TEACHING EFFECTIVENESS AND STUDENTS' ACADEMIC ACHIEVEMENT IN VOCATIONAL AND TECHNICAL EDUCATION BASED PROGRAMMES IN NIGERIA

Uwaifo, V. O.
Department of Vocational and Technical Education
Ambrose Alli University, Ekpoma, Edo State, Nigeria
**E-mail: vuwaifo@yahoo.com*

ABSTRACT

The study adopted literature review to assess teaching effectiveness and students' academic achievement in Vocational and Technical Education (VTE) based programmes in Nigeria. It discouraged stipulating a specific period for evaluation. The paper also discussed the techniques for developing evaluation, instruments and techniques for reporting evaluation findings and stressed that evaluation in vocational and technical subjects should be a continuous process. Applying caution on the choice and use of evaluation procedures was therefore plausible.

Keywords: Students evaluation, effective teaching, vocational and technical education, programmes

INTRODUCTION

Evaluation is becoming our way of life. In every walk of life, human beings are constantly been evaluated with a view to assessing the success or otherwise of the desired objectives. In the school system, various reasons have been adduced for evaluating student's attainment. Evaluation in vocational education should not adopt the traditional system since the issues evaluated are not just the cognitive domain, but also involves the psychomotor and affective domains. Vocational subjects are more complex to evaluate, however, they subject themselves to more meaningful evaluation than the evaluation of other school subjects.

From both education and instructional perspective, evaluation can be defined as: The systematic collection of evidence to ascertain whether in actual fact certain changes have taken place in the learner as a result of teaching. From the foregoing, evaluation has measured a step further towards the making of value judgment. Thus, evaluation is a combination of measurement and value judgment. Hence evaluation is preceded by measurement. It has also been said that there can hardly be an objective evaluation without measurement (Ohuche and Akeju, 1977). When we consider technical subjects or courses the achievement of their curriculum objectives can only be measured through structural evaluation procedure to ensure that the purpose of the subject is served by the teachers and learners. In this regard, the evaluation process should be designed to take cognizance of the process, the product and product review (a feed back) of the instructional process, to provide necessary information for determination of the achievement of the objective, and possible improvement

and other essential purposes. This paper aimed at examining the general principles of evaluation and various types of test and their applicability in the teaching of technical courses, such as: building technology, auto-mechanical technology and electrical/electronic technology.

EVALUATION, MEASUREMENT AND ASSESSMENT

Evaluation of progress in teaching is an integral part of the learning process involved in all teaching. In a very real sense, learning and evaluation go hand-in-hand. The teacher makes plans and establishes goals and purposes in harmony with fundamentals of human development and behaviour: The best of plans or goals are of little value if they are not acted upon or if evaluation of the progress made toward achieving them does not take place. Assessing progress seems futile and meaningless unless it is done in light of certain purposes and in terms of dynamic behaviour. It is an activity that involves the appraisal of performance. Evaluation is often composed with measurement or as a cover name for the two terms including assessment activities. However, a critical examination of the principles and practise of the two terms show that evaluation is more comprehensive than measurement, while assessment are those steps taken to achieve evaluation and measurement.

GOALS AND OBJECTIVES OF EVALUATION

The purposes of evaluation may be classified under headings of curriculum guidance and administration. The teacher's judgments in each of these areas are vital, that is to say that evaluation data are necessary for:

a) Evaluating the educational programme.
b) Guiding students in understanding their strengths and weaknesses
c) Providing an assessment of student progress for determining graduation, honours, college admission, and information to employers. Evaluation is therefore the ultimate culmination of teaching art.

Generally, the goals of evaluation include the following:

i. To motivate direct and improve teaching and learning.
ii. To diagnose students learning difficulties and make prediction of future performances.

In specific terms, the objectives of evaluation include the following:

a. To provide knowledge concerning the students entering behaviour and or previous knowledge.
b. To encourage good study habits in students
c. To increase students motivation to learning.
d. To set, refine and classify achievable learning goals/objectives for students.
e. To test, measure and evaluate learners' achievements in learning objectives.
f. To refine the teacher's instructional techniques.

TYPES AND TECHNIQUES OF EVALUATION

Instructions in technical subjects are mainly concerned with performance,

which are in most cases instant. It is therefore essential to highlight some of the evaluation techniques that are relevant to the evaluation of instructions in these subject areas.

Maximum Performance: This is concerned with how well individuals performed when motivated to put forth his best effort. This will indicate what an individual can do. Here aptitude and achievement test are required.

Typical Performance: This is how individual usually behave in normal or routine situation, that is, what individual will do. Evaluation of typical behaviour falls in the general area of personality appraisal.

Placement Formative, Diagnostic and Summative Evaluation: Placement evaluation is concerned with the learners entry behaviour. Formative evaluation is used to monitor learning progress during instruction. It provides continuous feedback to both leaner and teachers concerning teaming successes. Diagnostic evaluation is concerned with the leaner's persistent or recurring teaming difficulties left unresolved by standard corrective prescriptions of formative evaluation. Summative evaluation typically comes at the end of a course of instruction. It is designed to determine the extent to which the instructional objectives have been achieved and is used primarily for assigning course grades or for certifying learning mastery of the intended learning outcomes.

Criterion Reference and Norm Reference Test: Criterion referenced test described performance in terms of the specific behaviour the learner can demonstrate. For example, he can construct a hyperbol without reference to a text book on the other land. Norm referenced test describe the learners performance in terms of the relative position he holds in some known group.

One of the important tools of instructional evaluation is the use of tests. There are, basically two types of testing, they are: Norm referenced testing, and the criterion referenced testing. To evaluate a vocational and technical education instruction, criterion referenced testing is recommended Criterion testing required no additional skills to those already known to the educationists since criterion test are intimately related to the objectives they measure, they can either be formulated directly from the objectives, or as some may prefer, the objectives can be formulated from the criterion measure. For the unskilled the latter approach is probably preferable, since people tend to be more skilled in asking questions than in defining objectives. However, it is important to realize that the criterion test must fulfil three essential conditions, if it is to do its job properly this means that it must be: appropriate, effective, and practical.

The appropriate criterion test must be appropriate to the objectives,as well as appropriate to the instructional materials, the teaching method employed, and to the student who will respond. Effective criterion test must perform its job of measurement This means that the test must be reliable (that is., its scores not dependent on chance). The criterion test must be Practical in the sense that it is acceptable to both teachers and students, realistic in terms of cost and time involved in administering it, and preferably, easily used and reused. If these three conditions are met, most of

the criticism leveled against educational achievement examination will be avoided (Toby, 1997). Evaluation involves four types of test: pre-requisite tests, pre-tests, post-tests, and retention tests.

Pre-requisite Test: Is usually a section of the pre-test, to determine whether or not students will fulfill the necessary prior condition for undertaking the learning commitment. Any student who fails this test should undergo immediate remedial teaching once the real nature of his difficulty has been defined, since he cannot possibly hope to realize the agreed objectives.

The pre-test: This fulfils a number of functions. It can indicate to the teacher which of the objectives are already in the student's repertoire, he can also use the pre-test result to decide when, and at what point, the students should enter the learning system. This information is particularly important if a module approach is being used, or when a remedial learning programme is being undertaken. A students pre-test score, compared with his Post-test Score, can also have an important motivating effect since it helps to demonstrate that a change has indeed taken place.

The post-test: This is administered immediately the lesson ends. Its main function is to determine whether or not the objectives have been realized. For this reason, the test really consists of the objectives written in test format. It should be noted that the use of the word "test" in this work is not intended to imply that all instructions should necessarily be accompanied by a formal question paper. On many occasions, the last stage of the instruction, or even the assignment given to the student for completion before the next lesson, will cause the student to perform the total task and so constituted a true instructional evaluation.

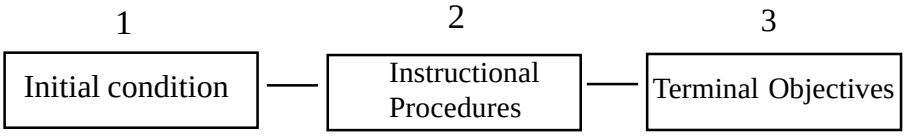
Retention tests: This can take different forms as compared to that of the post-test but, since the purpose is to determine which of the objectives still remain in the students' repertoire it is usual for the retention test to follow the post-test in every particular lesson. Not only does examination serve as evaluation measuring instrument, but, in the real sense, it also aid to improve the overall quality of learning experiences (Toby, 1999). Whatever the purpose of the test, it must possess certain characteristics against which the objectives of the test could be measured. Some of the common characteristics are as follows

(a) ***Validity:*** This measures the extent to which the result of a test serves the particular purpose for which they are intended? Is the test testing what it suppose to test? Validity is classified into content validity, criterion related validity, and face or construct validity

(b) ***Reliability:*** This provides the consistency which makes validity possible and indicate how much confidence we can place in our result

(c) ***Usability***: This includes such practical features as ease of unlimited administration, time required, ease of scoring, ease of application, availability of equivalent of comparable forms and cost.

Effective approach to evaluation: One of the most effective approaches to evaluation is to assess the different decisions made and base it on the following learning system model:



In order words, there are three types of critical evaluation question that can be derived in the process as follows:

Type 1. Evaluation questions derived from initial conditions.

Because of the limited amount of instructional time available to achieve objectives, a teacher must make certain decisions about the ability level of the students when they enter the system. It would be a waste of time to cover materials student already know. On the other hand, if we assume students know more than they actually do, they will have great difficulty learning. Students must have attained a particular level of entry skills and knowledge so that they will be prepared for instruction. If the students do not have the necessary entry skills the instructional procedures you have designed cannot be effectively implemented. The first set of evaluation questions is derived from the assumptions made about the entry skills of students. Some examples are:

(a) What proportions of students have the prerequisite entry skills?
(b) Which students do not have the entry skills?
(c) Which particular entry skills does each student lack?
(d) What modifications in instructional plans are required?

Type 2: Evaluation questions derived from instructional procedure. As we have already noted, decisions about instructional procedures are made as a result of:

(a) Analyzing the tasks and objectives to be learned, and
(b) Applying psychological principles of learning to the derived concepts, principles, and skills. Such instructional decisions include choosing and sequencing the conditions to facilitate learning, keeping track of students achievement, and providing feed back to students about their progress.

These design decisions give rise to the following kinds of evaluation questions:

(i) Have students achieved enabling objectives?
(ii) Do they know the things they will need to know to achieve the terminal objectives?
(iii) What problems are students having, after learning the material?
(iv) How is the teacher "coming across" to the student?

Type 3: Evaluation question derived from terminal objectives.

Terminal objectives describe the instructional outcomes of learning system and student achievement of these objectives represents one of the most important criteria for evaluating system design. However, a learning system is evaluated by other criteria as well, in designing the system, decisions are also made about how available resources can be used most efficiently. In some cases, the outcomes from two different learning systems, such as televised versus regular classroom instruction,

may be evaluated and compared. These decisions produced the following kinds of evaluation questions:

(a) How many terminal objectives did each student achieve?
(b) What proportion of the students achieved each terminal objective?
(c) Which instructional procedures should be revised?
(d) Were students and instructor's time used most efficiently?
(e) How does this system compare to some other system designed to achieve the same or similar objectives?

TYPES OF TEST

Technical subjects are made up of theory and practical instruction, the theory can be assessed through the use of any of the conventional types of test that is: objective and essay tests. Evaluation of practical is somehow conservative, restricted to special forms of measurement. While objective and essay may be used to test the understanding of theoretical framework, the real skill acquisition, apart from oral test of constructional techniques and procedures are test through direct observation technique.

In applying these technique, the evaluation procedure, for greater objectivity and effectiveness are broken into two: process evaluation, and product evaluation. Process evaluation is carried out while the exercise is in progress, taken cognizance of the sequence of operation and performance of the analysed tasks, while product evaluation is carried out at the end of the exercise, assessing the quality of the product.

Test for practical exercises through observation technique

There are three types of observation technique.

(a) Anecdotal records
(b) Rating method
(c) Check list

Anecdotal Records: These are factual description of the meaningful incident and event, which the teacher has observed in the lives of the students, record of students activities, are kept for consequent interpretation and evaluation.

Rating Method: This method is usually constructed in accordance with the learning outcome to be evaluated. It is broken into smaller units and arranged in sequential order, either horizontally or vertically on the sheet for rating the qualities to be judged.

Check Lists: According to Gronlund (1976), while a rating scale provide an opportunity to indicate the degree to which a characteristic is present and the frequency with which a behavior occurs, the check list on the other hand, calls for a simple "yes" or "no" judgment. Check lists are especially useful in evaluating these performance skill that can be divided into a series of clearly defined specific actions, it could be used in evaluating procedures, products, and aspects personal social development.

MARKING SCHEME AND CONTINUOUS ASSESSMENT

It is imperative to draw up a marking scheme that contains list of scorable units contained in a question and their individual weight. Marking scheme enhances objectivity and improves validity and reliability of the test. Apart from the traditional formal examination discussed above another form of continuous updated evaluation of student is the continuous assessment. According to Curzon (1980), in practice, continuous assessment substitutes for simple examination a series of continuous updated judgments by the teacher of the learners' attainments. These judgments may be based on, for instance, weekly test of the learners performance in variety of situation. Continuous assessment is one of the evaluation device introduced by the National policy on Education in 1981.

This system is opposed to the concept of once for all evaluation in the form of an end of course examination. Advocates of this method argued that the strain and anxieties induced by a three hour test may produce a distorted reflection of a learners level of achievement, further more, they argued that the student is supplied with feed back relating to his achievements and is able to plan immediate remedial action. The greatest importance of continuous assessment is that the student future is not determined by his performance in one examination only. The heavy demand made on teaching staff in relation to the large number of assessments to be made throughout a course is one of the points advanced by critics of this method of evaluation. Other points raised are the anxiety spread over an entire term or year and the subjective judgment of teachers, which does not give for external moderation of test assessment. Like all debates there is truth on both sides and a good deal of error and wrong assumptions too.

CONCLUDING REMARK

The need for evaluation, measurement and assessment is accepted by all teachers but the value of examinations as a means of doing it is still one of the most hotly debated subjects in education. There are two extreme and divergent views; those who would abandon all examinations and those who would welcome an extension of the examination system. Those who are against examinations give as their reasons the waste of time they cause and the fear and control they exercise over students and teachers. Students often do not do them self-justice and teachers sometime cease to be educators. Further accusations are leveled at the examination system when they say it is largely ineffective because it measures only knowledge acquired and not the experience gained which both form the important fruits of education. Moreover the system of marking is so arbitrary that they feel the whole system is unjust. Those who favour examination argue differently.

They claim that examinations are a form of educational stock taking and the only form which does not rely on the vague opinions and prejudices of the teacher gathered in the course of his teaching. They say examinations are the fairest way of deciding on the various types of selection required in the process of education and

that, they are necessary for maintaining high standards without examinations, students would not work hard or those who work hard, would have no tangible proof of their progress. Applying caution on the choice and use of evaluation procedures was therefore plausible.

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