
Improving Biology Education Students Assessment Policy and Practice in Using Digital Assessment

BY

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Abstract

This study examines biology education students the integration of digital assessment methods hold significant promise for enhancing both assessment policy and practices. This research investigates the enhancement of secondary education assessment policy and practice in Enugu Urban using digital assessment. The research utilized a non-experimental design of descriptive research type. The population for the study consisted of 1,797 teachers of 31 biology students schools in Enugu Urban. Eleven schools were randomly drawn from 31 biology students using simple random sampling. Taro Yamene's formula was used to determine the sample size of 327 teachers. From these drawn schools, the sample of the 327 teachers was drawn using stratified random sampling. Three research questions aligned with the study's objectives, guiding the investigation. Instrument for data collection was a well-structured questionnaire. Two specialists in Educational Research, Measurement and Evaluation validated the questionnaire. The questionnaire was also tested for reliability using Cronbach Alpha and the reliability coefficient was 0.83. The data collected were analyzed using relative frequency. The findings from the study indicated that digital assessment enhances biology education assessment policy and practice in Enugu Urban. It was recommended that the study findings be made available to the Enugu State Ministry of Education. It was also recommended among others that digital assessment should be introduced in schools in Enugu Urban and teachers be trained on how to integrate digital assessment into assessment processes.

Keywords: Assessment Policy, Assessment Practice, Digital Assessment

Introduction

Education plays a pivotal role in the socio-economic development of any nation. In Nigeria, as in many other countries, the quality of education directly impacts individual growth, societal progress, and national development. To enhance the quality of secondary education, it is crucial to focus on assessment policies and practices that promote effective teaching and learning.

Enugu State, located in southeastern Nigeria, grapples with challenges in its secondary education system. These challenges include inadequate infrastructure, teacher quality disparities, curriculum implementation gaps, and management issues. Educators and policymakers are increasingly turning to digital assessment. Assessment policies shape how student learning is evaluated. These policies influence the design of examinations, grading criteria, and the overall assessment framework. Hence, in Enugu State its assessment policies and practices align with the curriculum, ensuring that what is taught is what is assessed. This approach includes both objective assessments (focusing on students' knowledge, skills, and understanding of the subject matter) and continuous assessment (incorporating ongoing assessments beyond final exams). (Enugu State Ministry of Education, 2024).

Assessment practices are the overall approaches used for evaluating students' learning, which include a broad range of activities and procedures, both formal and informal ways of assessing students' performance. The Enugu State Ministry of Education employs a variety of assessment methods including written examination, practical assessments, projects, and oral exams. These methods cater to diverse learning styles and aim to balance assessing essential knowledge with encouraging critical thinking and problem-solving skills (Enugu State Ministry of Education, 2024). These assessment methods are specific techniques which are used by secondary schools in the Enugu Urban to measure students' achievement. Assessment is not just about grading; the goal is to provide constructive feedback to aid students' growth and improvement. Quality assurance is an integral part of assessment practices in Enugu State's secondary education system. A study assessed quality assurance practice in Enugu state secondary schools and the key practices identified include provision of infrastructural facilities, recruitment of qualified teachers, secondary school curriculum implementation, and effective leadership management (Nwite & Okpalanze, 2017). These practices collectively contribute to the assessment process by creating a conducive environment for student learning and growth. These practices ensure schools maintain high standards and provide effective learning experiences for students. Ogwuiké and Iheonu (2021) in a study noted that there are challenges which impact assessment practices in Enugu State secondary education, such as lack of effective supervision which affects curriculum implementation, teacher performance, infrastructure maintenance, inadequate governmental supervision, misaligned curricula, teacher remuneration issues, and poor learning environments (Ogwuiké and Iheonu 2021).

Digital assessment, also known as e-assessment or electronic assessment refers to the use of technology in evaluating student learning outcomes. Digital assessment involves delivering assessments, tests, surveys, and other measures through digital devices such as computers, tablets, and mobile phones (Issayeva, 2024). While digital technologies offer opportunities for effective assessment, they also pose challenges. According to the Organization for Economic Cooperation and Development (OECD, 2024), using digital technology poses challenges to teachers when they try to design pedagogically sound and responsible digital assessment, and ensuring fairness, security and accessibility in online assessment. Ethical questions may also emerge with regards to inequalities because not all teachers and students have the necessary technological devices or software (Vidal, 2023).

However, most teachers and students use Androidphones. Digital assessment can be effectively done with their android phones.

The implementation of assessment practices directly impacts student outcomes. Traditional pen-and-paper assessments are prevalent in the Enugu Urban secondary education system. This is done through continuous assessment whereby a test is administered to the students either weekly or monthly. The continuous assessment test is designed to measure the cognitive abilities of students, and most often the affective and psychomotor domains are not considered. The continuous assessment practice which is done through the pen-and-paper test may not fully capture students' abilities or provide timely feedback. Traditional paper-based assessment is time-consuming to administer and grade and sometimes lacks efficiency and accuracy. Integrating technology can help teachers create more engaging and personalized assessments leading to better learning outcomes for students. Digital assessment involves leveraging technology to evaluate students' performance, provide timely feedback, and enhance the overall assessment process. By integrating digital assessment methods, Enugu Urban secondary education can enhance the accuracy, efficiency, and fairness of evaluating students' performance. This shift aligns with global trends and recognizes the potential of technology to transform education. Digital tools will allow for automated grading, reducing teacher workload and minimizing errors. When teachers use only traditional paper-based assessments, students are devoid of the knowledge of digital tools. Familiarity with digital tools during secondary education prepares students for real-world scenarios. It is based on this framework that the researcher seeks to study the intersection of assessment policy, practice, and digital innovation within Enugu State's secondary education system, using Enugu Urban as the area of study.

The purpose of the study was to examine how the secondary education assessment policy and practice in Enugu Urban can be enhanced using digital assessment.

The study specifically examined:

1. The assessment policies of secondary education in Enugu Urban.
2. The assessment practices of secondary education in Enugu urban.
3. The digital assessment methods that can enhance the assessment policies and practices of secondary education in Enugu Urban.

The study was guided by the following research questions:

1. What are the assessment policies of secondary education in Enugu Urban?
2. What are the assessment practices of secondary education in Enugu urban?
3. What are the digital assessment methods that can enhance the assessment policy and practices of secondary education in Enugu Urban?

Method

The population for the study comprised 1,797 teachers of 31 secondary schools in Enugu Urban (Source: Planning Research and Statistics, PPSMB 2024). A sample of 327 teachers was used. Taro Yamene Formula was used to determine the sample size, while the multistage sampling method was used to select the schools and the teachers. Initially, simple random

sampling was used to draw 11 schools from a total of 31. Subsequently, stratified random sampling was employed to draw 327 teachers from the 11 schools. This approach ensured a representative and unbiased sample of schools and teachers for this study. In alignment with the purpose of the study, three research questions were formulated and answered. The study was conducted using a descriptive research design, which is non-experimental. Data were gathered through a questionnaire titled “Assessing Policy, Practice, and Digital Assessment in Enugu urban Secondary Education” (APPADEUSE), specifically formulated for this research. The researcher employed the help of five research assistants in the distribution of the questionnaire to the target sample. The instrument was validated by two specialists in Educational research, Measurement and Evaluation, Godfrey Okoye University, Enugu. The instrument was subjected to a reliability test through the Cronbach Alpha procedure to determine its internal consistency with a reliability coefficient of 0.83. All the questionnaires were retrieved and used for data analysis. Relative frequency was used to analyze the data collected. The proportion expressed as a percentage provided valuable insights into the prevalence of the responses. The researcher adopted the following percentage proportions for analyzing the results:

1. Relative frequencies between 0.10 and 0.29 indicate a low occurrence.
2. Proportions from 0.30 to 0.69 suggests a moderate occurrence.
3. Relative frequencies between 0.70 and 0.90 represent a high prevalence.

Results

Table 1: Frequency distribution of the assessment policies of secondary education in Enugu Urban.

S/N	What is the current assessment policies of Enugu State Ministry of Education?	SA	A	D	SD	Total
1.	Students are assessed objectively, focusing on their knowledge, skills, and understanding of the subject matter.	83(25.38)	201(61.47)	27(8.26)	16(4.89)	327
2.	Teachers do not focus on their knowledge, skills and understanding of the subject matter.	12(3.67)	44(13.46)	79(24.16)	192(58.72)	327
3.	Students are assessed with formative assessment during the learning process in Enugu Urban.	40(12.23)	57(17.43)	156(47.71)	74(22.63)	327
4.	Students are assessed only with summative assessment in Enugu Urban.	26(7.95)	97(29.66)	115(35.17)	89(27.22)	327
5.	Teachers incorporate continuous assessment in evaluating students' performance in Enugu Urban.	213(65.14)	101(30.89)	8(2.45)	5(1.53)	327
Total		374	500	385	376	
Average		75	100	77	75	
Percentage		114.4%	152.9%	117.8%	114.1%	

Table 1 showed that out of the total respondents of 327, 75 (114.4%) strongly agreed, 100 (152.9%) agreed, 77 (117.8%) disagreed, and 75 (114.1%) strongly disagreed, with the assessment policies of secondary education in Enugu Urban. The result of the data showed a

very high prevalence in the response category agreed (A). This indicates that the assessment policies of secondary education in Enugu Urban have a high prevalence.

Table 2: Frequency distribution of the assessment practices of secondary education in Enugu Urban

The assessment practices of Enugu Urban secondary schools	SA	A	D	SD	Total
6. Students are assessed with only written exams.	67(20.49)	129(39.45)	106(32.42)	25(7.65)	327
7. Students are assessed with only continuous assessment tests.	35(10.70)	49(14.98)	187(57.19)	56(17.13)	327
8. Teachers use practical assessment to assess students.	5(1.53)	98(29.97)	173(52.91)	51(15.60)	327
9. Teachers do not use projects to assess students.	104(31.80)	122(37.31)	31(9.48)	70(21.41)	327
10. Assessment practices do not align with the curriculum.	37(11.31)	72(22.02)	103(31.50)	115(35.17)	327
11. Assessment process is not transparent with information about assessment dates and formats.	85(25.99)	166(50.76)	44(13.46)	32(9.79)	327
12. Continuous assessment practice is paper based.	119(36.39)	127(38.84)	70(21.41)	11(3.36)	327
Total	452	763	714	820	
Average	64.6	109	102	117.14	
Percentage	138.21%	233.33%	218.4%	110.11%	

Table 2 showed that out of the total respondents of 327, 64.6 (138.21%) strongly agreed, 109 (233.33%) agreed, 102 (218.4%) disagreed, and 117.14 (110.11%) strongly disagreed, with the assessment practices of secondary education in Enugu Urban. The percentage of respondents who strongly agreed is high (138.21%) indicating high prevalence and the percentage of those who agreed is very high (233.33%) indicating a high prevalence of positive response. The percentage of respondents who disagreed is high (218.4%) suggesting a moderate occurrence of negative responses while the percentage of those who strongly disagreed is moderate (110.11%), falling within the moderate occurrence range. SA and A responses have high prevalence showing the assessment practices of secondary education in Enugu Urban.

Table 3: Frequency distribution of digital assessment methods that can enhance the assessment policies and practices of secondary education in Enugu Urban

Digital assessment methods can enhance policies and assessment practices of students	SA	A	D	SD	Total
13. Short online quizzes that measure learners' comprehension.	102(31.19)	194(59.33)	29(8.87)	2(0.61)	327
14. Digital assignment that can help assess specific skills.	197(60.24)	118(36.09)	9(2.75)	3(0.92)	327
15. WhatsApp are used for students' feedback and reflection.	199(60.86)	121(37.00)	7(2.14)	-	327
16. WhatsApp use of assessment enhance accessibility and low cost.	100(30.58)	201(61.47)	24(7.34)	5(1.53)	327
17. teachers create exit tickets using Google Forms to access students' answers from any location and at any time.	68(20.80)	235(71.87)	24(7.34)	-	327
18. Teachers use video discussions for assessment.	57(17.43)	93(28.44)	164(50.15)	13(3.98)	327
19. Reading comprehension are assessed by common Lit that has built-in quizzes.	26(7.95)	77(23.55)	151(46.18)	73(22.32)	327
20. Kahoot which is a free online quiz game generator is used for assessment.	64(19.57)	172(52.60)	51(15.60)	40(12.23)	327
Total	813	1211	459	136	
Average	101.6	151.4	57.4	17	
Percentage	248.6%	370.4%	140.4%	41.6%	

Table 3 showed that out of the total respondents of 327, 101.6 (248.6%) strongly agreed, 151.4 (370.4%) agreed, 57.4 (140.4%) disagreed, and 17(46.6%) strongly disagreed. Strongly agreed responses represent a high level of endorsement for digital assessment methods. The agreed responses also show positive endorsement of digital assessment methods. A significant proportion of respondents disagreed with the effectiveness of this method. Strongly disagreed represents the lowest level of endorsement. The data reveals a general positive acceptance of digital assessment. Therefore, digital assessment can enhance assessment policies and practices.

Discussion

The results of the study as shown in the tables were based on the study research objectives and questions. The results of table 1 of the study have shown that the assessment policies of secondary education in Enugu Urban have a high prevalence. Lynch (2023) sustains that assessment policies guide teachers in enhancing classroom practices, help teachers analyze students' performance, and tailor their instruction to address learning gaps.

The results of Table 2 also showed a high prevalence of the assessment practices of secondary education in Enugu Urban. the findings agree with Sastry (2023) who noted that assessment practices are good checkpoints on the educational journey. It helps the teacher to track students' progress and find out areas for improvement.

The result of Table 3 showed a positive endorsement of digital assessment methods in secondary education in Enugu Urban. Digital assessments make assessment processes efficient and manageable for teachers, help them tailor teaching methods to individual needs, and enhance learning (Education Brief, 2017). Embracing digital assessments is essential for maintaining educational relevance and enhancing learning.

Conclusions

Based on the study's findings, it was concluded that digital assessments are required for the enhancement of assessment policies and practices of secondary education in Enugu Urban. Digital assessment is required by the teacher to enhance teaching and by the learner to improve learning outcomes.

Recommendations

1. Digital assessment should be used to augment the paper-based assessment to reduce the amount of time spent in administering and scoring of students.
2. Digital assessment should be adopted in schools, for the evaluation of students' performance, provide timely feedback, and enhance overall assessment process.
3. Digital assessment will allow for automated grading, reducing teacher workload and minimizing errors.
4. Familiarity with digital tools during secondary education prepares students for the real-world situations.

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