

Comparative Analysis of Transformed Continuous Assessment Scores of Private and Public Secondary Schools in Osun State

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Abstract

Non-uniformity of continuous assessment scores assigned by teachers or schools indicates that there is an intrinsic issue with its comparability standard. The study examined the transformed Continuous Assessment (CA) scores of Osun State Junior Secondary Schools (JSS) for better comparability of scores among private and public secondary schools. The study adopted the ex-post-facto research design. The study population was 33,552 which comprised all JSS Class III students during the 2010/2011 academic session in both private and public secondary schools in Osun State. The sample consisted of 1200 students selected using a multistage sampling technique. A proforma titled Continuous Assessment Scores Retrieval was used as an instrument to collect CA scores of the selected students in English Language and Mathematics. Data were analysed using percentages and Pearson's Product moment correlation statistics. Results showed that the transformed continuous assessment scores of private and public schools were above the mean score =0 and SD = 1 in Mathematics (62.70%) and English Language (66.0%). The results also showed that there was a significant positive relationship between the transformed continuous assessment scores and raw continuous assessment scores obtained by students in Mathematics and English Language ($r=1.00$; $p<0.05$). Results further showed that there was a significant difference in the transformed continuous assessment scores of private and public schools in Mathematics ($t=5.341$; $p<0.05$) and English Language ($t=4.395$; $p<0.05$). The study therefore concluded that transformed continuous assessment scores of private and public secondary schools in Osun State would be comparable if appropriate transformation models were used.

Keywords: Transformed Model, Continuous Assessment Scores, Private School, Public School

Introduction

The feedback used in the evaluation of students' learning which yields the impartial evidence needed for educational decision-making is provided through educational assessment. Therefore,

continuous assessment (CA) describes an iterative and cumulative testing procedure that happens as a student is studying. Continuous assessment is the process whereby teachers continuously evaluate pupils to receive input on the lessons they have learned during a course of study. It considers all of a learner's activities in the cognitive, emotional, or psychomotor domains as well as the extent to which students have learned. This is done using a series of tests that add up to the learner's final results rather than a single assessment (Obilor, 2021). The characteristics of C. A are systematic, comprehensive, cumulative, and guidance-oriented. Furthermore, the benefits of using CA in educational settings include: increasing student confidence in their knowledge and abilities; giving all students a chance to demonstrate their knowledge; encouraging learning for understanding; improving teaching; identifying which students need remediation and enrichment activities; and letting students know how well they are doing in their learning inform parents of their children's development; result in an overall evaluation; and ascertain what students know and are capable of (Obilor, 2021).

According to Olanigan, Adediwura, and Ogunsanmi (2022), teachers in Nigeria are required to generate their students' continuous assessment scores (CAS) as part of the continuous assessment process. The fact that the scores assigned to the CA are not uniform indicates that there is an intrinsic issue with standard comparability. The variations in teacher quality between schools or in the caliber of instruction and evaluation may be the cause of the non-uniformity in students' continuous assessment results, which varies between teachers and schools. Schools are categorized into Federal Government Colleges, Unity Schools, Science Colleges, Public Schools, Private Schools, and so on. The assumed best students would be admitted into the Federal Government Colleges or private schools while the better ones go to state/science colleges and good ones then go to old or grade one schools while the remaining students go to mushroom schools. This seems to create a superiority and inferiority complex among the schools and even among the students. Students' academic advancement as well as their future is significantly impacted by their assessment scores. As a result, just as crucial as the test itself is the requirement for standardization and setting these scores on a common scale to improve fairness and comparability as these comparisons are part of the judgment and decision-making process.

The continuous assessment scores must first be converted into a similar format (standard score) to compare two or more sets of scores. In their contributions, Adediwura and Adeoye (2016)

pointed out that raw scores are usually converted to a different scale to facilitate insightful analysis and interpretation. The most commonly used standard scores, according to Adediwura and Adeoye (2016), are Z and T scores, which quantify individual raw scores from the distribution mean in terms of the standard deviation of the distribution. Put another way, it stands for the distance between the mean and the standard deviation. Additionally, the standard score, also known as the Z-score, is useful for comparing scores from various normal distributions and for estimating the probability that a particular score will fall inside the desired distribution. Put another way, it stands for the distance between the mean and the standard deviation. Additionally, standardizing scores in a normal distribution and converting them into z-scores which show how well an individual performed in comparison to other test-takers in the norm group allows the standard score, also known as the Z-score, to be used to compare two scores from different normal distributions and calculate the likelihood that a given score will fall within the distribution (Ogunsanmi, 2023). Z-scores, which would fall to the far right of the normal distribution curve, normally sit between the extremes of the normal distribution curve, at +3 standard deviations and -3 standard deviations, respectively. As a result, negative z scores are smaller than the mean, and positive z scores are higher than the mean.

In research studies by Alonge (2004) and Gregroy, (2006), Z-scores are virtually equally negative and positive, making it highly challenging for non-test professionals to comprehend them. Also, when the Z-score is calculated, negative values and decimals might occur, which could yield problematic statistics that are difficult to understand and utilize for reporting purposes. They recommended further, a linear modification (transformation) of the scores into a more practical form to prevent misunderstanding. Through the transformed scores, raw scores can be meaningfully understood which facilitates comparison and explanation of the data. T-scores get rid of Z-score restrictions on decimals and negative values (Alonge, 2004; Gregroy, 2006). Adeoye, Babatimehin, and Adamu (2022) also noted in their study that since standard scores (z-scores) have a mean of zero and involve negative numbers, they can be confusing to people who have not studied statistics. Therefore, to get around this problem, researchers often transform standard scores to another scale that does not have negative values known as transformed standard scores or T-scores. T-scores are standardized scores with a mean of 50.00 and a standard deviation

of 10.00. In other words, the Z-score is one of the standard scores that is used to express how far the standard deviation is from the mean.

$$Z\text{-score} = \frac{\text{Raw score} - \text{Mean score}}{\text{Standard deviation}}$$

Since the introduction of the 6-3-3-4 system of education, one of the primary issues has been the comparability of the standards of continuous assessment scores. The practice of continual assessment and the disparity in scores generated seem to be a concern to all stakeholders. Other issues include inconsistent instrument administration, student characteristics, variations in scoring and grading techniques, and collation of the grade from continuous assessment. According to Okafor (2001), the ratio of continuous assessment marks to final examination marks varies from school to school and ranges from 10:90 to 30:70 to 50:50, respectively. Different instruments (assignments, quizzes, exams with varying degrees of difficulty, etc.) are used by teachers who teach the same topic to different students or at various schools to gather data on CA. How can we be certain that the 30% grade given to students in private schools and the 30% grade given to students in public schools are the same? there is a need for general standards if the marks awarded are to be comparable are suggested ways to lessen these flaws.

Students in junior secondary schools (JSS) get certificates based on their final grades in each subject from state exams and ongoing evaluations. According to studies such as (Okafor, 2001; Ayodele, 2012; Olanigan, Adediwura, & Ogunsanmi, 2022), there may be discrepancies in school assessment results, scoring methods, and grading that would make it impossible to compare standards, giving some children an unfair advantage over others. There should be a performance criterion that is considered acceptable and that does not establish low expectations for any students to harmonize these results. Furthermore, even though there are no consistent standards or guidelines by which such judgments are formed, certain uniform grades, such as A, B, C, D, E, and F, are assigned to scores. Additionally, some school registrars appear to falsify continuous assessment results before submitting them to ministries of education to be utilized alongside the JSS test for the issuance of a JSS certificate, either with or without the subject teachers' knowledge.

Ayodele (2012) and Adeoye, Babatimehin and Adamu (2022) also pointed out that there is a stark difference in secondary school educational quality that makes it challenging to compare grades from different schools. Even though the State Ministry of Education gives these schools

identical guidelines on how to run their institutions and follow the same curriculum. Alonge (2004) thought that before one could compare student's performance across subjects and schools, there is a need to process their raw scores in each subject. The author added that to facilitate meaningful analysis and interpretation, raw scores are usually transformed into other scales. Therefore, it is anticipated that raw scores of public and private schools' continuous assessments will be translated into scales to enable meaningful analysis, comparison, and interpretation. However, it's unclear the extent to which the Osun State Ministry of Education standardizes these results. Therefore, it is necessary to determine the variations in the converted continuous assessment scores that are sent to the Ministry of Education: hence this study. To achieve the specific objectives of the study, the following research questions were raised and hypotheses tested.

Purpose of the Study

The main purpose of the study is to provide information on the procedure for transforming continuous assessment scores for better comparability of scores among private and public secondary schools. The specific objectives of the study are to;

- i. examine the transformed continuous assessment scores of Osun State junior secondary schools;
- ii. determine the difference in the transformed continuous assessment scores of private and public schools in the State; and
- iii. examine the procedures used by Osun State Ministry of Education to transform the raw scores submitted to the Ministry.

Research Questions

- i. How far from the mean are the transformed continuous assessment scores of Osun State junior secondary schools?
- ii. What are the procedures used by the Osun State Ministry of Education to transform the raw scores submitted by the schools?

Research Hypotheses

- i. There is no significant difference between the transformed continuous assessment scores of private and public schools in the state.

- ii. The difference in the transformed C.A. scores of private and public schools in the State is not significant.

Methodology

The study adopted the ex-post-facto research design. The population for the study comprised all Junior secondary school Class III students in Osun State for the 2010/2011 academic session. The total population of the students in Osun State as of the 2010/2011 session was 33,552. The number of male students was 17,945 representing 53% of the total population, and the number of female students was 15,607 representing 47%. 1200 pupils who had completed continuous assessments in math and English made up the sample. To create a total of six Local Government Areas (LGAs) and 24 schools, two Local Government Areas (LGAs) were chosen from each of the three senatorial districts in Osun State, and four schools were chosen from each LGA. A simple random sampling procedure was used to choose 50 students from each school, making a total of 1,200 pupils. To obtain the English Language and Mathematics continuous assessment scores for the 2010–2011 session from the Osun State Ministry of Education, a Proforma with the title "Continuous Assessment Scores Retrieval Format" was employed. The following codes were used to categorize the students' exam results: 0 - 44 = F (Fail), 45 - 49 = P (Pass), 50 - 59 = C (Merit), 60 - 69 = B (Credit), and 70 - 100 = A. Data collected were analysed using the t-test, z-score, t-score, percentage, and Pearson Product Moment Correlation Statistics.

Results

Research Question 1: How far from the mean are the transformed continuous assessment scores of Osun State junior secondary schools?

To answer this question, the CA scores of students in Mathematics and English Language were transformed into Z-scores the transformed score was then used to determine how far above or below the mean in standard deviation units the raw scores lie as presented in Table 1.

Table 1: The distance of the raw score from the mean

School Type	MATHEMATICS				
	Fall Below the mean by 4 SD and Above	Fall Below the Mean by 2 to 3 SD	Fall Below the mean by 1 SD	Fall Above the Mean by 1 SD	Fall Above the Mean by 2 and above SD
Public School	0	1 (1.8%)	309(51.5%)	280(46.7%)	0
Private School	9(1.5%)	21(3.5%)	183(30.9%)	371(62.7%)	8(1.4%)
School Type	ENGLISH LANGUAGE				
	Fall Below the mean by 4 SD and Above	Fall Below the Mean by 2 to 3 SD	Fall Below the mean by 1 SD	Fall Above the Mean by 1 SD	Fall Above the Mean by 2 and above SD
Public School	0	11(1.8%)	283(47.2%)	306(51.0%)	0
Private School	9(1.5%)	20(3.4%)	164(27.7%)	390(66.0%)	8(1.4%)

Table 1 shows that in Mathematics while 46.7% and 62.7% of public and private school student's raw scores fall above the mean by one standard deviation, 0% and 1.5% of students' scores fall below the mean respectively. Also from Table, while 47.2% of public and 27.7% of private school students' scores in English Language fall below the mean by one standard deviation, 51.0% of public and 66.0% of private school students fall above the mean by one standard deviation. This shows that the CA scores of students in private schools are comparable while in the CA scores of students in public schools are not comparable.

Research Question 2: What are the procedures used by the Osun State Ministry of Education to transform the raw scores submitted to the Ministry?

To answer the research question, The procedure by Kolawole's (2005) was adopted that continuous assessment scores should be spread across the three years for students as follows; 5% for JSS I, 12.5% for JSS II 12.5% for JSS III and 70% for the state test. After following this procedure, the result showed that the Osun State Ministry of Education does not use transformation models such as t-score and z-score to transform the raw continuous assessment scores submitted by both private

and public secondary schools in the state. Therefore, the state only assigns a certain percentage of scores to junior secondary classes (JSS 1-3).

Hypothesis 1: There is no significant relationship between transformed continuous assessment scores and raw continuous assessment scores submitted by secondary schools in the State.

To test this null hypothesis, the transformed continuous assessment scores of each student were correlated with the raw score using Pearson Product Moment correlation (r) and the result is as presented in Tables 2 and 3.

Table 2: Relationship between transformed continuous assessment scores and raw continuous assessment scores submitted by secondary schools in the State

		Raw	Z- Score	T-Score	Predictive True-Score	Derived True-Score
Mathematics	R	1	1.000**	1.000**	1.000**	1.000**
Raw-Score	P		.000	.000	.000	.000
English Language	R	1	1.000**	1.000**	1.000**	1.000**
Raw Score	P		.000	.000	.000	.000
	N	1192	1192	1192	1192	1192

** . Correlation is significant at the 0.01 level (2-tailed).

The result as presented in Table 2 showed that there is a significant positive relation between the transformed CA Scores and the raw score obtained by students in Mathematics and English Language. Hence, the H_0 is rejected.

Hypothesis 2: The difference in the transformed C.A. scores of private and public schools in the State is not significant.

To test this hypothesis, the sampled students were sorted into private and public schools they belong to. The transformed C.A. scores were then compared using an independent t-test. The results are presented in Table 3.

Table 3: t-test showing the difference in transformed C.A. scores of private and public schools

Mathematics	School Type	N	Mean	Std. Deviation	t	df	
Z- Score	Public School	600	-0.152	.794	5.353	1190	<0.05
	Private School	592	0.154	1.153			
T-Score	Public School	600	48.477	7.939	5.340	1190	<0.05
	Private School	592	51.543	11.528			
Predictive True-Score	Public School	600	64.364	18.983	5.341	1190	<0.05
	Private School	592	71.694	27.565			
Derived True-Score	Public School	600	62.620	28.076	5.340	1190	<0.05
	Private School	592	73.462	40.769			
English Language							
Z- Score	Public School	600	-0.125	0.812	4.395	1190	<0.05
	Private School	592	0.127	1.147			
T-Score	Public School	600	48.745	8.121	4.395	1190	<0.05
	Private School	592	51.272	11.465			
Predictive True Score	Public School	600	64.832	19.575	4.395	1190	<0.05
	Private School	592	70.922	27.634			
Derived True Score	Public School	600	63.385	28.937	4.395	1190	<0.05
	Private School	592	72.388	40.851			

The result as presented in Table 3 showed that the difference in the transformed CA of private and public schools' students for both Mathematics and English Language is significant at 0.05 level significance. Therefore, the hypothesis is rejected. There was a significant difference between transformed continuous assessment scores in Mathematics and English language between private and public schools.

Discussion of Findings

Examining the transformation of continuous assessment scores for private and public secondary schools in Osun State would involve a comparative examination of the findings from both types of schools. How distant from the mean was the converted continuous assessment score of Osun State Junior Secondary Schools? was the first study question. The outcome showed that

the results were equivalent in both disciplines, with the transformed continuous assessment scores of private and public secondary schools being above the mean score in mathematics and English Language.

The findings of research question two, which looked at the methods the Osun State Ministry of Education used to transform the raw scores submitted to the ministry, showed that the ministry does not use transformation models like the t-score and z-score to transform the raw continuous assessment scores submitted by the state's private and public secondary schools. Only a specific percentage of scores—5% for JSS I, 12.5% for JSS II, and 12.5% for JSS III—were distributed by the Ministry to the junior secondary classrooms (JSS 1-3). The link and difference between the transformed continuous assessment scores from private and public secondary schools in Osun State are determined by hypotheses one and two. The outcome showed that the converted continuous assessment scores in the chosen disciplines (English Language and Mathematics) in the state of Osun showed a significant difference. This is an indication that the transformation models i.e. True score, Predictive true score, Z-score, T-score, and Derived true score functioned well. This finding is supported by the findings of Ayodele (2012) in a study on the transformation of continuous assessment scores among schools in Nigeria that there was a significant difference between transformed continuous assessment scores in English Language and Mathematics among the sampled schools. This is also supported by the findings of Adeoye, Babatimehin, and Adamu (2022), where a difference in the transformed C A of rural and urban school students for both Mathematics and English Language is significant. This finding is also in line with the report of Alonge (2004), who stresses that to facilitate meaningful analysis and interpretation, raw scores are transformed into other scales. This finding may have nothing to do with Abbas's (2000) observation that the results of continuous assessments may not be an accurate representation of students' abilities. Hence, a substantial result was reached when the true score, predicted true score, and derived true score were utilized to change continuous assessment results for the chosen school subjects (English language and Mathematics) throughout the state.

Conclusion

The study concluded that transformed continuous assessment scores of private and public schools in Osun State are comparable if transformation models are used to transform the raw scores submitted by secondary schools to the Ministry of Education.

Recommendations

Based on the findings, it was recommended that:

- i. Teachers should work harder to produce continuous assessment results that are accurate and valid.
- ii. Subject teachers ought to get together regularly to discuss the strategies and tactics to be employed in creating uniform continuous assessment tools for both public and private schools, as well as for homogeneity at the state level.
- iii. It is important to provide subject teachers with training on how to convert continuous assessment results.
- iv. Ministries of Education (continuous assessment units) and exam organizations must implement the usage of True scores for the conversion of continuous assessment results that are submitted to them as comparability standards.

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