Validity Test of the Assessment Techniques of Higher Education at Distance Mode

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Quality of education is the most important consideration in the distance learning mode which is essentially associated with educational assessment technique. This paper suggests an important validity test of educational assessment techniques and focuses on how to evaluate educational interaction between student and teacher at distance education system.

                                                                    Editor

1.   Introduction

In the middle of the 20th century learning through correspondence, text and telecommunication technology came into being. Perraton (1982) defined distance education as "an educational process in which a significant production of the teaching is conducted by someone sitting in a remote place and having different time from the learners." So distance education is not a way of replacing teachers, but rather a means to support them with high quality materials.

Distance education is viewed as a continuous education system. The establishment of distance education has been partly responsible for the increasing awareness of instructional design in the academic study. Instructional design has been forthcoming in documenting way of improving instructions. Meacham (1989) addressed that instructional design is not a discrete form of knowledge with distinctive concepts and methodologies but an assimilation of knowledge from various disciplines gathered for a common purpose. On the other hand, Rogolf (1987) stated that instructional design is a system of process of designing an instructional solution to an educational and training problem. It requires identifying causes of the problem, determining instructional objectives and recommending or designing instructional materials.

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A frequent criticism of distance education has been that it is a packaged programme to education, underpinned by a behaviourist model of teaching and learning (Harris, 1987; Winn 1990). "The desirability of encouraging student to be more autonomous and self-critical by requiring them to self-evaluate their efforts at search on student ratings of courses had identified several common dimensions or groups of items that can be evaluated (Aleanoni and Yimer 1973; Renner and Greenwood 1985). For course appraisal, the two most common dimensions for evaluation appearing in the majority of instruments devised are: organization of course and its structure, and even workload and difficulty. Other categories include marking examination and assignment, the learning value of a course, the breadth of converge, some impact of the course on students and the global or overall effectiveness of the course. Not all rating instruments incorporate all the evaluation criteria, but the majority include evaluations of organization and work load. Adelman and Alexander (1982) examined the usefulness of workload rating, finding them to be much more satisfactory than the other internal group based techniques that tend to be affected by group biases. Rather than describing individual categories and questions at length, however, it is simple to present typical categories and items drawn from an examination of existing questions. Bangladesh Open University has been very careful in this aspect from the beginning. In this paper, we have constructed a new method of validity test of educational assessment techniques in distance mode and have tried to justify the method with an example based on examination system of Bangladesh Open University.

2.   Materials and Methods

Instructional design at distance education

Instructional design primarily focuses on how learners are instructed with and how they encode different instructional materials. It is concerned with the structural properties of these materials and how these instructional properties can facilitate memorization, retrieval, transfer and learning.

Function of the instructional design

The instructor of the teaching-learning system at distance education is different from on-campus systems. In distance education system, students begin with pre-prepared learning materials such as text books specially written by course experts, Audio-Video cassettes, Radio and TV programmes. Students may never

meet the teachers who developed the courses, may seldom meet any tutor at tutorial centre.

Furthermore, they may never meet other students. Thus, in distance education system, the structured course materials are the main basis of learning to a student and from these materials the student is expected to learn on his own. For this, the structured materials are often called self-teaching materials or self-instructional materials. The student is required to read text books, to write assignments, to witness television programmes, to listen to radio programmes or audio cassettes. Since neither tutors nor other students may be around the learner to give him help, encouragement and guidance to what he is trying to learn, the self-teaching materials not merely to teach himself but also to tell himself whether he is learning. Therefore, self-teaching materials often incorporate review questions, exercise and activities to help the learner check his development of understanding the things he goes to learn. So, the relationship between teaching and learning strongly depends on the interaction between the teaching materials and the student which can be portrayed as below:
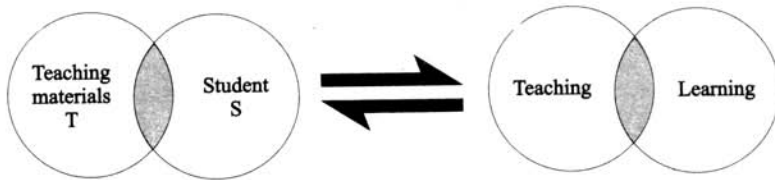
The four situations that may follow are:

1. $T \cap S = T \cap L \Rightarrow$ Student would be a good learner, the interaction between teaching materials and student is present.

2. $T \cap S = O \Rightarrow$ Student would be absent from learning; there is no interaction between teaching materials and student.

3. $T \cap S \geq T \cap L \Rightarrow$ Student would be fairly learning.

4. $T \cap S \leq T \cap L \Rightarrow$ Student would be excellent learner.

In the above diagram, it is revealed that the teaching materials and student is related by a functional form as given below:

Method of Education → Experience tutor, Counsellor

Good Student

Text media; Audio and video media, Radio and T.V. Media

Environment of education, well communication with the fellow students
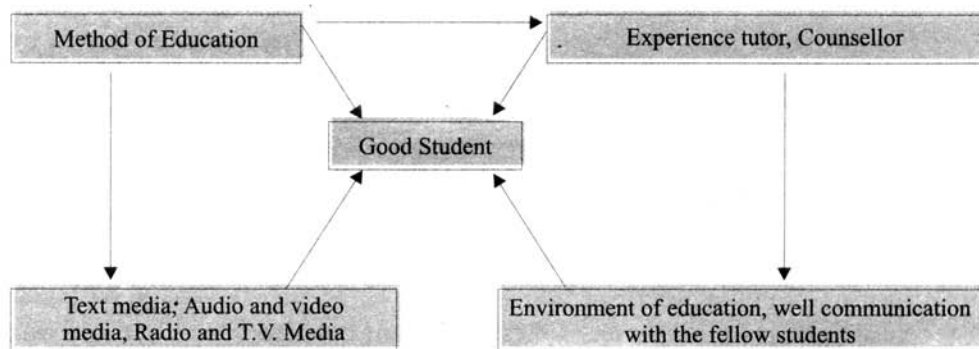
Fig: Teaching-learning structure

So, the teaching-learning structure includes a minute whereby students can guess their own progress. In addition, it needs to find a means of retaining the students' interest in continuing with the course. Distance students may easily become discouraged especially when they are aware of all the things they have to do timely having insufficient text materials, audio-video cassettes, Radio and TV programmes, no tutor to help solve problems and no fellow students to discuss difficult topics.

Assessment

Assessment is an essential part of the teaching-learning process. Test, examination and assignment play an important role in any course of instruction. "Assessment is an attempt to get to know about the student and find out the nature and quality of his learning his strength and weakness, or his interests and avaricious, or his style of learning (Rounder, 1981)".
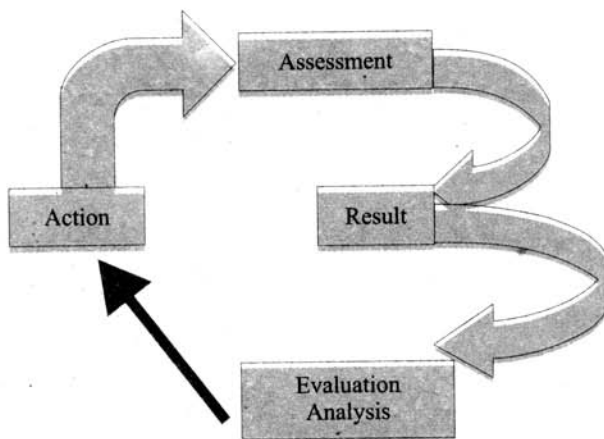
Assessment techniques

The major purpose of assessment is to determine whether the student could meet the educational needs. All important areas of student's performance must be studied through assessment. Some well-known assessment techniques are continuous assessment, end-of-course assessment, intermittent assessment, cummulative assessment etc. Open universities mainly use the combination of con-

tinuous assessment and end-of-course assessment. Continuous assessment and end-of-course assessments are explained as under:

1. Continuous assessment of Work done during Course	2. End-of-course assessment of Work done during Course	3. End-of-Course assessment of Work done at end of Course

In 1. As the student goes through the course, his works are continuously assessed and the student can know how much each piece of his work is contributing to his final result. In 2. The student may get some source ideas about the quality of his work during the course period from the comments of his tutor, but he can not know how much his work done during the course period is exactly contributing to his final result. In 3. Only the student's work done at the end of the course period is assessed.

Assessment of education can be analysed as under:

Assessment tools are technically adopted and administered by trained professionals. No student may be placed in special education without a comprehensive assessment that includes evaluation of his or her educational needs.

Assessment tools

There are several sources of guidance in the selection of assessment tools in addition to legal requirements. A more usable source is Standards for Educational and Psychological Test (1994) approved by a joint committee of the American Psychological Association, the American Educational Research Association and the National Council on Measurement in Education. They considered three phenomena in selecting assessment tools which are: Reliability, Validity and Test.

On the other hand, there are four measurement scales of education as under:

a. Nominal: A nominal scale is devised into categories. In nominal measurements, no values are assigned to categories, categories are simply different from each other because it is impossible to add, subtract, multiply and divide.
b. Ordinal: Persons or other subjects of study are placed in sequence in an ordinal scales.
c. Interval: In interval scales, there are equal intervals between the units of measurement and the scales begins from arbitrary starting points.
d. Ratio: A ratio scale begins with a true zero and equal interval between units of measurement.

Statistical tools of educational assessment

Statistical tools are very useful to assess education. Two types of measurement tools used widely to education are;

1. Criteria Reference
2. Norm Reference

Criteria reference: Assessment in which the student's work is measured against some absolute standard is often described as criterion reference test.

Norm reference: The norm-reference test approaches to standards may be justified for national examination involving very large number of students; because it is quite likely that the spread of ability among the candidates will not differ greatly from year to year. However, another type of measurement test named self-reference approach which basically introduces weighting with some particular component to measure student's work. Now we will concentrate on the validity test of the educational measurement techniques. In this paper, we have proposed a new technique of validity test.

3.   Proposed Validity Test

In our proposed method of validity test, two or more sets of grades being very different in their average or in their variability have been considered. So, two statistical tools such as arithmetic mean and standard deviation would be used in the test.

The arithmetic mean can be shown as:

$$\xi \overset{N}{\underset{I=1}{=}} \Sigma\, xi\sqrt{N}$$

$\xi =$ arithmetic mean
$Xi =$ any grade
$N =$ the number of students and the standard deviation denoted as S.D. and defined as

$$S.D._{(x)} = \sqrt{\overset{N}{\underset{i=1}{\Sigma}} (xi-\xi)^2 / N} = \sqrt{\overset{N}{\underset{I=1}{\Sigma}} xi^2 / N - (\overset{N}{\underset{1=1}{\Sigma}} xi / N)^2}$$

Finally, a graphical line would be drawn in the following way:

i.   X-axis contains end-of-course examination marks and Y-axis continuous assessment, i.e. assignment marks (CA).

ii.   At least three points such as P, Q and R would be plotted on the graph..

Where
P = The point derived by plotting the exam mean against CA mean.
Q = The point derived by plotting the exam mean plus corresponding S.D against the CA mean plus corresponding S.D.
R = The point derived by plotting the exam means plus 2S.D against the CA mean plus 2S.D.

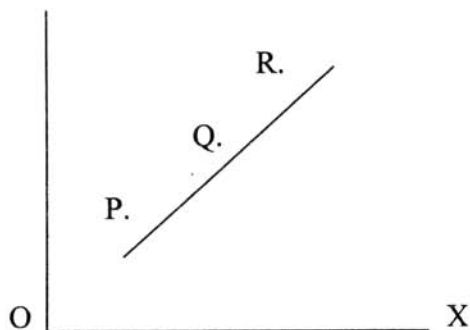iii.   Join the points P, Q and R with a line as in figure s.a.

Fig: 3.a

If the PQR line is a straight line, then we can say that the assessment technique is justified. Otherwise, the assessment technique is not justified.

Numerical Example

Bangladesh Open University (BOU) has already conducted Graduate Diploma in Management Examination. A group of students (R.R.C, Dhaka), selected randomly, obtained the following marks in continuous assessment (CA), i.e., TMA and final examination in MGC/MGF 1001 course in January-June semesters, 1995.

Students ID	CA (Out of 20)	Exam. (out of 80)	Total
95131160003	18.5	54	72.5
95131160007	15.4	53	64.4
95131160009	14.0	55	69.0
95131160012	12.0	47	59.0
95131160014	16.0	59	75.0

The mean and SD of the CA marks and exam. marks are as follows:

	Mean	SD	Mean + SD	Mean + 2 SD
CA	15.18	2.41	17.59	20.00
Exam	53.6	4.33	57.93	62.26

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Now, putting the information of the above table on graph we get the following diagram:
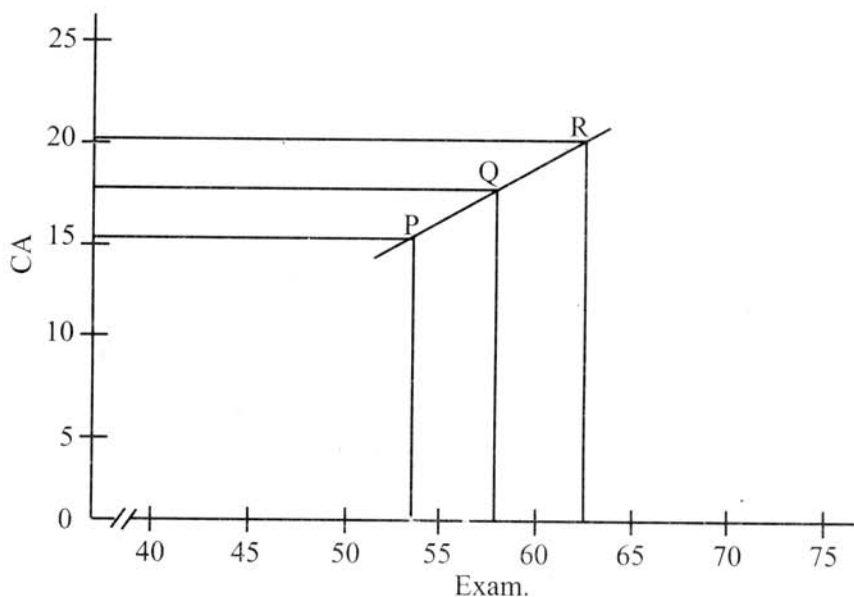
In the above diagram, we see that PQR is a straight line. So, according to our proposed technique of validity test, the assessment of the students' works is perfectly justified.

4. Conclusion

To make comment on the validity of educational assessment technique is a very difficult task. We have just tried to add something special to make that difficult task easy.

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