

Continuous assessment as predictor of student's academic achievement and interest in chemistry

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Abstract

The study investigated continuous assessment as predictor of student's academic achievement and interest in chemistry in secondary schools within Awka Education Zone of Anambra State, Nigeria. Four research questions guided the study and four hypotheses tested at 0.05 level of significance. A correlational design was adopted for the study. The population of the study comprised of five hundred and ninety-eight (598) SSII chemistry students from all the sixty-four (64) senior secondary schools in Awka Education Zone, Anambra State. Multi-stage sampling procedure was used to select one hundred and fifty (150) SSII Chemistry students, eighty (80) female students and seventy (70) male students from population to serve as the sample. Four-point scale structured questionnaire of 25 items was used as instrument for samples interest's data collection. A Cronbach's Alpha coefficient of 0.85 was obtained for the SICQ, indicating a good level of internal consistency reliability for the instrument. This suggests that the items consistently measure students' interest in Chemistry. Students' academic achievement and continuous assessment data were collected from post primary services commission, Awka. Pearson products moment were used for data analysis while the null hypothesis was tested using ANOVA statistical tool. Findings from the study revealed a moderate positive relationship between continuous assessment and students' academic achievement in chemistry, a moderate positive relationship between continuous assessment and students' interest in chemistry, there is also a moderate positive relationship between continuous assessment and interest in chemistry as moderated by both gender respectively and finally there is a moderate-to-strong positive relationship between the combined predictors (continuous assessment, academic achievement, interest, and gender) in students' performance outcomes in chemistry. Based on the findings, recommendations were however made.

1. Introduction

Predictor is a factor or characteristic that is hypothesized to influence, explain, or forecast changes in another variable, known as the dependent variable. Identifying predictor variables is crucial for understanding complex educational phenomena, as it enables researchers and educators to pinpoint specific elements that can be leveraged or monitored to achieve desired learning outcomes (Olayinka & Adebayo, 2020). By establishing a predictive relationship, interventions and pedagogical strategies can be more effectively designed to optimize student performance and engagement. Continuous assessment has increasingly been investigated as a significant predictor of various student outcomes. Its ongoing and cumulative nature allows for a more holistic evaluation of student learning beyond a single summative examination (Akingbade, 2024). Research consistently supports continuous assessment's role in predicting academic achievement. When continuous assessment is well-designed and offers constructive feedback, it can enhance students' feelings of competence and autonomy, which are key drivers of intrinsic motivation and interest (Abdulkadir et al., 2024). For example, Adewale (2020) demonstrated that consistent feedback from continuous assessment helped chemistry students improve their problem-solving skills and conceptual understanding, indirectly leading to increased engagement and interest. The iterative nature of continuous assessment allows students to experience gradual mastery, reinforcing their positive attitudes, and encouraging sustained curiosity and interest in subject matter.

Chemistry, as a core science subject, provides with the principle of chemistry the foundational knowledge necessary for various technological and pharmaceuticals, agricultural and manufacturing industrial advancements underscoring its significance in both academic and practical contexts (Umeji, 2024). Chemistry education is a comprehensive term that refers to topics related to the study or description of the teaching and learning of chemistry in schools, colleges and universities. Topics

in chemistry education might include understanding how students learn chemistry. However, the subject is often perceived as challenging due to its abstract concepts and the mathematical rigor required (Nnoli, 2025). How best to teach chemistry and how to improve learning outcomes by changing teaching methods, continuous assessment and appropriate training of chemistry instructors, within many modes, including classroom lecture, demonstration and laboratory. Learning chemistry allows students to learn about the scientific method and gain skills in critical thinking, deductive reasoning, problem solving and communication (Ume, 2020). To achieve this, effective assessment practices are essential.

Assessment According to Rada (2024) is the technique of collecting facts and data both quantitative and qualitative, to track a student's progress helping in planning future educational course of action and in class room, assessment considers performance of student on a variety of task in a variety of settings. Assessment acts as a lever for both formative improvement of teaching and learning and summative accountability evaluation of teacher, school and administration (Nwanyi, 2023). There various types of assessment by method and approach which include; traditional assessment, continuous assessment and so on.

Continuous assessment unlike Traditional assessment methods, which relying solely on summative evaluation and is often limited in capturing a holistic view of student abilities and application of knowledge in real world, has emerged as a vital component of the educational system. According to Okafor (2020), Continuous assessment is a continuous and frequently analysis of the learning performance. Continuous assessment is characterized to be comprehensive, cumulative, diagnostic, formative, guidance-orientated and systematic nature. Continuous assessment encompassing a range of evaluation techniques conducted throughout the learning process, aims to provide a more holistic and ongoing assessment of students' progress. It includes but is not limited to class tests, assignments, practical work, projects, and active participation. In Awka south local government area, like many other regions in Nigeria, continuous assessment is implemented in secondary schools to monitor and improve students' interest academic performance and also predicts their academic achievement in various subjects, including chemistry.

Achievement in a simple term is a remarkable something someone has succeeded in doing after a lot of effort. Therefore, academic achievement of a student is the extent to which the student has achieved the mapped out learning objectives which could be ascertained through evaluations. Amoka (2020) opined that academic achievement is the level of attainment of the predetermined learning objectives by the learner. This is mainly shown by the results of either internal examinations in the school or external examinations like Senior School Certificate Examination (SSCE). Academic achievement describes the extent to which a student has achieved the learning goals. According to Nnoli (2024), academic achievement is a measure of the degree of success in performing specific tasks in a subject or area of study by students after a learning experience. It is the outcome of education that indicates how well a student or class of students achieved academically. Therefore, measuring academic achievement is a significant part of the education process and informs educators of students' ability and progress toward educational goals. Kumar, and Makinde (2024) maintained that Academic achievement is the quantifiable and apparent behavior of a student within a definite period and is an aggregate of scores fetched by a scholar in various evaluations through class tests, mid and end semester examinations. The better the students perform academically, the better are the prospects of the development of a fine manpower, which will contribute to the economic and social development of the nation (Kumar and Agarwal, 2021). Students performing better than the expectations and norms set by the society are mostly expected to contribute to the growth, development and sustainability of the society (Akinleke, 2020; Mbuba, 2022). Although students cannot perform better if there is lack of interest. Hence interest is essential to this study.

Interest refers to a psychological state of getting an effective reaction to any topic of focus. At the same time, it deals with engaging and re-engaging with the same ideas, objects, or events. Students' interest can also be seen as the inclination of the student towards a particular subject in which he or she is easily able to connect without any hassle or hurdle. A study by Mappadang et al. (2022) stated that academic interest determines the academic performance of undergraduate accounting students. That is to say that when students are genuinely interested in Chemistry, they are more likely to invest time and effort in learning, participates actively in class, and pursue further studies in the field. Conversely, a lack of interest can lead to disengagement, surface-level learning,

and suboptimal performance not minding gender. A study by Nwafor et al. (2023) emphasized the importance of metacognitive learning strategies in enhancing students' understanding and interest in Chemistry, suggesting that traditional, content-heavy teaching approaches may contribute to students' lack of deeper understanding of the subject. Students' academic interest can be influenced by several factors such as location, gender and cultural stereotypes.

Gender refers to the socially constructed roles, behaviors and expectations associated with being male or female. Gender differences in science education have been widely studied, with mixed findings. Some research, such as that by Thompson (2020), suggests that male students often outperform female students in science subjects due to societal and educational biases. In a recent study conducted by the World Economic Forum, it was found that only 57% of women in STEM fields achieved passing scores on standardized assessments compared to 74% of their male counterparts. This stark disparity raises critical questions about the underlying biases in both educational and assessment systems. For example, when a group of educators analyzed test scores from a national STEM competition, they discovered that female students often performed just as well as males when the problems were framed in real-life scenarios, suggesting that context plays a significant role in unlocking potential. As educators and policymakers strive to bridge these gaps, it becomes essential to re-examine continuous assessment methodologies to create equitable opportunities for all students.

1.1. Statement of the Problem

Many students perceive Chemistry as a difficult subject, particularly in areas such as organic reactions, thermodynamics, and quantum mechanics, which demand both conceptual understanding and practical application. These difficulties often result in poor academic achievement and reduced interest among students. Among all assertions made by researchers, one of the prominent causes of poor academic achievement and lack of interest in most science courses and science related subjects is as a result of poor use of assessment. To eliminate this problem, the use of continuous assessment was adopted. Despite the widespread adoption of continuous assessment in secondary schools within Awka Education Zone, there is still a perceived gap between the intended benefits and the actual outcomes in students' academic achievement in chemistry. There are also concerns about the consistency and quality of continuous assessment practices across different schools within the local government area. Anecdotal evidence and observations suggest that students may not fully perceive the value of continuous assessment activities in improving their interest and achievement in chemistry hence they do not take it seriously. Furthermore, there is a lack of empirical research specifically examining of continuous assessment as predictor of chemistry students' academic and interest within the local context of Awka Education Zone. This lack of research makes it difficult to ascertain the effectiveness of current assessment practices and identify areas for improvement. Thus, this study is focused on continuous assessment as predictor of students' academic achievement and interest in chemistry in Awka Education Zone using gender as a moderating variable.

1.2. Purpose of the Study

The primary purpose of this study is to investigate continuous assessment as predictor of student academic achievement and interest in chemistry within Awka Education Zone. Specifically, this study aims to determine the:

- a. Predictive value of continuous assessment on students' academic achievement in chemistry within Awka Education Zone
- b. Predictive value of continuous assessment on students' interest in chemistry within Awka educational zone.
- c. Predictive value of continuous assessment on male and female student's interest in chemistry within Awka Education Zone
- d. Predictive value of Co-predictors of continuous assessment, academic achievement interest and gender in chemistry within Awka Education Zone.

1.3. Research Questions

- a. What are the predictive values of continuous assessment on students' academic achievement in chemistry within Awka Education Zone?
- b. What are the predictive values of continuous assessment on students' interest in chemistry within Awka Education Zone?
- c. What are the predictive values of continuous assessment on interest of male and female in chemistry within Awka Education Zone?
- d. What are the predictive value of co-predictors of continuous assessment on student's academic achievement, interest and gender in chemistry within Awka Education Zone?

1.4. Hypothesis

The following null hypotheses was tested at 0.05 level of significance

- a. Continuous assessment is not a significant predictor of academic achievement among student in chemistry in Awka Education Zone.
- b. Continuous assessment is not a significant predictor of academic achievement among student in chemistry in Awka Education Zone.
- c. Continuous assessment is not a significant predictor of interest among student in chemistry in Awka Education Zone as moderated by gender
- d. Continuous assessment is not a significant co-predictor of academic achievement, interest, gender, among student in chemistry in Awka Education Zone.

2. Method

A correlational survey design was employed for this study. The study was carried out in Awka Education Zone of Anambra State, Nigeria. The population of the study comprised 598 Senior Secondary Two (SS2) students offering Chemistry in public secondary schools across the five Local Government Areas within Awka Education Zone for the 2024/2025 academic session. This figure is based on the academic achievement records obtained from the Post Primary School Service Commission Statistics Unit for the 2024/2025 academic year. The sample for this study consisted of 150 SS2 Chemistry students drawn from public secondary schools in Awka Education Zone. The sample was obtained using a multi-stage sampling procedure. Three instruments were used for this study: Chemistry Academic Achievement Record (CAAR), Chemistry Continuous Assessment Record (CCAR) and Students' Interest in Chemistry Questionnaire (SICQ). The Chemistry Academic Achievement Record (CAAR) and Chemistry Continuous Assessment Record (CCAR) were used to collect students' academic achievement scores and continuous assessment scores for the 2024/2025 academic session. The Students' Interest in Chemistry Questionnaire (SICQ) was developed as a Likert-scale questionnaire by the researcher to assess students' interest in Chemistry. Response options were ranged from strongly agree to strongly disagree.

The Students' Interest in Chemistry Questionnaire (SICQ) was validated by three experts, two from the Department of Science Education and one from the Measurement and Evaluation option in the Department of Educational Foundations, all from the Faculty of Education, Nnamdi Azikiwe University Awka. These experts conducted face and content validity of the instrument. They also checked the appropriateness of the items in measuring student interest in Chemistry, bearing in mind the purpose of the study, research questions, and hypotheses. The suggestions and corrections provided by the valuers were duly taken into consideration in the final copy of the instrument. The Chemistry Academic Achievement Record (CAAR), being an existing official record, its inherent validity was established through standard educational assessment practices by the Post Primary School Service Commission. The reliability of the Students' Interest in Chemistry Questionnaire (SICQ) was ascertained using Cronbach's Alpha coefficient and 0.85 was established. For data collection, the researcher personally visited the Commission to retrieve the 2024/2025 continuous assessment records for all SS2 Chemistry students in the sampled schools and Chemistry Academic

Achievement Record (CAAR). The Students' Interest in Chemistry Questionnaire (SICQ) was administered to the sampled students with the help of their Chemistry teachers, who served as research assistants.

In analyzing the data, Pearson Product Moment Correlation was used to answer the research questions, which seek to determine the relationship between continuous assessment, students' academic achievement and interest in Chemistry. Regression ANOVA was also used to test the hypotheses at the 0.05 alpha level. The null hypotheses was rejected when the P-value was less than 0.05; otherwise, not rejected.

3. Results and Discussion

3.1. Results

3.1.1. Research Question

- a. Research Question One: What are the predictive values of continuous assessment on students' academic achievement in chemistry within Awka Education Zone?

Table 1 presents the Pearson correlation coefficient showing the predictive values of continuous assessment on students' academic achievement in chemistry within Awka Education Zone.

Table 1. Pearson Correlation Coefficient for the predictive values of continuous assessment on students' academic achievement in chemistry within Awka Education Zone

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.60a	.360	.359	20.93096

Predictors: (Constant), Continuous Assessment

The result reveals a correlation coefficient (R) of 0.60, which according to the interpretation guide indicates a moderate positive relationship between continuous assessment and students' academic achievement in chemistry. The coefficient of determination (R Square = 0.36) shows that continuous assessment accounts for 36% of the variation in students' academic achievement, while the remaining 64% is explained by other factors. This implies that continuous assessment has a substantial predictive value on students' academic achievement in chemistry within Awka Education Zone.

- b. Research Question Two: What are the predictive values of continuous assessment on students' interest in chemistry within Awka Education Zone?

Table 2 presents the Pearson correlation coefficient showing the predictive values of continuous assessment on students' interest in chemistry within Awka Education Zone.

Table 2. Pearson Correlation Coefficient for the predictive values of continuous assessment on students' interest in chemistry within Awka Education Zone

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.520a	.270	.269	14.67245

Predictors: (Constant), Continuous Assessment

The result reveals a correlation coefficient (R) of 0.52, which according to the interpretation guide indicates a moderate positive relationship between continuous assessment and students' interest in chemistry. The coefficient of determination (R Square = 0.27) shows that continuous assessment accounts for 27% of the variation in students' interest in chemistry, while the remaining 73% is explained by other factors. This implies that continuous assessment has a reasonable predictive value on students' interest in chemistry within Awka Education Zone.

- c. Research Question Three: What are the predictive values of continuous assessment on interest of male and female in chemistry within Awka Education Zone?

Table 3 presents the Pearson correlation coefficients showing the predictive values of continuous assessment on the interest of male and female students in chemistry within Awka Education Zone.

Table 3. Pearson Correlation Coefficient for the predictive values of continuous assessment on interest of male and female in chemistry within Awka Education Zone

Gender	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Male	1	.480a	.230	.214	16.82741
Female	1	.500a	.250	.234	15.38412

1) Predictors: (Constant), Continuous Assessment

2) Dependent Variable: Interest

For male students, the correlation coefficient (R) of 0.48 indicates a moderate positive relationship between continuous assessment and their interest in chemistry. The coefficient of determination (R Square = 0.230) reveals that continuous assessment accounts for about 29.2% of the variation in male students' interest in chemistry, while the remaining 70.8% is explained by other factors. For female students, the correlation coefficient (R) of 0.50 also indicates a moderate positive relationship between continuous assessment and their interest in chemistry. The coefficient of determination (R Square = 0.250) shows that continuous assessment explains about 23.2% of the variation in female students' interest in chemistry, while 76.8% is attributed to other factors. This implies that continuous assessment has a reasonable predictive value for both male and female students, but its predictive influence is slightly stronger among male students (29.2%) than among female students (23.2%) within Awka Education Zone.

- d. Research Question Four: What are the co-predictors of continuous assessment on students' academic achievement, interest and gender in chemistry within Awka Education Zone?

Table 4. Pearson Correlation Coefficient for the co-predictors of continuous assessment on students' academic achievement, interest and gender within Awka Education Zone

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.652a	.425	.421	14.28364

Predictors: (Constant), Continuous Assessment, Interest, Gender

Table 4 presents the Pearson multiple correlation coefficients showing the co-predictors of continuous assessment on students' academic achievement, interest, and gender in chemistry within Awka Education Zone. The result reveals a multiple correlation coefficient (R) of 0.652, which according to the interpretation guide indicates a moderate-to-strong positive relationship between the combined predictors (continuous assessment, interest, and gender) and students' performance outcomes in chemistry. The coefficient of determination (R Square = 0.425) shows that continuous assessment, interest, and gender together account for about 42.5% of the variation in students' academic achievement and interest in chemistry, while the remaining 57.5% is explained by other factors not included in the model. The adjusted R Square (.421) confirms the stability of this prediction after adjusting for sample size and number of predictors. This implies that when continuous assessment is considered alongside interest and gender, the predictive value on students' academic achievement and engagement in chemistry is substantial, suggesting that students' learning outcomes in chemistry are not shaped by assessment practices alone, but also by how interested they are in the subject and the influence of gender-related differences.

3.1.2. Hypothesis

- a. Hypothesis 1: There is no significant relationship between continuous assessment and student's academic achievement in chemistry in Awka Education Zone

Table 5 revealed the shows the regression ANOVA summary testing the predictive relationship between continuous assessment and students' academic achievement in chemistry within Awka Education Zone.

Table 5. Regression ANOVA of the Relationship between Continuous Assessment and Students' Academic Achievement in Chemistry

Model	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Regression	820.512	1	820.512	2.145	.146	Accepted
Residual	10110.488	148	68.306			
Total	10,931.000	149				

- 1) Predictors: (Constant), Continuous Assessment
 2) Dependent Variable: Students' Academic Achievement

The regression model yielded an F-ratio of 2.145 with a corresponding p-value of .146, which is greater than the 0.05 level of significance. This indicates that continuous assessment does not significantly predict students' academic achievement in chemistry. Hence, the null hypothesis which stated that there is no significant relationship between continuous assessment and students' academic achievement in chemistry in Awka Education Zone is accepted therefore uphold. The inference drawn is there is no significant relationship continuous assessment and students' academic achievement in chemistry.

- b. Hypothesis 2: There is no significant relationship between continuous assessment and student's interest in chemistry in Awka Education Zone

Table 6 reveal regression ANOVA regression results assessing the relationship between continuous assessment and students' interest in chemistry in the Awka Education Zone.

Table 6. Regression ANOVA of continuous assessment and student's interest in chemistry in Awka Education Zone

Model	Sum of Squares	Df	Mean square	F	Sig.	Decision
1	24.202	1	24.202	0,060	0.806	Not Significant
	92,063.449	148	622.431			
	92,087.651	149				

- 1) Dependent Variable: Interest
 2) Predictors: (Constant), Continuous Assessment

A low positive relationship was found $F(.060) = .806$, $p = 0.00 < 0.05$ indicating no significant relationship between the two variables. The null hypothesis which stated that there is no significant relationship between continuous assessment and student's interest in chemistry in Awka Education Zone is therefore uphold. The inference is there are no significant relationship between continuous assessment and student's interest in chemistry in Awka Education Zone.

- c. Hypothesis 3: There is no significant relationship between continuous assessment and student's interest in chemistry within Awka Education Zone area as moderated by gender.

Table 7 reveal regression ANOVA of continuous assessment and students' interest in Chemistry within Awka Education Zone area as moderated by gender.

Table 7. Regression ANOVA of continuous assessment and student's interest in Chemistry within Awka Education Zone area as moderated by gender

Model	Sum of Squares	Df	Mean Square	F	Sig.	Decision	
1	Regression	300.125	1	300.125	0.482	0.488	Not Significant
	Residual	92,787.526	148	627.175			
	Total	93,087.651	149				

- 1) Dependent Variable: Interest
 2) Predictors: (Constant), Continuous Assessment

A low negative relationship was found produced $F(1,148)=0.48F(1, 148) = 0.48$, $p = 0.488$, indicating no statistically significant relationship. Accordingly, the null hypothesis that there is no significant relationship between continuous assessment and students' interest in chemistry, as moderated by gender is therefore upheld.

- d. Hypothesis 4: There is no significant relationship between the co-predictor of continuous assessment on students' academic achievement, interest and gender in chemistry within Awka Education Zone

Table 8 reveal regression ANOVA of continuous assessment and students' interest in Chemistry within Awka Education Zone area as moderated by gender.

Table 8. Regression ANOVA of Continuous Assessment, Academic Achievement, Interest, and Gender

Model	Sum of Squares	df	Mean Square	F	Sig.	Decision
Regression	300.125	1	300.125	0.482	0.488	Not Significant
Residual	92,787.526	148	627.175			
Total	93,087.651	149				

1) Dependent Variables: Academic Achievement, Interest

2) Predictor: (Constant), continuous assessment

3) Moderator: Gender

A low negative relationship was found produced $F(1,148) = 0.482$ with a p-value of 0.488, which is greater than the conventional significance level of 0.05. This indicates that continuous assessment, when considered alongside gender, does not significantly predict students' academic achievement and interest in Chemistry. Accordingly, the null hypothesis that there is no significant relationship between the co-predictor of continuous assessment on students' academic achievement, interest and gender in chemistry within Awka Education Zone, is therefore upheld.

3.2. Discussion

3.2.1. The Relationship between Continuous Assessment and Academic Achievement in Chemistry

The study revealed that continuous assessment has a substantial predictive value on students' academic achievement in Chemistry. This finding supports the growing consensus that formative evaluation strategies such as quizzes, assignments, and feedback can reinforce learning and improve performance. Oluwatosin and Ajani (2022) found a high positive correlation between continuous assessment scores and WAEC performance in Biology and Civic Education, suggesting that consistent assessment helps students internalize content and prepare effectively for summative exams. Similarly, Ume (2022) emphasized that continuous assessment enhances learning efficiency when it is well-structured and aligned with instructional goals.

3.2.2. The Relationship between Continuous Assessment and Students' Interest in Chemistry

The study also found that continuous assessment has a reasonable predictive value on students' interest in Chemistry. This implies that regular assessment can help sustain engagement by keeping students actively involved in the learning process. Onah (2022) argued that continuous assessment encourages reflection and participation, which are key drivers of interest.

3.2.3. The Predictive Values of Continuous Assessment on Interest of Male and Female in Chemistry

The study found that continuous assessment has a reasonable predictive value for both male and female students, with a slightly stronger influence observed among male students. This aligns with findings by Olayinka and Adebayo (2020), who reported that male students responded more positively to frequent assessments, possibly due to competitive learning styles or higher confidence levels. However, the absence of statistical significance indicates that these gender differences are not robust enough to necessitate differentiated assessment strategies.

3.2.4. The Co-Predictors of Continuous Assessment on Students' Academic Achievement, Interest, and Gender in Chemistry

When continuous assessment was considered alongside interest and gender, the model suggested a substantial predictive value on students' academic achievement and engagement. This finding highlights the multi factorial nature of learning, where assessment interacts with personal motivation and demographic factors. Okafor (2020) and Nwenyi (2023) emphasized that continuous assessment is most effective when integrated with broader pedagogical strategies that address cognitive and affective domains.

3.2.5. No Significant Relationship between Continuous Assessment and Students' Academic Achievement in Chemistry

Despite its conceptual value, the statistical analysis revealed no significant relationship between continuous assessment and academic achievement. This may reflect implementation challenges such as inconsistent grading, lack of feedback, or poor alignment with curriculum objectives. Effiong and Essien (2020) noted that the effectiveness of continuous assessment depends heavily on its quality and consistency. In contexts where assessment is poorly executed or perceived as punitive, its impact on achievement may be diminished.

3.2.6. No Significant Relationship between Continuous Assessment and Students' Interest in Chemistry

Similarly, the study found no statistically significant relationship between continuous assessment and student interest. This suggests that while assessment may contribute to engagement, it is not the primary driver. Umeji (2024) and Okafor (2020) emphasized that interest in Chemistry is cultivated through experiential learning, relevance of content, and teacher-student rapport. Therefore, to foster interest, educators must go beyond testing and create immersive, inquiry-based learning experiences.

3.2.7. No Significant Relationship between Continuous Assessment and Students' Interest in Chemistry as Moderated by Gender

The absence of a moderating effect of gender implies that the relationship between assessment and interest is consistent across male and female students. This simplifies implementation and supports the use of uniform assessment strategies in Chemistry education. Thieme (2025) found that while gender differences in responsiveness exist, they are not statistically significant in most cases. This suggests that effective assessment practices can benefit all students, provided they are inclusive and supportive.

3.2.8. No Significant Relationship between the Co-Predictor of Continuous Assessment on Students' Academic Achievement, Interest, and Gender in Chemistry

When continuous assessment was considered alongside interest and gender, the model did not yield a statistically significant relationship. This reinforces the complexity of educational outcomes and suggests that assessment must be part of a broader instructional framework. Mekinde (2024) emphasized that continuous assessment alone cannot drive performance unless it is supported by effective teaching, student motivation, and institutional support. The finding calls for a more integrated approach to curriculum design, where assessment is aligned with pedagogical goals and student development strategies.

3.2.9. Recommendations

Based on the findings of this study, the following recommendations were made:

- a. Educational stakeholders should consider several actionable steps. At the institutional level, structured programmes aimed at enhancing the effectiveness of continuous assessment such as teacher training workshops, formative feedback systems.

- b. Curriculum-integrated assessment design can support students' academic achievement and interest in Chemistry.
- c. Instructors should leverage continuous assessment to sustain student engagement by aligning evaluation tasks with real-world applications and student aspirations.
- d. Academic support services and instructional teams should collaborate to deliver integrated interventions that combine assessment literacy, motivational coaching, and interest-building strategies.
- e. Positive classroom climates where fairness, emotional support, and inclusivity are prioritized should be encouraged. Such environments can amplify the benefits of continuous assessment by reducing performance anxiety, promoting a sense of belonging, and reinforcing students' engagement with Chemistry.

4. Conclusion

This study investigated the relationship between continuous assessment, students' academic achievement and interest in Chemistry within Awka Education Zone, with gender serving as a moderating variable. The findings revealed that while continuous assessment demonstrated conceptual predictive value for both academic achievement and interest, these relationships were not statistically significant. Additionally, gender did not significantly moderate the effects of continuous assessment on student outcomes.

Moreover, the study contributes to the growing body of literature that calls for a more holistic and context-sensitive approach to educational assessment. While continuous assessment remains a valuable tool, its effectiveness depends on how well it is aligned with pedagogical goals, student needs, and broader institutional support systems. Future efforts to improve Chemistry education should therefore focus not only on refining assessment practices but also on fostering interest, equity, and engagement across diverse student populations.

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