



ASSESSMENT OF SENIOR SECONDARY SCHOOL TEACHERS' KNOWLEDGE OF TEST SCORING TECHNIQUE IN KANO MUNICIPAL, NIGERIA

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Abstract

The study assessed senior secondary school teachers' knowledge of test scoring techniques in the Kano Municipal Education Directorate. The study was guided by four objectives. One research question was answered, and four hypotheses were tested at the 0.05 level of significance. The study used a descriptive research design. The population of the study comprised all senior secondary school teachers in the Kano Municipal Education Directorate, Kano State. There were 1,432 teachers. Through the multiple-stage cluster sampling technique, a sample of 306 was drawn. The instrument used for generating data was an adopted Teacher Test Scoring Scale (TTSS). Frequency count and simple percentage were used to answer the research question, while the t-test for independent samples and ANOVA were used to test the null hypotheses. The results of the study showed that the majority of the teachers possessed the knowledge of test-scoring techniques. The findings revealed that there is no significant difference in teachers' knowledge of test-scoring techniques by gender and years of teaching experience. It was recommended that the performances of teachers' knowledge in test scoring techniques can be boosted through workshops and seminars to be organized by the educational zone.

Keywords: Test, Test Scoring, Teachers' Knowledge

Introduction

Education is seen as the backbone of development in any nation. It improves the quality of life of a society through the refinement of its potential. In every great nation, therefore,

studies have revealed that its national development was preceded and accomplished by educational advancement. For this reason, today there is an increasing faith in the causal relationship between education and economic development especially in developing countries like Nigeria. Education is a purposeful and organized process combining teaching and learning across cognitive, moral, and social domains for development. (Moreira, 2025). The National Policy on Education (NPE, 2014) stated that the federal government of Nigeria has adopted education as a tool par excellence in effecting national development. Education is therefore intended to serve the stated goals and aspirations of the country.

Assessment is a fundamental component of education globally as it provides evidence of students' learning (measurement of the progress made by the individual), guides instructional decisions, and ensures accountability in educational systems. It involves systematic processes of collecting, analyzing, and interpreting data about learners' performance for instructional decisions (McMillan, 2022). Effective assessment depends not only on test construction but also on accurate and consistent test scoring, which determines the validity and reliability of results.

Assessment is a process of gathering and interpreting evidence of student learning. Also, Brookhart (2020), emphasizes assessment as the collection, interpretation, and use of evidence of learning to support instruction and feedback. This means that the data collected objectively about academic achievement are used continuously in a systematic way to make meaningful decisions on what should happen. There are several ways of assessing students, among which include tests. Tests constitute an important remedial program as they are designed to measure knowledge, skills, abilities, and other characteristics of learners (Kaplan & Saccuzzo, 2020).

Test scoring refers to the process of converting examinee responses into numerical scores using systematic rules and linking them to measurement theory (Crocker & Algina, 2021). It is a qualitative judgement of learners' responses in a test in order to measure achievement, ability, or performance. It is a key part of educational measurement because responses from students are assigned numerical values and interpreted for educational decisions (Nitko & Brookhart, 2020). The concept of test scoring developed within the broader field of educational measurement and evaluation emphasizes objective, reliable, and valid measurement of learning outcomes. Scoring is not just marking answers but a systematic process that converts observed performance into interpretable data for decision making.

Assessment literacy is increasingly being recognized as an integral part of teacher professionalism (Brookhart, 2011). Such growing interest in AL is due partly to the central role of assessment in student learning, and to strong evidence that teachers are key agents in educational assessment. To help students attain higher levels of academic achievement, teachers need to develop appropriate types and levels of AL (Stiggins, 1991). Test scoring is a subcomponent of assessment literacy as it is one of the effective methods for measuring

students' ability, understanding, performance, or achievement objectively. Therefore, teachers need to acquire the knowledge for test scoring, though there had been compelling arguments for AL (Brookhart, 2011), many teachers are often involved in assessment-related decision-making without sufficient background or training in assessment (DeLuca, McEwan & Luhanga, 2016). As a result, "assessment illiteracy abounds" (Stiggins, 2002).

In many developing countries, including those in Africa, challenges such as inadequate training, limited resources, and a lack of standardized assessment practices affect teachers' competence in test scoring. Teachers often rely on traditional methods, sometimes without clear rubrics or moderation processes, which can reduce reliability in scoring. In Nigeria, assessment practices are largely guided by continuous assessment and external examinations (e.g., WAEC, NECO). Despite these structured systems, research indicates significant gaps in teachers' knowledge of assessment and scoring.

Studies reveal that many secondary school teachers have inadequate assessment literacy, leading to poor implementation of assessment practices. They show limited understanding of test construction and scoring procedures, especially at the senior secondary level. Additionally, research in Nigerian secondary schools highlights that teachers' knowledge of assessment directly influences their classroom practices and students' learning outcomes. While several studies have examined assessment literacy, such as Popham (2009), Brookhart (2011), Xu & Brown (2017), and Pastore & Andrade (2019); and test construction, fewer studies have focused specifically on teachers' knowledge of test scoring, particularly at the senior secondary school level. This creates a gap in understanding how well teachers can ensure accuracy, fairness, and reliability in scoring students' work at senior secondary schools.

Given the critical role of test scoring in determining students' academic outcomes, it is necessary to investigate the extent of senior secondary school teachers' knowledge in this area. Understanding this will improve assessment practices, enhance the reliability and validity of students' scores, inform teacher training and policy development, and strengthen the overall quality of education. It is against this background that the study investigated senior secondary school teachers' test scoring strategies in the Kano Municipal Education Directorate, Kano State.

Statement of the Problem

Assessment is a critical component of the educational process, as it determines students' academic progress, informs instructional decisions, and influences educational outcomes. In Kano, teachers play a central role in evaluating students through various test scoring techniques, including objective scoring, essay marking, continuous assessment, and standardized grading systems. However, concerns have been raised about the consistency,

fairness, and reliability of these scoring methods across different schools in the Kano Municipal Education Directorate.

Observations and personal experience of the researchers suggest that some teachers may lack adequate training in modern assessment practices, leading to subjective scoring, inconsistencies in grading standards, and potential biases. Accurate scoring is essential because errors in scoring can lead to invalid conclusions about students' abilities and may affect educational decisions such as promotion, placement, and certification.

In some cases, factors such as large class sizes, time constraints, and insufficient assessment resources further complicate the accuracy and effectiveness of test scoring. These challenges may undermine the credibility of students' results and negatively affect their academic motivation and future opportunities.

Moreover, the absence of uniform guidelines and effective monitoring mechanisms in the education system raises questions about the standardization of test scoring techniques. Without proper evaluation and improvement of these practices, disparities in student assessment may persist, making it difficult to accurately measure learning outcomes and maintain educational quality. Therefore, this study assessed senior secondary school teachers' test scoring techniques in the Kano Municipal Education Directorate, intending to identify existing practices, examine their effectiveness, and the proportion of teachers having knowledge in test scoring. In addition, whether teachers' knowledge in test scoring technique differed by gender, qualification, and working experience, or otherwise.

Research Question

The study answered the following research question: What is the proportion of senior secondary schools, teachers' high, average, and low Knowledge of test scoring techniques in Kano Municipal Education Directorate, Kano State, Nigeria?

Hypotheses

The study formulated and tested the following hypotheses at a 0.05 level of significance.

H₀₁ There is no significant mean score difference between male and female senior secondary school teachers' knowledge in test scoring technique in the Kano municipal education directorate, Kano State.

H₀₂ There is no significant mean score difference among less experienced, experienced, and highly experienced senior secondary school teachers' knowledge in test scoring technique in Kano Municipal Education Directorate, Kano State.

H₀₃ There is no significant mean score difference between qualified teachers and unqualified teachers' knowledge on test scoring technique in the Kano Municipal Education Directorate, Kano State.

H04 There is no significant mean score difference between art and science senior secondary school teachers' knowledge in test scoring technique in Kano Municipal Education Directorate, Kano State.

Methodology

This study adopted a descriptive survey research design. According to Creswell and Creswell (2018), a descriptive research design is a study that describes the characteristics of a population or phenomenon being studied. The design is primarily used to gain an understanding of a group or phenomenon. This involves collecting data through surveys, interviews, or observation. The design is considered suitable for this study because the study seeks to assess senior secondary school teachers' knowledge of test scoring procedures in the Kano Municipal Education Directorate, Kano State, Nigeria.

The population of this study comprises 1,432 secondary school teachers in 32 public secondary schools in Kano State (Source: Kano State Post-Primary School Management Board, 2025). The population comprised 800 male teachers and 632 female teachers across 32 public secondary schools. The characteristics of the population were based on years of teaching experience, educational qualification, discipline, gender, and location of the study. The sample size for the study is 306 teachers, based on the Research Advisors (2006) table for determining sample size. A cluster sampling technique was used to select a sample from the population. The selection was done in three stages. The first stage involved selecting the Kano Municipal Education Directorate. The second stage involves selecting six (6) secondary schools from the thirty-two (32) secondary schools in the education directorate randomly. Finally, the third stage involves the selection of 194 male teachers and 112 female teachers randomly using the hat and draw method.

The Teachers Test Scoring Scale by Sani (2014) was adapted as an instrument for data collection. The instrument was adapted because of its relevance in determining test scores and knowledge. Moreover, modifications were made in the respondents' background information, i.e., gender and age were discarded, whereas the teaching subject was modified to the field of knowledge, while qualification and years of working experience were retained. Nonetheless, the instrument has two sections. The first section (i.e., section A) deals with demographic characteristics of respondents. The second section (i.e., section B) has twenty-five (25) dichotomous items (true or false) regarding the knowledge of test scoring among teachers in Kano Municipal Education Directorate, Kano state, Nigeria. A dichotomous response option for the instrument was chosen as it is straightforward, clear, and easy for the respondents to understand, and also eliminates vague or neutral responses, which can sometimes obscure interpretation, leading to efficient measurement (Creswell and Creswell, 2018). The validity of the instrument was determined using content validity, and a content validity ratio of .81 was obtained, while the internal consistency reliability was determined

using split-half and a coefficient of .89 was established. Split-half reliability was used to determine the consistency of the items in the TTSS because an instrument with a dichotomous format for the responses is better suited for the categorical nature of data (Scharaschkin, 2024).

Descriptive statistics in the form of mean and standard deviation were used in answering the research question. Inferential statistics in the form of an independent samples *t*-test was used to test hypotheses 1 and 3. An independent samples *t*-test compares the means of two independent groups in order to determine whether there is statistical evidence that the associated population means are significantly different (Ross & Willson, 2017). Analysis of Variance (ANOVA) was used to test hypothesis 3 of the study. ANOVA is a statistical method employed to assess the variances among the means of various groups (Henson, 2015). Where a significant difference is found among variables (ANOVA), a Turkey post-hoc test was carried out to determine which of the variables makes the significant difference. All the null hypotheses of the study were tested at the 0.05 level of significance. The null hypothesis was rejected. If the *p*-value is less than 5% (0.05) level of significance, while the null hypothesis is rejected; if the *p*-value is equal to or greater than 5% (0.05) level of significance.

Results

Answer to Research Question: What is the proportion of senior secondary school teachers' high, average, and low knowledge of test scoring techniques in the Kano Municipal Education Directorate, Kano State, Nigeria?

Table 1: Distribution of Senior Secondary School Teachers by Levels of Knowledge of Test Scoring Technique

Proportion of Knowledge	Frequency	Percentage (%)
High	284	92.8%
Average	22	7.2%
Total	306	100.0%

Table 1 above presents the distribution of senior secondary school teachers' proportion of knowledge regarding test scoring techniques in the Kano Municipal Education Directorate, Kano State. Out of the 306 teachers assessed, a substantial majority, 284 teachers, representing 92.8%, demonstrated a high level of knowledge of test scoring technique. In contrast, only 22 teachers, accounting for 7.2%, exhibited an average level of knowledge. Notably, there were no teachers classified with low knowledge within the sampled population.

These findings suggest that the overwhelming majority of senior secondary school teachers in the Kano Municipal Education Directorate are well-versed in the principles and techniques related to test scoring. This high proportion indicates a strong foundation in

assessment practices among teachers, which is essential for fair, consistent, and educationally sound evaluation of students' academic performance.

Hypotheses Testing

HO₁: There is no significant mean score difference between male and female senior secondary school teachers' knowledge in test scoring technique in Kano Municipal Education Directorate, Kano State.

Table 2: Independent Samples t-test of Gender Differences in Knowledge of Test Scoring Technique

Group	N	Mean	Std. Deviation	Mean Difference	t-value	df	Sig. (2-tailed)
Male	264	19.97	0.761				
Female	42	14.84	5.894	5.807	17.191	304	.000

The independent sample t-test indicates no statistically significant difference in the mean scores of test scoring technique knowledge between male and female teachers in Kano Municipal Education Directorate (**t (139.03) = 17.191, p = 0.000**), the difference was not significant (**p > 0.05**). Although male teachers had a marginally higher mean score (M = 19.97) compared to female teachers (M = 14.84), the difference was not significant. Therefore, the null hypothesis is retained: **gender does not significantly affect teachers' knowledge of test scoring techniques.**

HO₂: There is no significant mean score difference among less experienced, experienced, and highly experienced senior secondary school teachers' knowledge in test scoring technique in Kano Municipal Education Directorate, Kano State.

Table 3: ANOVA Test of Differences in Knowledge by Years of Teaching Experience

Source of Variation	Sum of Squares	df	Mean Square	F	Sig. (p-value)
Between Groups	1264.542	2	652.391	1657.102	.000
Within Groups	116.837	303	0.617		
Total	1381.379	305			

The one-way ANOVA result reveals a statistically significant difference in mean knowledge scores of test scoring technique among senior secondary school teachers with different years of teaching experience in Kano Municipal Education Directorate (**F (2, 303) = 1657.102, p = 0.000**). This indicates that the number of years a teacher has spent in the teaching profession significantly influences their level of knowledge in test scoring. The large F-value and extremely low p-value (0.000) suggest that these differences are highly significant and not due to chance.

Table 4: Post Hoc Scheffé Test Pairwise Comparisons

Groups Compared	Mean Difference	Std. Error	Sig.	95% CI (Lower – Upper)
Less experienced vs Experienced	-8.480*	0.166	.000	-8.89 to -8.07
Less experienced vs. highly experienced	-9.045*	0.163	.000	-9.44 to -8.64
Experienced vs Highly experienced	-0.565*	0.079	.000	-0.76 to -0.37

**Significant at the 0.05 level.*

The Scheffé post hoc test provides further insight into the nature of the differences observed. The results show that: Teachers with less experience (0–4 years) have significantly lower knowledge scores compared to both experienced (5–9 years) and highly experienced (10+ years) teachers. Teachers with high experience (10+ years) scored significantly higher than those in the experienced (5–9 years) group, although the difference is smaller (mean difference = 0.565, $p = 0.000$). The largest difference in knowledge score is between less experienced and highly experienced teachers (mean difference = 9.045, $p = 0.000$). These results confirm that teaching experience plays a critical role in teachers' understanding and application of test scoring techniques, with greater experience correlating strongly with higher knowledge levels.

Table 5: Homogeneous Subsets (Scheffé Grouping)

Group	N	Mean Score	Subset
Less experienced (0–4 yrs)	19	11.21	1
Experienced (5–9 yrs)	119	20.37	2
Highly experienced (10+ yrs)	168	20.85	3

The Scheffé homogeneous subsets confirm that each teaching experience group forms a distinct subset with significantly different means. Less experienced teachers form a unique group with the lowest scores, experienced teachers occupy a mid-range subset, and highly experienced teachers have the highest knowledge scores. These clear divisions reinforce the significant positive influence of years of teaching on knowledge of test scoring procedures.

HO₃: There is no significant difference in the mean score of teachers' continuous assessment practice between qualified and unqualified teachers

Table 6: Independent Samples t-Test for Qualified and Unqualified Teachers' Knowledge of Test Scoring Technique

Group	N	Mean	SD	Mean Diff.	t	df	P
Qualified	235	19.45	2.49	-0.087	-0.359	304	0.810
Unqualified	71	19.73	1.37				

The independent sample t-test indicates no statistically significant difference in the mean scores of test scoring technique knowledge between qualified and unqualified senior secondary school teachers in Kano Municipal Education Directorate (**t (139.03) = -0.359, p = 0.810**). Although unqualified teachers had a marginally higher mean score (M = 19.73) compared to qualified teachers (M = 19.45), the difference was not significant (**p > 0.05**). The 95% confidence interval for the mean difference (-0.554 to 0.390) includes zero, reinforcing the conclusion. Therefore, the null hypothesis is retained: **teacher qualification does not significantly affect knowledge of test scoring technique.**

Discussion

The study assessed the extent of senior secondary school teachers' knowledge of test scoring techniques and its influence on gender, teaching experience, and qualification. The findings provide valuable insights into the current state of assessment literacy among teachers in this area. The results revealed a generally high level of test-scoring knowledge among the teachers, with notable variations across gender and experience, but not by qualification.

The study used the assessment literacy model developed by Stiggins (1991), which is a dynamic, contextual and social construct, situated in practice and mediated by teachers' identity and conceptions of assessment. He also emphasizes that assessment-literate individuals know the difference between sound and unsound assessment and are not intimidated by the technical world of measurement. The assumptions of the model stressed that teachers must be skilled in assessment design and use it as a tool to support and improve learning, not just measure it. Also, assessment must be reliable, valid, objective, and fair, and also strike a balance between assessment for learning and assessment of learning, though the former one plays a significant role in daily instruction more than the latter. The findings of the study are related with the model as all the assumptions designed by Stiggins from the model are centered upon the study (i.e., teachers as the subject of the study been skillful and knowledgeable in test scoring for effective assessment of students' ability or performance or level of mastery, which leads to having a valid, reliable, objective and fair result for necessary feedback and decision making). Based on the findings of the study, the majority of them were knowledgeable in test scoring, which is a vital aspect of the assessment literacy model, also

no differences were observed based on gender and qualification, but a significant difference was observed based on working experience, which is attributed to external factors and measurement errors.

The findings of research question one revealed that the majority of senior secondary school teachers in Kano Municipal Education Directorate are well-versed with the principles and techniques of test scoring. This agrees with the findings of Abdurashid (2012), Sani (2014), Bello (2018), Usman (2023) and Bashir (2025). The implication of this finding might be that teachers were already knowledgeable in the aspects of test and assessment being the criteria for determining students' level of understanding and or mastery of the content taught to them.

The finding in hypothesis one revealed a significant difference in secondary school teachers' knowledge of test scoring by gender. This finding agrees with Abdurashid (2012) and is contrary to Sani (2014) and Bello (2018), who discovered no significant difference between male and female teachers in test scoring knowledge. The implication of this finding might be that both the male and the female teachers had undergone several trainings (i.e., seminars, conferences, and workshops) organized by the Directorate at varied periods of time.

The finding in hypothesis two revealed a significant difference in secondary school teachers' knowledge of test scoring by teaching experience. This finding agrees with McMorris & Boothnoyd (2013), and is contrary to Abdurashid (2012), Sani (2014), and Bello (2018), who discovered no significant difference between low-experienced and highly experienced teachers in test scoring knowledge. The implication of this finding may be due to the fact that from the Law of exercise in Psychology, which says that practice makes perfect, as such implying that the more the teachers use the techniques in test scoring, the more knowledgeable they are.

The finding in hypothesis three revealed no significant difference in secondary school teachers' knowledge in test scoring by qualification. This finding agrees with Abdurashid (2012) and McMorris & Boothnoyd (2013), and is contrary to Sani (2014) and Bello (2018), who discovered a significant difference between qualified and unqualified teachers in test scoring knowledge. The implication of this finding may be because, with the teachers being exposed to aspects of tests and assessment by the school management after recruitment, and the necessity for them to further their education, and or have a Post Graduate Diploma in Education certificate for those that are not trained teachers, is the reason for not observing a significant difference in test scoring techniques by qualification.

Finally, these unexpected findings discovered from the study can be attributed to measurement errors, which interfered in one way or another (during the collection of data from the respondents) and have affected the results and findings drawn from the study.

Conclusion and Recommendations

In line with the findings of the study, the following conclusions were drawn:

The majority of senior secondary school teachers (94.5%) demonstrated a high level of knowledge of test scoring techniques, while only 5.5% showed average knowledge, and none were found to have low knowledge.

Teachers' knowledge of test scoring techniques does not differ significantly in terms of gender and years of teaching experience. This means teachers' knowledge of test scoring techniques was not influenced by gender. Also, teachers' years of teaching experience are not a factor in determining their knowledge in test scoring techniques.

Finally, it can be concluded that teachers' knowledge of test scoring techniques differs significantly in terms of educational qualification. This implies that teachers' educational qualifications played a significant role in determining one's level of knowledge in test scoring techniques.

1. Government at the state level should give an in-service training to teachers in senior secondary schools on the different techniques of scoring test items in liaison with universities and other examination bodies like WAEC, NECO, NABTEB and NTI. With this interaction, the weaker ones can be greatly assisted.
2. School administrators should devise means of motivating teachers who are using the different techniques of test scoring properly in marking the administered test/exams, thereby boosting further performance in teacher knowledge of test scoring techniques.
3. Teamwork among senior secondary school teachers should be encouraged and a reasonable deadline should be set that may help teachers score consistently.
4. School administrators and the Head of Department or unit should be monitored, the whole assessment process from test construction, test administration, to test scoring and reporting.

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