

The New Technologies and the Conduct Of E-Examinations: A Case Study of National Open University of Nigeria

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Abstract

The focus of this paper was to investigate the importance of the new technologies in the conduct of e-examinations as a means of maintaining the Nigeria educational standard using the National Open University of Nigeria as a case study. E-Examinations which are conducted and delivered with the use of electronic devices such as the computers, Internet, mobile phones, or other technologies are becoming globally acceptable for assessments. A researcher designed questionnaire was employed to collect data from purposively selected twenty-five IT staff who participated (and who were physically present at the time of this study) in the 2009 and 2010 e-examinations of the National Open University of Nigeria. The data collected were analyzed using mean scores, stand deviations and the general decisions of the respondents. The results showed, among other things, that e-examination as a mode of assessing students is worthwhile, able to control all the negative practices presently encountered in the conventional examinations, however, more IT equipment/facilities are required in most of the examination centers, the need for basic skills in computer among others, was also confirmed. It was recommended based on the result that both teachers and students should be computer literate for a successful manipulation of the IT equipment especially the computers during e-examination. There should be provision/procurement of adequate computers and other IT materials.

Keywords: Technology, e-Examination, NOUN, Nigeria, IT

INTRODUCTION

Technology is a Latin word meaning tools, materials and a process for solving practical problems. According to Simiyu (1999) the term technology as applied to the process of education includes ways of organising events and activities to achieve educational objectives as well as the materials and equipment involved in the process. The use of technology has made every aspect of education modern, reliable, global and efficient. The features of technology are more prominent in the conduct of e-examinations world-wide. There have been irregularities in the conduct of examinations in Nigeria as a whole. Thus, institutions that are experimenting with e-examinations are truly being proactive in using a scientific approach to solving the problems experienced in the conventional examinations.

The New Technologies

Technology can be described as a product in the sense that it is the end result of the systematic application of scientific knowledge in addressing human learning problems, including examination-related problems. The concept “new technology” is an indication that technology is not stagnant, but keeps bringing new ideas, knowledge, inventions and skills that should be applied. This explains why the developed countries are always improving and developing new ideas. The new technologies gave birth to the current use of the e-examinations powered by the computers and other physical Information Technology (IT) products such as microcomputers, mainframe computers, the Internet, mobile phones, etc. E-Examination is the end-to-end

electronic assessment processes where Information and Communication Technology (ICT) is used for the presentation of the assessment activity and the recording of responses from the students. This includes the end-to-end assessment process from the perspective of learners, tutors, learning establishments, awarding bodies and regulators, and the general public (www.jisc.ac.uk/assessment.html).

There are researches on the development and use of technology for e-examinations. For example, Schramm (2008) investigated e-learning web-based system which could present and grade questions in mathematics with infinite patience. Other researchers include Ai-Bayati & Hussein (2008) that prepared e-examination package for Hearing Impaired persons, Zhenming, Liang & Guo (2003) developed a novel online examination system based on a Browser/Server framework that carries out the examination and auto-grading for objective and operating questions, etc.

Technology can further be described as a process because it involves series of actions that could lead to the achievement of a successful conduct of e-examinations. This includes functions connected with the management, organisations of human and non-human resources for the overall conduct of e-examinations.

E-Examinations in Nigeria

Examinations worldwide are means of assessing or evaluating the entire teaching and learning processes especially as they relate to the learners' performance. Originally, examinations are expected to appraise not only the performance of the learners but also the teachers' effectiveness, achievement of the stated instructional objectives, overall effectiveness of the teaching methods, the instructional materials used and the final assessment of the learner's achievement, usually leading to a formal qualification or certification of a skill or simply a change in the learners' behavior. However, some of these parameters could be compromised for the electronic examinations because of their peculiarities and special operations (www.jisc.ac.uk/assessment.html).

Since e-learning is becoming more popular and accepted in the Nigeria school system, the importance of e-examinations is not negotiable and cannot be overemphasised. The e-examination is a welcome innovation because the conventional examination is plagued with several pitfalls such as examination leakages, impersonations, inadequate supervisors, demand for gratification by markers so that results can be influenced, bribe taking by supervisors or invigilators, and the most devastating of these is the delay and/or in many cases, non-release or delay of examination results especially where there are large classes or public examinations. This explains why Ayo, Akinyemi, Adebisi & Ekong (2007) proposed a model for e-examination for the Joint Admissions Matriculation Board (JAMB) as a way of curbing examination irregularities. Thus, the adoption of e-examinations by many institutions such as the West African Examination Council (WAEC), National Board for Technical Education (NABTEB), National Examination Council (NECO), National Teachers' Institute (NTI) and Teachers' Registration Council of Nigeria (TRCN) for assessing their candidates is in the right direction. Also, most tertiary institutions in Nigeria now use e-examinations in the post Unified Tertiary and Matriculation Examination (Post-UTME) for screening their students.

Furthermore, there are universities in Nigeria that are almost fully or partially implementing the e-examination for assessing their students. These include:

- National Open University of Nigeria (NOUN)
- University of Ilorin, Ilorin
- Federal University of Technology, Minna
- Covenant University, Ota (Private)

- University of Nigeria, Nsukka
- University of Lagos, Lagos

So far, it is only NOUN that is fully implementing e-examinations for assessing their students and is the only one using the Internet while the other universities using e-examinations employ the Intranet. However, this is understandable because NOUN is the only Open University (though there are Distance Education Programs such as sandwich and other short-term/flexible education programs) in the country (Ihebereme, 2010).

Challenges of E-Learning in Nigeria

The adoption of e-examination has more radical implications and challenges than mere changing the mode of examination. It can affect the entire structure of the education and probably change its patterns of work for staff and students. Attewell (2005) identified other challenges that are applicable to this study. These are explained as follows:

- While e-examination may offer a reduction in the time spent in marking, it will for these reasons shift the focus of effort, which is usually very tedious, for staff or lecturers to before rather than after the examination period. This is because preparations for e-examinations (such as setting, scripting, uploading, etc.) are very tedious, time consuming and tiring.
- Questions in item banks also need to be assessed and indexed so that each student experiences a test of equal measure to their ability, regardless of the combination of questions presented to them in a randomly generated test.
- Setting up a viable physical and IT infrastructure to support e-examination to the required scale.
- Instituting policies and procedures to ensure the validity of e-examinations.
- The problem of a technical failure the day of examination especially in places or some of the developing countries that experience eclipitics electricity.

Apart from the fore going some of the biggest challenges that may exist and which may be unique in Nigeria with regards to the conduct of e-examinations are inadequate electricity supply, inadequate IT tools such as the computers, and of course computer illiteracy, which is still on a wide scale among the teachers and the students alike. The Nigerian Government needs to address these problems in a very pragmatic way to ensure progress in technological advancement generally and in the conduct of e-examinations specifically.

The main purpose of this study was to investigate the importance of the new technologies and the conduct of e-examinations, using the National Open University that has fully adopted this mode of examination as a case study. The study sought to address the following research questions:

1. What are the factors influencing the conduct of e-examination in NOUN?
2. What is the students' competence level on the new technologies during the conduct of e-examinations?
3. What are the different ways to improve the conduct of e-examinations?

Methodology

The National Open University of Nigeria is the only Open University in Nigeria and has students in 42 study centres across the 36 states of the country. E-examinations started fully for the last two years in order to curb some challenges with regards to the release of results of examinations since its inception. The 25 Information Technology (IT) service staff of the university who have been directly involved in the conduct of the e-examinations since 2009 were purposively sampled for this study. They were requested to respond to a researcher-designed questionnaire which has two sections. The questionnaire was validated by two experts from the School of Education, National Open University

of Nigeria and their corrections or suggestions were used to improve the questionnaire. Simple descriptive means and standard deviation were used to analyse the data collected. The Likert ratings of strongly agree (4), Agree (3), Disagree (2) and Strongly Disagree (1) were applied to the scores obtained.

Analysis of Research Findings

The research findings from the questionnaire are presented in the following tables:

Table 1: Responses on the importance of ICT in the conduct of e-examinations

	ITEMS	Mean	Standard Deviation	Decision
1	The efforts expended on e-examination is not really worth it	1.94	1.18	Rejected
2	Knowledge of some basic computer skills are required for writing e-examination	2.28	1.21	Accepted
3	E-examinations should be cancelled	1.18	1.01	Rejected
4	E-examination has improved the standard of examination in our school	2.62	1.11	Accepted
5	More students fail e-examinations than the conventional examinations	2.21	1.18	Accepted
6	Supervision during E-examinations is too complex/cumbersome for me	1.08	1.06	Rejected
7	E-examination is capable of testing the performance of students	3.28	1.07	Accepted
8	E-examination centres are generally not too conducive	2.76	1.14	Accepted
9	Invigilators at the e-examination centres are not competent in computer usage	2.58	1.02	Accepted
10	Students at the e-examination centres are not competent in computer usage	1.94	1.13	Rejected
11	E-examination cannot replace the conventional way of writing examinations	1.01	1.83	Rejected
12	Inadequate electricity supply has rendered e-examination ineffective in most of the centres	2.51	1.10	Accepted
13	It is easy for students to cheat through e-examination than the conventional examinations	1.18	1.14	Rejected
14	E-examination saves time	3.5	1.64	Accepted
15	Students should be given orientation on how to write e-examination	2.89	1.05	Accepted

Acceptance Level = Above 2.50; Rejection Level= Below 2.50

The responses in table 1 revealed that the decision on the statement that the efforts expended on e-examination is not really worth it was rejected (Mean=1.94 and SD=1.18). Most of the respondents agreed

that knowledge of some basic computer programmes, such as Microsoft word, Corel Draw, should be required for writing e-examinations. The statement was accepted (Mean=2.68 and SD=1.21). The decision on the item that e-examinations should not be used at all because it requires IT tools that are not readily available in the Nigerian Universities was rejected (Mean=1.18; SD=1.01). The respondents accepted the statement that the conduct of e-examinations has improved the standard of examinations as a whole in NOUN (Mean=2.62; SD=1.11). The respondents accepted that more students failed e-examinations than the conventional examinations (Mean=2.51; SD=1.18). They rejected the notion that supervision during e-examination was too complex or cumbersome for them, probably because they are IT staff.

Furthermore, the respondents accepted that e-examination was capable of testing the performance of students (Mean=3.28; SD=1.07). The respondents accepted that examination centres were not generally too conducive for e-examinations (Mean=2.76; SD=1.14). They also accepted that invigilators at the e-examination centres were not very competent in assisting the students during the conduct of e-examinations (Mean=2.58; SD=1.02). The respondents rejected the notion that students at the e-examination centres are not competent in computer usage (Mean=1.94; SD=1.13). They also rejected that e-examination cannot replace the conventional paper and pen mode of writing examinations (Mean=1.01; SD=1.83). They however accepted that inadequate electricity supply was a major challenge for the conduct of e-examinations in most of the centres (Mean=3.51; SD=1.10). The respondents rejected the statement that it was easy for students to cheat in e-examinations than the conventional examinations (Mean=1.18; SD=1.14). Most of the respondents accepted that e-examination saves time (Mean=3.51; SD=1.64). Lastly, the respondents also accepted that students should be given orientation on the conduct of writing e-examinations.

Table 2: Responses on Students' Computer skills during the Conduct of E-Examinations

No	ITEMS	MEAN	STANDARD DEVIATION	DECISION
1	Ability to open the computer system	3.38	1.08	Accepted
2	Accessing their portals	4.18	0.91	Accepted
3	Entering names and matriculation numbers	3.34	1.91	Accepted
4	Able to rectify errors encountered during the examinations	1.09	2.21	Rejected
5	Ability to identify the operational computer keys	3.21	1.69	Accepted
6	Ability to save their documents after the examinations	2.01	1.94	Accepted
7	Ability to log off the computer after the examinations	3.11	1.02	Accepted

Table 2 revealed that students were able to perform most of the skills required for the conduct of e-examinations with the exception of item 1 which was the only one rejected (M=1.09 and SD=1.21) The other

items have means of between 2.01 to 4.18 which indicated that most of the students have the required skills for the conduct of e-examinations.

What are the ways to improve the use of ICT in the conduct of e-examinations?

Respondents suggested ways, based on their experiences on how to improve the conduct of e-examinations beyond their own institutions. The summary is presented below:

- 1) Examination centers-Most of the respondents (80%) suggested that the examination centers should be equipped with adequate computers and other IT tools for a smooth conduct of e-examinations.
- 2) IT tools/skills-Some of the respondents (60%) suggested that the students should be more exposed to basic computer skills. They also suggested that there should be computer laboratories in all centres or schools and the inclusion of practical computer education in the school curriculum with the aim of exposing students to the basic skills needed for the writing of e-examinations.
- 3) 40% of the IT staff suggested that the lecturers should be trained in the use of the computer for the preparation, scripting, uploading and monitoring of e-examination questions.
- 4) Power supply-(20%) of the respondents who witnessed electricity power disruption suggested that there should be adequate supply of electricity by having a standby generator.
- 5) Invigilators/supervisors-Just one or two of the respondents (10%) suggested that invigilators or supervisors need to be trained to handle some basic IT problems so that they can assist students during the e-examinations.

Discussion of Findings

The findings of this study revealed that efforts expended on e-examinations were worth it. Though it may be too early to conclude on the superiority of e-examinations over the conventional examinations in Nigeria in particular, this study sets the stage and awareness for technological approach to solving examination problems in education. It may also encourage NOUN and other institutions that are yet to fully adopt the e-examination for assessing their students to do so because it is also confirmed that the conduct of e-examinations saves time especially when the university has enough questions in its item/question banks and enough learning materials. This corroborates the assertion of Attewell (2005), that adopting e-assessment has more radical implications than just changing the mode of assessment. The findings further showed that the respondents accepted that e-examinations improved the standard of examinations, that more students failed e-examinations than the conventional examinations. This is against the expectations of some that e-examinations are easy to pass and that students can also easily cheat. It is also true because students need to read every detail in order to pass their examinations. The new technologies have made it impossible for students to cheat because each student is served with his own questions which may be different from the student sitting next to him. It was also revealed that necessary IT equipment and tools, the environment and computers were inadequate and many of the tools not installed or non-functional for the conduct of e-examinations so far. The study confirmed the inadequacy of electricity in the examination centers and thus requiring installation of standby generators until when the electricity supply in Nigeria improves.

Conclusion

This study examined the new technologies and the conduct of e-examinations using the National Open University of Nigeria as a case study. It discussed the new technologies as a way in which we are exposed to constant development in the educational system. Technology is not stagnant, which is the reason why we keep having new ideas, skills, inventions, innovations, etc. One of the innovations of the new technologies is the mode of assessing students through e-examinations. There are challenges against the full implementation of e-examination in the Nigeria educational system, such as inadequate electricity, inadequate questions in

the item bank, computer illiteracy, and lack of IT infrastructures. Further studies are desirable on a larger scale for generalization on the importance of new technologies and the conduct of e-examinations.

Recommendations

The following recommendations were proffered based on the results of this study:

- Lecturers should be sensitized about their changing roles in the conduct of e-examinations. They should be trained and assisted to adapt to the new technologies through workshops, seminars, conferences, etc.
- Students should be assisted to acquire basic skills in computer that will help them during the conduct of e-examinations.
- The provision/procurement of adequate computers is strongly recommended if e-examinations are to meet global standards.
- More Universities should adopt the e-examination mode of assessing their students because it is more objective and will solve the problems of delayed or non-release of examinations results.

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