

Relevance of Measurement and Evaluation to the Teaching and Learning Process

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Abstract

Measurement and Evaluation are key components of education and the teaching-learning process. Teaching and learning are incomplete without the process of measurement and evaluation, and the extent to which instrument objectives are attained is achieved through the process of measurement and evaluation. Hence the whole essence of teaching and learning is to find out whether learners have mastered the competences, skills, knowledge and ability required of them at any level of education which will enable them progress and contribute to societal development. This paper takes a look at the relevance of educational measurement and evaluation to the teaching-learning process. Measurement and evaluation as the paper pointed out have helped in the understanding of students' problems, acknowledgement of individual differences, motivating students to study harder, measurement of educational progress and achievement among others. The paper concludes with recommendation that classroom teachers should be abreast with the various techniques involved in testing, measuring and evaluating their teaching-learning activities.

Keywords: Measurement, evaluation, teaching, learning, education.

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I. INTRODUCTION

Education is the process by which development takes place in individuals, societies and institutions. Education is seen as a means of achieving total development of man in order to bring about desired changes in every area of human endeavour. Education also being the process of imparting knowledge has been greatly used to enhance the standard of living of individuals and societies. Hence, education is an instrument per excellence. Without education the improvement in every aspect of life today would have been a mirage. Education can be formal informal and non-formal. Whichever form education is received it has helped in bringing out potentials embedded in human beings. Therefore, any society that neglects education has destroyed generations unborn and that society will lag behind in current realities of things globally. The extent to which education or learning takes place is achieved through measurement and evaluation in the formal educational system. The importance of measurement and evaluation in education cannot be overemphasized.

Measurement and evaluation as area of study is important to every teacher. Good knowledge in measurement and evaluation will help the teacher to a very great extent in determining the progress or otherwise of the teaching learning process. Therefore a closer look at the concept of measurement and evaluation is necessary for clarity and understanding.

Meaning of Measurement, Evaluation and other related Concepts

Measurement as a concept has been defined by various authors and experts in education and other fields of study. Iwuji as cited in Chikwe (2017) defined measurement as a systematic assignment of minerals to aspects of an object according to specified rules. To Aiken (1982), measurement is seen as procedures for determining (or indexing) the amount of quantity of some construct or entity. Furthermore, measurement is the description of the learner's behaviour, performance, characteristics quantitatively (Groundlund, 1976 & Asuru, 2015). Measurement as explained by Batton (2018) is determining the attributes and dimensions of an object, skill or knowledge. Ukwuije and Opara (2012) opined that in education measurement is the act of determining the degree to which an individual possesses certain attributes. In the same vein, Asuru (2015) explained that in education and psychology, measurement is the systematic process of determining the characteristics or behaviour of an individual and reporting same quantitatively.

Educational measurement therefore, is the application of various techniques to quantify, describe and determine learner's behaviour or performance during or at the end of the teaching-learning process. Educational measurement is the systematic qualification of available attributes using standard procedures. Agwagah (1997) noted that measurement does not include qualitative descriptions of the attributes being measured; and does not involve any decisions on the worth or value of the attribute being measured.

Popham (1988) explained there are various measurement strategies available to educational evaluators and indeed educators. In other words there are measurement strategies implored in determining the extent to which learners possess attributes, characteristics, knowledge and skill expected of them in the teaching-learning process. Popham has classified measurement techniques as follows: paper-and-pencil tests of ability, paper-and-pencil self-report devices, rating scales (numerical, graphic and rankings rating scales), observation (anecdotal records, high and low inference observations), interviews, and performance tests. The above measurement techniques are used in educational measurement and evaluation.

Evaluation on the other hand is "the systematic process of collecting, analyzing and interpreting information to the extent to which pupils are achieving instructional objectives" (Gronlund as cited in Chikwe, 2008; p. 9). Similarly, Mehrens and Lehmann as cited in Onunkwo (2002) stated that evaluation is the process of delineating and providing useful information for judging decision alternatives. Evaluation also has been defined as the process of passing value judgement as to the worth of a thing, object or programme; and determining the value or worth of collected data (Asuru, 2015; Kirkendall, Gruber & Johnson, 1987). Evaluation therefore, is the teacher's activity which involves determining the extent to which instructional stated before the commencement of instruction have been attained or achieved; and passing value judgment on the worth of students' performance.

Evaluation is critical to the teaching-learning process as no teaching is meaningful without evaluation. Evaluation is the end product of teaching and learning process. Evaluation ascertains the effectiveness of teaching and the quality of students' performance or achievement before, during and at the end of the teaching and learning process.

There are various types of evaluation which include formative, summative, diagnostic, placement, norm-referenced, criterion-referenced and programme evaluation. Formative evaluation takes place while the lesson, course of study or programme is on course. The goal of formative evaluation is for monitoring, guiding and improvement of the instructional process or programme. Feedback from formative evaluation enables the teacher to adjust the teaching methodology. Summative evaluation is carried out at the end of instruction, course of study or programme. The essence of summative evaluation for determining the effectiveness of teaching and learning process and taking a decision as to modify, continue or terminate the process or programme. Further, results arising from summative evaluations are used for promotion, certification and award of honours and degrees. Diagnostic evaluation is the evaluation undertaken to find out the specific areas of difficulty students have in studying a particular unit of lesson, subject or course of study. The aim of diagnostic evaluation is to determine whether students have mastered or developed proficiency in the basic skills needed to study a subject successfully. Placement evaluation takes place before an instructional programme begins to determine the students' readiness or entry behaviour in a sequence of instruction in order to place them accordingly. Diagnostic evaluation is used to determine the suitability or readiness of candidates for particular programme or training.

Norm-referenced evaluation is carried out to determine how a student's performance compares with the performance of other students in the same test or examination. The purpose of summative evaluation is for comparison and ranking of students according to the magnitude of their scores in a test or examination.

Criterion-referenced evaluation is the evaluation of students whereby the performance of a student or an individual is determined by comparing it with a standard performance earlier set. Thorndike in Chikwe (2017) stated that criterion-referenced evaluation covers a narrow domain and is used for mastery decisions. Further, criterion-referenced evaluation is appropriate for focus on one or small number of carefully designed objectives and for which standard performance can either empirically or logically derived.

Programme-evaluation is the type of evaluation used to determine or judge whether a programme which has been executed succeeded in achieving the objective for which it was designed (Nkwocha, 2009). Gall, Gall and Borg (2007) identified the following steps in programme evaluation: clarifying, reasons for an evaluation; selecting an appropriate evaluation model; identifying stakeholders; deciding what to be evaluated (programme goals, resources and procedures, programme management, programme outcomes); identifying evaluation questions; developing an evaluation design and timeline; collecting and analyzing evaluation data; and reprinting evaluation results.

To carry out measurement and evaluation, teaching and learning must take place. Teaching and learning are goal-orientated activities which are undertaken to ensure attainment of instructional objectives. Amadi (2006) explained that to teach is to engage someone in an activity or experience which influences a change in behaviour. Teaching is very critical to measurement and evaluation because the quality of what is

being measured and evaluated depends on teacher quality. For a quality measurement and evaluation, the teachers' good personality, knowledge of the subject matter, ability to teach effectively, ability to inspire the learners, resourcefulness, ability to understand the learner etc (Amadi, 2006) are to be put into consideration.

Learning on the other hand, is a relatively permanent change in behaviour as a result of experience (Amadi, 2006). Teaching is effective when what is taught produces a change in the behaviour of the learner. This change in behaviour expected from the learner is achieved through measurement and evaluation.

The teaching-learning process therefore is one which in the teacher "assesses learning needs, establishes specific learning objective, develops teaching and learning strategies, implements plan of work and evaluates (and measures) the outcome of the instruction" (www.igi-global.com, 2020). For the teacher to measure and evaluate, the teacher is to understand the teaching-learning process in more depth and apply the various teaching strategies in order to bring about the desired result.

Relevance of Measurement and Evaluation to the Teaching-Learning Process

The importance, functions and relevance of Measurement and Evaluation to the teaching-learning process cannot be overemphasized. Measurement and Evaluation has also served many purposes in the teaching-learning process, education and in order areas of human endeavour. At the centre of classroom instruction is educational Measurement and Evaluation. The aim of every effective teacher is to effect positive changes in the behaviour of the learner. The teacher can achieve these through effective measurement and evaluation of the teaching learning process.

Institute of Education University of Nigeria, Nsukka as cited in Chikwe (2017) stated that through measurement and evaluation, the teacher will be able to assess the performance of his pupils (students); acquire skills in test construction, usage, and interpretation; assess psychomotor/affective aspects of pupils (students' performance; evaluate the effectiveness of instructional materials, content and intervention strategies; diagnose learning deficiencies and plan for remedial work, make use of standardized tests, acquire skills in innovative evaluation procedures (eg continuous assessment, school-based assessment and computer-based assessment); determine the attitude of the pupils (students; determine the interest of students, determine the aptitude of the students; and provide guidance to students.

Furthermore, educational measurement and evaluation help the teacher determine students' progress through the use of series of tests and from the analysis of the test results may modify the teaching method, give more time for students' participation, review the curriculum, etc. Through the knowledge of educational measurement and evaluation, the teacher learns how to evaluate existing programmes and make sufficient contribution about how to plan effective programmes. Measurement and evaluation motivate students to study. Measurement and evaluation inform of texts, examination enable students to study and prepare effectively. Nwana (2007) informs that without these tests pupils would be reluctant to make time for private study and some would be less likely to listen attentively in class, no matter how lively and interesting the teaching may be.

Measurement and evaluation helps in determining how much students have learned. The teacher would not be able to assess how far students have learned without measuring and evaluating of what he has taught. This also helps the teacher to know what to do especially when the objectives of his teaching are not being realized.

Students' specific difficulties could be identified through measurement and evaluation. Students have different levels of difficulties in studying some subjects. Such weaknesses are identified by the process of measurement and evaluation. Also, special abilities of students are determined by measurement and evaluation. Such abilities are revealed especially when the evaluation instrument includes aptitude and intelligence tests. Measurement and evaluation makes the teacher realize that his students' performances in examinations do not only indicate the students' performance but also his (the teacher's) efficacy. That is, the teacher evaluates his teaching methodology from the performance of his students. Measurement and evaluation also offer the teacher an in-depth knowledge of the students in terms of their weaknesses and strengths.

One of the most basic aims of measurement and evaluation is to find out what students' need are. Through measurement and evaluation learning disabilities and handicaps can be identified and dealt with. Without proper evaluation problems can go unrecognized for years (Andrew, n.d.). Measurement and evaluation is relevant in determining students' progress. It will be impossible to find out whether students are making any progress without measurement and evaluation. The feedbacks obtained from tests and assignments can tell the teacher students' knowledge of the materials learned. Measurement and evaluation have different functions which include instructional, administrative, guidance and research functions. In instructional function, measurement and evaluation help the teacher clarify the instructional objectives during the planning of instruction, and also enables the teacher to set realistic and attainable instructional objectives. Administratively, measurement and evaluation assist school administrators to classify and assign students to appropriate classes or groups that they are suited for. Results from tests, measurement and evaluation aid principals and headteachers to promote students to new classes or levels. The award of certificates and degrees are made possible through

the results of measurement and evaluation. In terms of guidance and counselling, measurement and evaluation enables counsellors to assist students overcome their educational, vocational and personal-social problems. They also help in improving counsellor, teacher and parents' understanding of problem cases. In research measurement and evaluation is relevant as they serve as instrument for data collection in conducting researches in education. Evaluation instruments such as tests and veritable tools that can be used to gather data during research.

II. CONCLUSION

Measurement and evaluation as veritable tools in driving the teaching-learning process towards the attainment of educational goals have given educators wider opportunities in improving students' performances and achievements. The cumulative result of the teaching-learning process or classroom activities is obtained through the instrumentality of measurement and evaluation. The paper concludes that without measurement and evaluation, students' progress, achievement, abilities, aptitudes, competences, skills and efforts cannot be ascertained. Also, measurement and evaluation is not only relevant to the teaching-learning process but also serves administrative, guidance, research functions and other functions.

III. RECOMMENDATIONS

Based on the above-highlighted relevance of measurement and evaluation and the conclusion, the following recommendations are made:

1. Classroom teachers should be abreast with the various techniques involved in testing, measuring and evaluating their teaching-learning activities.
2. School administrators should monitor the teaching-learning process to ensure that high quality students are produced. This will also improve the quality and proper recognition of the certificates and degrees awarded to students.
3. Teachers in primary, secondary and higher institutions should attend conferences, and seminars and workshops organized by different associations in assessment, measurement and evaluation. Such conferences will help to improve their knowledge in measurement and evaluation strategies.
4. Government at various levels – local, state and federal should encourage teachers by sponsoring and funding measurement and evaluation related bodies such as examining bodies like WAEC, NECO, JAMB and teachers to acquire more knowledge in this regard.

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