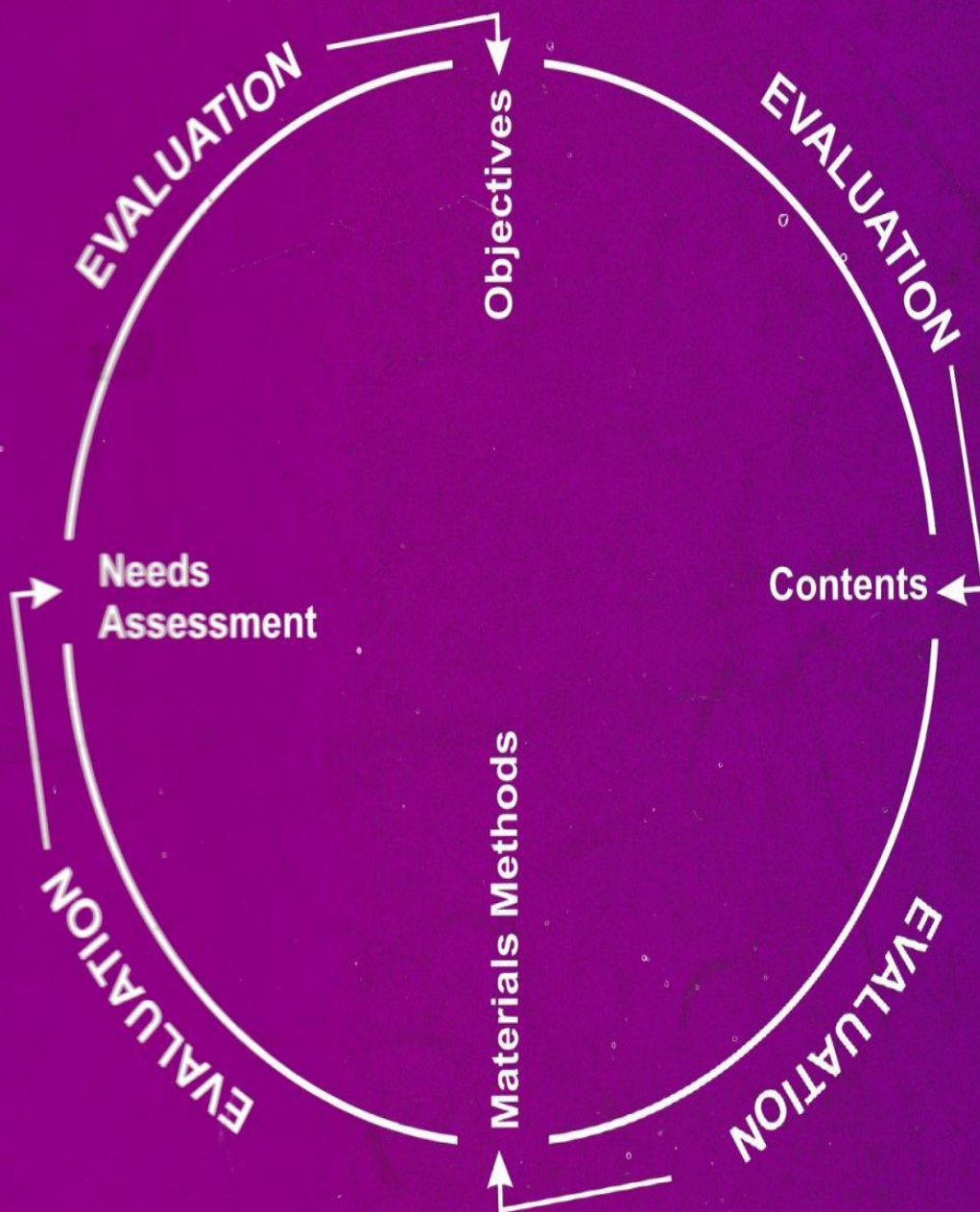




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# CHALLENGES AND PROSPECTS OF ASSESSMENT PRACTICES IN SENIOR SECONDARY SCHOOL SCIENCE CURRICULUM

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## Abstract

The study determined the frequency, rank and perception of fifteen assessment tools used by Chemistry teachers. Three research questions were asked and answered. The study adopted a survey design. A sample size of 150 SS2 Chemistry students and 27 Chemistry teachers were drawn from four public schools in Uyo municipality of Akwa Ibom State. Two instruments, Chemistry Teachers Assessment Questionnaire (CTAQ) and Chemistry Students Assessment Questionnaire (CSAQ) were used to collect data for the study. The reliability coefficients for CTAQ were 0.72 and 0.78 while that of CSAQ was 0.72. The data were analyzed using percentage, mean and standard deviation. The results showed that teachers frequently used all other tools except questionnaire, observation and interview. It was also observed that large class size and poor remuneration were rated very high with a mean score of 2.6 as these posed challenges facing assessment practices. It was concluded that teachers should use variety of assessment tools during evaluation of any teaching/learning process and recommended that new teachers should be recruited.

## Introduction

Assessment is a crucial mechanism in developing the minds, thoughts and creative ability of students in any educational system. It serves as a mirror to expose the strengths and weakness of curriculum implementation. Effective and meaningful assessment relates to assessment procedure and instruments, capacity for processing examination data and utilization of assessment results to solve

problems (Badmus, 2005). FME (2004) bases the assessment of students on continuous assessment and final examinations. Kika, Mclaughling and Dixon (1992) asserted that brief and frequent assessments are more effective than long infrequent ones.

A look at the science curriculum indicates that there are problems especially in assessment techniques that require urgent reformation. Yearly statistics from the West African Examination Council (WAEC) reveal that the percentage failure recorded in Chemistry over the year is very high (Salau, 1996). Students' poor performance could be due to bad test, poor timing, inadequate time allocated and the nature of test itself (Meres & Fraser 2004). Inyang (2007) stated that science curriculum materials contain assessment items but do not offer guides for the construction of assessment items. For any meaningful teaching/learning, it is appropriate assessment technique that will mirror the extent of implementation. Teachers abuse and inflate scores thereby making nonsense of predictive validity of such scores (Adeyegbe, 2004). Thus scores from teacher-made test are always at variance with student' scores conducted by NECO and WAEC.

Ivowi (2008) noted that students' continuous assessment scores are much higher than their corresponding scores in SSCE conducted by NECO and WAEC. The science curriculum is outdated, overloaded, and not relevant with over 50% failure in all subjects (Akpan, 2008). Then the question is what are the challenges faced by teachers in assessing students? What are the types of assessment instruments used?

### **Challenges of Assessment in Secondary Schools**

Students' performances are judged based on the combination of continuous assessment (internal exams) and terminal assessment (external exams). The reliability and effectiveness of such assessment especially the internal exams depend to a large extent on the characteristics of assessment tools. Such characteristics include reliability, validity, variety, accuracy of measurement, recording and fairness in scoring. Sadly, such characteristics are hardly achieved



because teachers are faced with daunting challenges regarding assessment. These challenges range from lack of time, poor equipment, overloading of curriculum content, large class size, incessant strike by teachers and examination malpractices. Others are lackadaisical attitudes of teachers and students, poor supervision, over-crowded timetable, interruption due to extra curricular activities and poor remuneration to teachers. Denga (1989) identified constant strikes, fee rises, shortages of teachers, inability to record assessment scores and lack of guidance counselors in schools as factors affecting effective assessment. Assessment should be comprehensive, reliable and valid. To actualize this, teacher must be committed, use appropriate and variety of assessment tools and assess regularly. Gyuse and Ada (2005) agreed that teachers in Nigeria are not devoted to work and the result is irregular grading of students after tests and examinations. They also submitted that teachers' remuneration is not commensurate with their jobs. Hence, there is laxity in the daily execution of their duties.

Teachers abuse assessment scores and grades. Most of them lack the required skills for setting questions and after inflate scores, thereby making nonsense of possible predictive validity of such scores. (Adeyegbe, 2004). The fact that the problems pose a challenge to effective and meaningful teaching and learning implies that there is need to revisit assessment practices in secondary schools science curriculum.

### **The Role of the Teacher**

The teacher is the pivot of any educational process. Students' achievement depends on the type and the appropriateness assessment tools used during evaluation. Offorma (2006) asserted that the teachers are the major determinant of success in the school. Hence, teachers are a critical resource for effectiveness and meaningful assessment in the classroom. Valuable information about students in the three domains of learning can be obtained using various instruments such as test, class assignment, project, homework, field trip, questionnaire and classroom observations.

Good teaching cannot exist without good students' assessment by teachers. This invariably calls for teachers who are well disposed, committed, and capable of setting valid and reliable questions and who would use a variety of assessment tools. Students learn more when assessment is an integral part of instruction and effective teaching boils down to good instruction and good assessment (Ariyibi, 2008).

### **Research Questions**

The study sought to answer the following questions

1. How frequent do teachers use the different types of assessment tools?
2. What are the possible problems faced by teachers in assessing students?
3. What is the chemistry students' perception of these assessment tools?

### **Methodology**

#### **Research Design**

The study employed descriptive survey research design to seek opinions of teachers and students on assessment practices in secondary school.

### **Population**

The target population consisted of all the senior secondary II (SSII) science students from all the government owned secondary schools in Uyo municipality of Akwa Ibom State.

### **Sample and Sampling Techniques**

Simple random technique was used to select four schools from the target population. Balloting technique was used to select 150 SS II chemistry students and 27 chemistry teachers as sample for the study from the selected schools.

## **Instrumentation**

Two instruments Chemistry Students' Assessment Questionnaire (CSAQ) and Chemistry Teachers Assessment Questionnaire (CTAQ) were used. The CSAQ contained two parts, part I was on demographic variables and part 2 was to elicit the degree of agreement and disagreement with the 15 item statements based on a four Likert scale of Strongly Agreed=4, Agreed=3, Disagreed=2 and Strongly Disagreed=1. The second questionnaire, CTAQ, was for chemistry teachers. Part 1 used Always=3points, Sometimes=2points and Never=1point to elicit information on the frequency of use and part 2 used a four Likert scale of Strongly Agreed=4, Agreed=3, Disagreed=2 and Strongly Disagreed=1 to determine chemistry teachers' ranking of challenges in assessment of students.

## **Validation of Instrument**

The instruments were face and content validated by three experts, two of whom were specialists in test and measurement and an experienced secondary school classroom teacher of chemistry. They offered useful suggestions and modified some of the items.

## **Reliability**

The reliability indices of 0.82 for CSAQ, 0.72 and 0.78 for section A and B of CTAQ were obtained. The data obtained from CSAQ were analyzed using means. A mean of 2.50 and above indicated a positive statement and below 2.50 was an indication of negative statement. For CTAQ Section A data collected were analyzed using frequency counts and percentages. Section B used mean, standard deviation and ranking. A mean of 2.0 and above indicated high ranking and below 2.0 indicated low ranking.

## **Administration of Instrument**

Instruments were administered to the students and selected chemistry teachers in the 4 respective schools after due permission from the school principals. Both students and teachers responded to the items independently. The completed questionnaires were collected immediately by the researchers. A total of 177 questionnaires were collected from the 150 chemistry students and 27 chemistry teachers respectively. Instrument administration lasted for two weeks.

## Findings and Discussions

**Table 1:** Frequency and Percentage of chemistry teachers' use of Assessment tools.

S/N	ASSESSMENT TOOL	NO. OF RESPONDENTS	ALWAYS		SOMETIMES		NEVER	
			F	%	F	%	F	%
1.	Test (Oral and written)	27	25	95.60	2	7.40	0	0
2.	Project	27	10	37.0	5	18.50	12	44.50
3.	Questionnaire	27	0	0	7	25.90	20	74.10
4.	Assignment	27	20	74.10	7	25.90	0	0
5.	Homework	27	16	81.48	5	18.50	0	0
6.	Short quiz	27	16	59.30	11	40.74	0	0
7.	Examination	27	13	48.12	14	51.85	0	0
8.	Essay writing	27	7	25.90	15	55.60	5	18.50
9.	On the spot assessment	27	5	18.50	5	18.50	17	62.96
10.	Check list	27	4	14.80	5	18.50	18	66.70
11.	Observation	27	0	0	10	37.0	17	63.96
12.	Interview	27	0	0	0	0	27	100
13.	Multiple choice objective	27	14	51.9	13	48.1	0	0
14.	Field trip	27	7	25.93	18	66.67	2	7.40
15.	Combination of two or more	27	22	81.50	5	18.50	0	0

Table 1 shows the result of analysis as related to question 1 on the degree of frequency of use of assessment tools by chemistry teacher. It revealed that test, homework and combination of two assessment tools are always used as indicated by a high frequency of 95.60%, 81.48%, 81.50% and 74.10% respectively. The result also showed that fieldtrip, examinations and essay writings with scores of 66.67%, 51.85% and 55.60% are sometimes used by teachers in assessing students. However, interview has a negative response of 100%, followed by questionnaire 74%, checklist 66.7%, on the spot 62.96% and observation 62.95% in that order.



**Table 2:** Mean and Standard Deviation of chemistry teachers' ranking of challenges in assessment.

S/N	CHALLENGES IN ASSESSMENT	X	SD	RANK ORDER
1.		2.6	0.56	1 <sup>st</sup>
2.	Teachers do not frequently assess students because of work load and lack of supervision.	2.2	0.77	7 <sup>th</sup>
3.	Teachers make nonsense of assessment because of poor remuneration.	2.6	0.58	1 <sup>st</sup>
4.	Students poor attitude towards assessment is a discouragement towards meaningful assessment.	1.5	0.74	15 <sup>th</sup>
5.	Incessant strikes by teachers is a challenge to effective assessment.	2.3	0.74	5 <sup>th</sup>
6.	The curriculum is too demanding so there is no time from assessment.	2.1	0.63	8 <sup>th</sup>
7.	I find it difficult to set questions that are valid and reliable because I was not trained.	2.1	0.86	8 <sup>th</sup>
8.	Extra-curricular activities like sport, compound work always affect assessment in schools.	2.5	0.75	3 <sup>rd</sup>
9.	Teachers un fairness in scoring is a challenge to effective assessment.	1.8	0.78	11 <sup>th</sup>
10.	Poor infrastructure such as inadequate classroom space and seats pose problems to meaningful assessment.	2.4	0.85	4 <sup>th</sup>
11.	Students belief in exam malpractice makes assessment difficult.	1.7	.85	13 <sup>th</sup>
12.	Lateness and absenteeism on the part of the students is a threat to effective assessment.	2.0	0.72	10 <sup>th</sup>
13.	Lack of fund and resource materials hinders effective assessment.	2.2	0.77	6 <sup>th</sup>
14.	Test aversion is a problem to assessment.	1.6	0.71	14 <sup>th</sup>
15.	Some topics are difficult to assess because of the abstract nature.	1.8	0.78	11 <sup>th</sup>

The result presented on Table 2 indicated that chemistry teachers ranked items 1, 3, 8 and 10 with 2.6, 2.5 and 2.4 as serious challenges facing assessment practices in schools.



**Table 3:** Mean and Standard Deviation of Chemistry students perception of Assessment Tools.

S/N	STUDENTS PERCEPTION	X	SD	REMARK
1.	I like written test than oral test.	2.7	1.1	Positive
2.	It is easier to pass with multiple choice question.	3.0	0.73	Positive
3.	Essay type of test is very ambiguous, in most cases and cannot be understood.	2.40	0.49	Negative
4.	Assignment is the best tool for assessment.	2.9	1.06	Positive
5.	On the spot assessment can motivate students to learn.	1.90	1.06	Negative
6.	Project method is irrelevant as assessment tool in chemistry.	2.7	0.88	Positive
7.	I understand questions better when short quiz is used.	2.5	1.02	Positive
8.	Examination motivates students to learn.	2.9	0.90	Positive
9.	Observation lacks the mental process for effective concept understanding.	2.4	0.80	Negative
10.	Interview is not reliable.	2.60	1.0	Positive
11.	Homework is time consuming.	2.40	0.80	Negative
12.	Questionnaire promotes fear.	3.2	0.90	Positive
13.	Variety of assessment instrument is always used by my teacher.	2.4	0.80	Negative
14.	Frequent assessment helps me assimilate chemistry concept effectively.	3.0	0.73	Positive
15.	Use of checklist enhances our mental capacity to learn and acquire skill.	2.8	0.83	Positive

Table 3 was used to answer question 3. the mean score for 10 items out of 15 asked in respect to the use of assessment tools was above 2.55, being the bench mark for agree or disagree. Negative acceptance was shown to items 3, 5, 9, 11 and 13 which indicated that they are difficult, time consuming, cause fear and lack motivation to learn. This is in consistent with Meres and Fraser (2004) statement that poor students' performance could be as a result of bad test, fear, confusing instructions, poor timing and inadequate time allotted for the test.

### Discussion

Research question 1 aimed at identifying the frequency of use of different types of assessment tools. It revealed that oral and written test have the highest score of 95.60%. Combination of two assessment tools gave 81.50%, homework gave 81.48% while assignments gave 74.10%. This implies that teachers frequently use six out of the fifteen assessment tools. This is in agreement with Kika, Mclaughling and Dixon (1992) observations that brief and frequent assessments are more effective than long infrequent ones.

The observed zero usage of questionnaire, observation and interview indicated that chemistry teachers do find it difficult to construct appropriate questions and using them. As indicated by Inyang (2007), science curriculum contain assessment items but do not provide guides for the construction of the items.

For question 2, the findings revealed that large class size, poor remuneration, extra-curricular activities and poor infrastructure pose serious threat to meaningful/effective assessment. This is supported by Denga (1989) and Gyuse and Ada (2005) who noted shortage of teachers and poor remunerations as critical factors in Nigerian education system.

### **Prospects of Assessment Practices in Schools**

The American Federation of Teachers (1990) opined that assessment competencies are an essential part of teaching and good teaching cannot exist without good students' assessment. The prospects of assessment practices hinges on certain factors such as identification of appropriate assessment techniques, integrating assessment into teaching/learning process and providing feedback to the learners on the outcome of the assessment. The teacher is to make adequate plans before carrying out assessment frequently and use variety of assessment tools that are brief, valid and reliable to foster learning and retention.

### **Conclusion**

Meaningful teaching/learning cannot exist without good students' assessments, which bother on effective use of assessment tools by teachers. Students learn more when assessment is an integral part of instruction. Government should motivate teachers through regular payment of salaries and other incentives so that assessment is carried out regularly. Stakeholders of education should organize seminars and workshops to sensitize teachers. Schools should set up assessment committees for monitoring and implementation process. For meaningful assessment and testing of skills, projects and on-the-spot assessment tools should be used alongside other types of tools. Challenges such as large class size should be addressed through recruitment of new teachers and provision of classroom blocks.

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