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MEASURES OF SCIENCE TEACHERS' AWARENESS AND UTILIZATION OF ASSESSMENT MODES IN CLASSROOM LEARNING IN ONDO STATE, NIGERIA

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Abstract

This study investigated the level of science teachers' awareness and utilization of assessment modes in classroom learning in Akoko Zones of Ondo State, Nigeria. A sample of eighty science teachers were selected from secondary schools in Akoko North East, Akoko NorthWest, Akoko South East and Akoko South West Local Government Areas using stratified random sampling techniques. Data were collected using a self-developed questionnaire tagged "Science Teachers Awareness and Utilization of Assessment Modes Questionnaire, STAUAMQ", which has a reliability coefficient of 0.87. The data obtained were coded and subjected to statistical analysis using the frequency counts, percentages, means and Chi-Square.The results showed that out of sixteen selected assessment modes, most of the science teachers were moderately aware (24.65%) of, but rarely used (37.55%) the assessment modes in secondary school classrooms. The results also showed no significant relationship in science teachers' level of awareness (gender: $x^2(1,80)=.50$, $p<.05$ & experience: $x^2(1,80)=.37$, $p<.05$) and utilization (gender: $x^2(1,80)=.43$, $p<.05$ & experience:$x^2(1,80)=.38$, $p<.05$) of the assessment modes based on gender and years of teaching experience. It was recommended among others that science teachers should be re-orientated on choice and utilization of appropriate assessment tools in the classroom in developing higher order thinking skills and in overcoming challenges of admission into tertiary institutions.

Keywords: Science Teachers, Awareness, Utilization, Assessment Modes

Introduction

Teaching-learning is a continuous, cumulative and systematic process. To achieve this, the teachers generally are tasked to monitor the progress by using various techniques to observe the characteristics or behaviour of students, and effort on how to improve learning. Therefore, the teachers are saddled with some responsibilities to observe skills exhibited during problem solving, class interaction, listening to students' responses to questions or their comments on notes to know their difficulties. In order to successfully assess the attainment of the desired objectives, an instrument or tool like assessment is very crucial. Assessment is an integral part of education that involves teaching and learning process because the teacher uses it when classroom activities are on-going and to test the level of students' understanding as well as to improve learning. According to Sadler (2005), assessment is the process of forming a judgment about the quality and extent of students' achievement or performance. Assessment is the process of gathering and interpreting information/evidence to make value judgments about a place of learning (National Research Council, 2001a). Idialum (2013) observed that assessment can be made valid, ethical, feasible and efficient tools for learning using multiple measures. Assessment is a key component to effective and successful learning. Besides, the implementation of teaching-learning, curriculum themes, modules, and policies are incomplete without the right choice of assessment tools to measure the level of attainment of set objectives. Assessment is a bridge between the twin enterprise of teaching and learning.

The method of assessment modes includes among others:

Peer-Self assessment: Research shows that when students are allowed to take active role in monitoring and regulating their learning, then the rate of their learning is dramatically increased (William, 2007) and perhaps the cognitive theories explain the central role for meta-cognition in students' learning (NRC, 2001). The term meta-cognition means a process of self-monitoring and general reflection on one's own thinking.

Students' portfolios: A portfolio is a meaningful collection of students' work that tells the story of students' achievements or grow as viewed by Arter, Spandel & Culham, (2000). When a portfolio is designed for assessment of learning, students can select the samples of their work, reflect, interpret, present and explain their work to their teachers and parents, (Staggins, 2008 and Isijola, 2021). Portfolios can focus on documenting students' activities, documentation of strength, best work or progress. Portfolios also encourage students' self-evaluation and reflection as well as ownership of learning, (Popham, 2005).

Rubrics: Rubrics could be holistic or analytical. In holistic, general descriptions of performance are made and a single overall score is obtained, while in analytical, it provides descriptions of levels of students' performance on a variety of characteristics. However, they provide students' feedback on the aspects of their strengths and weaknesses that needs improvement, (Linn & Miller, 2005).

Computer Based Test: The mode of Information and Communication Technology (ICT) which is widely used today for assessment is referred to Computer Based Test (CBT). According to Conian (2009), CBT is a system with an installed learning management that can only be assessed through internet facilities. It is an electronic method of administering, responding, documenting and processing test or examination. This is so important that paper based seemed so difficult can now be overcome. Apart from this, companies, organizations in Nigeria nowadays make use of CBT to screen, recruit job seekers, and enable the examiners to set same test condition for the examinees irrespective of the population size, Saad (2007).

Essay type test: This is a type of test containing questions requiring the student to respond in writing. Essay tests emphasize recall rather than recognition of the shortcomings, suggestions are made to improve its construction and scoring.

Apart from the aforementioned assessment modes, several others are equally used for classroom learning assessment. They are Objective Type test, Matching type test, Investigative project, Laboratory activities, On-board presentation, Class assignment, Home-work, Quiz and Short Answer. In a lucid term, any assessment tool discussed could have a dual function of formative and summative, depending upon facts whether to improve on instructional delivery, screening, placement, students' achievements and promotion.

Formative Assessment and Summative Assessment

It is so pertinent for teachers to be conversant with, aware of and utilize appropriate assessment tools so as to adequately provide a reliable assessment. Likewise, at the summative stage of assessment, choice of assessment modes cannot be overemphasized. Reporting on the outcome of the classroom teaching-learning activities would be efficient, objective, thorough and adequate. Teachers use a range of assessment strategies in the classroom to gain comprehensive insight into how much students have learnt as part of formative assessment. Formative assessment is a process in which teachers and students provide feedback during instruction to organize the teaching-learningprocess so as to increase student's achievement, McManus (2008).

Summative Assessment is that assessment carried out to determine what the students have been able to learn at the end of a given lesson, unit, programme or period of school, Nworgu (2015). Summative assessment summarizes what students have learnt at the conclusion of an instructional segment; which could be used internally and, or externally.

If there is a wrong choice or faulty assessment tools, there is a tendency of misleading decisions by the user on the testees. Assessment is a weapon of decision in the hands of an examiner.

It is evident in many occasions that the teachers' wrong choice and unskillful use of assessment tools in teaching-learning environment mostly lead to students' failure. The faulty assessment tools always give erroneous results, and the testees are put at the disadvantage. In order to present a reliable and justifiable results, teachers must be proficient or skillful in choosing and applying the appropriate assessment tools. Thus, the focus of this study is to investigate the science teachers' level of awareness and utilization of the assessment modes in Akoko Educational Zones.

Purpose of the Study

The main purpose of this study was to find out the levels of science teachers' awareness and utilization of assessment modes in classroom learning of students. Specifically, the study was designed to find out:

1. the levels of awareness of assessments modes by science teachers based on (a) gender and (b) years of teaching experience.
2. the levels of utilization of assessments modes by science teachers based on (a) gender and (b) years of teaching experience.

The following research hypotheses were tested:

1: There is no significant relationship in the level of awareness of assessment modes between male and female science teachers.
2: There is no significant relationship in the level of awareness of assessment modes based on years of teaching experience.
3: There is no significant relationship in the level of utilization of assessment modes between male and female science teachers.
4: There is no significant relationship in the level of utilization of assessment modes based on years of teaching experience.

Methodology

The study was a descriptive research of the survey type. The population comprised all the senior secondary school science teachers of Basic Science, Chemistry, Physics, and Biology in Akoko Education zones in Ondo State. One hundred (100) science teachers were purposively selected from only the public secondary schools in the area. Eighty (80) science teachers eventually responded properly to the instrument used for the study. The instrument used for the study was a researcher- designed questionnaire tagged "Science Teachers' Awareness and Utilization of Assessment Modes Questionnaire (STAUAMQ)". The questionnaire contained two sections. Section A requested for the personal information of the respondent such as gender, school, area of specialization, teaching qualification, years of teaching and subject taught. Section B of the questionnaire sought for information on teachers' level of awareness and utilization of the selected sixteen (16) assessment modes. It had a 3-option rating scale for awareness Highly Aware (HA=3), Moderately Aware (MA=2) and Not Aware (NA=1), which are levels of awareness; and for utilization Frequently Used (FU=3), Rarely Used (RU=2), Not Used (NU=1) were used. The level of both awareness and utilization of assessment modes is represented by the mean values which ranges between 1 and 3. For the purpose of the study, the levels of awareness of assessment modes in terms of the mean awareness is rated as: 1.0: Not Aware; 1.1-2.4: Moderately Aware and 2.5-3.0: Highly Aware. Similarly, the level of utilization of assessment modes in terms of the mean utilization is rated as: 1.0: Not Used; 1.1-2.4: Rarely Used and 2.5-3.0: Not Used. The mean values for each of the items is calculated by multiplying the weighted value of the response modes (3 for HA or FU, 2 for MA or RU and 1 for NA or NU) with the number of teachers that chose them for the item, added together and then divided by the number of teachers. The study considered sixteen (16) assessment modes out of myriads of modes. The selected assessment modes were based on utility and relevance to stages of teaching and learning in classrooms. The instrument was validated by senior lecturers in the Departments of Science Education and Tests and Measurement in Adekunle Ajasin University, Akungba Akoko. The reliability of the instrument was determined using Cronbach's Alpha, by being given to twenty (20) science teachers selected from neighboring zone not covered in the study. The reliability coefficient was found to be 0.87. The permission was taken from the managements of the schools used for the study. The researcher administered the questionnaire, waited until they are completely filled and retrieved from the respondents before leaving the schools. The data obtained were coded and subjected to statistical analysis using frequency counts, percentages, means, standard deviation and Chi-Square statistical tool.

Results and Discussion

Descriptive Analysis

Table 1: Responses of science teachers based on their gender.

Gender	Frequency	Percentage (%)
Male	50	62.5
Female	30	37.5
Total	**80**	**100**

Source: Field survey, 2022

The result in table 1 revealed that 50(62.5%) of the surveyed science teachers were male while 30(37.5%) of them were female. This means that majority of the science teachers surveyed are male

Table 2: Responses of science teachers based on their years of teaching experience.

Years of Teaching	Frequency	Percentage (%)
9 years & below	19	23.8
10 years & above	61	76.2
Total	**80**	**100**

Source: Field survey, 2022

The result in table 2 revealed that 19(23.8%) of the surveyed science teachers have taught for 9 years and below while 61(76.2%) of them have taught for 10 years and above. This implied that majority of the science teachers surveyed had years of teaching experience of 10 years and above.

Hypotheses Testing

Hypothesis 1: There is no significant relationship in the level of awareness of assessment modes between male and female science teachers.

Table 3: Item-by-item Chi-Square Analysis showing relationship between Science Teachers' level of Awareness of the Assessment Modes based on gender.

Assessment Modes	Highly Aware n(%)	Moderately Aware n(%)	Not aware n(%)	Total	p	df	Remark
1. Peer-self Assessment	*29(36.3) **20(25.0)	17(21.3) 6(7.5)	4(5.0) 4(5.0)	50 30	0.360	2	NS
2. Matching	*33(41.3) **(25.0)	10(12.5) 8(10.0)	0(0.0) 7(8.8)	50 30	0.530	2	NS
3. Drawing/ Figuration	*18(22.5) **11(13.8)	20(25.0) 13(16.3)	2(2.5) 12(15.0)	50 30	0.911	2	NS
4. Essay type	*37(46.3) **17(51.3)	10(12.5) 10(12.5)	3(3.8) 3(3.8)	50 30	0.277	2	NS
5. Objective type	*35(43.8) **20(25.0)	10(12.5) 8(10.0)	3(3.8) 2(2.5)	50 30	0.953	2	NS
6. CBT	*6(7.5) **4(5.0)	6(7.5) 3(3.8)	38(47.5) 23(28.8)	50 30	0.954	2	NS
7. Oral type	*4(5.0) **8(10.0)	4(5.0) 10(2.5)	42(52.5) (12(15.0)	50 30	0.000	2	S
8. Quiz	*12(15.0) **2(2.5)	19(23.8) 12(15.0)	19(23.8) 16(20.0)	50 30	0.120	2	NS
9. Short Answer	*4(5.0) **4(5.0)	4(5.0) 5(6.3)	42(52.5) 21(26.3)	50 30	0.324	2	NS
10. Student Portfolios	*54(42.5) **17(21.3)	14(17.5) 11(13.8)	2(2.5) 2(2.5)	50 30	0.578	2	NS
11. Class Assignment	*35(43.8) **22(27.5)	12(15.0) 7(8.8)	3(3.8) 1(1.3)	50 30	0.861	2	NS

Assessment Modes	Highly Aware n(%)	Moderately Aware n(%)	Not aware n(%)	Total	p	df	Remark
12. Home Work	*35(43.8) **22(27.5)	13(16.3) 6(7.5)	2(2.5) 2(2.5)	50 30	0.748	2	NS
13. Laboratory Activities	*39(48.8) **23(28.8)	9(11.3) 6(7.5)	2(2.5) 1(1.3)	50 30	0.967	2	NS
14. On-board Presentation	*38(47.5) **11(13.8)	8(10.0) 12(15.0)	4(5.0) 7(8.8)	50 30	0.002	2	S
15. Rubric	*8(10.0) **5(6.3)	10(12.5) 6(7.5)	32(40.0) 19(23.8)	50 30	0.997	2	NS
16. Investigative Project	*31(38.8) ***15(18.8)	7(8.8) 10(12.5)	12(15.0) 4(6.2)	50 30	0.120	2	NS

Source: Field survey, 2022 **NS = Not significant, S = Significant**

* means **Male**, *** means **Female**

Table 3 shows that there was a significant relationship between male and female science teachers' level of awareness of assessment modes Oral type test, and On-board presentation with p-values of 0.000 and 0.002 respectively. The p-values of these assessment modes were less than 0.05 level of significance with 2 degrees of freedom, hence, the significant relationship.

Gender	Levels of Awareness pf Assessment Modes						
	Highly Aware	Rarely Aware	Not Aware	Total	P	df	Remark
	Observed No. of Teachers (Expected)						
Male	24.9 (49.8)	10.8 (21.6)	14.2 (28.4)	50	0.543	2	NS
Female	13.8 (46.0)	8.3 (27.7)	7.9 (26.3)	30			
Total				80			

Source: Field survey, 2022

The table 4 shows that the p-value was 0.543 which was greater than 0.05 level of significance with 2 degrees of freedom. Therefore, the null hypothesis which states that there is no significant relationship in the level of awareness of assessment modes between male and female science teachers was upheld.

Hypothesis 2: There is no significant relationship in the level of awareness of assessment modes based on years of teaching experience.

Table 5: Item-by-item Chi-Square Analysis showing relationship between Science Teachers' level of Awareness of the Assessment Modes based on years of teaching experience.

Assessment Modes	Highly Aware n(%)	Moderately Aware n(%)	Not aware n(%)	Total	p	df	Remark
1. Peer-self Assessment	*14(17.5) **35(43.6)	4(5.0) 19(23.8)	1(1.3) 7(8.8)	19 61	0.427	2	NS
2. Matching	*14(17.5) **39(48.8)	5(6.4) 13(16.3)	0(0.0) 9(11.3)	19 61	0.205	2	NS
3. Drawing/ Figuration	*8(10.0) **21(26.3)	7(8.8) 26(32.5)	4(5.0) 14(17.5)	19 61	0.829	2	NS
4. Essay type	*13(16.3) **41(51.3)	5(6.3) 15(18.8)	1(1.3) 5(6.3)	19 61	0.911	2	NS
5. Objective type	15(18.8) **40(50.0)	3(2.8) 17(21.3)	1(1.3) 4(5.0)	19 61	0.532	2	NS
6. CBT	*4(5.0) **6(7.5)	4(5.0) 5(6.3)	11(13.8) 10(12.5)	19 61	0.096	2	NS
7. Oral type	*4(5.0) **8(10.0)	5(6.3) 9(11.3)	44(55.0)	19 61	0.000	2	S
8. Quiz	*2(2.5) **12(15.0)	9(11.3) 22(27.5)	8(10.0) 27(33.8)	19 61	0.553	2	NS
9. Short Answer	*9(0.0) **8(10.0)	1(1.3) 8(10.0)	18(22.5) 45(56.3)	19 61	0.129	2	NS
10. Student Portfolios	*16(20.) **35(43.8)	2(2.5) 23(28.8)	1(1.3) 3(3.8)	19 61	0.079	2	NS
11. Class Assignment	*11(13.8) **(48(57.5)	6(7.5) 13(16.3)	2(2.5) 2(2.5)	19 61	0.248	2	NS
12. Home Work	*10(12.5) **47(58.8(	8(10.0) 11(13.8)	1(1.3) 3(3.8)	19 61	0.093	2	NS
13. Laboratory Activities	*13(16.3) **49(16.3)	6(7.5) 9(11.3)	0(0.0) 3(3.8)	19 61	0.184	2	NS
14. On-board Presentation	**10(12.5) **39(48.8)	7(8.8) 13(16.3)	2(2.5) 9(11.3)	19 61	0.389	2	S
15. Rubric	*2(2.5) **11(13.8)	4(5.0) 2(15.0)	13(16.3) 39(47.5)	19 61	0.740	2	NS
16. Investigative Project	*14(17.5) ***32(40.0)	3(3.8) 14(17.5)	2(2.5) 15(18.8)	19 61	0.243	2	NS

Source: Field survey, 2022 **NS = Not significant,** **S = Significant**

* means **9 years & below,** ** **10 years & above**

Table 5 shows that there was no significant relationship in the level of awareness of assessment modes based on years of teaching experience except on Oral type with p-value 0.000 which is less than 0.05 level of significance with 2 degrees of freedom.

Table 6: Chi-Square Analysis showing relationship between Science Teachers' level of Awareness of the Assessment Modes base on years of teaching experience.

Gender	Levels of Awareness pf Assessment Modes						
	Highly Aware Observed Teachers (Expected)		Rarely Aware Observed Teachers	Total	P	Not Aware Observed Teachers df	Remark
9 years & below	9.4 (49.5)	4.9 (25.8)	4.7 (24.7)	19	0.371	2	NS
10 years & above	29.4 (48.2)	14.3 (23.4)	17.4 (28.5)	61			
Total				**80**			

Table 6 shows that the p-value of 0.371 which was greater than 0.05 level of significance with 2 degrees of freedom. Therefore, the null hypothesis which states that there is no significant relationship in the level of awareness of assessment modes based on years of teaching experience was upheld.

Hypothesis 3: There is no significant relationship in the level of utilization of assessment modes between male and female science teachers.

Source: Field survey, 2022

Table 7: Chi-Square item-by-item analysis showing relationship between science teachers' level of utilization of assessment modes based on gender.

Assessment Modes	Highly Aware n(%)	Moderately Aware n(%)	Not aware n(%)	Total	p	df	Remark
1. Peer-self Assessment	*5(6.3) **5(6.3)	24(30.0) 9(11.3)	21(26.3) 16(20.0)	50 30	0.264	2	NS
2. Matching	*11(13.8) **11(13.8)	27(33.8) 17(21.3)	12(15.0) 2(2.5)	50 30	0.095	2	NS
3. Drawing/ Figuration	**10(12.5) *6(7.5)	32(40.0) 20(25.0)	8(10.0) 4(5.0)	50 30	0.947	2	NS
4. Essay type	*28(35.0) **22(27.5)	13(16.3) 5(6.3)	9(11.3) 3(3.8)	50 30	0.287	2	NS
5. Objective type	*8(10.0) **9(11.3)	14(17.5) 16(20.0)	28(35.0) 5(6.3)	50 30	0.003	2	S
6. CBT	*4(5.0) **9(11.3)	10(12.5) 16(20.0)	26(45.0) 5(6.3)	50 30	0.000	2	S
7. Oral type	*4(5.0) **7(8.8)	26(32.5)	20(25.0) 8(10.0)	50 30	0.124	2	NS

Assessment Modes	Highly Aware n(%)	Moderately Aware n(%)	Not aware n(%)	Total	p	df	Remark
8. Quiz	*4(5.0)	16(20.0)	30(37.5)	50	0.950	2	NS
	*2(2.5)	9(11.3)	19(23.8)	30			
9. Short Answer	*6(7.5)	34(42.5)	10(12.5)	50	0.004	2	S
	**7(8.8)	9(11.3)	14(17.5)	30			
10. Student Portfolios	*8(10.0)	18(22.5)	24(30.0)	50	0.445	2	NS
	*8(10.0)	11(13.8)	11(13.8)	30			
11. Class Assignment	*36(45.0)	5(6.3)	9(11.3)	50	0.842	2	NS
	**20(25.0)	3(3.8)	7(8.8)	30			
12. Home Work	*4(5.0)	22(27.5)	24(30.0)	50	0.673	2	NS
	**4(5.0)	11(13.8)	15(18.8)	30			
13. Laboratory Activities	*8(10.0)	14(17.5)	28(35.0)	50	0.456	2	NS
	**8(10.0)	6(7.5)	16(20.0)	30			
14. On-board Presentation	*6(7.5)	22(27.5)	22(27.5)	50	0.721	2	S
	**3(3.8)	16(20.0)	11(13.8)	30			
15. Rubric	6(7.5)	14(17.0)	30(37.5)	50	0.453	2	NS
	**6(7.5)	10(12.5)	14(17.5)	30			
16. Investigative Project	*6(7.5)	18(22.5)	26(32.5)	50	0.624	2	NS
	**6(7.5)	10(12.5)	14(17.5)	30			

Source: Field survey, 2022 **NS = Not significant, S = Significant**

* means **9 years & below, ** 10 years & above**

Table 8: Chi-Square Analysis showing relationship between Science Teachers' level of Utilization of the Assessment Modes based on gender.

Gender	Levels of Awareness pf Assessment Modes						
	Highly Aware Observed Teachers (Expected)		Rarely Aware Observed Teachers	Total	P	df	Remark
Male	9.6 (19.2)	19.3 (38.6)	21.1 (42.2)	50	0.431	2	NS
Female	8.3 (27.7)	11.4 (38.0)	10.3 (34.3)	30			
Total				**80**			

Source: Field survey, 2022

Table 8 shows that the p-value was 0.431 which was greater than 0.05 level of significance with 2 degrees of freedom. Therefore, the null hypothesis which states that there is no significant relationship between male and female science teachers' level of utilization of assessment modes was upheld.

Hypothesis 4: There is no significant relationship in the level of utilization of assessment modes based on years of teaching experience.

Table 9: Chi-Square item-by-item analysis showing relationship between science teachers' level of utilization of the assessment modes based on years of teaching experience.

Assessment Modes	Highly Aware n(%)	Moderately Aware n(%)	Not aware n(%)	Total	p	df	Remark
1. Peer-self Assessment	*2(2.5)	6(7.5)	21(26.3)	19	0.503	2	NS
	8(10.0)	27(33.8)	16(20.0)	61			
2. Matching	*3(3.8)	11(13.8)	5(6.3)	19	0.303	2	NS
	**19(23.8)	33(41.3)	9(11.3)	61			
3. Drawing/ Figuration	*3(3.8)	13(16.3)	3(3.8)	19	0.871	2	NS
	**3(16.3)	39(48.8)	9(11.3)	61			
4. Essay type	*16(20.0)	2(2.5)	1(1.3)	19	0.080	2	NS
	**34(42.5)	16(20.0)	11(13.8)	61			
5. Objective type	*6(7.5)	7(8.8)	6(7.5)	19	0.403	2	NS
	**11(13.8)	23(28.8)	27(33.8)	61			
6. CBT	*5(6.3)	6(7.5)	8(10.0)	19	0.374	2	NS
	**8(10.0)	20(25.0)	33(41.3)	61			
7. Oral type	*1(1.3)	9(11.3)	9(11.3)	19	0.291	2	NS
	**10(12.5)	32(40.0)	19(23.8)	61			
8. Quiz	*0(0.0)	2(2.5)	30(37.5)	19	0.014	2	S
	**2(2.5)	23(28.8)	17(21.3)	61			
9. Short Answer	*1(1.3)	6(7.5)	12(15.0)	19	0.001	2	S
	**12(15.0)	37(46.3)	12(15.0)	61			
10. Student Portfolios	*5(6.3)	2(2.5)	6(7.5)	19	0.445	2	NS
	**11(13.8)	6(7.5)	10(12.5)	61			
11. Class Assignment	*11(13.8)	2(2.5)	6(7.5)	19	0.333	2	NS
	**45(56.3)	6(7.5)	10(12.5)	61			
12. Home Work	*5(6.3)	8(10.0)	6(7.5)	19	0.017	2	S
	**11(13.8)	25(31.3)	33(41.3)	61			
13. Laboratory Activities	*5(6.3)	4(5.0)	10(12.5)	19	0.713	2	NS
	**11(13.8)	16(20.0)	34(42.5)	61			
14. On-board Presentation	*2(2.5)	12(15.0)	5(6.3)	19	0.266	2	NS
	**7(8.8)	26(32.5)	28(35.0)	61			
15. Rubric	*4(5.0)	5(6.3)	10(12.5)	19	0.685	2	NS
	**8(10.0)	19(23.8)	34(42.5)	61			
16. Investigative Project	*2(2.5)	7(8.8)	10(12.5)	19	0.822	2	NS
	*10(12.5)	21(26.3)	30(37.5)	61			

Source: Field survey, 2022 NS = Not significant, S = Significant
*** means 9 years & below, *** 10 years & above**

Table 9 shows that there was a significant relationship in the two categories of teaching experience on level ofutilization of assessment modes, Quiz, Short answer type and Home Work with p-values 0.014, 0.001 and 0.017 respectively. The p-values of these assessment modes were less than 0.05 level of significance with 2 degrees of freedom, hence, there is a significance difference.

Table 10: Chi-Square Analysis showing relationship between Science Teachers' level of Utilization of the Assessment Modes based on years of teaching experience.

Gender	Levels of Awareness pf Assessment Modes						
	Highly Aware	Rarely Aware	Not Aware				
	Observed No. of Teachers (Expected)			Total	P	df	Remark
9 years & below	4.4 (23.2)	6.8 (35.8)	7.8 (41.1)	19	0.383	2	NS
10 years & above	13.5 (22.1)	24 (39.3)	23.5 (38.5)	61			
Total				**80**			

Source: Field survey, 2022

Table 10 shows that the p-value was 0.383 which was greater than 0.05 level of significance with 2 degrees of freedom. Therefore, the null hypothesis which states that there was no significant relationship in the level of utilization of assessment modes based on years of teaching experience was upheld.

This study revealed that gender of science teachers did not influence their awareness and utilization of classroom assessment modes, hence, the null hypotheses tested in this study were retained. The level of assessment modes' awareness and utilization by the science teachers were also revealed in this study. The result showed that out of sixteen(16) assessment modes, only 10 which were Laboratory activities, Class assignment, Home-work, Essay type, Objective type, Matching, On-board presentation, Investigative project and Student portfolios were highly aware by most of the science teachers, while the remaining six (6) modes had the mean awareness for each below 2.4.The results also showed that out of sixteen (16) assessment modes, only 2, which were Class assignment and Essay type were frequently used by the science teachers, while the remaining twelve(12) modes had the mean utilization for each below 2.4.This agrees with McMillan, (2001) which stated that Essay type classroom activities are mostly used teachers for assessment and grading. Similarly, the findings also revealed that there were no significant relationship in the level of awareness and utilization of assessment modes based on years of teaching experience of the science teachers, were upheld.

Conclusion

The findings of this study indicate that all the assessment modes received some level of awareness and utilization by most of the science teachers, although science teachers were less aware that Short answer type, Oral, Rubric could be used in secondary science classrooms. Likewise Quiz, Student portfolio, Laboratory activities and Investigative projects were not adequately used by the science teachers. The four hypotheses were retained as there were no significant relationship in the level of awareness and utilization of assessment modes based on gender and years of teaching experience.

Recommendations

The following recommendations were made:

1. Science teachers generally, irrespective of their gender and teaching experience should be re-orientated on choice and utilization of appropriate assessment tools in the classroom.
2. Science teachers generally need guidance, retraining programme on assessment, adequate usage of assessment tools to develop the cognitive and higher order thinking skills of students.
3. Computer based test and Student portfolios received much less usage by the science teachers in the classrooms. More emphases should be placed on the adoption or utilization of these assessment modes as external examination bodies, such as JAMB, WAEC, NECO and so on now adopt the modes to screen and weed their candidates while securing admission into the tertiary institutions as well as placement for employment opportunities.

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