

## **IMPROVISATION AND UTILIZATION OF LEARNING RESOURCES FOR CHEMISTRY TEACHING AND LEARNING: IN SELECTED SENIOR SECONDARY SCHOOLS IN IJERO LOCAL GOVERNMENT AREA OF EKITI STATE.**

**BY**

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### **ABSTRACT**

**T**his study examines the improvisation and utilization of learning resources for the teaching and learning of Chemistry in Senior Secondary Schools in Ijero Local Government area of Ekiti State. Relevant data were collected by means of structured questionnaire titled learning resource for Chemistry teaching. Two sets of questionnaire were designed for both the teachers and students of Chemistry. Four Secondary Schools were visited in Ijero Local Government area of Ekiti State. Data were analyzed in percentage. The finding revealed that materials for the teaching and learning of Chemistry in the Schools were grossly inadequate and the level of improvisation was low as well. The few available learning materials were not properly utilized for teaching and learning of Chemistry. Also, most teachers of Chemistry do not possess the needed skills for improvisation. Based on the finding it was recommended that on the job training should be provided for the Chemistry teachers and fund should be made available by Ekiti State Ministry of Education and agencies for funding Science Education, potentially in the State.

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### **Introduction**

**S**cience as a field of study has done a lot for mankind. Life has been made more comfortable for man as a result of the advancement in Science. Through science, man has been able to manipulate the conditions of his environment to suit his own benefit.

The importance of chemistry as a requirement for technological development cannot be over emphasized. The national

policy on education FRN 1998 stressed that students should be well equipped to live effectively in our modern age of science and technology. To achieve this laudable aim, chemistry as a subject has been included as an elective subject to be taught in the senior Secondary School. The science of Chemistry aims at determining the nature and properties of nonliving matter which surround mankind and the preparation of new substances from materials which nature has provided (Balogun, 1995). Chemistry is regarded as the hub of Science in between physics and biology, thus it is considered as a

service subject, therefore, it is involved in several related disciplines such as medicine, pharmacy, agricultural food technology, nursing, engineering just to mention a few.

Effective teaching and learning of chemistry depend greatly on adequacy, relevance and effective use of learning resources or instructional materials. For effective chemistry teaching to be achieved, it requires the ability to improvise and utilize timely relevant instructional resources directed towards meeting specific need of the learners. Thus a child learns more from what he sees or touches than what he reads. In fact, it may be a distinct advantages to the chemistry teachers if the chemistry students are able to make use of the learning resources for effective learning and boost the morale and creates more interests in the students (FRN, 1998). In some cases, improvisation of suitable instructional materials can be done during practical lesson. This should be encouraged as far as possible as it is of greater educational values to such chemistry student to make use of his/her own hand and eyes, to see things coming to reality through the use of learning resources. Since chemistry is one of the practical oriented subjects, therefore, it is important to make use of instructional materials in order to make teaching and learning of the subject more meaningful and real (Bajah, 1983).

Nowadays, chemistry teachers are dealing with children who are very curious about what goes on in the classroom and their environment. Since the children show their curiosity by asking challenging

questions from their teachers, it is therefore, becomes imperative to use some learning resources to enrich the learning and teaching processes in the classroom. Most chemistry teachers teach most of the topics in abstract form and consequently the chemistry students in schools lack practical experience which can enable them to relate what they are being taught in the classroom to their day to day experience (Burton, 1992). There is also, the problem of lack of competence on the part of the chemistry teacher to improvise and use learning resources effectively. Moreover, some schools could not purchase the required instructional materials for chemistry teaching due to their high cost. This situation has compelled many chemistry teachers to avoid using these instructional materials as they could not afford them. This study therefore, focuses on the improvisation and utilization of instructional learning resources for schools.

### **Research Methodology**

This study is the survey of the level of improvisation and utilization of learning resources for chemistry teaching and learning in selected senior secondary schools in Ijero Local Government area of Ekiti State.

### **Study Population**

The research was carried out in Ijero Local Government area of Ekiti State. Although there are about fourteen public senior secondary schools in the local government, four Schools were randomly

selected to represent the whole. The Schools were: Doherty memorial senior Secondary School, Ijro Ekiti, Odo-owa memorial senior secondary School, Odo-owa, Ekiti, Ayetoro-iloru community senior secondary School, Ayetoro, Iloro Ekiti and Ekameta Community senior Secondary School, Epe, Ara, Araromi Ekiti.

### **Sampling Technique**

The subject for the study were Chemistry students and teachers of the senior secondary classes in the sample schools in Ijero Local Government area of Ekiti State. In all, one hundred representatives sample of students and ten teachers were involved in the study. The sample Schools were selected through simple random sampling technique. This was done as follows. All the names of the senior Secondary Schools in the Local Government area were written out separately on pieces of paper folded and mixed together these were handpicked by people randomly.

### **Research Instrument**

Two types of questionnaires were used. One for the students and the other for chemistry teachers in these Schools. The students questionnaire titled learning resources questionnaire for student was aimed at finding out the availability and utilization of learning resources in their Schools. The questionnaire further probes into whether local materials are improvised in their Schools or not. The teachers

questionnaire titled learning resources questionnaire for teachers was designed to find out information about the academic qualification of the chemistry teachers, the level of improvisation of teaching and learning resources for effective teaching and learning of Chemistry and cooperation enjoyed.

On the spot observation was also done by the researcher on both the Chemistry students and their teachers in all the School visited. This observation is to further verify the information already supplied in the questionnaire. Confirmation of require responses to the questionnaire was made during the on the spot observation of the students and the teachers by the researcher in all the Schools visited. The reliability of instruments was established through Test-Retest method. Twenty samples of the questionnaires were administered to twenty Chemistry teachers and twenty Chemistry students in the sample Schools. Their scores were corrected using person product movement correlation formulation. A correlation coefficient of 0.86 (teacher) and 0.34 (students) obtained, indicate that the instruments are reliable.

### **Method of Analysis**

The main method adopted in the analysis of the questionnaire is percentage. The total responses on each question were descriptively analyzed using frequency table. The responses were there after scored and expressed in percentages.

**Data Analysis**

Research question 1: Are you aware of the production of locally made Chemistry

learning resources in your School?  
Table 1 – Students responses from the local environment for Chemistry teaching and learning

Forms of improvised material	Responses			
	Yes	%	No	%
Pipette	20	21.1	75	78.9
Beaker	17	10.5	85	89.5
Bunsen burner	19	20.0	76	80.0
Oven	19	20.0	76	80.0
Test tubes	22	23.2	73	76.8
Burette	15	15.8	80	84.2
Measuring jar	12	12.6	83	87.4
Periodic table	10	10.5	85	89.5
Tripod stand	20	21.1	75	78.9
Spatula	16	16.8	78	83.2

From the above table 1, it is shown that the students are aware of the production of learning resources from the local environment for Chemistry teaching and learning but the attention giving to it is encouraging. From the table, it is obvious that, pipette, burette, spatula, measuring jar

and periodic table are not adequately produced in the Schools as shown by their percentages; 89.5%, 84.2%, 83.2%, 87.4% and 89.5% respectively.

Research question 2: Who are those involved in the improvisation of learning resources in your School?

Table 2: Students resources on categories of people involved in the improvisation of learning resources for Chemistry.

People involved in improvisation	Responses			
	Yes	%	No	%
Chemistry teachers	70	73.7	25	26.3
Chemistry students	68	71.6	27	28.4
Government	20	21.1	75	78.9
Parents	10	10.5	85	89.5
Other School personnel	11	11.6	84	88.4
Artisans from the community	5	5.3	90	94.7

The data in table 2 above shows that Chemistry teachers and Chemistry students are really involve in the improvisation of learning resources as shown by 73.7% for chemistry teachers and 71.6% for Chemistry students. Even though not actively involve, parents, other School personnel and artisans from the community take part in the

improvisation of Chemistry learning resources as indicated by 10.5%, 11.6% and 5.3% respectively.

Research question 3: How adequate are these locally produced materials for Chemistry teaching in the Schools?

Table 3: Students response on adequacy of locally produced materials for Chemistry teaching.

Resources	Adequate	%	Inadequate	%	Not available	%
Periodic table	22	23.2	50	61.1	15	15.7
Bunsen burner	15	15.8	50	52.6	30	31.6
Test tubes	35	36.8	55	57.9	5	5.3
Fire extinguisher	5	5.3	66	69.4	24	25.3
Spatula	40	42.1	51	53.7	4	4.2
Tripod stand	20	21.1	60	63.2	15	15.7
Burette	40	42.1	50	52.6	5	5.3
Pipette	40	42.1	50	52.6	5	5.3
Weighing balance	5	5.3	75	78.9	15	15.8
Retort stand	20	21.1	66	69.4	9	9.5
Beaker	30	31.6	55	57.9	10	10.5
Conical flask	35	36.8	55	57.9	5	5.3
Measuring jar	20	21.1	60	63.2	15	15.5
Round bottom flask	5	5.3	60	63.2	30	31.6
Water bath	5	5.3	75	78.9	15	15.8

From the table above, it is obvious that the learning resources for Chemistry teaching are grossly inadequate in all the studied Schools. For instance, the adequacy of periodic table is 23.2%, Bunsen burner 15.8%, test tube 36.8%, Burette and Pipette 42.1%, Beaker 31.6% and measuring jar 21.1%. All these apparatus are constantly used in the chemistry laboratory for

experiments, their inadequacy and lack of improvisation will definitely affect the teaching and learning of Chemistry by the teachers and students respectively.

Research question 4: Are chemistry teachers trained on production and utilization of learning resources and does learning resources enhance teaching and learning of Chemistry?

Table 4: This show the responses of the Chemistry teacher on special training on production and utilization of learning resources.

Special ability and support	Responses			
	Yes	%	No	%
Special training on resources production	3	33.3	6	66.7
Special training on resources utilisation	3	33.3	6	66.7
School support chemistry teachers training on resources improvisation and utilisation	4	44.4	5	55.6
Cooperation of students	6	66.7	3	33.3
Cooperation of parents	2	22.2	7	77.8

As clearly indicated in table 4, only few of the chemistry teachers undergo special training on improvisation of learning resources, 33.3%, the same percentage indicated that they have special training of learning resources utilization. The support receive from the School management is not encouraging as indicated by 44.4%. Majority of the students, 66.7% cooperate with the teachers on improvisation and

utilization of chemistry learning resources. Also, there is poor cooperation of parents, 22.2% on the improvisation of chemistry learning resources in the studied Schools.

Research question 5: How do you utilize the materials for the teaching of ChemistryE

Table 5: This shows teachers responses on utilization of chemistry resources.

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Resources utilisation	Responses			
	Yes	%	No	%
Passing materials round	3	33.3	6	66.7
Giving each student	1	11.1	8	88.9
Hanging on chalkboard	8	88.9	1	11.1
Hanging on plartform	2	22.2	6	66,7
Placing on central table	3	33.2	6	66.7

It is shown from the table 5 above, 33.3% of the Chemistry teachers passes round the teaching resources, 11.1% of chemistry teachers gives each student the teaching material, this percentage is too low, because this should have been the best method for every student to have a sample each of the teaching resources, 88.9% of chemistry teacher hangs the teaching resources on chalkboard for students to see.

While 22.2% hangs the teaching resources on a platform for the students.

### DISCUSSION OF FINDINGS

From the analysis of data collected, it was discovered that, virtually all the Schools has shortage of the instructional materials required for smooth execution of effective chemistry teaching and much is not done on improvisation for chemistry teaching and



learning resources. Even though, students are aware of the production of chemistry learning resources in their schools, the production is very low from their responses due to factors such as financial constraint, that is, there is no financial backing from the government through schools administrators to support improvisation of chemistry teaching and learning resources.

More so, non-challant attitudes of chemistry students towards improvisation of chemistry learning resources bring about low production of these materials. As it is not possible for the chemistry teachers to do everything alone, he has to involve his chemistry students and when there is no cooperation with him on the improvisation exercise, the production of such teaching materials suffers. In addition, poor support from the school administrator does not encourage improvisation of teaching and learning resources.

Except some drastic measures are taken to redeem the current poor situation of learning materials improvisation, the laudable curriculum produced by the experts would only be a waste as the objectives will

not be achieved without proper teaching learning materials (Koleoso, 2000). It was also discovered from the study that majority of the teachers don't undergo any special course on improvisation, a factor which hinders their effectiveness in improvisation exercise. Despite the positive responses that local materials were improvised for the teaching of chemistry, in the studied schools, the production level is very low as confirmed by the lack of some instructional materials for chemistry teaching. The school administrators only rely on the importation of these materials by the government which are not supplied or supply is not enough.

More so, the data analyzed shows that learning resources were not effectively utilized. According to Adebeyeje and Afolabi, 1991, for learning resources to be effective, the teacher has to consider the following factors: Identification, development, organization and utilization of learning resources. All these factors are not properly taken care of in the studied schools which has led to low level of improvisation of chemistry teaching and learning resources.

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