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Availability of laboratory equipment on chemistry in senior secondary school students and its effect on students' academic performance in Sokoto south local government, Sokoto state, Nigeria

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Abstract
The study investigated the effect of availability and utilization of instructional resources on student's performance in science in senior secondary schools in Sokoto State. A descriptive survey research design was used. Fourteen(14) science teachers in seven (4) sampled schools were selected across Sokoto south local government in the state. A total of three hundred and ten (310) senior secondary school students were selected as sample. one (3) instruments were used in collecting data which include checklist. The instruments were found valid for collecting data. Four (4) research questions were developed, of which research questions 1 ,2, 3 and 4 were answered using frequency and simple percentage. The findings revealed that there are Chemistry laboratory equipment in senior secondary schools but the equipment were not available and inadequately utilized by the science teachers. Based on the above findings, the researchers recommended the Ministry of Basic and Secondary Education officials should make sure that laboratory equipment are supplied to schools and the quantity should be supplied according to the number of students available in each school, the Ministry of Basic and Secondary Education and Ministry of Science and technology should make it compulsory to all the schools to provide adequate science laboratory facilities/ equipment to their schools for the successful conduct of practical's, or else refuse registration of schools refused to comply, ministry of Basic and Secondary Education Ministry of Science and technology should make appropriate plan to expose science teachers to training workshop on improvisation in order to update their techniques and also attend conferences, seminars and workshops on laboratory equipment, utilized and management, and Teachers should be encouraged to commit themselves into the effective use of Laboratory equipment.

Keywords: Availability, laboratory, Equipotent, Facility

Introduction
Chemistry is the branch of science that deals with the study of the composition and properties of matter, changes in matter, the laws and the principles that govern these changes (Ebbing, 1996). Chemistry is one of the subjects that is offered in the Nigerian secondary school curriculum (NCRDC, 2002). It is an important part of what is called science and an active and continually growing science that has vital importance to our world in both the realm of nature and realm of society (Anaso, 2010). According to Kauffman and Szmant (1987), chemistry is characterized as the most utilitarian of all the experimental sciences. For example, in Nigeria, a good secondary school education pass grade in chemistry is a prerequisite for joining medical and other professional courses. Poor performance in the subject means fewer students are able to join such professions, therefore lack of enough professionals leading to low health care provision and food insecurity in the country.

Since chemistry is the science that has the most direct and dramatic impact on our lives, and the science that shapes the world we will live in tomorrow, the performance of students in the subject is a major concern to any developing country (Khan, Hussain, Ali, Majoka, & Ramzan, 2011). The uniqueness of chemistry and the central role that it stands to play in the development of any nation when considered, are however, not evident in the performance of students. The students" performance in chemistry in Nigeria has been poor and unimpressive (Anaso, 2010).

In their study, Edomwonyi-Out andAvaa (2011) made an attempt to ascertain the remote causes for the poor performances reported in Nigeria in chemistry at the secondary level of education. Teacher variables, student variables and environment-related variables were investigated and the findings showed that these all contribute greatly to the poor performances of students in science subjects and chemistry in particular.

Chemistry a science subject, scientific inquiry is the primary process by which scientific knowledge is gained. One of the most effective vehicles by which the process of inquiry can be learnt is the laboratory where the student experiences first hand, the inquiry process (National Association of Chemistry Teachers, 2005). Thus, the study in a laboratory is an integral and essential part of a Chemistry course. Chemistry laboratory activities are hands-on experiences which emphasis process skills (Dike, 2008) which Agbo (2003) posited as motor skills that help the scientists to find answers to problems and enhance the learning of science. Laboratory activities also encourage students to construct knowledge by interaction with laboratory materials as they solve problems. Ado (2003) [3] further opined that it is very necessary that students manipulate materials and equipped in learning of Chemistry through equipment; this will help them not only to acquire science process skills and new knowledge but also scientific attitude such as honesty, open-mindedness and cooperation as moralities of science and enhance understanding and retention of difficult concepts and procedures. Laboratory facilities give students some basic insight into scientific concepts and leave them with feeling of the reality of science which in turn improves their academic performance in examinations (Habu, 2005).

Over the years, many have argued that science cannot be meaningful to students without worthwhile practical experiences or practical's in the school laboratory (Hofstein&Mamlok-Naaman, 2007). Typically, the term practical's means experiences in school settings where students interact with materials to observe and understand the natural world. Practical's are designed and conducted to engage students individually or in small groups, a method referred to as class experiment or in large-group demonstration settings, which is known as teacher demonstration method.

Since chemistry is a practical science, teaching and learning of chemistry should involve chemistry practicals. Chemistry practicals are an essential part of effective science education and science educators have suggested that there are rich benefits in learning from using laboratory activities (Millar, 2009). Anaso (2010) reports that researchers had observed that lack of chemistry practical's by Chemistry students" results in poor communication as well as observational skills; this gives rise to students" poor performance. Also, good quality chemistry practical helps in developing students" understanding of scientific processes and concepts (Dillon, 2008), hence the heavy investment made in the provision and equipping of chemistry laboratories in secondary schools.

Chemistry practical is an essential feature of secondary science education (Abrahams and Millar, 2008), hence high proportion of chemistry lesson time in secondary schools is given to chemistry practical with assumption that it leads to distinctive attainments in students. Although Abrahams and Millar report that questions have been raised by some science educators about their effectiveness as a teaching and learning strategy, this is yet to be thoroughly studied in Nigeria. Whilst such an approach is generally effective in getting students to do things with objects and materials, it is seen as relatively ineffective in developing their conceptual understanding of the associated scientific ideas and concepts. In countries with a tradition of chemistry practical in school chemistry teaching (such as the UK), chemistry practical are often seen by teachers and others (particularly scientists) as central to the appeal and effectiveness of chemistry learning (Abrahams & Millar, 2008). Although many science teachers believe that student chemistry practical lead to better learning and indeed better performance – because we all understand and remember things better if we have done them ourselves, many educators have expressed concern about their effectiveness in promoting learning (Millar, 2009). For example, Abimbola"s (1994) research on appraisal of the role of laboratory chemistry practical concludes that, continuing to accord a central role to laboratory work in science teaching does not seem reasonable and feasible any more in the developing countries. Due to arguments such as these and taking into consideration of the relatively high demand for resources and time, then the effectiveness and usefulness of chemistry practical's as a teaching and learning strategy has to be addressed.

Statement of the Problem

Chemistry has a crucial role in the rapid developments in science and technology. Since the Nigeria Vision 2020 emphasizes the role of science, technology and innovation (STI) in modern economy, then, good performance in the subject and other sciences is crucial. The school science curriculum in most countries has a distinct purpose of supplying new recruits to jobs requiring more detailed scientific knowledge and expertise then, learning of school chemistry, a science, provides the foundation for more advanced study leading to such jobs. Poor performance of students in chemistry is a major concern to teachers, policy makers and curriculum developers who are all geared towards achieving the Nigeria Vision 2020".

In Nigeria, chemistry practical are given a central and distinctive place in the teaching and learning of chemistry at the secondary school level. Although chemistry teaching and learning essentially involves chemistry practical and has a long tradition of student experimental work in schools, questions have been raised about the appropriate role and the reality of what is actually achieved by the chemistry practical especially with continued decline in performance in the subject. Despite the widespread use of chemistry practical as a teaching and learning strategy in school chemistry, and the view that increasing its amount would improve chemistry learning, some science educators have raised questions about its effectiveness. Although chemistry practical often occupy a massive share of curriculum time and resources, doubts have been raised about their effectiveness or their real educational value, as students continue to perform poorly in the subject. Therefore, this study sought to find out the effect of chemistry practical on students" performance in chemistry in Nigerian secondary schools in a bid to improve the academic achievement in the subject.

Research Objectives

The study aimed at achieving the following objectives. These were to:

1. Identify the availability of chemistry laboratory equipment on students' academic performance in secondary school in sokoto south Local Government.
2. Determine the availability adequacy in the provision of these chemistry laboratory equipment in secondary schools in Sokotosouth Local Government Area.
3. Determine the extent to which chemistry teachers utilize laboratory equipment in secondary schools in Sokoto South Local Government Area.
4. Find out how chemistry students utilize laboratory

equipment during practical in the laboratory in senior secondary schools in Sokoto south local government.

Research Questions

1. To what degree does availability of chemistry laboratory equipment on students' academic performance in secondary school in sokoto south Local Government?
2. To determine the availability adequacy in the provision of these chemistry laboratory equipment in secondary schools in Sokoto south Local Government Area.
3. To what extent does chemistry teachers utilize laboratory equipment in secondary schools in Sokoto South Local Government Area?
4. To find out how chemistry students utilize laboratory equipment during practical in the laboratory in senior secondary schools in Sokoto south local government.

Methodology

Research Design

The research used a cross sectional survey design because the study involved obtaining data from a wide range of respondents in various cohorts at the same time (Amin, 2005). Quantitative and qualitative approaches were used with the view of triangulation as being appropriate for the study. Also, cross sectional survey design is appropriate for collecting data about preferences attitude, practice and concern of people from a sample of population at a particular time was used. Qualitative research approach helped the researcher to gain insight and understanding of phenomenon through intensive collection of narrative data. Both the qualitative and quantitative approaches helped the researcher to obtain the information for availability and utilization of laboratory equipment in chemistry laboratory in senior secondary school students and its effect on students' academic performance. A quantitative research approach was used to collect numerical data in order to explain, predict and control phenomena of interest. The qualitative method was used to collect data to triangulate data collected using quantitative methods.

Population of the study

The population of the study comprised all the 15 Senior Secondary Schools in Sokoto South Local Government; all the schools are government schools, day, boarding, boys, and girls and mixed. The population of the study involved Chemistry subject teachers, HODS, and students as indicated in table 3.1 below summarize in a table.

Table 1: Population of senior secondary schools Sokoto South Local Government (2019/2020 academic session)

S/N	Schools Names	Schools types	Number of students	No of Teachers
1	Nana Girls Secondary School, Sokoto	Girls	171	4
2	HafsatAhmadu Arabic Secondary School, Sokoto	Girls	108	3
3	Sultan AttahiruAhmadu Secondary school, Sokoto	Boys	151	3
4	Government Day Secondary School,Gagi	Mixed	124	3
5	Sultan Abubakar College, Sokoto	Boys	152	4
6	Sokoto Science College, Sokoto	Boys	204	5
7	Sultan Atiku Secondary school, Sokoto	Boys	121	3
8	Government Girls Secondary school. Tudun Wada	Girls	108	3
9	Government Day Secondary School, Minanata	Girls	67	2
10	Government Girls College, Sokoto	Girls	231	6
11	Government Day Secondary School, Mabera	Boys	141	4
12	Sultan Bello Secondary School, Sokoto	Boys	231	6
13	Women Center for Continue Education, Sokoto	Girls	62	2
14	Sheikh Abubakar Gummi Memorial College, Sokoto	Boys	109	4
15	Abdulrashid Adisa Raji Special School, Sokoto	Mixed	101	6
	Total		2143	58

Source: Education Resource Center, Sokoto (2020)

Sample size and sampling technique

From the population of 2143 in the 15 school, only 320 respondent were selected because they would represent the school population to objectively explain how using Chemistry laboratory equipment is conducted. In some senior secondary schools in Sokoto South Local Government from the population of 309 teachers a sample of 10 teachers was selected. Determining both the sample for the teachers and that of students the Krejcie and Morgan (1970) table was used. Simple random sampling technique were used in this study to select teachers and students because there was need to reduce bias have in selecting participants. Also this method is very economical, offers accurate results and high degree of representativeness (Sotirios, 1999). Purposive sampling was used to select the stake holders who the researcher thought should not be left out in the study which included teachers, heads of departments and students. The sample selected purposively was used to collect qualitative data and simple random sampling.

The summary is below

Category	Population	Sample Size	Sampling Techniques
HODs Chemistry	15	4	Purposive sampling
Chemistry teachers	58	10	Purposive sampling
Chemistry Students	2143	300	Simple random sampling
Total	***2216***	***310***	

Source: Researcher (2020)

Research instruments

In this research the instrument we used is checklist.

Checklist

Check list is a number of possible answers are provided and the respondent is asked to choose one or choose all as it applies to him or her. It usually consists of sets of question that are presented to the respondent to give answer. The respondent read the questions, interpreted what is expected and then wrote circle or tick the answer. They are useful in gathering data of current events, conditions or attributes of a

population at a particular point in time. The checklist were also useful in generating reliable and valid information from a high proportion of a population within a reasonable time period at a minimum cost, and it is a relatively simple way of obtaining information.

Validity of the instrument

Validity refers to the extent to which an instrument measures what is supposed to measure (Amin, 2005). To ensure validity of the research instruments, the draft instrument was subject to scrutiny by experts these included lecturers in the area of content validity index and knowledgeable postgraduate students in the faculty of Education and extension services. Their comments and recommendations were used to improve the instruments which was used for data collection. The instrument was also subjected to rating by experts and the Content Validity Index (CV1) was calculated.

Data collection procedure

The researchers collects information from both students and teacher of chemistry of senior secondary schools in Sokoto South Local Government, Sokoto state, Nigeria. To collect the information on student performance on chemistry laboratory equipment in senior secondary schools in Sokoto South local Government, Sokoto, Nigeria. Checklist was be given to the experts for validation. The researcher met the Principals of the school to provide a brief overview of the proposed study. After being accepted, the researcher distributed letters of informed to respondents consent, explained any anticipated risks and provided copies of the checklist that were to be administered to collect data. The teachers filled the informed consent forms that also ask them to participate the study.

The consent forms were provided and explained the purpose of the research and also assuring them confidentiality. The checklist were distributed to the chemistry teachers and students in the school at interval time to be filled. As soon as the chemistry teachers and students finished filling in the form, the researcher collected them for analysis.

Administration and scoring of the instrument

The instruments were to be administered to the respondents in their classes by researchers with the help of chemistry teachers who serve as research assistants. Each respondent was served with a copy of instrument. The checklist were being collected by the chemistry teachers and returned to the researchers. The instrument for data collection was checklist.

Data analysis

The method to be adopted in this research will be based on the statistical table by distributing the respondents to their answers from surveyed for the purposed of the analysis simple statistical tools is used in most cases, frequency in tabular form and percentage used.

Data Presentation and Analysis

Demographic Characteristics

Table 2: Showing Name of your School

School	Frequency	Percent
S.B.S.S.S Sokoto	71	23.3
G.G.C	86	28.3
A.A.R S.S Sokoto	68	22.4
N.N.G.S.S. Sokoto	79	26.0
Total	304	100.0

Source: Field Data 2020

The table above shows that school B has the highest percentage of 28.3 while school D 26.0 and school A 23.3, school C 22.4%. The finding above shows that school B has the highest percentage of 28.3 percent.

Table 3: Show the sex of the respondents

	Frequency	Percent
Male	197	64.8
Female	107	35.2
Total	304	100.0

Source: Field Data 2020

The table show the respondents comprised of both male and female. The percentages of male were 64.8% were male and 35.2 % female. Although the number of female were less in study categories of respondents, it still helped in giving information that was necessary for the study. Involving female respondents helped in reducing biases that the use of one sex could have risked the study.

Table 4: Showing the nature of the school

	Frequency	Percent
Day only	197	65.0
Boarding	71	23.3
Day and Boarding	36	11.7
Total	304	100.0

Source: Field Data 2020

The table above show that 197 (65%) are in the days school, 71 (23.3%) are in the boarding school while 36 (11.7) are in the day and boarding school. The finding above show that majority of respondents are in the day's school where they are offering chemistry.

Table 5: Showing Year current class of study

Class	Frequency	Percent
S.S. 2	106	34.9
S.S. 3	198	65.1
Total	304	100.0

Source: Field Data 2020

The finding above shows that majority of the respondents are in SS 3 198 (65.1%) while 106 (34.9%) are in SS 2. The

finding above shows that majority of the students filled the research instrument are in SS 3 with the highest percentage of 65.1%.

Table 6: Showing chemistry was not a compulsory subject

	Frequency	Percent
Yes	290	95.4
No	14	4.6
Total	304	100.0

Source: Field Data 2020

The finding above show that 290 (95.4%) say yes on that chemistry is a compulsory subject which is offering in senior secondary school in Sokoto south while 14 (4.6%) say no that chemistry was not a compulsory subject for senior secondary school students. The basing shows that majority of the respondent believe that chemistry is a compulsory subject which is being taught in senior secondary schools in Sokoto south local government.

Data Presentation

The availability of Chemistry laboratory equipment

Table 7: Showing the availability chemistry laboratory Equipment

Item	(A)	(FA)	(I)	(NA)
Beaker	34 (11.2%)	107 (35.2%)	143 (47%)	20 (6.6%)
Conical flask	51 (16.8%)	120 (39.5%)	103 (33.9%)	30 (9.8%)
Volumetric flask	63 (20.7%)	102 (33.5%)	131 (43.2%)	8 (2.6%)
Burettes	73 (24%)	94 (30.9%)	122 (40.1%)	15 (5%)
Droppers	62 (20.4%)	84 (27.6%)	131 (43.1%)	27 (8.9%)
Funnel	25 (8.2%)	134 (40.1%)	142 (46.7%)	3 (1%)
Bunsen burner	14 (4.6%)	92 (30.2%)	173 (60%)	25 (8.2%)
Graduated cylinder	23(7.6%)	108 (35.5%)	164 (53.9%)	9 (3%)
Pipettes	21 (6.9%)	192 (63.2%)	74 (24.3%)	17 (5.6%)
Retort stand	25 (8.2%)	134 (40.1%)	142 (46.7%)	3 (1%)

Source: Field Data 2020

Table 4.6item 1 availability of beaker which indicate that 143 (47%) believe that beakers is inadequate, 107 (35.3%) are fairly adequate, 34 (11.2%) are adequate while 20 (6.6%) are in not available. The basing above shows that majority of the respondents are in the believe that there is not availability of beakers in the chemistry laboratory in their schools because it's one facility for more than five students.

However, item 2 availability of conical flask which indicate that 120 (39.5%) believe that conical flask is fairly adequate, 103 (39.5%) are inadequate, 51 (16.8%) are adequate while 30 (9.8%) are in not available. The basing above shows that majority of the respondents are in the believe that there is not availability of conical flask in the chemistry laboratory.

Item 3 Indications shows that the availability of volumetric flask that 131 (43.2%) believe that conical flask is inadequate, 102 (33.5%) are fairly adequate, 63 (20.7%) are adequate while 8 (2.6%) are in not available. The above shows that majority of the respondents are in the believe that there is not availability of volumetric flask in the chemistry laboratory.

Item 4 availability of Burettes which indicate that 122 (40.1%) believe that conical flask is fairly adequate, 94 (30.9%) are inadequate, 73 (24%) are adequate while 15 (5%) are in not available. This indicate that majority of the respondents are in the believe that there is not availability of burettes in the chemistry laboratory. Which shows that most of the students in secondary schools while conducting practical in the chemistry laboratory most share burrete while conducting practical.

Item 5 availability of dropper which indicate that 131(43.1%) believe that dropperis inadequate, 84 (27.6%) are fairly adequate, 62 (20%) are adequate while 27 (8.9%) are in not available. This indicate that majority of the respondents are in the believe that there is not availability of dropper in the chemistry laboratory.

Item 6 availability of Funnel which indicate that 142(46.7%) believe that dropper is inadequate, 134 (40.1%) are fairly adequate, 25 (8.2%) are adequate while 3 (1%) are in not available. This indicate that majority of the respondents are in the believe that there is not availability of funnel in the chemistry laboratory.

Item 7 availability of graduated cylinder which indicate that 164(53.9%) believe that dropper is inadequate, 108 (35.5%) are fairly adequate, 23 (7.6%) are adequate while 9 (3%) are in not available. This indicate that majority of the respondents are in the believe that there is not availability of graduated cylinder in the chemistry laboratory in most of the senior secondary schools in Sokoto South Local Government.

Item 8 availability of pipettes which indicate that 192(63.2%) believe that dropperis fairly adequate, 74 (24.3%) are inadequate, 21 (6.9%) are adequate while 17 (5.6%) are in not available. This indicate that majority of the respondents are in the believe that there is not availability of pipettes in the chemistry laboratory in most of the senior secondary schools in Sokoto South Local Government.

Item 9 availability of retord stand which indicate that 142(46.7%) believe that dropper is inadequate, 134 (40.1%) are fairly adequate, 25 (8.2%) are adequate while 3 (1%) are in not available. This indicate that majority of the respondents are in the believe that there is not availability of retord standin the chemistry laboratory in most of the senior secondary schools in Sokoto South Local Government.

Item 10 availability of thermometer which indicate that 143(47.1%) believe that dropper is fairly adequate, 132 (43.4%) are inadequate, 28 (9.2%) are adequate while 1 (0.3%) are in not available. This indicate that majority of the respondents are in the believe that there is not availability of thermometer in the chemistry laboratory in most of the senior secondary schools in Sokoto South Local Government.

Table 8: Utilization of chemistry laboratory equipment

Item	(HU)	(AU)	(LU)	(NU)
Methyl orange indicator	28 (9.2%)	143 (47.1%)	132 (43.4%)	1 (0.3%)
25cl pipettes	4 (1.3%)	42 (13.8%)	57 (18.8)	201 (66.1%)
Burettes	34 (11.2%)	107 (35.2%)	143 (47%)	20 (6.6%)
Measuring cylinder	28 (9.2%)	143 (47.1%)	132 (43.4%)	1 (0.3%)
Strong acid (egHcl)	24 (7.9%)	137 (13.8%)	141 (46.4%)	2 (0.6%)
Strong base (eg) Nacl)	62 (20.4%)	131 (43.1%)	84 (27.6%)	27 (8.9%)
Dropper	62 (20.4%)	84 (27.6%)	131 (43.1%)	27 (8.9%)
Conical flask	51 (16.8%)	120 (39.5%)	103 (33.9%)	30 (9.8%)

Source: Flied Data, 2020

Table 4.7 item 11 indicate that majority of the responders asked how teachers and students utilize methyl orange indicators in the chemistry labrotary141 (46.4) are average utilize in laboratory equipment, while 132 (43.4%) are low utilized, 28 (9.2%) are high utilized and 1 (0.3%) are in not utilized. The finding above shows that majority of the respondents are in the believe that majority of both teachers and students are not utilizing laboratory facilities during the practical of chemistry in senior secondary schools in Sokoto south local government.

However, item 12 shows that how teachers and students utilize 25cl pipettes during the chemistry practical's some respondents believe that 201 (66.1) are in the believe that 25cl of pip pates are not being utilized while doing practical in the laboratory, 57 (18.8%) are in low utilization of chemistry laboratory equipment, while 42 (13.8%) are average utilized and 4 (1.3%) are highly utilized of instructional materials. The basing above shows that majority of the respondents are in the believe that chemistry laboratory equipment are not being utilized,

Item 13 show the utilization of burretes in the chemistry laboratory where some respondents are in the believe that teachers are not utilizing bur rates in the chemistry laboratory. That is 143 (47%) are in low utilization of burettes, 107 (35.2%) are average utilization, 34 (11.2%) are highly utilization and 20 (6.6%) are in not utilization of burettes in the chemistry laboratory.

Item 14 show the utilization of conical flask in the chemistry laboratory where some respondents are in the believe that teachers are not utilizing bur rates in the chemistry laboratory. That is 120 (39.5%) are in average utilization, 103 (33.9%) are low utilization, 51(16.8%) are highly utilization and 30(9.8%) are in not utilization of burettes in the chemistry laboratory. The basing above shows that teachers in most of the senior secondary schools in sokoto south local government are not utilizing the chemistry laboratory equipment in most of the school. The finding shows that both measuring and non-measuring equipment are non-utilized by most of the teachers and students of chemistry in many secondary schools in Sokoto South local government.

Discussion of the Findings

Based on the findings of the research question one regarding the availability of the chemistry laboratory equipment in Sokoto State, the result on the appendices I of the laboratory equipment checklist Chemistry indicated that four (4) schools out of the fifteen (15) sampled schools had adequate laboratory equipment for practical's. This is due to the fact that these schools are given special treatment by the Ministry basic and secondary education and Ministry of Science and Technology being the only Science Secondary Schools under the Ministry. This is a clear indication that government owned schools had more laboratory facilities compared to the school owned by private individuals in the state. It was also discovered that most of the chemistry laboratory equipment are not adequately available in all the schools, the equipment are few in quantity, and so made it very difficult for teachers and students to use them effectively. This made the practical lessons to consume much time and also made Science laboratory activities boring due to the inadequacy of instructional resources which is one of the major constrains militating against the conduct of practical work. This agreed with the findings of Kamar (2007) which revealed that lack of laboratory equipment, chemicals and laboratory assistant are reported by teachers as the major constraints militating against the conduct of practical work in Sokoto State.

This revealed that there are adequate chemistry laboratory equipment for teaching and learning sciences in senior secondary schools in Sokoto South local government which is in line with the findings of Anene (2002). Stressed that availability of laboratory equipment's seems to influence students' performance positively in the Schools Certificate Examination as such it affect the attainment of stated objectives.

Evidence from Tables 4.2, 4.3, and 4.4 indicated that only few chemistry laboratory equipment were utilized by the science teachers. This may be due to the lack of knowledge and experience on how to utilize some of these instructional resources during teaching. This is in line with the findings of Ugwu (2005), stressing on the problems of effective utilization of science equipment. He reported that untrained teachers are employed to teach in our secondary schools and colleges and due to insufficient training, many teachers do not recognize the potential of many simple equipment available at very little cost or how to use them. The implication of this is that the student will not be able to acquire the necessary skills and attitude expected of them at this level of education. This may also result in students having negative attitude towards science which can affect the student's choice of science as a course at higher levels.

Conclusion and Recommendations

Conclusions

Based on the findings of this study it was concluded that:-

1. Senior secondary schools in Sokoto State have adequate chemistry equipment.
2. But the facilities are inadequately utilized by the science teachers. The study shows that when students are taught with available chemistry equipment, they tend to perform better than they would have done without chemistry equipment. This is in line with the findings of Maduekwe (2007) who stressed that availability and use of chemistry equipment seem to positively influence students' performance, as such it affect the attainment of stated objectives.
3. The study also indicated that male students from schools with adequate chemistry equipment performed better than female from school with adequate facilities.
4. Public senior secondary schools have more chemistry equipment than private schools in the State.

Implications of the Study

Implications of these findings include the following

1. Inadequacy of chemistry equipment will make students not be able to acquire the necessary scientific skills and attitudes expected of them. This may result in students having negative attitudes toward chemistry.
2. Inadequacy of chemistry equipment make practical lesson boring and consumes much time.
3. Low provision of chemistry equipment causes poor performance in science by students.
4. Lack of knowledge and skills of using chemistry equipment while teaching by some science teachers make it difficult for the learners to learn effectively.

Recommendations

On the basis of the above findings the following recommendations are made

1. The Ministry of Basic and Secondary Education officials should make sure that laboratory equipment are supplied to schools and the quantity should be supplied according to the number of students available in each school.
2. The Ministry of Basic and Secondary Education and Ministry of Science and technology should make it compulsory to all the schools to provide adequate science laboratory facilities/ equipment to their schools for the successful conduct of practical's, or else refuse registration of schools refused to comply.

3. Ministry of Basic and Secondary Education Ministry of Science and technology should make appropriate plan to expose science teachers to training workshop on improvisation in order to update their techniques and also attend conferences, seminars and workshops on laboratory equipment, utilized and management.
4. Teachers should be encouraged to commit themselves into the effective use of Laboratory equipment.

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