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Relationship Between Continuous Assessment and Examination Scores in Educational Statistics in the Department of Education, Benue State University Makurdi.

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Abstract

The relationship between continuous assessment (CA) and end-of-semester examination scores is a critical area of investigation in educational assessment. Continuous assessment serves as a formative tool that gauges students' understanding and progress throughout a course, while end-of-semester examinations are summative assessments that measure cumulative knowledge and performance. Investigating this relationship not only provides insight into students' academic development but also informs instructional strategies, offering educators a foundation for refining teaching methods, improving student engagement, and enhancing overall educational performance. This paper investigates the relationship between continuous assessment (CA) scores and examination scores among undergraduate students in Educational Statistics at Benue State University, Makurdi. The primary objective is to assess whether CA scores can predict examination outcomes and to determine if this relationship varies based on gender. Using a correlational research design, the study sampled 153 students from a population of 291 level 300 students, selected through multi-stage cluster sampling. Data analysis was conducted using descriptive statistics and Pearson Product Moment Correlation (PPMC). The findings reveal a significant positive relationship between CA scores and examination outcomes, confirming that CA scores can effectively predict students' examination performance. Furthermore, the study found no significant variation in the relationship between CA and end-of-semester examination scores based on gender. These results underscore the importance of continuous assessment as a predictor of academic performance. The paper concludes by recommending that lecturers emphasize the importance of CA to students and that students be guided and encouraged to maintain consistent effort throughout the semester.

Keywords: *Continuous Assessment, Examination Scores, Educational Statistics, Correlational Research, Undergraduate Students, Predictive Relationship*

1. Introduction

In the field of education, continuous assessment (CA) and examinations are two primary methods used to evaluate student learning. CA provides ongoing feedback on student performance, while examinations are often used to assess cumulative knowledge at the end of a course. Dennis, Stockall & Lynch (2012) observed that assessment is very important in teaching and learning process; through assessment feedback could be provided to both students and teachers. Aladenusi (2010) observed that assessment is a central element in the overall quality of teaching and learning. The relationship between these two forms of assessment is crucial as it can provide insights into the effectiveness of CA in predicting final examination outcomes.

In Nigerian higher institutions, formative assessments (continuous assessments) are conducted by lecturers during the semester while lectures are ongoing, and summative assessments (semester exams) are conducted at the end of the semester. The cumulative scores from both formative and summative assessments are used to calculate students' grade point averages (GPA). However, lecturers often observe that some students who perform well in continuous assessments perform poorly in the final exams. This discrepancy may be attributed to Nigeria's examination-focused education system, which has been entrenched since the inception of formal education. Teaching and learning are primarily geared towards passing final exams, often referred to as "teaching to the test." This issue is exacerbated by the fact that students' promotion or advancement to the next academic level is based on their exam grades. Greany and Kellaghan (2005) argue that this type of assessment is subjective, informal, immediate, ongoing, and intertwined with the learning process. Unfortunately, this approach encourages rote memorization and cramming of information rather than the development of problem-solving skills.

The introduction of continuous assessment system in the Nigerian educational system was based on the following Federal Ministry of Education (1985:23) handbill on continuous assessment, which stated that to: have something to report to parents and to some other interested persons; identify the level of ability, achievement and effective development for various individuals and group of students; diagnose learning difficulties in individuals as well as strengths and weaknesses in group performance for the purpose of improving instruction; assess gains in achievement on co-operatively developed standardized instrument in evaluation of some locally introduced innovative program; and assess special/attitude on the interest of students for counselling purposes.

However, experience has indicated the following as some of the problems of continuous assessment; record keeping, facilities for the proper implementation of continuous assessment and continuity of record. Therefore, to really project the ability of each student, there is a need for a valid and reliable assessment of the student

that would be unbiased. This study seeks to evaluate the relationship between CA scores and examination scores among undergraduate students in Educational Statistics. The study is particularly focused on students within the Department of Education at Benue State University, Makurdi during the 2018/2019 academic session. By analyzing this relationship, the study aims to provide educators and policymakers with valuable insights that can enhance student assessment practices and improve academic outcomes.

2. Literature Review

The application of assessment methods for the overall evaluation of educational programmes is indispensable and one of the interesting and positive features of assessment is its ability to predict future performance and provide bases for comparison and decision as to the level of learners' progress. Different studies have been carried out to examine likely relationship between continuous assessment scores and examination scores, while some of these studies were foreign-based, others were carried out locally. For instance, Okwu and Orum (2012) carried out a research on effect of continuous assessment scores on the final examination scores obtained by students at the Junior Secondary School (JSS) level in Mathematics. They opined that continuous assessment approach has many advantages over the short method of assessment. Wangara (2015) used a sample of 217 out of the total population of 518 subjects from Bayero University, Kano Department of Education. Using the Pearson Product Moment Correlation Coefficient (ρ), Wangara (2015) observed there is no relationship between continuous assessment and end of semester examination scores in the Department of Education Bayero University, Kano.

Saliu and Musa (2017) evaluated the impact of university mode of entry on the academic performance of Architecture Students in Ahmadu Bello University. Data was collected from the Department of Architecture, Ahmadu Bello University Zaria on the performance of 1902 students from two sessions which covers 20 sets of Course-Credit System. It was then analysed using One-way ANOVA technique with significance threshold of 0.05, bar charts, column charts, graphs and tables. The study rejected the null hypothesis and concluded that, the Impact of University Mode of Entry on the Academic Performance of Architecture Students is statistically significant.

Sangoniyi and Gbolagade (2022) investigated the relationship connecting continuous assessment and examination scores in Mathematics in South-West Nigeria Colleges of Education. Ten public Colleges of Education and six state Colleges of Education were randomly sampled for the study. The results indicated that there was no significant relationship between continuous assessment and final examination grade scores of Mathematics students based on gender. However, a significant relationship was found between continuous

assessment and final examination grade scores based on institution ownership. Among other recommendations, the study suggests that continuous assessments should be given high importance, regardless of students' gender or the ownership of the institution.

Recently, Egede and Omiegbe (2023) used descriptive/correlational research design to investigate the relationship between continuous assessment scores and examination scores of students motivated to attend lectures in College of Education, Agbor, Delta state, Nigeria. The sample comprised 2,214 students across three academic sessions. Pearson's product-moment correlation was employed to examine the relationship between their examination scores and corresponding continuous assessment scores for each course during each session. The results showed that all correlation coefficients were positive and statistically significant at the 0.05 level, indicating a consistent and meaningful positive relationship between continuous assessment scores and examination scores for every course, session, and the overall sample. Based on these findings, the study advocates for a more practical application of continuous assessment to enhance both cognitive and non-cognitive aspects of students' performance in courses at tertiary institutions.

This paper differs from existing studies in terms of location, population, samples, sampling technique, sessions and courses. Therefore, it is hope that it will contribute to the existing body of knowledge.

3. Methodology

3.1 Research Design

The design used in this paper is correlational design. Correlational designs are procedures in quantitative research in which the investigators measure the degree of association (or relation) between two or more variables or sets of scores using the statistical procedure of correlational analysis (Cohen, Manion & Morrison, 2007).

The study employed a correlational research design to investigate the relationship between CA scores and examination scores. This design is appropriate as it allows for the examination of relationships between two or more variables without manipulating them.

3.2 **Population and Sample**

The population of the study comprised all level 300 undergraduate students in the Department of Education during the 2018/2019 academic session, totaling 291 students. A sample of 153 students was selected using a multi-stage cluster sampling technique, ensuring a representative subset of the population.

In selecting individual student, systematic sampling strategy was employed. The formula below was used to determine the proportion of the sample size.

$$P.S.S = \frac{TCC}{TP \times SS} \tag{3.1}$$

where *P.S.S* = population of the sample size, *TCC* = total population of each course combination, *TP*= total population of the study, and *SS* = sample size

3.3 **Data Collection and Instrumentation**

Data on students' continuous assessment scores and examination scores were collected from departmental records. The data were then categorized and prepared for statistical analysis.

3.4 **Procedure for Data Analysis**

Descriptive statistics were used to summarize the data, providing an overview of the distribution of scores. Pearson Product Moment Correlation (PPMC) was employed to test the different hypotheses, examining the strength and direction of the relationship between CA scores and examination scores.

The formula for computing the PPMC is given as follows

$$\rho = \frac{\sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{(x_i - \bar{x})^2 (y_i - \bar{y})^2}} \tag{3.2}$$

where ρ = PPMC, *x* and *y* are any two variables whose relationship is to be examined.

4. **Results**

The data obtained from the field work were basically scores on Continuous Assessment (CA) and End of Semester Examination of students in the Department of Education, Benue State University. The data were then summarized, organized and presented in tables.

Table 4.1: Raw Scores Summary of Continuous Assessment 2018/2019

Class Interval	Frequency	Cumulative Frequency
35-39	11	11
30-34	51	62
25-29	43	105

20-24	34	139
15-19	12	151
10-14	2	153
Total	153	

Table 4.2: Raw Scores Summary of Examination 2018/2019

Class Interval	Frequency	Cumulative Frequency
50-54	28	28
45-49	72	100
40-44	32	132
35-39	17	149
30-34	4	153
Total	153	

The maximum Continuous Assessment score is 39 and the minimum Continuous Assessment score is 13. Table 4.1 revealed that 11 students scored between 35-39 marks, 51 scored between 30-34 marks, 43 scored between 25-29 marks, 34 scored between 20-24 marks, 12 scored between 15-19 and 2 of the students scored between 10-14 marks respectively. The summary of end of semester examination scores as shown in Table 4.2 indicates that the maximum exam score is 54 and the minimum exam score is 30. Likewise, 28 students scored between 50-54 marks, 72 scored between 45-49 marks, 32 scored between 40-44 marks, 17 scored between 35-39 marks and 4 of the students scored between 30-34 marks.

4.1 **Relationship Between CA Scores and Examination Scores**

The analysis in Table 4.3 revealed a significant positive correlation (0.725) between continuous assessment scores and examination scores among the students. This indicates that students who perform well in their CA are likely to also perform well in their examinations.

Table 4.3: **Correlation between CA Scores and Examination Scores**

		CA	Exams
CA	Pearson Correlation	1	.725**
	Sig. (2-tailed)		.000
	N	153	153
Exams	Pearson Correlation	.725**	1
	Sig. (2-tailed)	.000	
	N	153	153

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4.2 Gender Variations

Two Pearson product moment correlation coefficients have been computed. The first shows the association between the continuous assessment score and examination score for male students while the second shows the association between the continuous assessment score and end of semester examination score for female students (see Table 4.4).

Both male and female students exhibited similar patterns in how their CA scores correlated with their examination outcomes. In particular, there is strong positive correlations between the CA and exams scores across the two genders where ρ was found to be 0.747 and 0.708 for male and female respectively. Moreover, the relationships are statistically significant ($p = 0.000 < 0.05$). Thus, there is no variation between gender in respect to the relationships observed between continuous assessment scores and examination scores among the students of Department of Education, Benue State University.

Table 4.4: Correlations between CA Scores and Examination Scores across Gender

Variables	Gender	N	Df	R	Sig. value (*P*)	Remarks
CA/Exams	Male	83	81	.747**	.000	Significant
CA/Exams	Female	70	68	.708**	.000	Significant
Total		153				

4.3 Program Variations

Similarly, Table 4.5 shows that there is strong positive correlations between the CA and exams scores across the two programmes where ρ was found to be 0.671 and 0.840 respectively. Moreover, the relationships are statistically significant ($p = 0.000 < 0.05$). This suggests that the predictive value of CA scores is consistent across various educational tracks within the Department of Education.

Table 4.5: Correlations between CA Scores and Examination Scores across Programmes

Variables	Programmes	N	Df	r	Sig. value (*P*)	Remarks
CA/Exams	Education Art	104	102	.671**	.000	Significant
CA/Exams	Education Science	49	47	.840**	.000	Significant
	Total	153				

4.4 **Mode of Entry Variations**

In contrast, a significant variation was observed based on the mode of entry into the university. Students who entered the university through direct entry exhibited a different relationship between their CA and examination scores compared to those who entered through the standard university matriculation process.

Table 4.6: Correlations between CA Scores and Examination Scores across Mode of Entry

Variables	Programmes	N	Df	r	Sig. value (*P*)	Remarks
CA/Exams	UTME (JAMB)	108	106	.717**	.000	Significant
CA/Exams	Direct Entry (D.E)	45	43	.649**	.000	Significant
	Total	153				

4.5 **Discussion**

The first major finding indicates a significant relationship between students' continuous assessment scores and their examination scores in Educational Statistics. The findings of this study underscore the importance of continuous assessment as a predictor of final examination performance. The strong correlation between CA scores and examination outcomes suggests that CA can be a valuable tool for identifying students at risk of underperforming in their exams. This result aligns with the study by Aina and Adedo (2013), who researched the correlation between continuous assessment and academic performance in Lafiagi, Kwara State, Nigeria, concluding that there was a strong correlation between continuous assessment and students' academic performance. Similarly, the study supports Adebule (2014), who found a significant relationship between junior secondary school certificate examination scores and continuous assessment scores among junior secondary school students in Ekiti. The consistency between the current and previous studies may stem from teachers' emphasis on the importance of continuous assessment and students' preparation for both assessments and exams. However, this study contrasts with the findings of Wangara (2015), who reported no relationship between continuous assessment and end of semester examination scores in the Department of Education at Bayero University, Kano. The discrepancy could be due to differences in location and student levels.

The second key finding shows no significant variation across gender in the relationship between continuous assessment and examination scores among students in Educational Statistics at Benue State University. The lack of significant variations across gender and academic programs indicates that CA is a reliable predictor of examination performance regardless of these variables. This finding supports previous research by Wangara (2015), Kolawole and Ala (2014), and Okwu and Orum (2012), all of whom found no significant differences

in the relationship between continuous assessment and academic performance between male and female students. This suggests that gender does not influence the relationship between continuous assessment and examination outcomes. The study reaffirms the advantages of continuous assessment over short-term assessment methods, as it provides a more comprehensive and representative evaluation of students' overall abilities.

The results from analysis on different programmes revealed that there is no significant variation across programmes in the relationship between continuous assessment scores and examination scores in Educational Statistics among students of the Department of Education, Benue State University. The study suggests that differences in academic programs do not affect the correlation between continuous assessment scores and examination scores, as students' CA scores across all programs consistently correlate with their semester examination scores. This indicates that the relationship between CA scores and examination performance remains stable, regardless of the academic programme.

Furthermore, the findings on modes of entry suggests that the modes of entry into the university does influence the relationship between CA scores and examination outcomes. This result can be compared to the findings of Saliu and Musa (2017), who studied the impact of university entry modes on the academic performance of Architecture students at Ahmadu Bello University. Their study concluded that the mode of entry had a statistically significant effect on academic performance, highlighting that different groups of students may benefit from tailored academic support and assessment strategies.

5. Conclusion

This study concludes that continuous assessment scores are a strong predictor of examination scores among undergraduate students in the Department of Education, Benue State University, Makurdi. While the predictive relationship is consistent across gender and academic programmes, variations based on mode of entry highlight the need for differentiated assessment strategies. The paper thus recommends that lecturers take CA seriously as it plays a crucial role in predicting students' final examination scores. Additionally, counselors, parents, and university management should provide the necessary support to students to enhance their performance in both CA and examinations.

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