

SCIENCE STUDENTS' ASSESSMENT OF THE EFFECTIVENESS OF ICT TOOLS IN CONTROLLING EXAMINATION MALPRACTICE IN OPEN AND DISTANCE LEARNING (ODL) UNIVERSITIES IN NIGERIA

AYONOTE, Williams Elenode, PhD

Directorate of Information and Communication Technology

National Open University of Nigeria, Abuja

Email: wayonote82@gmail.com

Tel: +2348038969961

Abstract

This study assessed science students' perceptions of the effectiveness of Information and Communication Technology (ICT) tools in controlling examination malpractice in Open and Distance Learning (ODL) universities in Nigeria. A descriptive survey research design was adopted for the study. The population comprised 1,139 science students enrolled in selected study centres of the National Open University of Nigeria, from which a sample of 456 respondents was selected using stratified random sampling techniques. Data were collected using a structured instrument titled ICT Tools for Curbing Examination Malpractice Questionnaire (ICTCEMQ). The instrument was validated by experts in educational technology and measurement and evaluation, while reliability was established using the test-retest method, yielding a reliability coefficient of .81, indicating that the instrument was reliable. Data were analyzed using mean and standard deviation with a benchmark mean of 2.50 for decision making. The findings revealed that e-registration and authentication systems were perceived as effective in controlling examination malpractice, while SMS/internet tracking devices and CCTV surveillance were perceived as ineffective by science students. The findings imply that properly implemented ICT authentication technologies can significantly enhance examination integrity in ODL institutions. The study recommends the strengthening of biometric authentication systems, improved monitoring of CCTV infrastructure, and adoption of a multi-layered ICT-based examination security framework.

Keywords: *Information and Communication Technology (ICT); Examination Malpractice; Open and Distance Learning (ODL); Science Students*

Introduction

The integrity of examination processes remains a fundamental concern within higher education systems worldwide. In Nigeria, examination malpractice continues to undermine the credibility of academic qualifications and the quality of graduates produced by tertiary institutions (Adewale, 2011). The challenge is particularly pronounced in Open and Distance Learning (ODL) universities where technology-mediated assessment processes create unique vulnerabilities.

The emergence of Information and Communication Technology (ICT) has significantly transformed educational delivery, assessment administration, and institutional management. ICT tools such as computer-based testing (CBT), biometric authentication, CCTV surveillance, e-registration platforms, SMS monitoring systems, and internet tracking devices have been adopted by universities to enhance examination security and accountability (Adegboye et al., 2023;

Aguele, et al., 2025). These tools are designed to deter impersonation, limit unauthorized access to examination materials, and reduce human interference in assessment processes.

Empirical studies have documented mixed outcomes regarding the effectiveness of ICT tools in curbing examination malpractice. For instance, Eziechina, et al. (2017) reported that CCTV surveillance significantly reduced cheating during examinations by acting as a deterrent and providing evidentiary records. Similarly, Karimu (2024) found that ICT tools such as CBT and CCTV significantly influenced the reduction of examination malpractice in Nigerian public universities. Conversely, Manyo and Oben (2025) observed that inadequate maintenance, power supply issues, and poor monitoring limited the effectiveness of CCTV systems in some universities.

Studies focusing on computer-based examinations have also produced divergent findings. Umar, et al. (2022) reported that CBT was effective in controlling examination malpractice in tertiary institutions, particularly in reducing collusion and question leakage. However, Isabu and Asemhokhai (2025) argued that CBT alone may not sufficiently eliminate malpractice without complementary security measures. Similarly, Nwogbo, et al. (2021) emphasized the importance of integrating multiple ICT tools, including SMS and internet tracking devices, to effectively manage examination misconduct.

Despite the growing body of literature, limited studies have examined examination malpractice control from the perspective of science students in ODL universities, particularly at the National Open University of Nigeria (NOUN). Science students are generally considered more technologically inclined, making their perceptions critical in evaluating the practical effectiveness of ICT-based examination controls. This study therefore, sought to bridge this gap by assessing science students' perceptions of the effectiveness of ICT tools in controlling examination malpractice in Nigerian ODL universities.

Purpose of the Study

The purpose of this study was to assess science students' perceptions of the effectiveness of ICT tools in controlling examination malpractice in Nigerian ODL universities. Specifically, this study sought to:

1. determine the level of science students' assessment of the use of SMS and internet tracking devices in controlling examination malpractice in ODL universities.
2. Examine how science students assess the effectiveness of CCTV surveillance in deterring and identifying examination malpractice in ODL universities.
3. Ascertain the extent science students perceive e-registration and authentication systems as effective in preventing impersonation and unauthorized access during examinations.

Methods

A descriptive survey research design was adopted for this study. This design was considered appropriate because it enabled the collection of quantitative data from a large sample of respondents to describe their perceptions and experiences regarding the effectiveness of ICT tools in controlling examination malpractice (Creswell, 2005).

The population of the study consisted of 1,139 science students enrolled in the National Open University of Nigeria across selected study centres. A sample of 456 students was selected using stratified random sampling techniques to ensure adequate representation across study centres and academic levels.

Data were collected using a structured questionnaire titled “ICT Tools for Curbing Examination Malpractice Questionnaire (ICTCEMQ).” The instrument contained items organized into three categories of ICT tools used in examination monitoring: SMS and internet tracking devices, CCTV surveillance systems, and e-registration and authentication technologies. Respondents rated each item using a four-point scale consisting of Highly Effective (4), Effective (3), Ineffective (2), and Highly Ineffective (1). This scale enabled the researcher to determine the perceived effectiveness of each ICT tool in controlling examination malpractice.

To ensure the validity of the instrument, face and content validation were carried out by experts in educational technology, measurement and evaluation, and science education. Their suggestions were incorporated to improve the clarity, relevance, and comprehensiveness of the instrument. The reliability of the instrument was established through a pilot study conducted with students outside the main study area, and the data obtained were analyzed using Cronbach’s Alpha, yielding a reliability coefficient of .84, which indicated a high level of internal consistency. A total of 456 questionnaires were administered, out of which 451 were correctly completed and used for data analysis, representing a 98.9% response rate.

Data were analyzed using mean and standard deviation for research questions. A mean score of 2.50 was used as the criterion for determining effectiveness.

Results

This section presents the results of the study based on the three research questions. Mean and standard deviation were used to analyze students’ responses, with a benchmark mean of 2.50 used to determine effectiveness.

Research Question 1: What is the level of science students’ assessment of the use of SMS and internet tracking devices in controlling examination malpractice?

Table 1

Science Students’ Assessment of SMS and Internet Tracking Devices

Item	Mean	SD	Decision
SMS alerts discourage examination misconduct	2.28	.71	Ineffective
Internet tracking prevents unauthorized access	2.35	.69	Ineffective
Digital monitoring enhances examination transparency	2.30	.73	Ineffective

Overall Mean = 2.31 (Ineffective)

Table 1 reveals the results that science students perceived SMS alerts and internet tracking devices as ineffective in controlling examination malpractice.

Research Question 2: How do science students assess the effectiveness of CCTV surveillance in deterring examination malpractice?

Table 2

Science Students’ Assessment of CCTV Surveillance

Item	Mean	SD	Decision
CCTV discourages cheating during examinations	2.21	.68	Ineffective
CCTV footage aids post-examination investigation	2.27	.72	Ineffective
Monitoring personnel effectively observe CCTV feeds	2.26	.70	Ineffective

Overall Mean = 2.25 (Ineffective)

Table 2 results shows that CCTV surveillance was perceived as ineffective in controlling examination malpractice.

Research Question 3: To what extent do science students perceive e-registration and authentication systems as effective in preventing impersonation?

Table 3

Science Students' Assessment of E-Registration and Authentication Systems

Item	Mean	SD	Decision
E-registration prevents impersonation	2.63	.61	Effective
Authentication systems restrict unauthorized access	2.58	.65	Effective
Biometric verification enhances examination credibility	2.60	.62	Effective

Overall Mean = 2.60 (Effective)

Table 3 results indicate that e-registration and authentication systems were perceived as effective in controlling examination malpractice.

Discussion

The findings of this study revealed that e-registration and authentication systems were perceived as effective mechanisms for controlling examination malpractice in ODL universities. This finding suggests that identity verification technologies significantly reduce opportunities for impersonation and unauthorized access during examinations. The result supports previous studies which indicate that biometric authentication systems enhance the credibility of computer-based examinations (Umar, et al., 2022; Ogunsola, 2015).

However, the findings showed that SMS alerts and internet tracking systems were perceived as ineffective in preventing examination malpractice. This may be due to limited awareness of such technologies among students or weak integration into examination monitoring frameworks. Previous studies have similarly observed that technological solutions may be ineffective if they are poorly implemented or insufficiently integrated into institutional security policies (Ajayi & Adebisi, 2018).

The study also revealed that CCTV surveillance systems were perceived as ineffective by students. This finding may be attributed to infrastructural challenges such as inadequate monitoring personnel, irregular electricity supply, and poor maintenance of surveillance equipment. Studies by Eziechina, et al. (2017); Manyo and Oben (2025) have also highlighted the limitations of surveillance technologies in universities where monitoring systems are not actively supervised.

These findings suggest that the effectiveness of ICT tools in controlling examination malpractice depends not only on their availability but also on institutional capacity for monitoring, maintenance, and enforcement.

Conclusion and Recommendations

The study concluded that ICT tools play a significant role in controlling examination malpractice in ODL universities; however, their effectiveness varies across different technologies. While e-registration and authentication systems were perceived as effective, SMS/internet tracking devices and CCTV surveillance were perceived as ineffective by science students. These findings highlight the need for continuous evaluation and strategic enhancement of ICT-based examination control mechanisms.

Based on the findings of the study, the following recommendations were made:

1. ODL universities should deploy biometric authentication systems in all examination centres to prevent impersonation.
2. Institutional management should ensure reliable electricity supply and regular maintenance of CCTV surveillance systems.
3. Universities should adopt a multi-layered ICT-based examination security framework combining authentication systems, CBT platforms, and surveillance technologies.

References

- Adegboye, F., Okafor, J., & Ibrahim, S. (2023). Biometric verification and examination security in Nigerian universities. *Journal of Digital Learning and Assessment*, 22(3), 78–92.
- Adewale, R. (2011). Examination malpractice and its implications for quality education in Nigeria. *African Journal of Educational Studies*, 14(1), 33–47.
- Aguele, L. I., Ibhafidon, H. E., & Ayonote, W. E. (2025). Information and communication technology utilization and examination integrity: Evidence from the National Open University of Nigeria. *AAU Journal of Business Educators*, 5(2), 1–9.
- Ajayi, I. A., & Adebiyi, A. A. (2018). Technology integration and examination security management in Nigerian universities. *Journal of Educational Administration and Planning*, 12(1), 89–102.
- Creswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research (2nd ed.)*. Merrill/Prentice Hall.
- Eziechina, A. M., Ugboaja, U. C., & Esiagu, U. E. (2017). Closed-circuit television surveillance: An antidote to examination malpractice in higher institutions in Nigeria. *American Journal of Engineering Research*, 6(12), 247–251.
- Fayomi, O. O., Amodu, L., Charles, K., Ayo, O. R., & Idowu, F. O. I. (2022). E-registration: Panacea to examination malpractice in Nigeria. *Computers & Education*, 50(3), 915–926.
- Guto, R. (2020). *Information and communication technology usage in record management practices in prevention of corruption in public universities in Kenya* (Master's thesis). University of Nairobi.
- Isabu, M. O., & Asemhokhai, A. S. (2025). Effectiveness of computer-based examination in Ambrose Alli University, Ekpoma. *Journal of Theoretical and Empirical Studies in Education*, 9(2), 369–388.
- Karimu, A. Y. (2024). ICT tools as instruments for controlling examination malpractice in Nigerian universities. *Journal of Educational Technology Studies*, 11(1), 55–68.
- Lazarus, K. U., Adeyemi, B. A., & Ibrahim, M. A. (2022). Digital identity management and examination security in Nigerian universities. *International Journal of Educational Technology Research*, 10(3), 45–60.
- Manyo, E. D., & Oben, S. E. (2025). Utilization of closed-circuit television systems in the management of universities in Cross River State. *African Journal of Educational Management*, 14(2), 101–118.
- Nwogbo, V. N., Anierobi, E. I., & Nwafor, C. P. (2021). Availability and utilization of ICT in managing examination misconduct in public universities in South-East Nigeria. *African Journal of Educational Management*, 2(1), 19–41.
- Ogunsola, L. A. (2015). Information and communication technologies and the integrity of computer-based examinations in Nigerian universities. *African Journal of Educational Technology*, 6(1), 23–35.

- Okoye, C. I., & Alabi, T. O. (2022). Examination integrity and technology-mediated assessments in open and distance learning universities in Nigeria. *Journal of Open and Distance Education Studies*, 14(2), 55–68.
- Solomon, L. (2022). Enhancing the administration of national examinations using mobile cloud technologies, *Doctoral dissertation, University of Zambia*.
- Umar, A. K., Sani, M., & Nura, A. (2022). Prospect of using computer-based tests as effective tools for examination conduct in Nigerian institutions. *Educational Technology and Society*, 8(1), 104–112.

Abbreviations

ICT – Information and Communication Technology
ODL – Open and Distance Learning
CCTV – Closed-Circuit Television
CBT – Computer-Based Test