

Teachers Competency in Test Construction in Secondary Schools in Ovia North-East Local Government Area Edo State

Praise Kehinde ADEOSUN

Department of Educational Evaluation and Counseling Psychology

University of Benin, Edo State, Nigeria.

<https://orcid.org/0009-0003-1870-978X>

E-mail: praise.adeosun@uniben.edu

Gods' Time MOGOKWU

Department of Educational Evaluation and Counseling Psychology

University of Benin, Edo State, Nigeria.

Abstract

The study investigated teachers' competency in test construction in senior secondary schools in Ovia North- East local government area of Edo state. The descriptive survey design was adopted for the study. The study population comprised 162 teachers in the 23 senior secondary schools in Ovia North-East local government area of Edo state. The sample of the study consists of all 162 teachers in the senior secondary schools. The census method was used because the entire population of the study were used. The research instrument used for data collection was the Teachers' Competency in Test Construction Questionnaire (TCTCQ). The instrument was validated by three experts. Reliability of the instrument was done using the Cronbach alpha method, and a coefficient of 0.80 was obtained. The research question was answered using descriptive statistics such as mean and standard deviation while hypotheses were tested using the independent t-test and analysis of variance (ANOVA). The results revealed that the teachers in Ovia North-East Local Government Area of Edo state, have high competency in test construction. It was also found that a significant difference exists among the teachers in the area of competency in test construction based on sex. However, no significant differences were found among the teachers' competency in test construction based on qualification and years of experience of teachers. It was recommended that, periodic workshops for teachers to keep them abreast of new developments in the area of test construction to sustain this level of competency.

Keywords: *Teacher's competency, Test Construction, Assessment*

Introduction

Test construction is a vital element of the teaching and learning process in the educational system. Teachers are not just concerned with the presentation of contents of the curriculum to students but must also ensure that the aims and objectives are achieved. In other words, teachers themselves must ascertain that the desired behavioral changes expected from students after a

period of instructions take place. Indeed, the Professional Standards for Nigeria Teachers Document (Teacher Registration Council of Nigeria, 2010) made it clear that teachers are to administer assessments, reliable and valid, and directly related to the subject content to ascertain periodically the progress of students. Consequently, teachers gather information on students learning and record their progress on a periodic bases. The process of doing this is referred to as assessment. Assessment of students is very vital in the teaching and learning process because it is one sure way of determining the aspect of the content taught that students have learned and mastered, as well as the effectiveness of instructional methods and materials. It provides a means of evaluating student progress and achievements. While a number of tools are opened to the teachers to carry out assessments, a major and commonly used tool is test.

According to Mehren in Ahmed (2018), a test is any method (written, observational, or oral) utilized to collect data for assessment and evaluation purposes. In the view of Brown also in Ahmed (2018), a test is a method of assessing a person's capability, knowledge or performance in a given area. In other words, a device, a set of procedure, or items that requires performance on the part of the participant. Omoroguiwa (2019) defines a test as an item or set of items presented to an individual or set of individuals to which they are expected to respond under specific conditions with the intent to determine the extent to which such trait (a trait of interest) is present or absent in the respondent. A test is defined in this study as a set of items (questions) presented to students (testees/examinees) by the teacher to determine what students have learned or not learned and whether the behavioral objectives or the expected change in behavior is being achieved. This form of test that focuses on the achievement of the individual learners is termed achievement test.

An achievement test could be a standardized test or a teacher-made test, otherwise known as classroom test. Standardized tests are tests prepared by someone else apart from the teacher, usually, experts in the field of measurement and evaluation. Teacher-made tests or classroom tests, on the other hand, are tests prepared and administered by class teachers or subject teachers as the case may be (Omorogiuwa, 2019). . The teacher-made test is the focus of this paper. How effective are teachers in secondary schools in test construction? How competent are teachers in crafting or preparing test items with which students are assessed and evaluated? Frazen (2011), defines test construction as the set of activities that are involved in developing and evaluating a test of some

psychological functions. Test construction as it pertains to classroom test, can therefore be viewed as the set of activities the teacher engages in in producing a test used for assessing the students.

The term “Competency” has varied meaning and definitions in literature depending on the context in which it is used. Thus, Wong (2020) studied the various definitions of the term as given by different authors and concluded that there is little universal consensus of the meaning of the term, competency. According to the Cambridge dictionary, competency is an important skill that is needed to do a job. Ibrahim in Zamri and Hamzah, (2019), defined competency as a standard that determines performance of an employee in performing his / her task. According to Kolibacova (2014), the concept of competency is usually applied to define the whole of individuals’ abilities, skills, behaviors and knowledge, oriented to effective performance. Katane et al in Selvi (2010) viewed competencies as a set of knowledge, skills and experience necessary for future, which manifests in activities. Gupta, also in Selvi (2010) in his definition of competency, added to knowledge and skills, attitudes, values, motivations and beliefs people need in order to be successful in their jobs. In general, competencies can be described as a set of observable and measurable attributes or success factors required for individuals for effective work performance. These attributes or factors may include knowledge, skills, self-concepts and values, personal traits and motives (Wong, 2020). Competency is observable, measurable and encompass all that is needed for effective job performance. Teachers as important stakeholders in education, require some degree of competencies in carrying out their jobs/functions as teachers.

Teachers’ Competency is a standard set for teachers for mastering various educational competencies to meet current education needs enhance their competence in conducting assessment, the competencies required a professional judgement which include knowledge, professional responsibility, experience and students input (Sajali in Zamri and Hamzah, 2019). Teachers’ competency or competencies can therefore, be viewed as the knowledge, skills, values, beliefs and motivations that a teacher requires to function optimally in the teaching profession. These competencies can be acquired through training and experience in the field. Teachers require certain degree of competencies (skills, knowledge, attitude, values) in constructing classroom tests. These skills, according to Alison in Galle, Saleh and Awaisu (2022), are competency based on stipulated principles of test construction. Ali in Moses et al ,2021, cited in Galle et al, 2022) listed these competencies to include objectivity, communicative, item validation skills and skills for

applying appropriate strategies for ascertaining the validity and reliability of test instruments. According to Kojigili in Bika and Buba (2020), test construction skills include drawing table of specification involving item writing, blue print, and arrangement of items according to weightage of the item, item review and editing, tryout of items, testing item difficulty levels and considering principles of test construction.

Silker in Ibrahim and Taura (2022), posited that skills in test construction enables a teacher to construct tests with precision, appropriateness of language -use, objectivity, and good grading scale. In the view of other researchers such as Afolabi; and Ali, in Ibrahim and Taura (2022), test construction skills enable teachers' structure items to elicit clear and concise responses from students, construct tests that will be appropriate for learners of different ages, abilities, and gender, set tests so that students finish on time and do not grow scared of tests. How competent\skilled are teachers in our secondary schools in test construction? Do they possess the requisite competencies in constructing classroom tests? Teachers' competency in test construction is measured by their ability or inability to construct quality tests. According to Chau in Hamafyelto et al (2015), teachers' competence in constructing test items is directly related to achieving good / quality test instrument. Studies of Marso and Pigge; Dosunmu; Magno; and Kinyua and Okunya in Kissi, Baidoo-Anu, Anane, and Annan Brew (2023), have shown that test construction competencies are related to the quality of test items. Constructing a quality test therefore, requires competencies which entails strict adherence to laid down principles. A quality or good test possesses characteristics that will ensure that true evidence of students learning is obtained. Osunde in Ogbiede (2015), stated that a good test must meet some essential criteria in order for it to accurately assess students' achievements. Such a test must be valid (measuring what it is supposed to measure), reliable (consistently producing same result), usable, comprehensive and able to effectively discriminate between high and low achievers. A test that is properly constructed, allows the teacher to accurately and consistently measure students' mastery of specific contents taught in class. Results of such test enable the teacher to measure to some degree how effective instruction has been (Agu et al, 2013). Failure of teachers to construct tests that meet the mentioned qualities or standards will render testing ineffective and unreliable and amount to a total waste of time and resources as no meaningful decisions can be reached on the bases of results from such a test.

Teachers' incompetence in test construction will undoubtedly yield or produce undesirable outcome. Poorly designed test items can lead to inaccurate measurements of learning and provide false information regarding students' performance as well as instructional effectiveness (Education Close up in Agu et al; 2013). Teachers' incompetency in test construction has been pointed at, as a major cause of examination malpractice among teachers in secondary schools in Nigeria (Esomonu in Agu, Onyekuba & Anyichie, 2013), source of anxiety (Paulson in Ahmed 2018) and poor performance of students in internal and external examinations (Ebinye in Bika & Buba, 2020; and Kolawole, 2010) among others. Such incompetency could lead to false assessment of students. Results/scores obtained from the process may not give a true picture or indication of students' attainment or what the students have achieved from instruction. The implication of this is that students who are weak may be denied the needed assistance as it becomes difficult for the teacher to identify them in the first place. More so, students and their parents/guardians and school authority are provided inaccurate information about students learning and abilities leading to faulty judgment and wrong educational decisions. A faulty test instrument developed by teachers produces a faulty test report on the status of knowledge of the student (Eni et al, in Opie, Oko-Ngaji, Eduwen & Amba, 2021).

Poor assessment of students by classroom teachers, may lead to poor performance in standardized examinations. Students who are seemingly high performers in the school and adjudged 'A' students in various subjects from faulty assessments often struggle to make "Cs" in same subjects in standardized examinations such as WAEC, NECO, NABTEB etc. Studies such as Koksai, Leighton and Gokiart in Agu et al (2013) have suggested that faulty test items affect students' comprehension and ability to provide accurate responses to items, inference drawn from what students know and understand may be compromised. Poor assessment of students in schools resulting from teachers' lack of competencies in test construction leaves students with either low or poor self-concept or an over bloated confidence and poor results in external examinations. Considering the importance of information from classroom test and its implication on students' educational decision making, it is pertinent that teachers in secondary schools' take a critical look at their competencies in the act of test construction. It is on this note that this study investigates the competencies of teachers in secondary schools in Ovia local government area of Edo State, in test construction..

Although, quite a number of research studies have been carried out on teachers competencies in test construction, such studies have focused on some specific subject areas, and none of such studies have been carried out in secondary schools in Ovia North East of Edo state. This study will therefore investigate the competencies of teachers (in all subject areas) in secondary schools in Ovia North East, Edo State. Teacher- made test or classroom test is the teachers' most important tool in the assessment of students learning and effectiveness of instruction and thus requires careful attention and skillfulness in its development process. Unfortunately, most teachers do not seem to give this vital aspect of their job the utmost attention it deserves. In most cases these tests are hurriedly constructed and sometimes for the wrong purposes. As such, some of these tests are fraught with deficiencies that render them invalid and unreliable. Teacher-made tests are observed in literature to lack clarity (items not properly worded), comprehensiveness (in terms of coverage of every aspect of content taught), and also lack reliability and validity. It has also been observed that most of these test focus on assessing the lower domain of cognition. So, even though teachers are better positioned to assess their students given that they teach the students and also based on their training, most teachers have not proved themselves to be equal to this task, hence, the noise surrounding teacher made tests. Gani and Atta in Akpan, Godwin and Sanni (2021) revealed that teachers in basic education level do not spend time to develop and use reliable and valid instrument whenever they test their learners. This is not different from the position of earlier researchers whose works were cited in Agu, Onyekuba and Anyichei(2013) which clearly reveals that most classroom tests in Nigeria lack validity and reliability. What factors could be responsible? Could it be that teachers in Nigeria lack the competency competencies to construct classroom tests?

Research Question

What is the level of competencies in test construction among teachers in secondary schools in Ovia LGA?

Research Hypotheses

- i. There is no significant difference in the teachers' competency in test construction among teachers in secondary schools in Ovia local government area by sex.
- ii. There is no significant difference in the teachers' competency in test construction among teachers in secondary schools in Ovia Local government area by qualification.

- iii. There is no significant difference in the teachers' competency in test construction among teachers in secondary schools in Ovia local government area by experience.

Methodology

The research design adopted for this study is the descriptive survey design. The descriptive survey design enables the researcher to collect data and describe the competencies of teachers in test construction. The population of the study consists of the 162 teachers in the twenty three (23) public senior secondary schools in Ovia North East Local Government Area of Edo State. (Edo State Ministry of Education, 2023). The sample consists of all the 162 teachers in the 23 schools. Census method was used for this study considering the fact that all the population were used. Therefore, the entire population of study was used as the sample for the study. This helped to eliminate sampling error and provide data on the entire population.

The instrument for the study was titled, Teachers' Competencies in Test Construction Questionnaire (TCTCQ). It was adapted from Agu et al (2013) and Armah, (2018). The questionnaire was patterned in the form of Modified Likert Scale: SA- Strongly agreed, A -agreed, D - Disagreed and SD -Strongly Disagreed. It is made up of two parts. The first part, Section A, consists of demographic data of the respondents as follows, Gender, teaching experience and educational qualification. While Section B consists of 15 items on teachers' application of test construction. The instrument was validated by three experts in the field of educational measurement and evaluation. The corrections and suggestions made were duly effected by the researcher.

To determine the reliability index of the items on the teachers' competencies in test construction Questionnaire (TCTCQ), the instrument was administered to 30 teachers who were not part of the population of study. The data was collated and subjected to Cronbach alpha statistics. The coefficient of 0.80 was obtained. This was considered high and indicated that the items were internally consistent. The data obtained for this study was analyzed using both descriptive and inferential statistics. The research question one was analyzed using descriptive statistics such as mean and standard deviation while the hypotheses were tested using the independent t-test for hypothesis 1, and analysis of variance (ANOVA) for hypotheses 2 and 3.

Results

Research Question 1: What is the level of teachers’ competency in test construction among teachers in secondary schools in Ovia Local Government Area?

Table 1: Descriptive of Teachers’ Competency in Test Construction

Variable	N	Mean	Std Dev
Teachers’ Competency in Test Construction	163	48.97	5.57

Table 1 shows the mean value of 48.97 and a standard deviation of 5.57. Since the calculated mean is greater than the normative mean of 37.50, this indicates that the level of competency in test construction among teachers in secondary schools in Ovia Local Government area is high.

Hypothesis One: There’s no difference in teachers’ competency in test construction among teachers in secondary schools in Ovia local government area by sex.

Table 2: t-test of Independent Samples of Teachers' Competency in Test Construction Based on Sex.

Sex	N	Mean	Std Dev	t	df	Sig (2-tailed)
Male	54	50.40	5.56	2.341	161	.020
Female	109	48.26	5.46			

Table 2 shows a calculated t- value of 2.341 and a p-value of .020, testing at an alpha level of 0.05. Since the p-value is less than the alpha level, the null hypotheses which states that there is no significant difference in teachers' Competency in test Construction among teachers in secondary schools in Ovia Local Government is rejected. Consequently, there is a significant difference in teachers Competency in test Construction among teachers in Ovia Local Government based on sex.

Hypothesis Two: There is no significant difference in the teachers' Competency in test construction among teachers in Secondary schools in Ovia Local Government Area by qualifications

Table 3: ANOVA of Teachers Competency in Test Construction among Teachers’ in Ovia Local Government Area based on Qualifications

	Sum of Square	df	Mean Square	F	Sig.(2-tailed)
Between Groups	107.307	6	17.885		.756
Within Groups	4922.594	156	31.555	.567	
Total	5029.902	162			

Table 3 shows an F-value of .567 and P-value of .756, testing at an alpha level of .05. Since the p-value is greater than the alpha level, the null hypothesis which states that there is no significant difference in the teachers' competency in test Construction among teachers in Secondary School in Ovia Local Government Area by qualification is retained. Consequently, there is no significant difference in the teachers' competency in test construction among teachers in Secondary schools in the Ovia Local Government area based on qualification.

Hypotheses Three: There is no significant difference in teachers competency in test construction among teachers in Ovia north east LGA by experience.

Table 4: ANOVA of Teacher’s Competency in Test construction among Teachers in Ovia Local Government area Based on Experience.

	Sum of Square	df	Mean Squares	F	Sig (2-tailed)
Between Groups	40.123	2	20.061		.572
Within Groups	4989.92	160	31.186	.0843	
Total		162			

Table 4 shows an F- value of 0.843 and p-value of .527 testing at an alpha level. Since the p-value is greater than alpha level, the null hypothesis which states that there is no significant difference in teachers' competency in test construction among teachers in secondary schools in Ovia Local Government area based on experience is retained. Consequently, there is no significant difference in teachers' competency and test constructions among teachers in Ovia Local Government based on experience.

Discussion of Findings

The finding of this study revealed that the level of teachers' competency in test construction among the teachers in secondary school in Ovia north-east, Edo state, is high. This indicates that teachers in secondary schools in Ovia local government demonstrated a high level of competency in test construction. This could be attributed to the fact that most teachers employed in public secondary schools have a background in the field of education. In other words most of the teachers had a training in the field of education either at the certificate, diploma, and graduate or post graduate level. More so, Edo state Government have in recent times introduced programmes such as Edo Best, aimed at equipping teachers with skills that will enable them function effectively in their classroom tasks. The finding tend to refute that of most researchers, particularly those cited in Agu et al. (2013) among others, that most classroom tests in Nigeria lack validity and reliability, an indication of incompetency in test construction among classroom teachers in Nigeria.

The result of the study also shows that the sex of teachers accounts for their competency in test construction. This is consistent with the findings of Adodo(2014) which reported significant differences in teachers' gender and competency in evaluating learning outcomes. Other studies whose findings are in agreement with the findings of the study with respect to teachers' competency in test construction and sex of teachers are Camble and Hamman-Tukur (2017), Bandele and Oluwatayo (2013), and Derri (2012). These studies also showed a significant differences exist between male and female teachers knowledge of test construction. Again, in line with the findings of Derri(2012), this study shows that male teachers tend to have a higher level of competency in test construction than the female teachers.

The result also indicated that teachers' qualification does not explain or account for the competency of teachers in test construction. This again may be due to the fact that teachers in the schools covered tend to have a basic training in education which has equipped them with basic skills in test construction. Apparently, that is what is needed for a teacher to be able to construct test items effectively. The level of education at which this skill was acquired seemed not to be of any effect. So, whether a teacher possesses a National Certificate in Education or a Ph.D. in the field of education does not determine teachers' competency in test construction. In other words, a National Certificate in Education holder can be as competent in test construction as one with a bachelor's degree in education. This finding, again, is consistent with the findings of Adodo (2014)

which shows that qualification does not affect how to determine the objectives of the test, construct a table of specifications, and evaluate students' learning. However, it is inconsistent with the findings of Camble and Hamman-Tukur (2017) who found a significant relationship between teachers' qualification and knowledge of test construction and concluded that higher degree (qualification) and professionalism are very important factors for teachers' competency in test construction.

The finding of the study also revealed, that teachers years of experience does not account for or explain teachers' competency in test construction among teachers in secondary schools in Ovia Local Government area. This finding is in agreement with the study of Magno in Amoako and Ankomah (2019) who studied the test construction profile of professional teacher-made tests and found no significant difference in the knowledge of test construction in relation to the number of years of experience and thus concluded that neither status nor number of years of experience qualifies for knowledge in test construction. Other studies which this study aligns with include Camble and Hamman-Tukur (2019), Ahmed, Abdullahi & Bashir (2020). It is however inconsistent with the finding of Metler in Bika and Buba (2020) which reported that experienced teachers were more test construction literate than less experienced teachers and also the study of Bika and Buba (2020) which found that experienced science teachers had a good knowledge of test construction processes unlike the inexperienced teachers.

Conclusion

Based on the findings of this study, it is concluded that the level of teachers' competency in test construction among teachers in senior secondary schools in Ovia Local Government Area is high. More so, teachers' characteristics such as qualification and experience of teachers do not account for the level of teachers' competency in test construction among the teachers. However, the sex of the teachers does account for their competency in test construction.

Recommendations

The researchers, therefore, recommended that:

- i. periodic workshop for teachers to keep them abreast of new developments in the area of test construction and test administration is needed to sustain the teachers' high level of competency.

- ii. Experienced teachers should be employed by the school administration
- iii. Qualified teachers should also be employed by school administration.

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