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The Relevance of Instructional Materials in Teaching and Learning Chemistry (A Case Study of Selected Secondary School in Maradun Local Government Zamfara State)

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ABSTRACT:

This research examined the effects of availability and use of instructional materials in teaching chemistry curriculum content at Senior Secondary Schools in Zamfara State. The objective was investigated to know whether or not provisions are, made for acquisitions of instructional materials in school, and factors militating against the use of instructional materials, also examined the effect of non-usage of the instructional materials in teaching of Chemistry in Secondary schools. Experience in teaching chemistry in secondary schools has shown that there are problems facing students in learning chemistry, without the aid of instructional materials. It is also known that the standard of students performance in chemistry keep falling or deteriorating due to in effective usage of instructional materials in teaching/learning process of chemistry, hence need to a cord chemistry of acquired attention in the use of instructional materials. The study therefore examined the feasibility and available for the instructional materials to ameliorate the daunting challenges of paucity of instructional for teaching chemistry in Secondary Schools. To achieved these objectives, both descriptive and parametric analysis were employed in the study. The finding of this study contribute positively to prompting teaching/learning chemistry ins secondary schools.

Keywords: relevance, instructional materials, Secondary School, Maradun.

INTRODUCTION:

Chemistry instrumental materials are objects which the learner can see, tough and hear from and which can be add to the effectiveness of learning. It is believed that all learning outcomes are the resort of sensory experiences. Much appeal is made to the sense of hearing in learning process.

If there is to be improvement in the learning process as of Chemistry, the greater potentials that sight can offer are to be taken advantage of instructional materials can be of value to both learners and teaching, and is of much assistance to the learner to grasp all that is taught in the classroom for the day, (Abdulqudus M. 2015). Instructional materials varies for each subject, under the umbrella of chemistry in practical, there are reagents, practical text books, exercise book for writing. (Amadiohasw 2020).

However real effectiveness of use of instructional materials depend on the student and teachers, it is quite unfortunate that some chemistry students find it default to access materials to aids in easy assimilation of the chemistry studies concepts, (STAN 2020). There is need to make use of instructional materials which help the students to bring out their best in all the topics under chemistry, (Olayinka AB 2016). Even though instructional materials do not perform magic in the learning activities of students, they are learning devices needed for the students to understand topics taught under chemistry (Anajite G.O et – al., 2019).

The influence of instructional materials in promoting students academic performance and teaching and learning in educational development is indisputable. The teaching of chemistry in Nigerian secondary schools needs to be properly handle instructional materials are materials which assist teachers to make their lessons explicit to learners. They are also use to transmit information ideas and notes to learners. (Jimoh 2017).

Instructional materials includes both visual and audiovisuals such as pictures, flash cards, posters, charts tape, recorder, radio, video, television and computers. If educational program is to be planned, and if efforts for continued improvements are to be made, it is very necessary to have some conception the goal that are being aimed at the educational objectives become a criteria by which materials are selected, contents in outline, instructional procedures are developed. Education, according to (Kakure 2016). Consists of two components inputs and output. According to him, inputs consist of human and material resources and outputs are the goals and outcomes of the educational process.

Instructional materials which are educational inputs are of vital importance to the teaching of any subjects in the school curriculum. In all human society past and presents, education has been instrumental impacting positively to the survival of individuals and the society, indeed instructional materials provides concepts and attitude to the students which improved his/her skills, ability to reason and makes him/her informed about what is going on globally. (Tukur,2019). The use of instructional materials makes different continents to shape their rules and regulations, to accommodate others (Ekpoj 2022).

This is done by providing them with the socio – cultural and poetical ways. It makes students understand more effective (Lardi, 2016).

Instructional materials stimulates the students desire to learn, enhance learning process by making as simulation and memorization of material (Kayi 2018).

MATERIALS AND METHODS:

Two questionnaire, a set of oral item and visit was done to schools chemistry laboratories were research tool was formed. They were validated by pretesting on small fraction of the population and vetting by two experts.

The first questionnaire was directed to the chemistry teachers. It consist of 30 items soliciting information on chemistry practical apparatus, type, status and number of science materials like burettes and pipette available, students enrolment in chemistry, the SSCE results and the number of chemistry teachers. It also contained inventory items on reagents, water tap safety gadgets available. There ten structured items on laboratory safety awareness.

The second questionnaire directed to the best five chemistry students in the class that had five simple items soliciting information on practical bases.

SAMPLING PROCEDURE:

The research was conducted is five (5) secondary schools in Maradun Local Government, Zamfara State. The schools include private and public School. The schools are as follows: Muallayidi Arabic Secondary Schools, Government Day Secondary School, Government Girls Day Secondary School, Ahmad Memorial Islamic Science Academy, Maradun Islamic Academy, Ashab International School. It was thought that the private schools are more likely to be among the best equipped and staffed.

DATA COLLECTION:

Chemistry teachers were directly administered the first questionnaire. They administered the second type on the best five chemistry students in their respective schools. Questionnaires were retrieved immediate. Oral items were mentally recorded. Chemistry laboratories were visited to assess their status and available infrastructure.

Availability of Science Material (Table 2)

(a) Essential Glassware

Each chemistry student should normally have one burette, one pipette, for conical flasks (250m3) and 9-10 boiling and test tubes (medium size) with excess for immediate replacement in case of breakage. This is to enable student perform chemical analysis experiments individually. However Table 2 shows that public schools have very low numbers of glassware per student. The situation on private schools is fair but the optimum condition was not generally achieved.

DATA ANALYSIS

The number of science materials like burettes and pipettes available per student were calculated for each schools by dividing the available total numbers of each, by the numbers of chemistry students. Inventory survey of bench and stock reagents, energy and water sources and the responses to the structured items were analyzed as percentages. Finding from oral question were treated qualitatively.

RESULTS:

The following are the findings from the research

A. Distribution of certain features in the schools. (Table 1)

(a) Weekly Chemistry practical classes.

TABLE 2: AVAILABILITY PER STUDENT OF SOME GLASSWARE AND ENERGY SOURCE

NUMBER PER STUDENT **ENERGY TYPE**

PERCENTAGE NUMBER PER STUDENT					**ENERGY TYPE**	
	Burette	**Pipette**	**Conical Flask**	**Test Tube**	**Kerosene**	**Gas**
1. MASS Maradun Public School	0.70	1.07	1.17	2.15	40%	10%
2. GDSS Maradun Public School	0.86	0.71	0.57	1.52	60.0%	15%

3.	GGDSS Maradun						
	Public School	0.45	0.36	0.63	2.10	30.7%	20.3%
4.	AMISA Maradun						
	Public School	0.54	0.63	0.7	2.3	70%	17%
5.	MIA Maradun						
	Public School	0.40	1.30	2.00	2.10	75%	14%
	MEAN						
	Public School	0.58	0.73	0.85	2.84		
	Private School	1.15	1.20	2.38	4.43	60.50%	20.25%

CHEMICALS/REAGENTS

The availability of concentrated HCI, H_2SO_4, HNO_3 and their dilute solution and aqueous NaOH, lime water and ammonia solutions are regarded as an indication of good chemicals supplies. Data showed that most schools had 1 or 2 of the stock acids, and 3 to 4 of the bench reagents. However, the available concentrated acids were present in relatively small quantities or volume.

SUMMARY OF FINDINGS

a) Chemistry classes in public schools are very large. It has bad implication for available laboratory space per student and teaching effectiveness.

b) Chemistry practical classes are not held weekly in most public schools, they hold only a few weeks to the final SSCE examination.

c) Chemistry students in public student perform badly in SSCE examinations than those in private schools.

d) Instructional materials needed by student to conduct chemistry experiment individually in public schools are in short supplies.

e) These is laboratory safety awareness but infrastructure for emergencies like fires fighting etc. are absent.

f) Laboratory accidents are few because laboratory exercises are few also because accidents are not recorded. None of the sampled schools has laboratory accident record book, some had breakage records.

DISCUSSION

The situation in the school chemistry instructional materials could be as a result of:

a) Little or no fund made available for chemistry some state government do bulks purchases of materials at outrageous prices and distribute to public schools with no regards to schools needs. The only source to fund is taken additional money for examination registration of candidates.

b) Once science is approved for a school such approval remains, no matter how badly the laboratory situation deteriorates.

c) Burglary rate of science laboratories is on the increase. Chemistry teachers who keep the keys to the laboratories prefer not to buy or keep science materials in the laboratory store to forestall unpleasant experience of police trouble in case of break – in.

d) Available materials do not meet students needs to work individually. The quantity and quality of materials and infrastructure are inadequate and stretched since the consumption rate usually exceeds replacement.

e) Teachers and laboratory staff, where these exist, carry excessive work load so that practical's are irregular. It has implications on available laboratory space per student, preparation for and supervision of practical and teaching effectiveness.

RECOMMENDATION

Chemistry is unique in the rate of resources consumption. Sufficient funds and infrastructure maintenance effort are therefore, essential inputs. Government and other donor agencies should make necessary provision of enough text books, reagent for secondary school student, they should also assist the teachers to at least a better way of life.

CONCLUSION:

The instructional materials in teaching and learning chemistry in secondary schools need to be improve, since these materials have some inherent advantages that make teacher unique in teaching.

Public schools need to be given money to run the activities of their laboratories smoothly. As this can enhance the students performance in the area of chemistry. The teaching of chemistry in Nigerian secondary school need to be handle properly through provision of adequate instructional materials across all secondary schools in Maradun and Zamfara State, since no any professional qualifications can be obtained without passing chemistry subject with atleast credit in SSCE result.

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