

ASSESSMENT OF TEACHERS' APPLICATION OF MULTIPLE CHOICE TESTS CONSTRUCTION PROCEDURES IN SECONDARY SCHOOLS IN EKITI STATE NIGERIA

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Abstract

The aim of this study was to assess application of multiple choice tests construction procedures by secondary school teachers. To achieve this, the descriptive survey research design was used purposeful sampling was used to select 87 teachers amongst the population of 213 teachers in the area. The instrument used for the study was a self developed a questionnaire tagged: Multiple Choice Test Construction Procedures Application Questionnaire (MCTCPAQ) having a total of twenty items designed on a four point scale with a Cronbach alpha co-efficient of 0.82. Data obtained from the subjects were analysed using the means and standard deviations. The results showed that teachers studied apply knowledge of test construction procedures effectively in setting objective tests; however, they do not subject the students to pre-test before the main test is carried out. It was recommended amongst others that science teachers be sponsored to attend assessment practice workshops and also be encouraged to give pre-tests before the main test in schools.

Keywords: Assessment, Teachers, Application, Multiple Choice Tests, Construction Procedures.

Introduction

Test is an important instrument to gather information about the learning progress of the students. Crooker and Algina (2008) described test to be a standard procedure for obtaining a sample of behavior from a specified domain. According to Tamakloe, Amedahe and Atta (1996) cited by Quansah (2019) test is a device or procedure for measuring a sample of an individual's behaviour in a specific learned activity or discipline Tests is an instrument used to measure a sample of an aspect of a behavior from which a total aspect of the behavior is inferred.

Test has a vital role in education especially in teaching-learning process. Testing gives teachers and students insight into how much has been learned, tests provide insight into whether learning really occurred in the classroom, test also offers helpful data for selecting kids, instructors, and a whole program. According to Opie, et al (2021), tests provide insight into whether learning really occurred in the classroom, enhance instruction, identify issues with the way they are being taught, and highlight students' strengths and limitations. They emphasized that testing offers helpful data for selecting kids, instructors, and a whole program. This suggests that Tests might be considered a tool for assessing whether or not learning goals.

However the most popular testing techniques is multiple-choice test which is most widely used by classroom teachers because it's easier to score than other forms (Opateye&Edwin (2022) Denga (2017) believed that it is still preferred to other test formats. This noticed trend of preferences is likely to be based on its advantages over other objective type items and the essay type questions. Most national (standardized) test makes use of it regularly. For instance, the senior secondary school certificate has an objective paper which uses multiple-choice items. In addition to this, the Joint Matriculation Examination papers comprise of multiple-choice items.

"Multiple-choice item" refers to an item that consists of one or more introductory sentences followed by a list of two or more suggested responses (Nitko, 2001). The student must select the correct response from the list of responses provided by the teacher (Nitko, 2001). The portion of the item that poses the question is called the stem; rather than posing a question, it may state the task that the student must complete or the problem that the student must solve. The list of suggested responses to the stem is called options; these alternatives, responses, or choices (Nitko, 2001). Typically, only one of the options is the best or correct response to the question or problem.

According to Izard (2005), one would expect teachers to gain the necessary skills for creating multiple tests, as the majority of tests created by teachers could only evaluate the lower level processes listed in Bloom's taxonomy of educational objectives. Joshua (2005) listed the following steps as the test instruction procedure to help teachers with the test construction process. The test's objectives must be stated. A test blueprint must be created. Test items must be developed. Test instructions must be prepared. The test must be assembled. The test must be administered. The test must be marked. The test must be scored. The test results must be interpreted. The test items must be appraised (item analysis). The test items must be revised based on the findings of item analysis.

The relevance of teachers following this procedure to set valid tests cannot be over emphasized. The outcome of any valid test reflects the traits or learned experiences acquired in the learning environment. It's however intriguing that after series of tests in the school system some students are still found performing poorly in the expected learning outcomes. Eni, et al (2020) acknowledged that students who failed in classroom assessment sometimes do so not because they are dull but sometimes because of teachers' incompetence in test item development. A faulty test instrument developed by teachers produces a faulty report of the status of knowledge of the students. Students' performance has historically been correlated with teachers' credentials and years of classroom experience (Zusovsky, 2008). Some teachers are regarded as qualified due to their exposure to pedagogical training; as a result, they have gained skills in subject matter, lesson planning, the use of instructional aids, student assessment, classroom management, and the sociological relationships among students. It is said that teachers who have experience in fields other than education are unqualified. Teaching and other human endeavors have been shown to benefit from experience, which has been shown to increase knowledge and skills over time (Kini & Podolyski, 2016). The knowledge and application of test construction procedure is another dimension that could be explored to evaluate the teachers on what is happening in the school system. Such dimension of evaluation seems to be relatively new in measures of competence and as it affects science teachers in Nigeria.

This study therefore aimed at assessing teachers' application of multiple choice test construction procedure in secondary schools Ekiti State.

Purpose of the Study

The purpose of the study is to assess among others

- i. The extent of application of Multiple Choice Objective Test construction procedure by secondary schools teachers in Ekiti State.
- ii. Gender effects on the application of Multiple Choice Test construction procedure by secondary schools teachers in Ekiti State.
- iii. Effect of teachers qualification on application of Multiple Choice Test construction procedure by secondary schools teachers in Ekiti State

Research questions

To direct the investigation, the following research questions were raised:

- i. To what extent do teachers apply Multiple Choice Test construction procedure in constructing Multiple Choice Test?
- ii. Is there any significant difference in the application of Multiple Choice Test construction procedure between male and female teachers of secondary schools in Ekiti State?
- iii. Do teachers' qualifications have effect on the application of Multiple Choice Test construction procedure between train and untrained teacher?

Hypotheses

HO₁ There is no significant difference between male and female teachers' application of multiple choice test construction procedure between male and female teachers in secondary school in Ekiti State

HO₂ Teachers qualification will not significantly influence application of Multiple Choice Test construction procedure

Methodology

The research design employed in the study was analytical descriptive survey as information was collected from a sample of the population and findings were generated to the entire population. All secondary school teachers in Ekiti State constitute the study's population. For the study A stratified sampling technique was used to select 210 secondary school teachers as the study sample. The instrument used for the study was a self developed questionnaire tagged multiple test Construction Procedure application Questionnaire (MUTCPAQ) It has two sections. Section A elicited demographic information about the respondents, which includes gender, age, and educational qualifications. Section B consisted of forty items designed on a four point interval scale

Three experts in tests and measurement validated the instrument using faced and content validity. The reliability coefficient of the instrument (0.78) was computed using the Cronbach alpha. The collected data were analyzed using frequency count, mean, standard deviation, and a t-test at the 0.05 level of significance. A mean criterion value of 2.50, which was the arithmetic mean of the weight assigned to the 4-point Likert scale, was used to make a decision

on the items. A mean score of 2.50 or above indicated acceptance, while a score below 2.50 indicated rejection

Results

Research Question 1: To what extent do teachers apply the procedure of multiple choice test construction? To answer this research question, the teachers' responses on application of procedures of multiple choice test construction was subjected to mean and standard deviation the result of the analysis was presented in the table below

Table1 Summary of means and standard deviations of respondent of teachers' application of the procedures of multiple choice test construction

S/ N	ITEM	MEAN	SD	DECISION
1	State the purpose of the test	3.10	1.03	Agree
2	Write content framework	3.20	1.04	Agree
3	Write testing time available and the needs for breaks.	3.12	0.96	Agree
4	Outline number of items per content area	3.01	1.03	Agree
5	Give item format appropriate for the purpose of the test	2.99	1.14	Agree
6	Write items for the test	3.17	1.04	Agree
7	Preliminary administration of the test	1.60	0.74	Disagree
8	Check the reliability of final test	3.10	1.02	Agree
9	Checking the validity of the final test	3.13	0.99	Agree
10	Preparation of the test manual and reproduction of the test	3.18	0.95	Agree
11	Arrange items in order of difficulty so that test taker begin with easy items to that of increasing difficulty .	3.02	1.03	Agree
12	Prepare items to measure correctly the difference among test takers	3.13	0.97	Agree
13	Revise items based on items indicators	3.10	1.05	Agree
14	Estimate test item parameters	3.23	0.98	Agree
15	Select good items with high discriminatory ability	3.10	1.01	Agree
16	Outline formats for marking criteria.	3.02	1.01	Agree
17	Give criteria to assess task.	3.13	0.96	Agree
18	Give performance standard for each criterion	3.10	1.1	Agree
19	Assign grades/marks to items.	3.11	1.06	Agree
20	Reflect/review marks allotted to items	3.11	1.06	Agree

From the table item 1-5 showed that teachers in the study outline the content covered for the item before setting test form (Mean = 3.10; SD = 1.03); they also prepare a test blueprint or table of specification as a guide in the test construction (Mean = 3.20; SD = 1.04); they consult previous tests and adapt questions from them (Mean = 3.12; SD = 0.96); they consult standard textbooks in the subject for guide (Mean = 3.01; SD = 1.03); they organize test items in a logical manner (Mean = 2.99; SD = 1.14).In summary, teachers in the study showed that they apply the knowledge of developing test specifications (Mean = 3.08; SD = 1.04

From table, responses from the teachers in the study showed that they give clear instructions to guide the test takers (Mean = 3.17; SD = 1.04); conversely, they do not administer preliminary or mock examination to testees before the real examination (Mean = 3.10; SD = 0.74). Again, they subject test items to item analysis (Mean = 3.10; SD = 1.02) and they keep a resource bank of questions that can be referred to when setting tests (Mean = 3.13; SD = 0.99); in addition, they set test with due regards to the time available for testing (Mean = 3.18; SD = 0.95). As a final point, science teachers in the study agreed that they utilize selecting appropriate item types (Mean 3.14; SD = 0.95)

teachers in the study showed that they add enough test items to cover all the requisite levels of cognitive domain (Mean = 3.02; SD = 1.03); they ascribe scores for each test item (Mean = 3.13; SD = 0.97); they ensure that the items are measuring the determined objectives (Mean = 3.10; SD = 1.05); they prepare marking guide while constructing the test (Mean = 3.23; SD = 0.98) and; they consider the age of learners during item writing (Mean = 3.10; SD = 1.01). In all, science teachers in the study agree that they utilize preparing relevant test items (Mean = 2.72; SD = 1.01).

Research Question 2: Is there any significant difference in the application of Multiple Choice Test construction procedure between male and female teachers of secondary schools in Ekiti State? To answer this research question, the male and female teachers' responses on application of procedures of multiple choice test construction was subjected to mean and standard deviation the result of the analysis were presented in the table below.

Table 2: Mean and standard deviation scores of male and female teachers' application of Multiple Choice Test construction procedure

Gender	N	X	SD
Male	641	50.7	4.75
Female	359	50.1	4.73

Table 2 shows the mean scores of male and female teachers' applications of Multiple Choice Test construction procedure as 50.7 and 50.1 respectively. This implies that male have a relatively higher mean than female teachers

Research question 3: Do teachers' qualifications have effect on the application of Multiple Choice Test construction procedure between. To answer this research question, teachers' responses on application of procedures of multiple choice test construction based on their qualifications was subjected to mean and standard deviation the result of the analysis were presented in the table below.

Table 3 Mean and standard deviation scores of responses on teachers' application of Multiple Choice Test construction procedure based on their qualification

Qualification	N	X	SD
NCE	447	39.9	1.50
B.Ed	363	46.5	4.50
HND/B,A,B SC	147	39.3	5.90
PGDE ME.d Above	43	49.4	0.90

Table 3 indicated that teachers with PGDE, Med has the highest mean score (49.4) followed by those with B.Ed with a mean value of 46.5, those with NCE and HND /B A/B SC had mean value of 39.9 and 39.9 respectively this imply that teachers with teaching qualifications had higher mean score than those without teaching qualifications the imply that teachers with teaching qualification apply procedures of multiple choice test construction than teachers t

Test of Hypotheses

Hypothesis 1 There is no significant difference between male and female teachers application of multiple choice test construction procedure between male and female teachers in secondary school in Ekiti State

Table 4 T-test analysis of difference in the application of multiple choice test construction procedure between male and female teachers in secondary school in Ekiti State

Gender	N	X	SD	DF	Tcal	tcrit
Male	641	50.7	4.75	998	1.92	1.96
Female	359	50.1	4.73			

The result in Table 2 show that the calculated t-value of 1.92 is statistically significant ($p < 0.05$). Therefore, the null hypothesis which states that there is no significant difference in the male and female teachers' application of Multiple Choice Test construction procedure was rejected

Hypothesis 2 Teachers qualification will not significantly influence application of Multiple Choice Test construction procedure

One way analysis of variance of the influence of Teachers qualification on application of Multiple Choice Test construction procedure

Source of variance	Degree of freedom	Sum of square	Mean sum of square	F cal	F crit	Result
Between group	3	55797006	1859.9002			
Within group	996	24936.0584	25.0962			
		305157590				

Table 3 shows when the responses of the teachers were compared statistically base on qualifications the F calculated was 74.2884 while the F Critical was 2.61. the F Calculated value is greater than the F critical . Therefore the null hypothesis that Teachers qualification will not significantly influence application of Multiple Choice Test construction procedure was rejected this imply that teachers qualifications influence application of Multiple Choice Test construction procedure

Discussions

The findings show that the mean score of male teachers on application of Multiple Choice Test construction procedures was higher than that of female but when the score were subjected to statistical testing it was discovered that gender of the teacher does not significantly influence the application of Multiple Choice Test construction procedure The research of Rufai (2005), who studied test construction abilities among teachers in senior

secondary schools in Kano Municipal, supports this conclusion. The study found no appreciable differences in test construction abilities between male and female teachers. Furthermore, a study on the validity of classroom tests was carried out by Adeola and Fajonyimi (1991) at the University of Nigeria (Nsuka). The study's findings showed that there is no discernible gender difference in teachers' test construction knowledge. This finding was in consonance with the findings of Dubem (2014) whose study revealed that lecturers' uses of objective assessment practice depend on the personality and training of the lecturer rather than their gender. Ibrahim, Ibrahim, and Amina (2022), who found no significant variations in teachers' understanding of test building by gender or degree of experience in Ungogo Local Government Area (LGA), Kano State, Nigeria.

The result also revealed that professional teachers have the higher mean score of application of Multiple Choice Test construction procedure than non-professional teachers. When the scores were subjected to statistical analysis, it was discovered that teachers' qualification has influence on application of Multiple Choice Test construction procedure. This corroborated Ololube (2008) whose findings revealed that professional teachers are more likely to use various evaluation tools correctly. This study provided evidence that educators with advanced degrees are better equipped to create essay and multiple-choice test items due to their increased breadth of knowledge. Instructors without the necessary credentials are unable to produce high-quality assignments that adhere to the standards for item validity and reliability. According to Zuzovsky (2008) and Kalu (2012), professional qualified teachers are those who have received professional training that offers them professional knowledge, skills, techniques, and aptitudes that set them apart from general education. These educators also possess the necessary training and abilities to formulate inquiries, reason for the effect could be a trained teacher could have received training on application of Multiple Choice Test construction procedures.

Edem (2001) condemned the employment of non-professional teacher to teach in secondary schools. Although other researchers Overt and Oferm (2017) found no significant influence of professional training on the lecturer's application of table of specification in learners' assessment in schools.

Recommendations

From the findings of this study, the following recommendations are made:

- a. Teachers should be provided with retraining programs, workshops, or in-house services by test experts regarding the use of test construction procedure.
- b. Sponsorship of teachers to attend assessment practice workshops should be encouraged.
- c. Pre-tests should be administered by teachers in schools prior to the main exam.

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