



DYNAMIC MULTIDISCIPLINARY JOURNAL OF NIGERIA

DELTA STATE UNIVERSITY LIBRARY, ABRKA, DELTA STATE, NIGERIA

**DYNAMIC MULTIDISCIPLINARY JOURNAL OF NIGERIA**  
DELTA STATE UNIVERSITY LIBRARY, ABRAKA, DELTA STATE, NIGERIA.  
Email: [dmjon2080@gmail.com](mailto:dmjon2080@gmail.com)  
**ISSN: 2955-0564**

**Volume 5, Number 2, April, 2024**

**PUBLISHED BY DYNAMIC MULTIDISCIPLINARY JOURNAL OF NIGERIA**  
DELTA STATE UNIVERSITY LIBRARY, ABRAKA, DELTA STATE, NIGERIA

# **ASSESSMENT OF TEST CONSTRUCTION COMPETENCE AMONG SENIOR SECONDARY SCHOOL TEACHERS IN GOMBE STATE, NIGERIA.**

by

**Fatima Inuwa Darazo**

School of Education, College of Education, Billiri, Gombe State

Email: [fatimaidarazo2020@gmail.com](mailto:fatimaidarazo2020@gmail.com),

**Farida Lamaran Shehu**

Government Day Secondary School (Pilot) Gombe, Gombe State

&

**Fatima Umar Muhammed**

School of Education, College of Education, Billiri, Gombe State

## **Abstract**

This study on the assessment of test construction competence among senior secondary school teachers in Gombe state has five objectives, one research question and four corresponding null hypotheses. Survey research design was employed, and the population comprised of public senior secondary school teachers in the state with a total number of 3,178 (males = 2,219 and Females = 959). Using the Research Advisor (2006) a sample of 346 teachers were sampled via the multi-stage cluster and simple random techniques. Test Construction Skills Inventory (TCSI) was adapted from Agu; Chika & Aloysius. (2013), after pilot testing the questionnaire, it was found to have 0.83 as coefficient reliability. Data were analyzed using mean scores, t-test for independence and Analysis of variance ANOVA at 0.05 level of significance. Findings indicated that there is a significant difference between teachers' gender, qualifications and years of experience but in the area of specialization no significant difference was observed. The paper therefore recommends that government at the state level should sponsor teachers to attend educational conferences and workshops.

**Keywords:** Assessment, Test, Test Construction, Competence, Senior Secondary School & Teachers

## **Introduction**

Teachers play a vital role in any education setting apart from imparting knowledge, observing and managing the classroom during teaching and learning process they also construct tests which are used to determine the extent to which stated behavioral objectives have been achieved or not. This test provides information for decision-making about the teachers, students and program, for these reasons there is a need for teachers to be competent in constructing the test. The competency of a teacher is the ability of the teacher to adopt the requisite test construction steps when constructing a test.

Adodo (2013) concurred that not much attention has been paid to the area of teachers' competencies and that it is not unusual to find teachers who lack a grasp of basics. Teachers in Gombe State have a good understanding of the general principles of test construction but they lack specific knowledge and skills in this area and do not have access to resources and support to develop their test construction competence. Test construction competence and quality are essential tools required by any teacher before teaching and learning goals are to be achieved. The significance of tests in a school system is bountiful since it is how any meaningful

educational goal is attained. (Rufina, Abubakar & Stephen, 2015). Adodo (2014) defined teacher competency as the ability of a teacher to exhibit on-the-job skills and knowledge gained as a result of training. Teachers need not be experts in educational measurement and evaluation to construct valid and reliable tests. There are basic test construction skills which every teacher ought to possess to construct a qualitative test. These skills help teachers to: structure items to elicit clear and concise answers from students; construct tests that will be appropriate for learners with different ages, abilities, and genders; and set tests so that students finish within time and do not grow scared of tests.

Senior secondary school is a level of education where students are prepared for tertiary education. Students who perform wonderfully in the teacher-made classroom tests at this level are expected to perform well in the standardized tests equally which is a prerequisite for gaining admission into tertiary institutions such as the West African Examination Council (WAEC), National Examination Council (NECO), National Board for Arabic and Islamic Studies (NBAIS) and any other standardized tests taken at the end of every secondary education. However this appears not to be so. Research evidence indicates that teachers' competency in test construction is below expectations among senior secondary teachers of science, Technology and math (Asim, Ekwi & Eni, 2013). The construction of valid and reliable tests in various subject areas has not been given enough attention in senior secondary schools in Nigeria (Osadebe, 2014).

### **Statement of the problem**

Personal experience shows that for years, there has been a great deal of employment of unqualified teachers in the teaching profession. Teaching is used as a stepping stone to greener pastures. Test construction has been a major source of anxiety among senior secondary school teachers, especially the less experienced ones and this anxiety stems from a lack of competence in test construction procedures. The quality of Teacher Made Test is a thing of concern. Ugodunluwa (2008) posited that the qualities of items on Teacher Made Test generally unknown and low when compared to standardized tests. The issue of validity and reliability of Teacher Tests calls the attention of researchers (Ngozi, Chika & Aloysius, 2013). These researchers observed that most of the Teacher Made Test lacks validity and reliability because teachers seem to lack competent in test construction procedures that enable them to construct valid and reliable tests. According to Anikweze (2014), feedback from well-constructed Teacher Made Test could help to improve students' performance either through the correction given by the teacher or by learners' effort to cover the lapses that account for failure. Testing provides feedback on which educational decisions are made. Jane, A; Taynan, L.S; Hoffman and Algina, S (2022) believe that teachers' knowledge of psychometrics, teaching years of experience and high qualifications, were positively related to their ability to develop a science test as were more likely to have greater knowledge of the principles of test construction. In view of these, the researcher seeks to conduct an assessment of the senior secondary school teachers' competence in test construction to address the issue in Gombe State.

Therefore, the purpose of the study is to,

1. to determine the level of senior secondary school teachers' competencies in test construction procedures in Gombe State;
2. to find out differences in test construction procedure competence between male and female senior secondary school teachers in Gombe State;
3. to investigate the difference in test construction procedures competence between the qualified

and unqualified senior secondary school teachers in Gombe State;

4. to find out the difference between science and non-science senior secondary school teachers with regards to their competencies in test construction procedures in Gombe State; and,

5. to determine the difference between experienced and experienced teachers concerning their competence in test construction procedures in Gombe State.

To aid this, the following research questions were raised to guide the study:

1. What is the level of teachers' competencies in test construction procedures among senior secondary school teachers in Gombe State?

The following hypotheses were equally generated thus:

1. There is no significant difference in test construction procedure competence between the male and female senior secondary school teachers in Gombe state.

2. There is no significant difference in test construction procedure competence between qualified and unqualified senior secondary school teachers in Gombe state.

3. There is no significant difference in test construction procedures competence between the science and non-science senior secondary school teachers in Gombe state.

4. There is no significant difference in test construction procedure competence between experienced and experienced senior secondary school teachers in Gombe State.

## **Method**

The research design for this study was a survey which is considered appropriate for this study because it is a design that is used to determine and report the way things are; it involves a collection of numerical data to test hypotheses or answer questions about the current status of the subject of study. (Gay; Mills; Airasian. 2009). The population of the study comprised all the senior secondary school teachers in the Government-owned schools in Gombe State. Presently there are one hundred and sixteen (116) senior secondary schools with a total number of two thousand one hundred and seventy eight (3,178) teachers in Gombe State out of which males constitute 2,219 Males and females 959 (MOE Gombe, 2023). The teachers come from various ethnic, social, religious and cultural backgrounds. Based on the provision of the research advisor (2006). A total number of three hundred and forty- six (346) was drawn from the population as sample size using the MultiStage Cluster sampling technique in all the stages the selection was randomization. The instrument used for data collection was a thirty items inventory adapted from the Test Construction Skills Inventory (TCSI) developed by Ngozi, Chika and Aloysius (2013), administered to the respondents with the help of the research assistants, Cronbach alpha was employed to measure the internal consistency of the questionnaire after running the data using SPSS 23 version. It was found that the entire items measure a high reliability of 0.837. This is in line with the benchmark that an instrument with a coefficient of 0.60 is regarded to have average reliability while a coefficient of 0.70 and above shows the instrument has a high-reliability standard from 0.713 to 0.956. This questionnaire with a coefficient of 0.83 is regarded as high reliability (Hair, Black, Babin, Anderson 1967; Sekaran & Bongie, 2010).

In analyzing the data, the mean score was used to answer the research question, t-test and analysis of variance were employed in testing the null hypotheses.

## Results

**Table 1: Mean and Standard Deviation of the Level of teachers' competence in Gombe state**

	N	Min	Max	Mean	SD
	Statistic	Statistic	Statistic	Statistic	Statistic
Test Construction					6.341
Procedures	346	11.00	82.00	22.92	0.341
Competencies					
Valid N (listwise)	346				

From the above table considering the mean score of teachers of 22.92, the maximum score 82.00 and the minimum score 11.00 it was concluded that the level of test construction competence among senior secondary school teachers in Gombe state is high which is influenced by their qualification, teaching experience and professional qualification, this contradicted the findings of Donker; Osei-Tutu and Amoah (2018) with low level.

### Research Hypothesis one

There is no significant difference in test construction procedures competence between male and female teachers.

**Table 2: Result of t-test Analysis of Genders in TCPC**

	Gender	N	$\bar{X}$	SD	SE	T	Sig. (2-tailed)	Df
TCPC	Male	191	24.73	6.05	.438	6.199		
	Female	155	20.69	5.98	.480		.000	240

\* = Significant at 0.05 -level

An independent t- test was performed at 0.05 level to examine the differences in test construction competence concerning gender, Male teachers had a mean score of 23.97 and standard deviation of 4.35, female teachers had a mean score of 20.13 and a standard deviation of 6.49. Based on the results showed a significant difference at .000 as gender differed in test construction competence among senior secondary school teachers in Gombe state. This is in line with the findings of Aku; Agbo and Agama (2020).

### Research hypothesis Two

There is no significant difference in test construction procedures competence between the qualified and unqualified senior secondary school teachers in Gombe State

### Research hypothesis Two

There is no significant difference in test construction procedures competence between the qualified and unqualified senior secondary school teachers in Gombe State.

**Table 3: Result of t-test analysis of teachers' qualifications in TCPC**

	N	Mean	SD	SE	T	sig	df
Qualified	246	24.42	6.21	.396	344	.000	344
Unqualified	100	19.24	5.04	.504			

**\* = Significant at 0.05 -level**

Ascertaining whether a difference was observed in test construction competence between the qualified and unqualified senior secondary school teachers in Gombe state, the total mean score obtained from different groups of qualifications was subjected to analysis of t-test and presented in the table above. The results revealed that teachers teaching Qualifications had a significant impact on their test construction competence in Gombe state thus, the null hypothesis was rejected as qualifications differed in test construction competence.

### Research Hypothesis Three

There is no significant difference in test construction procedures competence between science and Non-science senior secondary school teachers in Gombe state.

**Table 4: Result of t-test analysis of science and non-science teachers with regards to their competence in test construction procedure in Gombe state.**

SAS	N	$\bar{X}$	SD	SE	T	Sig. (2-tailed)	df
TCPC Sci.	204	23.03	7.58	.531	0.384	.537	240
Non sci.	142	22.77	3.94				

**\* = Significant at 0.05 -level**

The summary of the calculation contained in the above table shows that the computed t- t-value was found to be 0.618 with a degree of freedom of 240 at 0.05 level of significance level, hence there is no significant difference, implying that the null hypothesis was accepted, as an area of specialization does not differ in test construction competence in Gombe State.

#### **Research Hypothesis four**

There is no significant difference in teachers' teaching experience concerning their competence in test construction procedures.

**Table 5: Descriptive statistics of teachers' experience in TCPC**

	N	Mean	SD	SE
High experience	72	26.20	3.38	.398
Very experienced	88	26.73	6.79	.724
Less experience	112	20.47	4.59	.434
In experience	74	18.90	6.16	.716
<u>Total</u>	346	22.925	6.341	.3409

The table above provides information in relation to the teacher's teaching experience and competence in test construction which were categorized into four: the higher experienced teachers with a total number of 72 teachers and a mean score of 26.20, very experienced teachers with a total number of 88 and a mean score of 26.74, less experienced teachers with a total number of 112 teachers with a mean score of 20.47 and Inexperienced teachers with a total number of 74 and the mean of 18.90 so the higher the experience of a teacher, determine the teacher competence in test constructing.

#### **ANOVA**

**Table 6: Result of analysis of variance of teachers' experience in TCPC**

	Sum Squares	of df	Mean Square	F	Sig.
Between Groups	392.93	3	1308.308	44.982	.000
Within Groups	9947.12	342	29.085		
Total	13872.046	345			

In determining whether a difference was observed in test construction competence between experienced and inexperienced teachers, the total mean score obtained from different groups of years of experience was subjected to analysis of variance (ANOVA) it shows that there is a significant difference as presented in the table above. The results of analysis of variance in the above table revealed that a significant difference was observed at 0.05. Thus, there is a significant difference in teachers' teaching experience with regard to their competence in test construction in Gombe State. The post hoc analysis below indicated where the differences lay which showed that long-serving teachers are more experienced than the new beginners in the profession which makes them more competent than the newly employed teachers in test construction competence based on their experience in the teaching profession.

**Table 7: Post hoc analysis of teachers teaching experience scheffee**

(I) Years of experience	(J) Years of experience	Mean Difference (I-J)	Std. Error	Sig.
Higher experience	Very experienced	8.62*	2.096	.001
	Less experience	20.316*	2.043	.000
	Inexperience	32.697*	1.831	.000
Very experienced	Higher experience	-8.621*	2.096	.001
	Less experience	11.696*	2.227	.000
	Inexperience	24.076*	2.035	.000
Less experience	Higher experience	-20.316*	2.043	.000
	Very experienced	-11.696*	2.227	.000
	Inexperience	12.380*	1.980	.000
Inexperience	Higher experience	-32.697*	1.831	.000
	Very experienced	-24.076*	2.035	.000
	Less experience	-12.380*	1.980	.000

### Summary of findings

The major findings of this study showed that:

1. The level of teachers' competence in test construction procedure in Gombe State is high considering the maximum score of teachers is 82.00 and minimum score of teachers is 11.00 and the general mean score is 22.92, we can say that the level is high since it is more than 50 as anything below 50 considered as low.
2. The study discovered that no significant difference exists between male and female teachers with regard to the competence in the test construction procedure.
3. The study discovered that teachers with professional qualifications such as B.A Ed, B.Sc. Ed, M.Sc Ed and M.A Ed considered as qualified teachers are more competent in test construction

procedure than teachers with B.SC, B.A and HND holders are regarded as unqualified teachers.

4. The study also discovered that there is no significant difference between science and nonscience teachers with regard to their competence in test construction procedures in Gombe State.

5. The study revealed that the length of time spent in the teaching profession plays a vital role in test construction procedure competence. The study showed that a significant difference exists between those (teachers) who spent longer years in the teaching profession and are more competent in test construction procedures than recently employed teachers in Gombe state.

### **Conclusion**

The results of these findings revealed that the level of teachers' competence in Gombe State is moderate. The study showed teachers' test construction competence can be measured using a combination of self-report and objective measures and that there is no significant difference between male and female teachers in test construction procedure with regards to competence in test construction procedure, results of this study further showed that professional teaching qualifications play a vital role in test construction procedure. Teachers with teaching qualifications are more competent in constructing tests than those without professional teaching qualifications. The results also revealed that there is no significant difference between science and nonscience teachers in the competence in test construction procedures. The last aspect of the study shows that long-serving teachers in the teaching profession are more competent than beginners in the profession who are considered inexperienced teachers.

### **Recommendations**

1. The unqualified teachers should be encouraged to go for post-graduate studies in education in order for them to acquire the skills required for test construction.
2. The government should enlighten the teachers more on the appropriate techniques for test construction through seminars and workshops as this will improve the outcome of assessment.
3. Test and measurement/evaluation processes are vital in educational dispensation, as such there is a need to have test and measurement experts in the state ministry of education.
4. Further research is needed to explore the impact of teachers' test construction competence and any other barriers that teachers face in developing their competence.
5. Provide opportunities to practice crafting and administering assessment
6. The government should create a system of accountability and shared understanding of test construction literacy among all stakeholders including parents, students and administrators
7. Provision of recognition and incentives for teachers who construct high-quality tests.

### **References**

Adodo, S.O. (2014). An evaluation of secondary school teachers' competency in evaluating students' cognitive and psychomotor achievement in basic science and technology (BST). *Journal of Emerging Trends. Trends in Education Research and Policy Studies (JETERAPS)* 5(3): 48-53. Jeteraps. <http://www.scholarlnkresearch.com> Retrieved on July 10, 2015.

Donkar, A.AJ; Osei-Tutu, E.S.J & Agama ,Amoah ,G ( 2020). A study of English Language Teachers' test construction competence in Nigeria. *International Journal of Educational Technology in Higher Education*, 17(1),1-19.

Aggarwal, J.C (2007). *Essentials of Examination System: Evaluation, Tests and Measurement* 4<sup>th</sup> edition. New Delhi: Vikas Publishing Pvt (ltd) A-22 sector Nonda (up) Jangpura.

Agu, N.A.; Chika, O.; & Aloysius, C. (2013). Measuring Teachers' Competencies in Constructing Classroom-Based Tests in Nigerian Secondary Schools: Need for test Construction Skill Inventory.10.5897/ERR12.219<http://www.academicjournals.org/journal/ERR/articleabstract/563A7405501.pdf>.

Aku, D.I; Agbo E.M; Agama, A.E (2020). A study of English Language Teachers' test construction competence in Nigeria.

Alice, Iroha, Idaka & Sam (2010). Competency in science, mathematics and Technology assessment: The case of primary school teachers in Cross River State Nigeria.

Amusa, B.A & Nwanko M.J (2021) Test construction Competence among secondary school teachers in Nigeria. Anastasi, A. & Susana, U. (1997). *Psychological Testing* 7<sup>th</sup> edition. USA: Pearson.

Anikweze, C.M. (2014). *Measurement and Evaluation for Teacher Education* 3<sup>rd</sup> edition. Ibadan: Constellation (Nig) Publishers.

Ariyo, A.O. (2015). An overview of classical test theory and item response theory in test development: *The Nigerian Journal of Educational Research and Evaluation*. Vol., 14, (3), 2015.

Asim, A. E; Ewi, E. E. & Eni, E. I. (2013) A diagnostic study of preservice teachers' competency in multiple-choice item development.

Babbie, E. (2005). *The basics of social research*. Canada: Thomson Wadsworth.

Magno, C. (2013) Standards of Teachers Competence on Student Assessment in phillipines.<http://www.researchgate.net/publication/277405210>.

Rufina. S.H, Abubakar, H.T, & Stephen, S.H (2015). Assessing Teacher Competence in Test Construction and Content Validity of Teacher Made Examination Questions in Commerce in Borno State, Nigeria, *Education*, vol.5no.5, [www.2015.pp](http://www.2015.pp),doi:10.5923/jedu.20150505.01. Retrieved on October 2, 2015.

Sidhu, K.S (2005). *New Approaches to Measurement and Evaluation*. New Delhi: Starling Publishers pvt A-59, Okhla Area, phase-11.

Ugodunluwa, C.A (2008). *Fundamentals of Educational Measurement and Evaluation*. Jos, Nigeria: Fab Educational Books.