students regarding digital assessment security measures. This aligns with the research of Yuniarti et al., (2022), who identified gender-based variations in students' perceptions of online assessment fairness. The unequal variances revealed by Levene's test mirror the understandings of Wong and Bouchard (2021), underlining the importance of considering variance equality in such comparative analyses. Overall, the study emphasizes the need for tailored strategies addressing diverse attitudes and concerns related to digital assessment security.

Table 4 presents descriptive statistics on how digital literacy influences the integrity and success of digital assessment strategies among students in tertiary institutions. Higher digital literacy empowers students to navigate secure assessments confidently (2.27), while adequate literacy fosters understanding of security features, reducing unintentional breaches (3.02). Students with advanced digital skills are less likely to engage in malpractice, valuing fair evaluation (3.16). Limited digital literacy may lead to feeling overwhelmed and impact performance negatively (3.32). Advanced digital literacy promotes adaptability to evolving technologies (2.72), ensuring ongoing effectiveness. In contrast, a study by Rinekso et al., (2021) reported lower mean scores for digital literacy among students in tertiary institutions, emphasizing the need for enhanced digital education. Similar findings were observed by Gie et al., (2019), suggesting that students with limited digital literacy may indeed feel overwhelmed during assessments. Table 6's analysis reveals significant differences in the impact of digital literacy on assessment integrity between male and female students. This aligns with the research of Eze et al., (2015), who found gender-based variations in digital literacy and its impact on academic performance. In a related study by Adigun et al., (2015), unequal variances were noted in the context of digital literacy, emphasizing the importance of gender-sensitive strategies in promoting digital literacy and maintaining assessment integrity.

CONCLUSION:

In conclusion, our study on perceived digital assessment strategies for the prevention of examination malpractice among students in tertiary institutions in Anambra state sheds light on crucial understandings. The descriptive statistics highlighted varying levels of awareness, attitudes, and digital literacy among students. Plagiarism tools emerged as the most recognized strategy, while attitudes toward security measures showcased a nuanced perspective, influenced by factors such as privacy concerns and digital literacy. The findings underscore the importance of tailored strategies to enhance students' awareness and understanding of digital assessment tools. Additionally, the impact of digital literacy on the success of preventive measures emphasizes the need for comprehensive digital education programs.

Levene's test and subsequent t-tests revealed significant differences in attitudes and the impact of digital literacy between male and female students. These gender-based variations necessitate a more nuanced approach in the implementation of digital assessment strategies, considering the diverse needs and perceptions of students. To address the challenges identified, educational policymakers and institutions in Anambra State should consider implementing targeted interventions, including educational campaigns, workshops, and digital literacy programs. Such initiatives can contribute to fostering a positive attitude toward digital assessment strategies, enhancing awareness, and equipping students with the necessary digital skills to navigate secure assessments confidently. Ultimately, the study provides valuable understandings for improving the effectiveness of digital assessment strategies in preventing examination malpractice among students in tertiary institutions in Anambra state.

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