

SUSTAINABLE ASSESSMENT AND EVALUATION STRATEGIES FOR OPEN AND DISTANCE LEARNING

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ABSTRACT

This paper first presents an overview of the concepts of assessment and evaluation in Open and Distance Learning (ODL) environment. The large numbers of students and numerous courses make assessment and evaluation very difficult and administrative nightmare at Distance Learning (DL) institutions. These challenges informed exploring issues relating to assessment and evaluation like the development and use of question bank and deployment of technology in assessment with emphasis on strategies for sustainability. Assessment in ODL, unlike in the Conventional system where students have a range of opportunities to demonstrate their learning periodically, depends on formal assessment tasks only. Thus, for validity to be high in ODL assessment, assessment must provide the appropriate situation possible for measuring the specific abilities being measured. Reliability is maximized when the assessment items are many; the items are not too easy or too difficult for the candidates; and the marking consistent. Evaluation depends on Tutor Marked Assignments (TMAs) and End of Semester Examination (ESE) in ODL system. Large question/item bank (with reliable and valid questions) from which items are picked to constitute test are needed. Attempts are made to provide argument for the use of computer as a viable option for sustainable assessment based on its sustainable features especially for ODL institutions with a large number of students' population. It is hoped that these strategies if adopted have the potentials to eliminate some of the challenges that ODL institutions are currently facing in assessment. It will also strengthen quality assurance mechanism in ODL institutions.

Keywords: assessment; evaluation; question bank; technology; strategies; sustainability.

INTRODUCTION

Distance Learning (DL) is the fastest growing form of domestic and international education today. In addition to the challenges of assessment in conventional institutions, distance learners are spread out geographically - physically separated from each other and from the instructor. Moreover, class sizes for DL courses are generally larger than those for traditional classes. For instance, the National Open University of Nigeria (NOUN) has about 10,026 registered students in 2004 (pioneer) admission, 17,028 registered students in 2005 admission and in 33 Study Centres, the third admission exercise escalated to 47000 students. Also NOUN has 105 academic programmes, 1383 courses, 61 CDs and 63 courses online at the time of this study. These large numbers of students and numerous courses make assessment and evaluation very difficult and administrative nightmare at DL institutions.

Yet, given large class sizes and their physical separation from students, many distance learner instructors feel they have few options for assessing students' performance.

This paper hopes to offer some possible solutions based on issues and insights in both methodology and technology for sustainability in assessment and evaluation in ODL.

AN OVERVIEW OF THE CONCEPT OF ASSESSMENT IN ODL ENVIRONMENT

Assessment is a systematic basis for making inferences about the learning and development of students. It is the process of defining, selecting, designing, collecting, analyzing, interpreting and using information to increase students' learning and development (Erwin, in Brown & Knight, 1994). In education, assessment may be thought of as occurring whenever one person, in some kind of interaction, direct or indirect, with another is conscious of obtaining and interpreting information about the knowledge and understanding, or abilities and attitudes of that other person (Rowntree, 1977). There are two distinct interpretations of assessment. These are:

- Interpretation of assessment in terms of the routine tasks that students undertake in order to receive feedback on their learning and a mark or grade signifying their achievement.
- Assessment as applied to processes at the institutional level, for example, programmes evaluation. (Biswas & Pradhan, 2002)

The focus of this paper is on the first interpretation. Assessment in ODL, unlike in the conventional (f2f) system where students have a range of opportunities to demonstrate their learning periodically, depends on formal assessment tasks. The major characteristics of assessment in both settings are:

For the conventional system, the learners:

- are known through lectures, tutorials and individual consultations;
- have a range of opportunities to demonstrate their learning –their interest, motivation, questioning and interaction;
- have opportunities to diagnose their errors before they go for formal assessment task; and
- assessment activities have some flexibility.

On the other hand, ODL learners:

- are at a distance;
- rarely enjoy varied opportunities to communicate their learning;
- depend much on formal task as they have less opportunity in which to diagnose their errors or mistakes before formal assessment task; and
- hence, assessment must be thoroughly planned, communicated and managed.

ISSUES RELATING TO ASSESSMENT AND STRATEGIES FOR SUSTAINABILITY

A number of issues are relevant in assessment and are to be well thought – out in assessment processes in both the conventional and the ODL systems. These issues encompass:

Stake holders in Assessment

- Students need assessment to establish precisely:
 - How they are progressing with their studies;
 - Whether they are achieving the required standard; and
 - To gain certificate of a level of achievement.

- **Tutors need to ascertain:**
 - **Whether students are attaining the intended learning outcomes;**
 - **Whether course materials and distance learning activities are effective; and**
 - **That learners have achieved standards or met requirements.**
- **Institutions require to:**
 - **Provide evidence of achievement of institutional aims;**
 - **Determine whether programmes are effective in their stated aims;**
 - **Certify that learners can practise in specific vocational areas; and**
 - **Make judgement about admission to courses/programmes.**
- **Community require to state whether:**
 - **Institutions and tutors are effective and deserve continued funding;**
 - **Students are adequately prepared for their careers; and**
 - **Education is being geared to meet the broad, long term needs of the society.**

RELIABLE AND VALID ASSESSMENT

Reliability and Validity are terms used for educational assessment

Validity is the extent to which an assessment measure does the job for which it is intended; evidence that an assessment measures what it is assumed to measure. The validity of an assessment can only be determined by reference to the assessment's stated purposes and its designs specifications. For validity to be high the assessment must analyze student's performance on each objective and the assessment should provide the appropriate situation possible for measuring the specific abilities being measured.

Reliability refers to consistency or precision or dependability of the assessment measurement; how consistent results are from one to another. The assessment is reliable if the results would be replicated on a subsequent occasion. Reliability is maximized when the assessment items are many; the items are not too easy or too difficult for the candidates; and the marking is consistent

Methods of Assessment

There are various methods of assessment. The commonly used ones are:

- **Objective questions. This method of assessment derives its name from objectivity employed in marking the answers to the questions. The marking which is a simple mechanical process can be done by an individual or by a computer. Examples of objective type questions are True/false items; Fill in the blanks item; multiple choice items; Completion items and Matching items.**
- **Short answer questions. This may take different forms of answers such as one word/phrase; one sentence; completing a table/diagram; preparing a list or writing a paragraph.**
- **Long answer questions. This may also take various forms such as essay; reports or dissertations.**
- **Presentation. This method is used to assess presentation skills. It requires appropriate assessment criteria for assessing the appearance of presenter; introduction of self; introduction of presentation; content of presentation; logic and order of presentation; eye contact; audibility; handling questions and use of visual aids. This method of assessment has high validity when the presentation is assessed by a group.**

ASSESSMENT IN OPEN AND DISTANCE LEARNING (ODL)

Educators generally work with learners to review and support learning; and to make judgment regarding their merits and their achievements. In ODL, Self Assessment Questions (SAQs); Tutor Marked Assessments (TMAs) and End of Semester Examinations (ESEs) are used. There is no immediate feedback and reinforcement. The SAQs embedded in the course material enable distance learners to evaluate their progress frequently. The TMAs serve as the continuous assessment and the marks obtained carry about 25% to 30% weight which count in the final result of the course. The ESE carries about 70% to 75% weight age of the final results. Distance learners are usually free to appear at any of these examinations either for specific courses or for all the registered courses provided that the minimum period of study prescribed for the relevant course is completed. Like in the conventional system, assessment in ODL can be both formative and summative. Formative assessment takes the form of tutor marked assignments (TMAs). This is exemplified in the assignment responses of the learner and the writing of tutors' comments on them. It helps to identify the weaknesses and strengths in learning. It also helps to improve upon the process and the attainment of learning. Grading or scoring may be done in formative assessment. Summative Assessment takes the form of 'ESEs'. Both TMAs and end of semester assessment grades lead to final award of a certificate/diploma/degree to the learner.

THE CONCEPT OF EVALUATION

Evaluation is the systematic process of collecting, analyzing and interpreting information to determine the extent to which pupils are achieving instructional objectives. (It answers the question "How good?"). Evaluation may pertain to either or both of quantitative description (measurement e.g. testing) or qualitative description (non-measurement e.g. observation) of pupils. It always includes value judgment concerning the desirability of the results or to judge the effectiveness of a teaching programme. The emphasis of evaluation is on the extent to which learning outcome is achieved. It subsumes the roles of measurement and non-measurement techniques. Hence, it is comprehensive in nature (Gronlund, 1985). Evaluation in education is a systematic activity involving:

- The analysis or documentation of programme related components and processes;
- The measurement of variables associated with the programme;
- The elaboration of recommendations based upon the collected information;
- The activities provide opportunities for feedback, accountability and cost – benefit information (Biswas & Pradhan, 2002).

Evaluation in Distance Education

Here in the National Open University of Nigeria, evaluation depends on Tutor Marked Assignments (TMAs) and End of Semester Examination. In ODL system, the individual learners proceed at their own paces and sit for examination when they are ready. This results in provision for individual assessment/evaluation.

Thus, large question/item bank (with reliable and valid questions) from which items are picked to constitute test are needed. Assessment differs from evaluation in the following ways:

- Assessment focuses on the learning of the students while evaluation focuses on the way the various components of a course perform;
- Assessment focuses on the performance of the students (grading or marking) while evaluation focuses on the performance of the provider and the provision; and
- Assessment result may be used as a source of information while evaluation results have no direct bearing on students (Biswas & Pradhan, 2002).

Evaluation is a broad term. Hence, this paper focused on assessment of students learning outcomes.

QUESTION BANK

A question bank is a planned library of test items pooled through cooperative efforts under the protection and support of an institution for the use of evaluators, academics and students in partial fulfilment of the requirements of the teaching learning process (Biswas & Pradhan, 2002).

It is designed to fulfil certain pre-determined purposes namely to enrich the instructional aspect and to judge the distance learner. It offers a utility service with an inbuilt feedback mechanism for improvement of its questions.

The importance of question bank for sustainable ODL

The number of questions needed for a course/programme which runs for a number of years is very large in a distance education institution. The academic staff are accordingly supposed to prepare a large number of quality questions on different topics of the prescribed courses/programmes for learners self assessment, TMAs and ESEs. Most of these academics lack the adequate skill in test development and the time at their disposal is limited and they cannot be expected to develop a question pool of reasonable magnitude and quality within a specific time.

In the absence of a stock of ready made questions, the quality of question papers is liable to suffer. This necessitates the entrusting the preparation of quality items in different subjects to experienced teachers who are well conversant with the content and techniques of framing questions.

This strategy helps to build up ready made stock of items for learners self assessment (SAQs), TMAs and ESEs. Such pool of item is of immense use if developed according to predetermined objectives.

The type of questions making up a question bank are to depend entirely on the total framework of reference envisaged at the planning stage – SAQs, TMAs, ESEs items.

Planning a question bank

Running a question bank efficiently to sustain assessment necessitates careful planning. The objectives of such a bank should clearly be visualized and include:

- To increase the value of measurement;
- To increase the pedagogical value of evaluation; and
- More detailed specific objectives on special need for the question bank

The question bank should be located in such a place that it should be managed properly to provide utility services to all those who are interested. The planning of a question bank should take care of:

- suitable place and equipment for storing;
- Vetting and screening of items before depositing them in the bank;
- Sorting and classifying items in the question bank;
- Arrangement for subject wise assistance for efficient maintenance and up keep; and
- An academic manager for question bank to direct the activities of the question bank

Development and use of question bank

A good question pool is one that contains questions on all the topics in a course testing all abilities in a pre-determined structure. The generation of sets of questions for the question bank is based on test blue prints and question paper design. The design of a question paper considers setting percentage weight to these parameters:

- Learning objectives;
- Types of questions;
- Content areas in a course; and
- Difficulty level.(Prasad & Xavier; 2006)

Based on these parameters a blue print / table of specification is designed. A blue print is a two dimensional table that specifies the level of objectives (expected learning Outcomes) in relation to the content (modules/units) of the course. A blue print defines how many items are to be taken from each content -module/unit, for each level of learning objectives and for each type of item. A detailed table of specification helps to ensure representative sample of items for a course.

A Sample of a hypothetical test blue print/table of specification

Content		Objectives						Total	Long Answer Items
Area	Weight	Knowledge 10%	Comprehension 15%	Application 15%	Analysis 30%	Synthesis 10%	Evaluation 20%		
Module 1	15%	--	1	-	2	-	-	3	1
Module 2	15%	-	1	-	2	-	-	3	1
Module 3	30%	1	-	1	1	1	2	6	2
Module 4	30%	1	1	1	1	1	1	6	2
Module 5	10%	-	-	1	-	-	1	2	1
Total	100%	2	3	3	6	2	4	20	7

The basic steps in preparing enhanced valid, reliable and useful items surround determining the purpose of testing, developing the test specification/test blue print, selecting appropriate questions, preparing relevant questions, assembling the test and using the results to improve subsequent items. Others are stating clear instructions to respond to the questions and sentence structure of a question. The use of test items appropriate for the outcomes being measured such as easy of scoring, ease of interpretation and application and cost of developing items (Biswas & Pradhan, 2002).

Screening of questions/In-house moderation

The written items are passed onto other members of the group for their comments. The comments are passed onto the item writer who in consultation with two or three participants finalizes the item.

Also, the individual items may be written on the chalkboard by the author for the items to be discussed by the participants. This method of previewing item consumes time but it is educationally more potent and pedagogically sound. The process improves quality of items and provides good training to the participants for framing good items.

Screening of questions/Expert moderation

The second level screening may be done by a group of three experts all conversant with the techniques of test construction. These three experts may consist of:

- A subject specialist who is in a better position to pass judgment on the authenticity of the subject matter.

- A tutor who has the experience of teaching that particular class for which the item is written and is in a better position to judge the suitability of the item for a given grade.
- An evaluation expert who can help in improving the format of the question in the light of the objectives to be tested

Using and updating the question bank

Carefully selected questions from the question bank can be used for instructional purposes. Various types of questions may be selected from the question bank for pre-testing, review and revision of a lesson. A question pool from a question bank can be utilized in the preparation of textual material and review exercises in course materials. Learners can also use questions from question bank for self assessment of their learning outcomes for specific units or modules of a course since outline answers are provided in such questions. A 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 continually added in line with the revision of course materials. Enrichment of questions by updating, replacing, discarding, modifying, adding new ones, regrouping and classification is an ongoing process aimed at giving the question bank a dynamic look (Biswas & Pradhan, 2002). A well developed and efficiently used question bank is an asset to sustainable assessment.

COMPUTER BASED ASSESSMENT (CBA)

Computer based tests are defined as test or assessments that are administered by computer in either stand alone or networked configuration or by other technology devices linked to the internet or World Wide Web (WWW) (Biswas & Pradhan. 2002). Computer based testing is recognized as a sustainable strategy for sustainable assessment for ODL because:

- It can be more responsive to the needs of both the test provider/institution and distance learners. An example is where "on demand" testing of examinees is needed; the use of computer based testing is more helpful;
- Computer based testing works on a completely different model than paper and pencil administration and offers the benefits that the later cannot match;
- Smaller number of candidates can be tested throughout the year rather than large numbers several times a year;
- Study centres can offer different tests at the same time since examinations may be delivered on personal computers using local area network (LAN); and
- The computer selects test questions from a pool, so candidates taking the same examination will not be answering identical questions, which would enhance test security.

SUSTAINABLE FEATURES OF COMPUTER BASED ASSESSMENT FOR ODL

Computer based assessment allows for a diverse range of question types which is a better test of candidates competency. It can be offered at different times, locations or even different tests to different students. The computer selects test question from a pool, so candidates taking the same examination will not be answering identical questions. It eliminates the need for test booklets and answer sheets that increase the security levels. Self paced tutorials show candidates how to use a mouse and other testing tools, ensuring that even those without computer experience are comfortable.

Candidates can use either paper and pencil or word processing for essay questions depending on their own preference. It improves the link between instruction and assessment, providing a profile of candidates' strengths and weaknesses, and matches questions and the order in which they are presented to the ability of each test taker.

Computer based examination system reduces the large proportion of workload on examination, training, grading and reviewing. The set of questions mostly used in computer based examination system are multiple choice objective tests that can be formally and easily evaluated online. Emphasis is now shifting to computer based tests and on-screen marking of essay questions in the developed world. Computer based tests are scored immediately or shortly after administration unlike the paper and pencil test result that takes several months to process. Fast scoring helps for publishing results quickly. It can be used to control inadequate examination halls. Lack of admin is a dream and it is the way forward.

Limitations of computer based testing attempts to grade students' essays online are now being explored in the on-screen marking is already being practiced by Cambridge Assessment. On-screen marking is much better than paper scripts. This process although already practiced by some institutions in the developed world is stilled at the fundamental stage. CBA necessitates that the question bank needs be large enough to prevent high levels of repetition. Computer crashes – regardless of the computer system in use occurs. Hence, there is need for contingency plan in case there are any technical faults in the middle of the examination period that may prevent student from completing the examination and disadvantage their results. Other limitations are related to resources required – a sufficient numbers of computers, a room to install them, appropriate software and adequate technology expertise.

Implications of computer based assessment for ODL institutions

The development and use of computer based assessment such as "On Demand Examination System" would reduce the problems associated with the traditional methods. It is possible to space the period of examination without compromising quality and integrity of examination. The system has the potentials to reduce examination malpractice as examinees are duly authenticated before sitting for the examination. The examination can be scored immediately and comprehensively; and can be easily collated and released on time. More investment is needed in the areas of infrastructure and human development especially in the area of ICT training. It is easy to administer and the verification of result is ease and devoid of paper work. The long time involved in marking examination scripts which in most cases are prone to errors and misplacement of some scripts due to large volume of scripts that has to be marked and assessed can be managed. Only registered candidates of the institution having enrollment numbers and valid identity cards are eligible to appear in the examination. These processes enable ease processing of examination results. Computer based assessment is a viable sustainable assessment strategy that could reduce the burden of examination result processing already experience by ODL institutions in Nigeria.

CONCLUSION

Open and Distance Learning (ODL) is the fastest growing industry in education sector today. The process of assessment of students learning outcomes remains a big challenge to the validity and reliability of ODL provisions. It is imperative for ODL institutions to enhance the quality of their assessment practices by commitment to issues relating to assessment strategies for sustainability. The deployment of functional question banks and computer based assessment is needed to foster modernization of assessment programmes in line with practices in the developed world.

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