

# **eAssessment Platform as a Veritable Tool for Administering Multiple Population Candidate Tests: NOUN Technological Option**

**By**

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## **ABSTRACT**

e-Assessment as a technology tool in examination testing is a field of growing importance globally in this 21<sup>st</sup> Century and it is very new in Nigeria. This paper discusses the relevance and efficacies of e-Assessment in the position of distance education in Nigeria. It uses the perception of students about e-examination vis-a-vis required computer literacy level and the experiences of academic tutors to describe the efficacies of the eAssessment platform in relation to the testing of the university's multiple population learners as a fully fledged open and distance learning institution. Three research questions were formulated for the study while survey research design was adopted. Instrument used were both designed questionnaire and structured interview. Personally designed questionnaire with reliability co-efficient of 0.72 was used to obtain data regarding NOUN adopted e-assessment platform and previous computer experience from the student respondents while direct interview was used to gather responses from academic tutors.

The gathered data were analyzed with the use of descriptive statistics. The results indicate that technology has high prospects and acceptance as means of assessing learning outcomes of learners though there are some problems militating against its successful utilization. The paper offers general suggestions towards improvement and future development of e-examination.

**Keywords:** e-Assessment, Distance Education, Technology, National Open University of Nigeria.

## **INTRODUCTION**

The National Open University of Nigeria is the latest in the line of institutions offering distance learning programmes in Nigeria aside those few that are dual mode institutions. It is the first single mode open and distance learning university in the West African sub-region. It was initially established in 1983, but was suspended nine months later due to modifications in government policy. In 2002 the National Open University of Nigeria was resuscitated to meet the huge gap in application and admission statistics of Nigerian universities. The University took off with about 78 programmes at the Proficiency Certificate, Certificate, Diploma, Bachelors, Postgraduate Diploma, and Masters levels under four schools and one centre, viz: the Schools of Arts and Social Sciences; Business and Human Resources Management; Education, and; Science and Technology as well as the Centre for Continuing Education and Workplace Training. The University currently has 43 study centres spread across the six geopolitical zones of the country. In addition to these, the university has its Headquarters located in Lagos, a planning office at Abuja (the Federal Capital Territory) and an Educational Technology Centre at the Kaduna Campus.

NOUN is an equal opportunity institution, providing access to qualitative education for those whose aspiration for higher education is not met by the conventional systems and/or those who preferred the open and distance learning mode of instructional delivery due to their peculiar circumstances. Due to the large number of students right from inception as the idea portend by the establishment of the university was well embraced and accepted by generality of the populace, the results of the first three sets of semester examinations conducted in the university had some challenges ranging from missed scores of the Tutor Marked Assignments for some students, examination scores for some and both for some inspite of good planning that guided the conduct of the examination. These examinations were pen-on-paper and the challenges led to delay in the release of the students results aside other complaints on the issue of examinations that is snowballing to other subsequent semesters. This observation was corroborated by Okonkwo & Ikpe, (2008) when they remarked that NOUN was challenged in the conduct of meaningful assessment of students learning outcomes and release of quality result from inception. This burden took a while before the decision to adopt ICT solution to the problem in form of e-assessment was adopted as it has also been revealed by Prased & Xavier (2006) and Reju & Adesina (2008) that technology can effectively be used in assessment of students learning outcomes. This is the beginning of deployment of technological facilities to the assessment system of NOUN. This is used for both the Tutor Marked Assignments and the Semester examinations though three hundred levels and four hundred levels in the degree programmes and the post-graduate programmes are excluded from this mode of assessment due to the levels and type of educational taxonomies that are actually measure when they are examined as the e-assessment items are based on different types and kinds of objective questions for easy administration in its entirety; marking and results compilation inclusive.

This migration was the inception of NOUN technological option when conducting multiple population candidates' examination as it helps resolve the challenges faced when pen-on paper examinations were the only single method of assessment relied on without undermining

the quality of learning as innovative strategy for sustainability and quality assurance. This innovative strategy according to Okonkwo (2010) was introduced to transform the university from the worrisome examination challenges and to enhance the operational efficiencies of the institution. She further asserted that NOUN deliberately imbibed the use of technology as best practice for sustainability of the institution and to enhance quality assurance of her products and services to her stakeholders.

Although assessment of learning outcomes encompasses a range of activities such as testing, performances, project ratings, and observations as remarked by Orlich, Harder, Callahan & Gibson (2004), it is not all that can be examined through e-assessment. Many requires other assessment skills for the students in programmes involve in such situations or students offering courses that involves such situation to be examined as it is a fact that assessment is an ongoing process that involves planning, discussion, consensus building, reflection, measuring, analyzing, and improving based on the data and the artifacts gathered about a learning objectives. E-assessment adoption in NOUN is a way of dealing with the encumbrances that militates against confirmation of learning outcomes through examinations amongst the multiple population students expected to enrol for different courses of programmes offer by any open and distance learning university and related institutions worldwide. Also without mincing words, assessment in the life of institutions is on of the basis for quality assurance and acceptability in the society as it is through it that learning outcomes that confers rate and level of knowledge and skills on learners are established. As observed by Haken (2006) and confirmed by Okonkwo (2013), assessment is an integral piece to assuring that an educational institution achieves its learning goals, as well as a crucial means of providing the essential evidence necessary for seeking and maintaining accreditation. Hersh (2004) also reiterated that assessment of students learning should be considered an integral part of the teaching and learning processes as well as part of the feedback loop that serves to enhance institutional effectiveness. It is therefore important that open and distance learning institutions whose students are always multiple in numbers unlike the conventional institutions should get their mode of assessment right in order to show their readiness to compete with other institutions of learning as this singular act will be a plus during their institution's programme accreditation by the body saddle with accreditation responsibility, shore up their level of credibility and finally acceptance in the society.

Love & Cooper (2004) opined that good assessment serves multiple objectives and also benefits a number of stakeholders while Dietal, Herman, and Knuth (1991) remarked that assessment provides an accurate measure of students' performance to enable teachers, educators, and other key decision makers to make effective decisions. To buttress the above assertions, Kellough and Kellough (1999) identified seven purposes of assessment; which must be of good standard as: i. Improve student learning; ii. Identify students' strengths and weaknesses; iii. Review, assess, and improve the effectiveness of different teaching strategies; iv. Review, assess and improve curricular programmes; v. Improve teaching effectiveness; vi. Provide useful administrative data that will expediate decision making; and vii. Communicate with stakeholders.

It is therefore pertinent that institutions of learning with multiple of hundreds and thousands of students at their various levels and different programmes such as open and distance learning system should seize the advent of ICT and the development of various kinds of software as it apply and relates to issue of examinations in their institutions in this modern day. This is in tandem with the fact that open and distance learning operations are driven by technology and also, coupled with the fact that there are evidences that technologies now support both formative and summative assessment and exploits in technological advances are

daily on the increase. Quellmalz, Timms & Schneider (2009) and Clarke & Dede, (2010) in their report remarked that students can be assessed through simulations, e-portfolios and interactive games though there are still some challenges that needed to be resolved as technologies are being deployed to assessment of learners and learning outcomes, progresses are being made daily in finding solutions to various encountered and indentified barriers be it technical or administrative problems.

Generally, assessment system is rightly viewed as part of the teaching –learning process. Every instructional process involves a strategic assessment for a complete learning – circle. Learners’ assessments are very critical in any instructional programme and in all ramifications; NOUN ascribes much importance to this hence the decision to adopt a technological solution to the issue of assessment and evaluation as it relates to the examination of its students.

### **RATIONALE FOR TECHNOLOGICAL OPTION**

NOUN as an institution of higher learning saddled with assessment burden from the beginning as a result of large classes that are involved in the ‘paper and pen’ assessment. The university migrated to eAssessment method in order to be able to manage effectively the assessment of the courses and programmes with large classes without undermining the quality of learning. The university introduced the usage of computers in students’ assessment as innovative strategy for sustainability and quality assurance. This innovative strategy (deployment of technology in assessment of students’ learning outcomes) was introduced to transform the University from the worrisome examination challenges via eAssessment to enhance the operational efficiency of the Institution. The operational efficiency in dealing with the issue of the university examination amongst others is a critical system-wide initiative that can translate to the reason why the institution is either retains in business or closing down as it could generate enough furores whose resultant effect might not be easy to douse. The university e-Assessment operational efficiency has till date effectively dealt with minimization of delays and other challenges of the ‘paper and pen’ examination era that was engrossed by waste of time and resources while maximizing the resources capabilities. It is therefore strategically beneficial to adopt the use of technology for sustainability of the institution and also as a means to quality assured her product and services to her stakeholders. World over, ODL is driven by technology. The incursion of technology into assessment aspect of school curriculum and school administration is another novel idea regarded by Okonkwo (2010) as a recent trend in the use of technology provisions for the assessment of learning outcomes. Finger, Russell, Jamieson-Procter & Russell (2007) therefore seeing the use of technology as a recent trend in assessment, suggested that if information and communication technology (ICT) is to bring out transformation in this area of education, practitioners must consider which assessment techniques would allow the students to use the best suited technology. Curriculum transformation in this area can only be made possible due to simulation of a standardised assessment with a suitable computer based way of conducting examinations. Through this development, eAssessment can be carried out with students being positioned to be in any place, at any time with a proviso that the atmosphere wherein the students are is under the auspices of examination condition. This according to Pullen & Cusack (2008) has made it possible for online assessment to be conducted using either of Institutional Learning Management System (LMS) devices such as Blackboard, WebCT, or an in-house product. Online assessment is mostly used for quizzes, forums and digital assignment drop boxes (Fluck, Pollen & Harper, 2009). In NOUN eAssessment platform is used for the assessment of Tutor Marked Assignments which is the university’s continuous assessment method and the semester examination of first and second year courses. This method, provide instant feedback to students and the coordinating units; Directorate of Evaluation and Assessment, that is saddled with everything that has to do with examination in the university. The unit harvests the scores of the courses the technology method; eAssessment, is

used to examine for final collation of results. Aside these, the method help remove the burden of marking from the academic staff. Other advantages of eAssessment as remarked by Fluck, Pollen & Harper (2009) in literature are:

- Time analysis of responses to the question level to better discriminate between candidates (Gvozdenko & Chambers, 2007);
- Use of video in questions particularly for scenarios in authentic assessment;
- Adaptive testing, where the next question to be posed is determined by prior response(s);
- Question banks and randomization of questions and response orders to reduce cheating;
- Automated analysis of results from entire candidate cohorts; and
- Immediate feedback can be given.

In National Open University of Nigeria, information technology has become the assessment development tool. The use of information technology in NOUN learners' assessments is rewarding and it has the potential for helping to resolve development issues in learners assessments experienced from inception in the University. Same token same analogy, it should be noted that information technology is not an end in itself but a tool to help in accomplishing the goals of organizations towards sustainable development. The main goal of deployment of computers in assessment of students learning outcomes in NOUN is to harness the benefits of ICT in overcoming the challenges encountered in the total management of examination which huge numbers of students are involved during the era of 'paper and pen' examination in the university.

This experience has done both the staff and the generality of the students' lot of good. The adoption of the technology method has helped to actualize people's need of exposure to basic information technology principles and concepts necessary for keying into the technology ability requirement of the Institution which rely so much on computer usage. The move has led to more exposure through series of training for staff who consequently feel very comfortable with the internet knowing full well the inherent potentiality for them and the institution. It is of note to point out the fact that this feat was possible due to the commitment of the NOUN management, the Schools/Faculties, Study Centres and the Directorate of Examinations and Assessment that is in charge of administration of the university examinations. Although the eAssessment to some extent has moved the conduct of examinations in the university forward, it is not without its frustration but the frustrations are challenges that could come up during the process. Such challenges cannot be ruled out when a change is in process as many issues would be unfolding but the solace is in the fact that they are taken care of as they rear their heads.

At the inception of eAssessment method in NOUN, many learners were not conversant with the use of computer coupled with the fact that the university has not deployed technological infrastructures to her entire operations; they can be regarded as computer illiterate and ignorant of the use and capabilities of computers. This made the use of computer for eAssessment to be challenging and therefore, very many of the students committed a lot of mistakes. On the part of the university, the Server used to beam the examination may atimes hang and cause delay probably due to the capacity of the servers. Invariably some students might have to use two or three computers before they finish a particular examination as they are transferred from one sit to the other. The antidote to this problem is the availability of enough technical personnel who could assist when any issue that could mar the examination occur. To avert the learners' illiteracy problems of computer knowledge and skill, universities should encourage if not making it compulsory for learners to participate in computer literacy and develop their computer usage competence skill as this will enable them to be able to participate fully in the current knowledge society where technology is the pivot on which

teaching and learning activity stands. This move will support and corroborate what the International Association for Evaluation of Educational Achievement (IEA) is planning. According to Webb & Gibson (2011), the International Association for Evaluation of Educational Achievement (IEA) is planning a cross country study of students computer and information literacy (CIL). Where CIL refers to an individual's ability to use computers to investigate, create, and communicate in order to participate effectively at home, at school, in workplace, and in the community . Resultant effect of this study will be an enhancement of the application of technology in assessment.

### **DESCRIPTION OF THE ADOPTED TECHNOLOGICAL DEVICE**

The eAssessment option adopted by NOUN tagged E-Exam in the university environment is a fully robust web application which can work on any client systems such as PCs, laptops, and thin client systems on popular browsers such as Firefox, Chrome and Internet Explorer. It scales with multiple concurrent connections and can handle various question types such as multi-choice questions (i.e. objective questions), fill-in-the-blank questions, and check list questions (i.e. select-all-that-apply questions). It also supports questions within a passage. Such English passage would contain blank spaces as questions numbers for the candidate to answer.

For questions uploading, the device could adopt Microsoft Office tools such as Microsoft excels and word there is no need for formal scripting or use of tags. The device integrity lies in the fact that questions are shuffled such that no two candidates have the same set of questions. For objective questions, the answer options for each question are also shuffled so that, for instance, option A would have a different answer for another candidate for the same question while it allows Latex expressions for mathematical and chemical equations. It also supports images within questions as well as within answers; these are characteristic of science subjects such as Mathematics, Biology, Physics or Geography. For instance, Chemistry questions that have chemical equations as answer options can be displayed without a problem for the candidate to select the right answer. The device is very robust, and it activates questions form legitimate questions bank. Candidates do not need to keep two login credentials for registration and e-Assessment portals. The device will, if need be, allow candidates to suspend one subject and commence another subject i.e. being able to switch between subjects in the course of writing the examinations. It also allow candidate to answer the questions in either sequential or random manner.

For the purpose of control, the examination administrator has the power to end a particular candidate's examination, end all examinations, extend examination duration and download all students' results in an encrypted format, etc. SMS and Email alerts of grades for candidates are available and seamless. All exams are timed with a clock timer displayed at the top of each subject. Once the time lapses, the exam ends and marking is done immediately. Candidates' performance reports analyses are available for authorised stakeholders.

The device platform is page by page. The first page is where candidates log in with the Registration Number and password credentials that have been generated for them during the registration process. The second page displays the home page consisting of subjects or courses registered for. Students select a particular course and proceed to question page

#### **Test Questions Page**

This contains the list of test questions that the candidate will attempt. If the questions can be timed from the administrative control panel, a question will be displayed at a time.

It is worth noting that each question has a point that determines the total mark for each test.

#### **Submitting TMA/EXAM Questions for Grading**

After candidate has completely answered the objective questions, he/she will click SUBMIT button to finally submit the questions to a grading service the engine that runs at the background. This service is responsible for checking the correct questions against the choices of the candidate.

## **System Administration Control Panel**

### **Administrator Log On**

Administrators are the authorized personnel that are expected to login to the eAssessment portal center and set Questions for candidates. This role can also be performed by Examination unit if it is centralised. Whenever an examiner logs in, only subjects' codes that have been assigned by the System Administrator are activated for him to work on.

After selecting the examiners, all the names of examiners in the board are listed, among which the examiner picks his own name and enter his password. System Administrator creates all the examiners' login credentials with initial password sent to their mails.

At first logon, an examiner is expected to change his password. Sample screens are shown below

### **Examiner Activities Centre**

This contains functional links that the examiner will use to:

- Set Test Questions
- Modify any part of the questions
- Attach Diagram to Questions
- Publish Questions for Candidate View
- Use Questions from Archive
- Get courses that are assigned to him
- Get candidates that registered for his course
- View Grading Performance Results

### **Uploading Test Questions**

To upload questions, the examiner will browse the excel file that contains the list of the questions in an agreed format. The system parse the file and read all the questions into the page for preview before the examiner finally click on 'Upload Test Questions' button to complete the process.

### **Questions Archive**

This contains the list of automatic archived questions. Questions are automatically archived whenever they are activated for candidates view. New set of questions can be extracted from archive database to formulate another test question

## **OBJECTIVES/PURPOSE OF THE STUDY**

The objective of the study is to investigate the students' perception of the adopted e-Assessment method of examination in relation to the required computer literacy level and the experiences of academics in the faculties in relation to the adopted e-Assessment method of examination in order to justify the need for the adoption of electronic examination method in the assessment of the university's multiple population learners during university semester examinations. This is with a view to sensitize the management of ODL institutions especially in the developing countries on the need to adopt the method of examination due to the inherent advantage it portend and also to reveal the fact that basic computer literacy course as a fundamental 'general study course' should be taken by every ODL student to adequately prepare them for their effective participation in the digital future which requires IT skills not just for assessment of their learning outcomes but also for their effective study as modern

days ODL learners in this digital age. The following three research questions guided the study

1. What is the view of NOUN students on the computer literacy preparedness level in relation to e-assessment examination method adopted by the University
2. What are the perceptions of the NOUN students about e-Assessment examination method adopted by the University?
3. What is the perception of the Academic staff of NOUN about e-Assessment examination method adopted by the University?

### **POPULATION AND SAMPLE**

The two different samples used for the study were drawn amongst the returning students of Ibadan and Kaduna study centres who had experienced the e-Assessment examinations and the academic staff who had participated in setting of both e-Assessment and paper and pen examination questions in the university. The student samples consist of both male and female students in the five schools; School of Arts and Social Sciences (SASS), School of Management Sciences (SMS), School of Education (SOE), School of Law (SOL) and School of Science and Technology (SST) and the Centre for Lifelong Learning (CLL) of the university. The number of samples from each of the study centres were 130 and 110 respectively totalling 240 students participants while the instruments distribution were as follows; SASS ( 76 ) , SMS ( 62 ) , SOE (44), (SOL) (44) and CLL (14). The number of academic staff that made up the second sample was 23 with each school having four representatives except CLL with 3 representatives.

### **METHODS/PROCEDURES**

This study employed survey research design. The data for the study was collected using multimethodology-research method approach wherein questionnaire was administered on the student samples while the academic staffs were interviewed. The questionnaire elicited responses on the computer literacy ability required of the students and their perception of e-Assessment examination method of the university while the perceptions of the academic staffs about the e-Assessment examination method of the university were gathered through interview.

### **DATA ANALYSIS**

The distribution of the student's sample of the study in relation to gender and age range and percentage on required computer literacy level and perception about e-assessment examination method is given below in table 1

#### **Demographic characteristics of the participants and their percentage score in relation to their perceptions and views on required computer literacy level in relation to e-assessment examination method of the University**

**Table 1: Gender and Age differences of the Sample**

<b>AGE</b>	<b>20-30</b>	<b>31-40</b>	<b>41-50</b>	<b>51—ABOVE</b>
<b>NUMBER(N)</b>	<b>56</b>	<b>84</b>	<b>68</b>	<b>32</b>
<b>Gender</b>	<b>F= 30 M=26</b>	<b>F= 33 M=51</b>	<b>F=30 M=38</b>	<b>F=14 M=18</b>
<b>%age</b>	<b>23.33</b>	<b>35</b>	<b>28.33</b>	<b>13.3</b>



The population of the participating students is more in the 31- 40 age bracket (84; 35%) followed by 41-50 (68; 28.33%). Age 20-30 has 56 (23.33%) while 51 and above is 32 (13.3%). This showed that large percentage of students of the university is made up of real working class group which is 31- 50 (152; 63.33%). These are category of students who could not leave their work to attend any higher institution for the undergraduate degree due to problems ranging from the problem of access to financial difficulties. They are those who benefit much from the flexibility and other characteristics of the open and distance learning institutions. The population of the very young fold is 56 (23.33%) while those that can be categorised as old; 51 years and above is made up 32 (13.3%). This shows that the university is really taken care of the young fold who are expected to actually be in the conventional university if not for the problem of access created mostly by difficulty in securing admissions and also the old who must have denied the privilege of attaining university degree. The picture portray by gender composition of the participant also revealed that gender inequality was taken care of by the university because in all categories of age difference the proportion of both male and female students is quite close hence the institution in all ramifications is open to all.

The subjects used for the study were requested to respond to some survey items in the administered questionnaire to reveal their perception and the required computer literacy level as it relates to e-assessment examination method of the university. The table 2 below therefore, provides information that describes the NOUN returning students' perception and what is perceived to be the required computer literacy level expected of students as it relates to the e-assessment examination methods adopted by the university.

**Table 2: Percentage responses of the subjects**

S. No.	ITEM	YES	NO
<b>A</b>	<b>COMPUTER LITERACY</b>		
1	Student must be able to put on and put off the computer before he/she can partake in e-assessment examination	231, 96.25%	09 3.75%
2	Partaking in e-assessment examination require ability to type words with computer	234, 97.5%	06, 2.5%
3	Students must have e- mail address to be able to attempt e-assessment examination	16 6.66%	224 93.33%
4	Students must know how to browse the internet before he/she can take e-assessment examinations	208, 86.66%	32, 13.13%
5	I need resources from the internet during e-assessment examination	-, 0%	240, 100%
6	Student should have participated in on- line chat before he/she can sit for e-assessment examination	08, 3.33%	232, 96.67%
7	I don't need to be computer literate at all before I can take part in e-assessment examinations.	-, 0%	240, 100%
8	I need not to be perfect in on-line learning to be able to take e-assessment examination.	232, 96.67%	8, 3.33%
9	I need to have sound knowledge of different search engines before I can take part in e-assessment examination.	12, 5%	228, 95%
10	I require the knowledge of Power point before I can take e-assessment examinations	-, 100%	240, 100%
<b>B.</b>	<b>PERCEPTION OF E-ASSESSMENT EXAMINATION METHOD</b>		
1	e-assessment examination eliminate the problem of delay in marking of scripts and allows candidate to know the examination score as soon as the paper is over	240, 100%	- 0%
2	e-assessment examination will enable us finish our programme to time.	236, 98.33%	04, 1.67%
3	The e-assessment will help sort out the issue of missing results	240, 100%	-, 0%
4	The university will need to acquire more computers so that all	112,	128,

	of us can be attempting our examinations at the same time.	46.67%	53.33%
5	Computer training should be part of the courses we will register for in order to equip us for the e-examination.	224, 93.33%	16, 6.67%
6	e-assessment examination allow students to attempt their examination in a relaxed atmosphere devoid of harassment from supervisors	238, 99.16%	02, 0.83%
7	e-assessment examination reduces the level of paper work required during examinations	231, 96.25%	9, 3.75%
8	It reduces examination malpractices on the part of students and the lecturers	240, 100%	-, 0%
9	e-assessment examination will alleviate the problem of students with poor hand writing	218, 90.83%	22, 9.17%
10	I prefer e-assessment examination to the pen and paper examination	226, 94.16%	14, 5.83%

### Academic Staff interview

Individual interviews were conducted with 23 members of academic staff selected on the basis of being a participant in setting of both e-Assessment and paper and pen examination questions in the university. The participants were drawn from the six schools and the Centre for Lifelong Learning; which is an academic unit of the university. Each interview session lasted between 30-45 minutes. Interview questions responded to by these samples include belief about technology, experience in the use of computer, enabling environment, computer knowledge, individual perception and training.

## RESULTS AND DISCUSSION

**Research question 1:** What is the view of NOUN students on the expected computer literacy preparedness level in relation to e-assessment examination method adopted by the University?

The table 2 above shows that 231 or 96.25% agreed that a student must be able to switch on and off the computer before he/she can partake in e-assessment examination; 234 or 97.5% confirm that partaking in e- assessment examination requires ability to type words with computer. 224 or 93.33% agreed that a student does not need to have e- mail address to be able to attempt e-assessment examination while 208 or 86.66% believe that student must know how to browse the internet before he/she can take e-assessment examinations. 240 which made up the entire sample population agreed that student do not need resources from the internet during e-assessment examination; 232 or 96.67% also confirmed that student does not need to have participated in on- line chat before he/she can sit for e-assessment examination. In order to participate in e-assessment examination, 240 or 100% of the sample believe that a student needs to be computer literate before he or she can take part in e- assessment examinations while 232 or 96.67% revealed that students need not to be perfect in on-line learning to be able to take e-assessment examination. Amongst the entire samples of the study, 228 or 95% agreed that students do not need to have sound knowledge of different search engines before he or she can take part in e-assessment examination. Lastly, the entire sample agreed that a student does not require the knowledge of Power point before he or she can take e-assessment examinations. What could be deduced from this result is that students require only basic knowledge and skill in computer literacy to be able to sit for e-assessment examination. The exposition of students will enhance their ability and increase their literacy level. Such computer exposition and training will broaden their knowledge. In tandem with this assertion are research evidences that suggested that training significantly reduces anxiety and increases confidence in computer use (Colley et al., 1994; Gressard & Loyd, 1986; Torkzadeh & Koufteros; 1994).

**Research question 2:** What are the perceptions of the NOUN students about e-Assessment examination method adopted by the University?

From the table 2, the entire sample agreed to the fact that e-assessment examination eliminates the problem of delay in marking of scripts and allows candidate to know the examination score as soon as the paper is over; 236 or 98.33% of the sample agreed that e-assessment examination will enable them to finish their programme to time. The entire sample also has the belief that the e-assessment will help sort out the issue of missing results. 112 or 46.67% of the sample population agreed that the university will need to acquire more computers so that all of us can be attempting our examinations at the same time while 128 or 53.33% disagreed. 224 or 93.33% of the sample is of the opinion that computer training should be part of the courses we will register for in order to get them equipped for the e-examination and 238 or 99.16% of them agreed that e-assessment examination allow students to attempt their examination in a relaxed atmosphere devoid of harassment from supervisors. 231 or 96.25% also revealed that e-assessment examination reduces the level of paper work required during examinations. The entire sample also agreed that the e-assessment examination reduces examination malpractices on the part of students and the lecturers while 218 or 90.83% of the sample is of the view that e-assessment examination will alleviate the problem of students with poor hand writing . In totality, 14 or 5.83% of the sample prefer pen and paper examination while 226 or 94.16% of the samples prefer e-assessment examination. The results here revealed that the students accept the mode of examination and perceive the e-assessment examination in high regard. They prefer it to the pen and paper examination. Considering the responses, many of students confirmed that they prefer e-assessment method of examination since it would make them finish their examination in time and there would not be any delay in getting the results of the examination they sat for. This experience has helped in erasing the incident they heard, that before the advent of e-assessment many of the results of the students were always missing but with e-assessment whoever pass or fail in a course would know his or her stand and be able to move ahead in the programme he or she registered for. Students that require repeating a course would know their stand and be able to follow through the process instead of being in the dark.

**Research question 3:** What is the perception of the Academic staff of NOUN about e-Assessment examination method adopted by the University?

The conducted individual interviews elicited responses from the samples. All the samples candidly express their views. On the issue of training, the samples are of the opinion that the computer training which exposes them to the mode and method of question setting for the e-assessment method really help their adaptation. This singular act according to them reduced their anxiety and erased the fear and ill feelings many had harboured. Many (18; 78%) also confirmed that they were highly computer literate before joining the university and they have also received various computer trainings while in employment of the university. Those (5; 22%) who were not so highly computer literate before joining the university claimed to have improved tremendously due to exposure through trainings. On the issue of belief about technology, they all consented positively to the fact that the ODL mode which is a shift in paradigm from the conventional mode which everybody were used to before now is highly driven by technology and the knowledge they have been exposed to and acquired by being involved in different things that are done in the university system through Information technology has made them to be aware of the fact that technology can help mediate activities and resolve lots of problems when it concerns the issue of teaching and learning. The responses of the sample on their experience in the use of computer can be easily deciphered from the responses expressed when responding to question on training. As it is, they all can use computer very well and are now versed in it. They are also positively disposed to the fact

that the environment is very good though they express their reservation about the bandwidth available in the university. They felt the bandwidth should be increased. They all claimed to have the required basic knowledge they can use to function effectively and efficiently in the ODL environment. Lastly on the individual perception of the e-assessment examination method adopted by the University for the Semester Examinations of their very large number of students, the responses were in the affirmative. The academic staffs belief that adopting the e-assessment examinations suit the university for its advantages and also for the value it add to the university services. The e-assessment examination is seen as a welcome development and also as an innovation considering many pitfalls the pen and paper examination has generally and especially when it involves a large number of candidates going to the tune of tens of thousands. The traditional examination is noted to be plagued with several issues that bother on irregularities such as allowance for impersonations, inadequate supervisors, question paper leakages, influencing of scores through payment of gratification to markers and bribing of supervisors or invigilators. Others are delay of release of results, non-release of results and missing of results which is common to examination that involves a very large number of candidates. As the examination mode suits the modern day time in all ramifications so also is its adoption has some implications for those who would work with it and through it. As succinctly put by Attewell (2005), e-assessment examination will amongst others, (a) 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. (b) require questions in item banks 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. (c) require setting up of a viable physical and IT infrastructure to support e-examination to the required scale. (d) require instituting policies and procedures to ensure the validity of e-examinations. (e) require alternative provisions for the problem of a technical failure on the day of examination especially in the developing countries that experience poor electricity supply.

Aside the above challenges, the challenges that may be expected to face the deployment of e-assessment examination method mostly in developing countries like Nigeria are inadequate electricity supply, inadequate Information Technology facility tools such as the computers and also the level of illiteracy in the use of computer which is still on a wide scale among the teachers and the students. Nonetheless the problems are surmountable if institutions are ready to take to e-assessment examination method due to its inherent benefit.

### **SUGGESTED WAYS TO IMPROVE e-ASSESSMENT EXAMINATION METHOD**

From the fore going, the identified problems from the study that could militate against e-assessment methods of examination in various institutions where it is being adopted could be resolved through critical considerations of the steps that should be taken to alleviate the identified issues or problems. The identified problem with the research question lies in the required level of computer literacy a student should possess for him or her to be able to attempt e-assessment examination. It is the belief and opinion of the samples that students require the basic knowledge and skill in computer literacy for him or her to be able to partake in the e-assessment examination. This can be taken care of by making sure that courses that will expose the students to computer literacy skills are included in their courses of study. This course in particular must be made to have a practical aspect through which the students will be made to actually use computer physically. As the case may be, there is tendency for many of the students' before coming into the university not to have been opportune to use computer either on their own or with the assistance of an expert. This invariably indicates that many

students might be admitted to their course of study without possessing any literacy skill or strong literacy skill in computing.

This issue or problem needs to be addressed wherever the e-assessment examination is being adopted since ability to use computer is the required skill for attempting such examinations. In NOUN as in other ODL institutions, computer literacy plays great roles from the beginning to the end of the educational structure. It is necessary and important that ODL students be computer literate enough to have the basic knowledge in computer literacy and know what can be done with the computing machine. If this knowledge is lacking, such students will have to depend and rely on another person on the issues that has to do with his or her academic activities. Invariably, these issues might include e-assessment examination amongst others. As computer literacy is important in ODL institutions for reasons adjudged above so also it is important in any other institution or systems that would be adopting the e-assessment examinations. It is important that students are exposed to basic computer and word processing skills as part of their course. Computer literacy as Harvey (1983) sees it therefore implies some skills or knowledge which is necessary for every person to be able to cope with the computer-centred society. Other ways to counter expected problems or issues include the fact that the examination centres where e-assessment examinations will be taken place should be equipped with adequate computers and other information technology tools for a smooth conduct of e-examinations; 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 of computer literacy; the lecturers should be trained in the use of the computer for the reparation, scripting, uploading and monitoring of e-examination questions; there should be adequate supply of electricity by having a standby generating plant; invigilators or supervisors need to be trained to handle some basic IT problems so that they can assist students during the e-examinations; there should be enough questions in its item/question banks .

## **CONCLUSION**

Conclusively, considering the responses of the samples to the raised research questions as analysed, it is very glaring that the study support the use of e-assessment examination for the purpose of examining candidates when the examination involves a large number of students obviously for the inherent benefit it portends. The students through their responses showed that the e-assessment mode of examination require a basic knowledge and skill in computer literacy in all ramifications and also revealed their preference for the examination which was perceived to possess characteristics which made it to be acceptable than the pen and paper mode of examination. Aside these, the responses of the academic staffs through the conducted interviews support the adoption of e-assessment examination by the management of NOUN due to the advantages they belief it has over the traditional pen and paper examinations. Their positions on and perceptions of the mode of examination corroborate the position of the students regarding their perceptions of the e-assessment examination. Integrating these positions, it will be suggested that institutions be it conventional or ODL , either with multiple candidates in the region of tens of thousands should adopt the e-assessment examination methods to carry out their semester examinations as the advantages and benefits would allow smooth examination coupled with the value it will add to their operations and services

## **REFERENCES**

- Attewell,J. (2005). Mobile technologies and learning. [www.lsda.org.uk/files/PDF/041923RS.pdf](http://www.lsda.org.uk/files/PDF/041923RS.pdf)  
Federal Ministry of Education (2004). Ministerial initiative on e- examination for Nigerian education system. e-Education Project

- Clarke, J. & Dede, C. (2010). Assessment, technology, and change. *Journal of Research in Teacher Education*, 42(3).
- Colley, A.M., Gale, M.T. & Harris, T.A. (1994) Effects of Gender Role Identity and Experience on Computer Attitude Components. *Journal of Educational Computing Research*, 10, 2, 129-137.
- Dietal, R. J., Herman, J. L. & Knuth, R. A. (1991). *What does research say about assessment?* North Central Regional Educational Laboratory. Retrieved 3/27/06 from: [http://www.ncrel.org/sdrs/areas/stw\\_esys/4assess.htm](http://www.ncrel.org/sdrs/areas/stw_esys/4assess.htm).
- Finger, G., Russell, G. Jamieson-Proctor, R. J. & Russell, N. (2007). *Transforming learning with ICT: making IT happen*. Pearson Educational Australia.
- Fluck, A.; Pullen, D. & Harper, C. (2009). *Case study of a computer based examination system*. *Australian Journal of Educational Technology*, 25(4), 509-523.
- Gressard, C.P. & Loyd, B.H. (1986) The Nature and Correlates of Computer Anxiety in College Students. *Journal of Human Behaviour and Learning*, 3, 2, 28-33.
- Gvozdenko, E. & Chambers, D. (2007). Beyond test accuracy: Benefits of measuring response time in computerized testing. *Australian journal of educational technology*, 23(4), 542- 558. <http://www.ascilite.org.au/ajet/ajet23/gvozdenko.html>.
- Haken, M. (2006, January). Closing the loop-learning from assessment. Presentation made at the *University of Maryland Eastern Shore Assessment Workshop*. Princess Anne: MD
- Harvey, B (1983) Stop Saying “ Computer Literacy”! paper published Classroom Computer News. <http://www.eecs.berkeley.edu/~bh/stop.html>
- Hersh, R. (2004). Assessment and Accountability: Unveiling value added assessment in higher education. A paper presented at the *AAEA National Assessment Conference*. June 15, Denver: Colorado
- Kellough, R. D. & Kellough, N. G. (1999). *Secondary school teaching: A guide to methods and resources: planning for competence*. Upper Saddle River, New Jersey Prentice Hall
- Love, T. & Cooper, T. (2004). Designing online information systems for portfolio-based assessment: designing criteria and heuristics. *Journal of Information technology*
- Okonkwo, C. A. (2010). *Using e-Assessment to enhance the operational efficiencies of the National Open University of Nigeria (NOUN)*. *Journal of Educational Assessment in Africa*. A publication of the Association for Educational Assessment in Africa (AEAA), 117 – 138.
- Okonkwo, C. A. & Ikpe, A. (2008). Re-engineering examination at the National Open University of Nigeria: The On Demand Examination Initiative. A paper presented at the International Association for Educational Assessment (IAEA) 34th Annual Conference, Cambridge, 7-12 September, 2008. Accessed on 14th June 2013. [http://www.iaea2008.cambridgeassessment.org.uk/ca/digitalAssets/164845Okonkwo\\_CA.pdf](http://www.iaea2008.cambridgeassessment.org.uk/ca/digitalAssets/164845Okonkwo_CA.pdf)
- Orlich, Harder, Callahan & Gibson (2004). *Teaching strategies: A guide to better Instruction*. New York: Houghton Mifflin
- Prasad, S. K & Xavier, G. (2006). Use of ICT in Evaluation. On Demand Examination System of National Institute of Open Schooling (NIOS), India. Paper presented at the workshop on “On Demand Examination System” organized by the National Open University of Nigeria (NOUN), NOUN Headquarter Lagos, 6 – 17 November.
- Pullen, D. & Cusack, B. (2008). Content management systems: the potential for open education. *Fact Sheet FS01*. *Australian College of Educators*. Canberra.
- Quellmalz, E., Timms, M., & Schneider, S. (2009). *Assessment of Students Learning in Science Simulations and Games*. DC: National Research Council.
- Reju, S. A. & Adesina, A. (2008). “Instructional Planning for Online Assessment, Using Learning Content Management Systems (LCMS)”. Paper presented at the Commonwealth of Learning/RETRIDAL workshop on Strategic Policy and Management of Assessment in ODL for West African Sub Region, held in NOUN Headquarters Lagos, May.
- Torkzadeh, G. & Koufteros, X. (1994) Factorial Validity of a Computer Self-Efficacy Scale

and the Impact of Computer Training. Educational and Psychological  
Measurement,54,3,813-821

Webb, M. & Gibson, D. (2011). Briefing paper on assessment for Edusummit 2011 Draft:  
ICT. Assessed on 6/29/2013 from:

<http://jorgewerthein.blogspot.com/2011/07/briefing.paper-on-assess>