Rethinking and restructuring an assessment system via effective deployment of technology

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ABSTRACT

Every instructional process involves a strategic assessment system for a complete teaching – learning circle. Assessment system which is seriously challenged calls for a change in the approach. The National Open University of Nigeria (NOUN) assessment system at present is challenged. The large number of students and numerous courses offered by NOUN as an open and distance learning institution make assessment very cumbersome and an administrative nightmare. This paper has employed descriptive approach in studying the nature and various directions of challenges associated with NOUN assessment. These challenges are related to conduct of examination such as question paper, finance, manpower, collation of results and release of meaningful results. The study explores how technology envisaged to ameliorate these challenges can effectively be employed to restructure assessment in NOUN. Issues relevant for effective deployment of technology in restructuring like question bank, logistic operations, operational processes of technology and formal registration of students for assessment are discussed for ease of implementation. Implications for the use of technology in assessment are presented. Cogent recommendations are made for effectiveness of the system. In sum, the deployment of technology is a viable sustainable strategy open to NOUN to effectively manage the burden of assessment of students' learning outcomes.

Key words: *assessment system; challenged; technology; restructuring; question bank; students registration; sustainability.*

INTRODUCTION

Learner assessment is central to every instructional process. It is a process of collecting information from formal and informal sources from which formative and summative decisions could be made concerning the learner and the learning process. Assessment should be meaningful to the individual assessed and real value in determining their readiness to move on the educational system. It should also be useful to the users of assessment results in and outside the educational system.

Assessment system is a coordinated plan for periodically monitoring of the progress of learners in various levels and in variety of subjects. Mervis (1995, 1) says that a comprehensive assessment system "specifies the procedures that will be used for assessment; indicates when and how those procedures will be administered; and describes plans for processing, interpreting and using the resulting information." Assessment system which is seriously flawed and broken (challenged) with respect to these procedures calls for a change in the approach. This is necessary for assessment in supporting processes of teaching and learning for sustainability of the assessment process. This call is not for a method or technique but rather a way of thinking about all aspects of the assessment practice and its effect on summative assessment; and the eventual recipients of the assessment results. It points to the need for restructuring for sustainability. It is obvious that sustainable assessment is a function of many factors which Boud (2000) rightly affirmed cannot exist independent of the learning environment.

The assessment system in practice although has not neglected the formative assessment, has failed to generate substantive feedback information in the way it is currently managed. If we note that feedback is used to influence new ways of engaging the learner with the learning task and is important in modeling the full assessment system for lifelong learning. Then, new thinking is required in NOUN to build assessment system which sustains learning. This is a substantial challenge. It requires a revolution in NOUN assessment thinking. A rethinking, that should lead to eventual restructuring from where we are now to a new system. However, facing the challenge of discontinuity of the old paper and pencil assessment model is an uneasy pathway. It involves trying to implement strategies which might appear to be contradictory.

Open and Distance Education all over the world, is known to be technologically driven. The recent trend is towards the use of technology provisions for assessment of learning outcomes. UCTL (2006) showed how packages like WebCT^{TM} are useful tools in assessment exercises. Also, Reju and Adesina (2008) have demonstrated how Learning Content Management Systems (LCMS) can be utilized for online assessment. The NOUN in her wisdom has envisaged the deployment of technology in assessment to support End of Semester Examinations (ESEs) for credibility and quality assurance in the assessment system. She envisaged that technology will lead to sustainability of the assessment system by ameliorating the weaknesses inherent in the assessment of students' learning outcomes in the institution. To achieve this, NOUN has adapted and made available for consideration and utilization the 'On Demand Assessment System'; 'ATutor^{TM}'; 'MarpleTA^{TM}' softwares for assessment of students' learning outcomes. Besides, Integrated Learning Management System (iLMS) is being developed for full eLearning and eExamination in NOUN. However, restructuring assessment system in NOUN is needed to meet the needs of the present and to prepare learners to meet their own future learning needs. Hence, this study reflects on the assessment challenges at NOUN and the factors associated with the challenges. It proposes rethinking and restructuring of the assessment system via effective deployment of technology as a means of enhancing the assessment system of NOUN.

Objectives of the Study

The objectives of this study are in two parts:

1.   To identify:
     i.   Students' assessment related challenges in NOUN assessment of students' learning outcomes.
     ii.   The question papers related challenges in NOUN assessment of students' learning outcomes.
     iii. Manpower related challenges in NOUN assessment of students' learning outcomes.
     iv.   The challenges relating to collation of results in NOUN assessment of students learning outcomes.
     v.   The challenges associated with finance in NOUN assessment of students' learning outcomes.

2.   To present the effective deployment of technology – a vital means of salvaging the NOUN assessment system.

The National Open University of Nigeria (NOUN)

The NOUN was first established by an Act of the National Assembly in July 1983, and was closed down a few months later in 1984 by suspending the Act of 1983. By 2002, the NOU Act of 1983

was reactivated and it paved way for resuscitation of the National Open University of Nigeria (NOUN). Amongst the major objectives of NOUN are to:
- Enhance Education For All (EFA) and life-long learning;
- Provide instructional resources via an intensive use of information and communication technology; and
- Provide flexible, but qualitative education.

Furthermore, NOUN has her vision and mission statements as:
"The National Open University of Nigeria is to be regarded as the foremost university providing highly accessible and enhanced quality education anchored by social justice, equity and national cohesion through a comprehensive reach that transcends all barriers" (Vision Statement: NOUN; 2006, 4) and "To provide functional cost effective, flexible learning which adds life-long value to quality education for all who seek knowledge" (Mission statement: NOUN; 2006, 4). The 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 (ODL) mode of instruction due to their peculiar circumstances.

STATEMENT OF PROBLEM

The NOUN data base has shown that NOUN has a total student population of about forty five thousand from three admission exercises. These students are spread in thirty three study centres throughout the six geographical zones of Nigeria. One hundred and five academic programmes, comprising one thousand three hundred and eighty three courses are presently offered in the institution. Students offering these courses must be assessed as at the end of 2007/2008 session. The pioneer students were admitted by the year 2003/2004. This group is supposed to have been assessed both formatively and summatively for at least eight semesters as at the end of 2007/2008 session. The large number of students and numerous courses make assessment very cumbersome and an administrative nightmare for NOUN, a distance learning institution. The conduct of examination for the students has remained a challenge. The NOUN pioneer students have been assessed four times in end-of-semester examinations. The continuous assessments in form of "Tutor Marked Assignments" have also been administered as required. However, the results of all these assessments are not promptly scored and collated for presentation to the students. These results when subsequently presented have observable lapses. This has been a major source of concern to NOUN community and has caused considerable delay in the compilation and release of meaningful results. It appears to stake holders as if the NOUN vision and mission are not being realized. Moreover, the completions of programmes of studies take more years than anticipated. An end to this seeming illusion and myriad of examination hurdles are most desirable to move the institution forward.

RESEARCH QUESTIONS

1. What are the students' assessments related challenges in NOUN assessment of students' learning outcomes?

2. What are the question papers related challenges in NOUN assessment of students' learning outcomes?

3. What are the manpower related challenges in NOUN assessment of students' learning outcomes?

4. What are the challenges relating to collation of results in NOUN assessment of students' learning outcomes?

5.   What are challenges associated with finance in NOUN assessment of students' learning outcomes?

METHOD

This study has employed descriptive approach in studying the challenges associated with NOUN assessment of students learning outcomes. The data for this study was collected by using semi-structured questionnaire designed by the author based on the responses to the author's preliminary interview of academics within the School of Education of the University. The questionnaire was validated by presenting it to four senior academic colleagues of the researcher one of whom is a specialist in Measurement and Evaluation; one is in Educational Technology, while the other two are directly involved in the assessment process. Their critical comments on face and content of the questionnaire items were used in modifying the items of the semi-structured questionnaire. Also, the observations of the researcher as a concerned participant were noted and discussed with the subjects of the study. At the time of administration of the questionnaire, the university consisted of fours Schools, one Centre for Lifelong Learning and one Directorate of Examination and Assessment whose academic staff ranged from five to ten all of whom were directly involved with the development of question papers and conduct of examinations. The questionnaires were administered to five academic staff in each of the schools and two to the academic staff of the Centre for Lifelong Learning while the other three were administered to academic staff of the Directorate of Examination and Assessment. The number of questionnaire administered were based on the resident academic staff strength at the headquarter office at the time of this study. One questionnaire each from two of the four schools was not returned. That is, out of the twenty five questionnaires that were administered, twenty three were returned. The responses were collated and reported qualitatively. However, for a response to be listed, at least fifteen respondents must have mentioned that response. The in-depth responses elicited from twenty three out of twenty five academic staff of the institution headquarters office who are directly involved with assessment processes to whom the questionnaires were targeted were qualitatively analyzed and the results revealed the challenges to NOUN assessment. These challenges are presented under results.

RESULTS

The responses to the various research questions are presented alongside the relevant research question. These responses are not stated according to priority or ranking. But, for a response to be recorded, at least fifteen respondents must have indicated the statement as a challenge.

Research Question 1*: What are the students' assessments related challenges in NOUN assessment of students' learning outcomes?

Responses to this questionnaire item revealed that the students related challenges are:

-    Failure of most students to write their correct matriculation/identification numbers in their answer booklets;
-    Confusion on courses to be registered for examination;
-    Confusion on examination timetable/dates and scheduling of courses to be examined;
-    Failure of some students to do Tutor Marked Assignments (NOUN version of continuous assessment);
-    Non compliance with deadlines by students in submitting Tutor Marked Assignments;
-    Complaints from students on conflict between their work and examination schedule;

- Inability of some students to obey instructions and regulations guiding conduct of examination.

These challenges hinder effective and efficient processing of assessment results.

Research Question 2*:* What are the question papers related challenges in NOUN assessment of students' learning outcomes?

The question paper related challenges identified by the participants include:

- Timely production of examination question papers;
- Unintended use of ambiguous and sub-standard questions in some examination question papers;
- Poor editing of some questions used for examination;
- Transportation and ware housing the question papers (from the headquarters office to the study centres);
- Delivery of question papers to the Study Centres/Venues for examination;
- Absence of question papers for some registered courses at examination venues on days scheduled for examination;
- Security of question papers to avoid leakages

To overcome these challenges, a lot of careful planning and adequate logistics are required to effectively handle the large number of courses to be produced and delivered at the thirty three study centres spread across the six geographical zones of the country.

Research Question 3: What are the question papers related challenges in NOUN assessment of students' learning outcomes?

Participants responses to this questionnaire item showed manpower related challenges in assessment of students learning outcomes in NOUN as:

- Lack of adequate supervision of facilitators in their assessment of students' Tutor Marked Assignments and End - of - Semester Examinations;
- Lack of uniformity in grading Tutor Marked Assignments by facilitators across the Study Centres;
- Lack of experts to set questions in some courses at the NOUN headquarters office;
- Unskilled and underdeveloped human capacity for effective use of technology;
- Inadequate communication between the NOUN headquarters and the Study Centres with respect to Tutor Marked Assignments and End-of-Semester Examinations;
- Inadequate skill in the collation of examination scripts from the Examination Centres (Study Centres);
- Inadequate skill in coordination of marking exercises and collation of examination results and/or Tutor Marked Assignments

These challenges call for capacity building in form of staff development via workshops and seminars that focus best practices in the assessment processes of students learning outcomes especially in Open and Distance Learning Institutions.

Research Question 4*:* What are the challenges relating to collation of results in NOUN assessment of students' learning outcomes?

Collation of results is a high volume activity requiring a high degree of accuracy. Registration forms for candidates are usually completed at the Study Centres. The study revealed that error rates are generally high and include:

- Incorrect spelling of names;
- Errors in courses entries; and
- Errors occurring during data entries.

These errors hinder efficient and accurate sorting of registered students records and subsequent sorting of results. A checking stage is therefore necessary to 'clean-up' the data.

Other challenges identified are:

- Non release of Tutor Marked Assignments results to students on time for effective use of feedback from them;
- Lack of proper coordination in processing of students results;
- Challenge of the use of technology in the result processing (i.e. under developed skills in the use of ICT in processing of results);
- Irregular submission of Tutor Marked Assignments by students for grading;
- Non release of all results of papers examined to most of the students;
- Missing Tutor Marked Assignments in transit;
- Prompt release of results of examination;
- Missing examination results.

These challenges call for a standard model for students' registration to target these administrative impediments to NOUN assessments of students learning outcomes. An ideal model of students' registration shall lay the foundation for subsequent administrative processes. The students' registration master data base is to be used to prepare:

- Attendance register;
- Packaging and distribution lists for question papers;
- The format for entry of students' scores; and
- Printing files for results listing.

These activities if carefully planned and executed would lead to efficiency in the system.

Research Question 5*:* What are challenges associated with finance in NOUN assessment of students learning outcomes?

The cost of administering examination nation wide is very enormous leading to:

- Inadequate provision of facilities for the examination;
- Inadequate provision of logistics for examination venues ;
- Inadequate provision for civility of the examination.

These challenges need adequate planning and financial budgetary support to forestall.

According to Nwana (1999), Civility of an assessment enquires whether the persons being assessed are in such conditions as to give their best without hindrances and encumbrances in the attributes being assessed and whether the exercise is seen as integral to or as external to the learning process. Hence, in the conduct of examinations for ODL, effort should be made to see that the learners are given a fair and unaided chance to demonstrate what they have learnt. The examination environment should be learner friendly with adequate physical conditions such as work space, good and comfortable writing desks, proper lighting, good ventilation, moderate

temperature, conveniences within reasonable distance and serenity necessary for maximum concentration. Ample time should be provided for candidates to demonstrate what they know and what they can do. The questions of course should be friendly with bold characters, neat, decent, clear and appealing and not such that intimidates candidates into mistakes. All relevant materials for carrying out the demands of the examination should be provided in reasonable number and quality. The above strategies are necessary for ODL practitioners in order to make the assessment civil in manifestation. Nwana (1999) observed that an examination in which physical conditions are uncomfortable and students are hounded like animals does not possess civility even if the tests paper had been demonstrated to be valid and reliable.

All these challenges associated with NOUN assessment of students' learning outcomes negate the vision and mission of NOUN in particular and assessment in general. The large number of students and numerous courses offered by NOUN as open and distance learning institution make assessment very cumbersome and an administrative nightmare. It is generally believed and suggested that effective use of technology would eliminate most of the identified challenges. Hence, the call for rethinking and restructuring of assessment system in NOUN via effective deployment of technology.

DISCUSSION ON RETHINKING AND RESTRUCTURING ASSESSMENT SYSTEM IN NOUN

It has already been observed that all over the world Open and Distance Learning (ODL) is known to be technologically driven. The recent trend is towards the use of technology provisions for assessment of learning outcomes. This is exemplified in the use of software packages like MarpleTA^{TM}, WebCT^{TM}, ATutor^{TM} and other Learning Content Management Systems dedicated for online and assessment globally. The National Open University of Nigeria in her wisdom has envisaged the deployment of technology in assessment to support End of Semester Examinations (ESEs) for credibility and quality assurance in the assessment system. She envisaged that technology will lead to sustainability of the assessment system by ameliorating the weaknesses inherent in the assessment of students' learning outcomes in the institution. Thus, this study explores how technology envisaged to ameliorate the challenge experienced thus far can be effectively employed to restructure assessment in NOUN. To achieve this, issues relevant for effective deployment of technology in restructuring are hereby discussed for eventual implementation.

DEPLOYMENT OF TECHNOLOGY IN ASSESSMENT SYSTEM

The deployment of technology will cover the following areas:
- The Question Bank
- Capacity building /Training need
- Operational Processes
- Formal Registration of Students for Assessment

The Question Bank

A question bank is a planned library of test items pooled through comparative efforts under the protection and support of an institution for the use of evaluators, academics and students in partial fulfillment of the requirements of the teaching learning process (Biswas & Pradhan, 2000). A question bank is designed to fulfill certain pre-determined purposes like enriching the instructional aspects and to judge the students learning outcomes. It offers a utility service with inbuilt feedback mechanism for improvement of its questions. The generation of items for the question bank is based on test blue prints and question paper design. A meaningful question

bank is evaluated at regular intervals at least once in three years, the questions are screened and the obsolete ones are discarded. As old and obsolete materials are discarded, new materials are continuously added in line with the revision of course materials to give the question bank a dynamic new look. The NOUN should design and develop a functional question bank based on NOUN assessment blue print as a first step in the deployment of technology in restructuring assessment. The question banks are to be utilization in her assessment of students' learning outcomes. Feedback information that can be used for instructional purposes, pre-testing, review and revision of a lesson is easily obtained from carefully selected items from the question bank. A question pool from the bank can further be utilized in the preparation of textual materials and review exercise in course materials.

Capacity Building/Training Need

Effective deployment of technology demands capacity building in the following areas:

- Technical training for the question databank administrators;
- Training of Course Coordinators and Programme Leaders on item development procedures for the 'blue prints' for courses to be examined (that is, the academics involved in items development processes);
- Training of all academic staff, including facilitators on generation of items;
- Training of examination officers and academic staff of the Study Centres on the use of technology software for assessment;
- Training of academic staff on development of test items using item codifications for the 'test blue print';
- Development of rich question bank with many items in each cell of the blue print for computerization and use in students assessment;
- Training of ICT personnel for technical support and back up for the deployment of technology in the Study Centres/examination venues; and
- Training of data entry operators for inputting the questions into question bank as they are developed, validated and moderated.

Operational processes

The operational processes of technology will entail consideration and effective implementation of the relevant factors in the deployment of technology in NOUN assessment. The factors are:

- Question Paper Design and Blue Print
- Number of Items in a Question Paper
- Total Number of Items in the Question Bank
- Item Codification
- Item Sheet

Question Paper Design and Blue Print

The design of a question paper considers setting percentage weight to parameters such as learning objectives, types of questions, content areas in a subject and the difficulty level. Based on the design a blue print is developed. The blue print allocates the number of questions and marks to each module/unit of a course, the learning objectives and the type of questions. It defines how many items are taken from each content unit, for each learning objective and for each type of item. A sample blue print for "EDU 101: Foundations of Education" is presented in table 1.

Table 1: *A Sample Blue Print for Foundations of Education*

Content		Very Short Answer					Long Answer
		Objective Level					
Area	Weight	K (10%)	U (15%)	A (15%)	S (60%)	Total (100%)	D (100%)
Module 1	20%	1	2	2	7	12	0.75
Module 2	25%	2	2	2	9	15	1.00
Module 3	25%	2	2	2	9	15	1.00
Module 4	30%	1	3	3	11	18	1.25
Total	100%	6	9	9	36	60	4.00

K=>Knowledge, U=>Understanding, A=>Application, S=>Skill, D=>All Objectives Defined

A cell of the blue print comprises of a specified type of question and under a specific objective of a content/unit. A number of questions are to be developed and computerized for each cell of the blue print. Ones items are developed rigorously by undergoing the processes of item development and validation; and are based on the specifications of the blue print, such items are computerized for use and they form a pool for the question bank. This process ensures that the qualities of items generated by deploying technology software are automatically taken care off. The Very Short Answer could be in the form of Multiple Choice Questions (MCQ), Multiple Selection, and Fill in the Blanks or Matching Items. While Long Answer are for Essay Questions and the like. The 'S=>Skill' in the 'Blue Print' stands for questions on Analyses, Syntheses or Evaluation. That is higher order question in which the skills of the examinees will be tested.

Number of Items in the Question Paper

The Blue Print assigns weights to each cell according to its earlier design and thereby fixes the total number of items in a question paper. This is generally determined by the Blue Print design for a subject. Each item has a distinct serial number and is classified as par the Blue Print. While generating a question paper, the computer randomly picks up a question/item from the item pool in each cell of the Blue Print. Every candidate appearing in a course may get different items if it is so programmed leading to different question papers but of equal weight, same sample of content, objectives and type of questions. Prasad and Xavier (2006) affirmed that by using On Demand Examination System software and Blue Print to guide the generation of the question paper by the computer, the weight of each question paper set is maintained in terms of content, objectives and types of questions.

Total Number of Items in the Question Bank

The number of items in the Question Bank is crucial in determining the number of unique sets of question papers. The larger the size of the Question Bank, the higher is the number of unique sets of question papers (Prasad and Xavier; 2006). They illustrating that for an existing question bank, having about 1000 items developed in a course, the number of distinct question papers that could be generated in that course are very large. This is as depicted below:

    i.   The total number of questions in the item bank = 1000
    ii.   Total number of items in a randomly generated question paper = 30
    iii.   The number of modules/units from which the questions are to be taken = 07
    iv.   The number of objectives areas from which questions are to be taken = 04
    v.   The number of types of items included = 04

Then, by using the theory of permutation and combination, the number of unique sets of question papers that can be randomly generated is given by:

$$\frac{^{1000}C_{30}}{^{30}C_7 \times {}^{30}C_4 \times {}^{30}C_4}$$
$$= 2 \times 10^{42} \text{ (approx.)}$$

That is, approximately 2×10^{42} unique sets of question papers may be generated from the data bank.

Item Codification

Items are to be codified before storage in the question bank and for subsequent computerization. This is as illustrated in table 2 using the course "Foundations of Education."

Table 2: A Sample Item Codification for 'Foundations of Education'

Course title	Foundations of Education
Course code	EDU 101
EDU 101/0101/D/LA/0001	Codification for all essay questions
EDU 101	Course Code
0101	Module Code. There are about four modules in EDU 101. The code for other modules would be 0201, 0301 & 0401. The unit code within the module has not been taken into consideration and has been left for the paper setter to frame question in such a way that all the units are covered.
D	Learning outcome as D fixed which is all defined. It may be from knowledge or understanding or application or skill or a combination of more than one learning outcome
LA	Type of question as Long Answer is fixed as all questions are essay type
0001	The unique serial number of the item
EDU 101/0101/K/VS/0001	For all Very Short Answers including Multiple Choice or fill up the blanks type of question.
EDU 101	Course Code
01	Module Code. There are about four modules in EDU 101. The code for other modules would be 02, 03, & 04.
01	Unit Code. There are about five units within each module of EDU 101. The code for other units would be 0102, 0103, 0104, 0105, 0201, 0202, 0203… 0405. Module would be 02, 03 & 04.
K	Learning Outcome as Knowledge, Understanding, Application and Skill
VS	Type of question as Very Short including Multiple Choice or fill up the blanks and is fixed as all questions are objective type.
0001	The unique serial number of the item.

Item Sheet

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(Question Bank: Course Name & Code)   Item Code: …………………………..
Module: ………………Unit………….   Estimated Time: …………………...

Learning Objective:……………………..(Knowledge/Understanding/Application/Skill/Undefined)

Question:

Item Description:	Marks

Marking Scheme:

Value Points:	Marks

Figure 1: *A sample of the model question paper to be generated using the computerized system.*

Formal Registration of Students for Assessment

It is glaring that effective and secure administrative system is essential for sustainable assessment. It does not matter how well a question is prepared if it cannot be printed and delivered to the candidate's desk at the appointed time, the objective of the entire exercise would not be realised. The consequence of administrative problems can be expensive and damages the education system. For instance, a delay in processing and publishing results can disrupt the functioning of the institutions. For instance, disruption of school calendar affects the entire processes and scheduling of academic activities. Significant improvements in efficiency and cost effectiveness can be gained by the use of modern technologies in students' registration for assessment.

Registration of Candidates

This lays the foundation for subsequent administrative processes. It is a high-volume activity requiring a high degree of accuracy. Registration forms for candidates are usually completed at the Study Centres. Error rates are generally high and include:
- incorrect spelling of names;
- error in course entries; and
- error may occur during data entry.

A checking stage is necessary to 'clean-up' the data.

The students registration master data base is to be used to prepare:
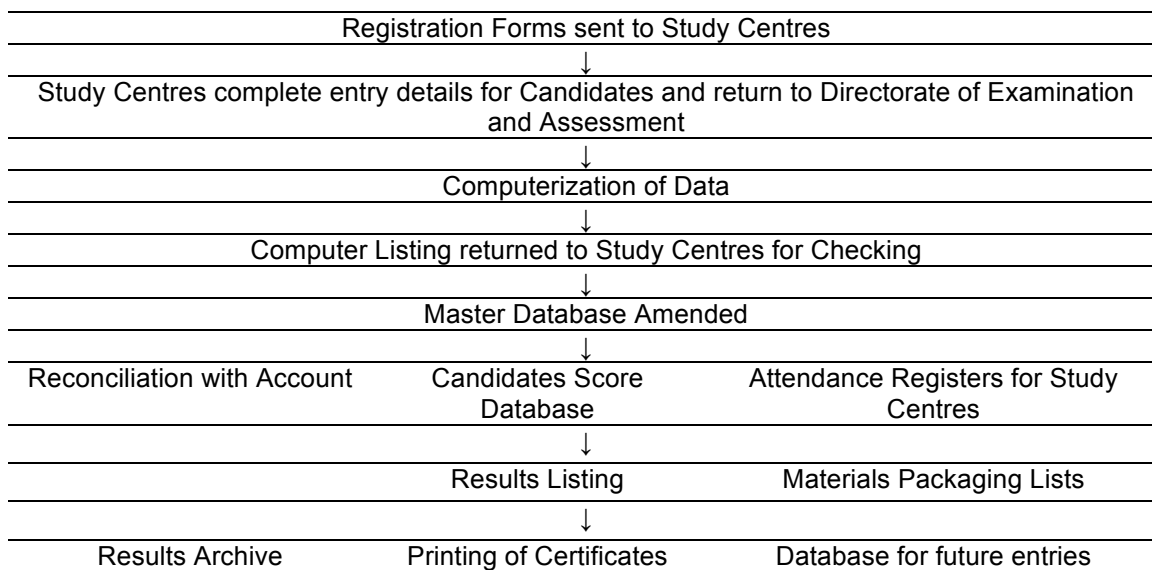- attendance register;
- packing and distribution lists for question papers;
- the data base for entry of students scores
- printing file for result listing.

The registration process assigns an examination number to each candidate. That is, an identity number made up of: *Study Centre code/Programme code/Student unique number entry code*

- This provides a unique identifier for each student for the examination period
- The unique identifiers also makes it possible to link results files to the candidates; their programmes and their Study Centres
- Registration system may include security measures like:
  - candidates may be required to supply certified photographs with their registration forms; and
  - one photograph stays with the original form and one is attached to the Examination admit card and should be checked by the examination hall supervisor.

The examination admits card helps to counter impersonation as a means of malpractice. Thus, for effective test administration and control, the structure shown in Figure 2 may be deployed in the assessment process as foundation in the examination processing system.

Registration of Candidates -   Foundation for Deployment of Technology in Assessment

Registration Forms sent to Study Centres
↓
Study Centres complete entry details for Candidates and return to Directorate of Examination and Assessment
↓
Computerization of Data
↓
Computer Listing returned to Study Centres for Checking
↓
Master Database Amended
↓

Reconciliation with Account	Candidates Score Database	Attendance Registers for Study Centres
	↓	
	Results Listing	Materials Packaging Lists
	↓	
Results Archive	Printing of Certificates	Database for future entries

Source: Adapted from The World Bank Group (2001)

Figure 2: Structure for Effective Registration of Candidates for Examination

IMPLICATIONS OF DEPLOYMENT OF TECHNOLOGY IN ASSESSMENT

The deployment of technology in assessment system allows for use of a diverse range of question types. This diverse range of question types is better in testing candidates' competencies. The use of technology enables assessment to be carried out at different times, locations or even administering different tests to different students at the same period. The computer selects test question from a pool, candidates taking the same examination may not be answering identical questions. It improves the link between instruction and assessment by providing a profile of candidates' strengths and weaknesses. The deployment of technology in test administration helps to enhance management and control of assessment and collation of results unlike in the manual processing approach that takes several months for processing results. This helps for publishing results quickly and it can be used to control inadequate examination halls. In addition, the system has the potential to reduce examination malpractices as examinees are duly authenticated before sitting for examination. Proper registration exercise will enhance proper collation and release of results on schedule. More investment is however needed in the area of infrastructure and human development especially in the area of ICT training and in item writing.

Attempts to deploy technology in grading essays tests have not been actualized but it is possible with well developed scoring rubrics. The question bank needs to be large enough to prevent high levels of repetition. Computer crashes occur – regardless of the computer system in use. Hence, there is need for contingency plan in case there are any technical faults in the middle of the examination period that may affect smooth conduct of assessment processes. Other limitations are related to resources required – a sufficient numbers of computers, a room to install them, appropriate software and adequate technology expertise are necessary for effective implementation.

RECOMMENDATION

For successful and effective deployment of technology in NOUN assessment to ameliorate the challenges faced in assessment process, the institution shall:

- Train her academic staff in item development procedures through well planned workshops and seminars. This item writing workshop shall lead to generation of items for meaningful question bank.
- Build up rich question bank with valid and reliable items for every course and programme. The items must have codes at various difficulty levels for ease of identification and accessible for use and for future references.
- Other categories of staff involved must also be trained in areas of their special needs such as in effective use of the technology software.
- Adequate budgetary provision has to be channeled to the project development to ensure its success.
- Proper registration and documentation of students' records must be made before the examination to help in nipping the challenges of administrative processes, collation and processing of results, sorting and release of meaningful results.
- Organize and execute pilot testing (acid test) of it planned actions in the examination to ensure its workability. Any identified challenges must be rectified before the main implementation.

These recommendations will go a long way to enhance effective implementation of deployment of technology in NOUN assessment.

CONCLUSION

Every instructional process involves a strategic assessment system for a complete teaching - learning circle. Assessment system which is seriously flawed and broken calls for a review of the approach. The challenges necessitate the development and deployment of technology in NOUN assessment. At present, the assessment of students learning outcomes is impeded by myriads of problems already exposed by this study. The challenges ranged from students factors, question papers, manpower, finance to collation of scores and release of meaningful results as at when due. All these challenges point to the need for adequate capacity building, to rethink and to restructure the assessment system for it to have utility value. For a successful deployment of technology therefore, there must be adequate planning, budgetary provision, training of personnel to be involved, development of usable question bank with valid and reliable items and proper registration of students to ease the enormous administrative processes involve.

In sum, the deployment of technology is a viable sustainable strategy open to NOUN to effectively manage the burden of assessment of students learning outcomes already experience in NOUN for credibility and quality assurance necessary to move the institution forward and for sustainability of the institution. The relevance of deployment of technology in NOUN assessment system cannot be over emphasized in view of the integral role of assessment in the teaching learning process leading to best practice in assessment.

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