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Full Length Research

Problem of students in learning Biology practical in Ilorin West Local Government Area, Kwara State

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ABSTRACT: The study investigated the problems of students in learning Biology practical in senior secondary schools in Ilorin West LGA, Kwara State. Three research questions and two hypotheses guided the study. Descriptive survey was adopted for this study. The population comprised SS1 to SS3 Biology students in Ilorin-West LGA, Kwara State. Questionnaires were involved in the collection of data from one hundred and eighty (180) Biology students and the data collected were analyzed using descriptive mean, t-test and analysis of variance ANOVA. The findings revealed that problems of students in learning Biology practical in Ilorin West LGA was significant. There was no significant difference in students' opinion towards the problem of learning Biology practical in senior secondary schools based on gender and class size. There was no significance difference in the problems of learning Biology practical in senior secondary school based on school type. In conclusion, it was recommended that Government and private school owners should ensure the provision of well-structured infrastructural facilities that would improve learning process and adequate laboratory equipment should be provided for senior secondary school students to ease the learning difficulty experienced in learning Biology practical. Schools should also endeavor to avail more and replace the obsolete equipment with more technologically modern equipment.

Keyword*:* Biology practical, learning, problem, students.

INTRODUCTION

Science as the bedrock on which modern day technological breakthrough is hinged. Also, a systematic, precise and satisfying enterprise requires creativity, skill and insight. Science can also be defined as rationally structures knowledge about nature, that embraces systematic method of positive attitudes for acquisition, teaching, learning and application (Mberekpe, 2012). Science as a body of knowledge, a way or methods of investigation and a way of thinking in the pursuit of understanding nature (Abimbola, 2016). Science subjects are not considered to be among the favorite subjects of senior secondary school students, especially Biology practical.

Allen et al. (2013) observed the observations of effective teacher student interactions in secondary school classrooms predicting student achievement with the classroom assessment scoring system in secondary school. It is seen that students have negative attitudes to science subjects because they consider science subjects to be ambiguous. Science is variously used in ordinary discourse in English to refer to a product (a body of knowledge), to a process (a way of conducting enquiry) and to an enterprise (the institutionalized pursuit of knowledge of the material world).

The aims of science education, according to Millar (2004) might then be summarized as:

1. To help students to gain an understanding of as much of the established body of scientific knowledge as is appropriate to their needs, interests and capacities;
2. To develop students' understanding of the methods by which this knowledge has been gained, and our grounds for confidence in it (knowledge of science).

In this research, the term “Practical Work” refers to any teaching and learning activity which at some point involves

the students in observing or manipulating the objects and materials they are studying. The term 'Practical Work' is used in preference to 'Laboratory Work' because location is not a critical feature in characterizing this kind of activity. The observation or manipulation of objects might take place in a school laboratory, but could also occur in an out-of-school settings, such as the student's home or in the field (e.g. when studying aspects of biology or Earth science) (Mberekpe, 2012).

It is often argued that practical work is central to teaching and learning in science and that good quality practical work helps develop pupils' understanding of scientific processes and concepts. Practical provide contrived experience to science learners and develop science skills, knowledge and understanding of their world (Ungku, 2017). Laboratory is a place that gives the learner opportunity to investigate information via experimental procedures. These procedures need careful observations and interpretation of data. It has the characteristics of questioning, *investigating and confronting the unknown by which tests is used to predetermined answers to know the ability or skill of the students', the desirable experiments are exercises, arranged as logical thought and intellectual action rather than performance. Orlich (2006) inferred that the goal for laboratory instruction in modern science courses focuses on the inquiry and discovery process or methodological phase of science and upon it intellectual constituents. Besides, laboratories are useful for teaching of biology in schools and the success of biology or any science related course so much relies on the laboratory provision made for it.

Chikelu (2009) conducted a research on effect of Biology practical activities on students' process skill acquisition. A quasi experimental design was employed for the study. The sample consists of one hundred and eleven (111) senior secondary one Biology students selected through simple random sampling techniques. The instrument for data collection in the study has 20 items Science Process Skill Acquisition Test (SPSAT). The data was analyzed using mean and standard deviation to answer the research questions and analysis of covariance (ANCOVA) to test the hypothesis at 0.05 level of significance. The results revealed that practical activity method to foster the acquisition of science process skills than the lecture method. Nwagbo (2008) noted that the use of practical activities in teaching Biology should be a rule rather than an option for teachers; if the students are to acquire the necessary knowledge, skills and competencies needed to live functionally in the society.

The West African Examination Council (WAEC) syllabus (2007) stipulates four major aims of teaching and learning practical Biology to be:

1. To promote the power of observation;
2. To develop the power to recognize general characteristics of animals and plants;
3. Interpretation of data, which illustrates certain known biological principles;
4. To develop ability to perform simple experiment and draw inferences from result obtained.

Abidoye (2018) observed the status of behavioural objectives on senior secondary school students' performance in Biology practical in Irepodun LGA, Kwara State, Nigeria. The target population for the study comprised senior secondary school two (SSS II) students in Kwara State. One hundred and eight (130) Biology students in senior secondary school two (SSS II) took part in the investigation. A quasi-experimental, non-randomized, non-equivalent, pre-test, post-test control group involving a 2 x 2 x 3 factorial design was employed as research design. The dependent variable was students' scores in performance test. The independent variables were the lecture method. The test scores were analyzed using mean scores, standard deviation, t-test and analysis of covariance on the three null hypotheses formulated. An alpha level of 0.05 was used to determine the significant level.

Oludipe (2012) investigated the influence of gender on senior secondary school student's academic achievement in Biology using cooperative learning teaching strategy. One hundred and twenty (120) students obtained from intact classes of three selected senior secondary schools in all selected Local Government Areas of Kwara State, North Central Nigeria participated in the study. This study employed a quasi –experimental design. Achievement Test for Biology Students (ATBS) was the instruments used to collect the relevant data. The data collected was analyzed using descriptive and independent samples t-test statistical methods. Findings of this study revealed that there was no significant difference between the academic achievement of male and female students at the pre-test, post-test and delayed post-test level respectively. In the light of the above study, the present study investigated the influence of gender using the mode (group and individual) of laboratory work on students' achievement in Biology practical.

Nwosu (2011) observed the study of practical approach to effective teaching of local and major biotic communities (Biomes) to secondary school students for sustainable development. STAN Biology workshops series maintain that gender has significant difference in academic achievement in science. Philias and Wanjobi (2011) reiterated that the type of schools (private and public) has effect on the academic performance of students. Therefore, this study find out that a relationship exists in types of school and academic performance.

Adigun et al. (2015) examined the relationship between student's gender and academic performance in computer science in New Bussa, Borgu Local Government of Niger state. Questionnaire, which consist of 30 multiple-choice items drawn from Senior School Certificate Examination past questions as set by the West Africa Examination Council in 2014 multiple choice past question was used as

the research instrument. The questionnaire was administered to 275 students from both private and public schools in the study area. The students' responses were marked and scored, afterward analysed using independent t-test. The results of the study showed that better performance was found to be pronounced in the private school, which was shown to possess the best. Yet the result indicated that there was no significant difference.

These objectives can only be achieved if Biology teacher possess the competencies/skills for organizing practical classes in Biology. The competencies/skills of Biology teachers should be enhanced if the problems Biology encounter are identified and proper strategies for the elimination of the problem adopted**.** Hence, this study intends to know the perceived problems being faced by the students doing or while learning practical Biology in senior secondary school level in relation to their gender as the moderating variable, the class size and their school types.

Purpose of the study

The main purpose of this study investigated the problems of students in learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State. Specifically, this study examined:

1. The problems of students in learning Biology practical in senior secondary schools in Ilorin West LGA, Kwara State.
2. The effect of gender of students learning Biology practical in senior secondary schools.
3. The effect of school type of students learning Biology practical in senior secondary schools.

Research questions

The research questions below were raised to guide the study:

1. What are the problems of students in learning Biology practical among senior secondary school Biology students?
2. Does gender of students have effect on the problem of learning Biology practical?
3. Does school type of students have effect on the problem of learning Biology practical?

Research hypotheses

The following null hypotheses were formulated and use for this study:

H_{01}: There is no significant difference on the problem of learning Biology practical in senior secondary schools based on gender.

H_{02}: There is no significant difference on the problem of learning Biology practical in senior secondary schools based on school type.

Scope of the study

The study examines problem of students in learning Biology practical in senior secondary schools based on research carried out in Ilorin-West LGA, Kwara State. According to data collected from Ministry of Education on the secondary school enrollment in Kwara State. The total number of public secondary schools is 382 while private secondary school is 257 making a grand total of 639 secondary schools in Kwara State. In Ilorin West LGA, the total number of public secondary schools is 31 while private secondary schools are 42 making a grand total of 73 secondary schools. The scope is delimited to six (6) senior secondary schools consisting of three (3) private and three (3) public schools with 30 students randomly selected from SS1 to SS3 in each school making a total of 180 Biology students involved.

METHODOLOGY

This is a descriptive study of the survey type. The researcher made use of questionnaire in order to determine the opinion or perception of the sample population. The target population for this study was Biology students' in senior secondary schools. Purposive random sampling was used to select one hundred and eighty (180) Biology students' responses on the problems of learning Biology practical assessing both genders in six (6) different schools (both public and private) in Ilorin West LGA Kwara State.

The instrument designed for this study was a questionnaire to collect data from Biology students on the problems of learning Biology practical. The questionnaire was titled "problems of learning biology practical". The questionnaire used in this study was designed to ask for the opinion of Biology students about problems they are facing in learning Biology practical. The questionnaire was divided into two (2) sections. Section A contains the demographic data and section B will contains questions relating to problems of learning Biology practical. The students ticked (√) the appropriate column to indicate their responses.

The researcher visited each of the selected schools. The researcher sought for the permission from the school administrator of each school and cooperation of the students of the selected schools. The researcher did the administering of the questionnaire and the respondents were given adequate times to filled the questionnaire, and it was collection back from them.

The data were analyzed using descriptive and inferential statistics. Demographic information was subjected to

Table 1. Demographic representation of data of responded.

Variable	Grouping	Frequency	Percentage %
	Male	84	47
Gender	Female	96	53
	Total	180	100
	Public	93	52
School Type	Private	87	48
	Total	180	100

Source: Field Survey, 2021.

simple percentages (%) and frequency count, the research questions were answered with Mean and Standard Deviation. The research hypotheses 1 and 2 were tested using t-test.

RESULTS

Table 1 shows gender distribution of the respondents that 84 (46.7%) of the respondents are male while 96 (53.3%) are females. School type distribution shows that 93 (1.7%) of the respondents attended public schools while 87 (48.3%) attended private schools.

Research question one

Table 2 revealed students' perception regarding problems of learning Biology practical in Ilorin West Local Government Area in Kwara State. Item 1 with mean value of 2.76 implies that majority of the respondents were of the opinion that large class size is an impediment to the learning of biology practical. Item 2 with mean value of 2.43 indicates that most of the respondents disagreed that lack of laboratory, specifically for Biology is not a problem of students in learning Biology practical among senior secondary school biology students in Ilorin West Local Government Area in Kwara State. Also item 3, with a mean value of 2.58 revealed that majority of the respondents agreed that lack of laboratory equipment for learning Biology practical is one of the problems of learning Biology practical. Furthermore, item 4 derived a mean value of 2.47 which pointed to the fact that most of the respondents disagreed that the environment (e.g. poor lighting and ventilation) is not conducive for Biology practical. On the contrary, item 5 with a mean value of 2.96 revealed that most of the respondents agreed that the number of students is always higher than the equipment available.

Furthermore, in item 6, mean value of 2.70 was derived which indicates view of respondents for the statement that unclearly stated curriculum is one of the curriculum related problems faced by students in the learning of Biology practical. Item 7 with mean value of 3.02 implies that respondents agreed that ICT is not used in the teaching of Biology practical. Also in item 8, 9 and 10, respondents believed that bulky curriculum and lesson note, poor teaching methods for practical and excessive assessment are curriculum related problems faced by students in the learning of Biology practical with a mean value of 2.86, 2.52 and 2.67 respectively.

A mean value of 2.44 was realized in item 11 which revealed that majority of the respondents were of the opinion that lack of moral support from the school management is not a problems faced by students in the learning of Biology practical. Also, it was revealed in item 12 with a mean value of 2.41 that majority disagreed that the principal do not provide some of the materials needed for practical. In the same vein in item 13, 14 and 15, a mean value of 2.81, 2.79 and 2.51 respectively was derived which indicates that respondents were of the opinion that poor funding for updating the Biology laboratory, improper laboratory settings, lack of reagents and chemicals and glassware are problems encountered by students in the learning of Biology practical.

Item 16, 17, 18, 19 and 20 revealed that lack of interest in class, lack of practical material, non-payment or late payment of practical dues, low interest in practical classes, students' incompetency and the lack of practical book as students' related problems that hinder the effective learning of biology practical with a mean value of 2.75, 2.88, 2.75, 2.51 and 2.79 respectively. Item 21, 22 and 23 with mean value of 2.60, 2.63 and 2.69 respectively, implies that poor syllabus implementation, poor practical teaching methods and time allocation for practical are teacher's related problems that negatively affects the learning of Biology practical. A mean value 2.49 was realized in item 24 which expresses that majority of respondents disagreed that laboratory assistant do not help the teachers in organizing and conducting the practical and lastly, item 25 with a mean value of 2.64 indicates majority of the respondents agreed that teachers do not possess the skills for conducting practical and as a result negatively affects students' learning of Biology practical.

Table 2. Problems of learning Biology practical among senior secondary school biology students in Ilorin West Local Government Area in Kwara State.

S/N	Items	Mean	S.D	Remark
Problems of infrastructure and resources				
1.	Large class size	2.76	0.96	Agreed
2.	Lack of laboratory, specifically for Biology Practical	2.43	1.09	Disagreed
3.	Lack of laboratory equipment for learning Biology Practical	2.58	1.11	Agreed
4.	The environment (e.g. poor lighting and ventilation) is not conducive for biology practical.	2.47	1.07	Disagreed
5.	The number of students is always higher than the equipment available.	2.96	1.00	Agreed
Curriculum related problem				
6.	Unclearly started curriculum	2.70	0.99	Agreed
7.	ICT is not used in the teaching of biology practical.	3.07	0.97	Agreed
8.	Bulky curriculum and lesson note	2.86	0.95	Agreed
9.	poor teaching methods for practical	2.52	1.07	Agreed
10.	Excessive Assessment	2.67	0.94	Agreed
Problems from the school administrator				
11.	Lack of moral support from the school management	2.44	0.99	Disagreed
12.	The principal do not provide some of the materials needed for practical	2.41	0.95	Disagreed
13.	Poor funding for updating the biology laboratory	2.81	1.00	Agreed
14.	Improper laboratory settings	2.79	1.03	Agreed
15.	Lack of reagents, chemicals and glassware	2.51	1.09	Agreed
Students related problem				
16.	Some students show no interest in practical class	2.75	0.94	Agreed
17.	Students do not provide some specimen from their locality	2.88	0.86	Agreed
18.	Students show less interest when they were asked to pay for practical	2.75	0.99	Agreed
19.	Students' incompetency	2.51	0.95	Agreed
20.	Lack of practical book.	2.79	1.06	Agreed
Teacher related problem				
21.	Poor syllabus implementation	2.60	1.03	Agreed
22.	Poor teaching methods for practical	2.63	1.01	Agreed
23.	The time allocated for practical is not enough	2.69	1.13	Agreed
24.	Laboratory assistant do not help the teachers in organizing and conducting the practical	2.49	0.99	Disagreed
25.	Teacher do not possess the skills for conducting practical	2.64	2.59	Agreed
Grand average		**2.67**		

*Mean $\geq$2.5 = Agreed, Mean< 2.5= Disagreed.

Research question two and hypotheses one

Table 3 shows t-test result of students' perception towards the problem of learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State based on gender. The table showed p-value of 0.098 with degree of freedom 178 at 0.05 alpha level. The null hypothesis was not rejected since p-value of 0.098 was higher than 0.05 which indicates that there is no significant gender difference in students' opinion towards the problem of learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State. This implies that the opinion of male and female respondents does not vary on the problem of learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State.

Research question three and hypothesis two

Table 4 shows t-test result of students' perception towards the problem of learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State based on school type. The table showed p-value of 0.159 with degree of freedom 178 at 0.05 alpha level. The null hypothesis was not rejected since p-value

Table 3. Independent sample t-test result of problems in learning Biology practical expressed by senior secondary school students in Ilorin West Local Government Area based on gender.

Gender	N	Mean	Std. Deviation	Df	P –value	Remark
Male	84	66.0119	13.78186	178	0.098	Not Significant
Female	96	67.3021	11.39171			

p<0.05 at 0.05 alpha level.

Table 4. Independent sample t-test result of problems of students in learning Biology practical expressed by senior secondary school students in Ilorin West Local Government Area based on school type

School Type	N	Mean	Std. Deviation	Df	P –value	Remark
Public	93	69.0645	13.78186	178	0.159	Not Significant
Private	87	64.1724	11.39171			

p<0.05 at 0.05 alpha level.

of 0.159 was higher than 0.05 which indicates that there is no significant difference in students' opinion towards the problem of learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State based on school type. This implies that the opinion of public and private school students does not differ on the problem of learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State.

Summary of findings

The following findings have been made in this study:

1. The major problem faced by students in learning of Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State was significant.
2. There was no significant difference in students' opinion towards the problem of learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State based on gender.
3. There was no significant school type difference in students' perception towards the problem of learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State.

DISCUSSION

This study investigated the problems of students in learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State. The problem of students in learning Biology practical in senior secondary schools was significant to their performance. This may be due to the fact that the learning Biology practical provide the students with an opportunity in learning and improve on their performance. This is in line with the findings of Abidoye (2018) who observed the status of behavioural objectives on senior secondary school students' performance in Biology practical. The result indicated that there was significant difference in the performance of students in Biology practical.

The findings of this study shows there was no significant difference in the problem of learning Biology practical in senior secondary schools in Ilorin West Local Government Area in Kwara State based on gender. This may be as result that both the male and female students pay attention to Biology practical lesson. This is in line with the findings of Oludipe (2012) who observed effectiveness of cooperative learning strategies on Nigerian junior secondary school students' academic achievement in Basic Science and the result shows that there was no significant difference in the performance of male and female students.

The study also revealed that there was no significant difference in the problem of learning Biology practical in senior secondary schools in Ilorin West LGA in Kwara State based on school type. It may be due to the fact that, both the students in public and private school are able to concentrate on the Biology practical class. This is in agreement with the findings of Adigun et al. (2015) who examined the relationship between students' gender and academic performance in computer science in New Bussa, Borgu local government of Niger State. The results indicated that there was no significant difference based on school type.

Conclusion

Based on the results obtained in this study, it can be concluded that there was significant difference in students' perception of the problem of learning Biology practical in

senior secondary schools in Ilorin West Local Government. There was no significant difference in students' perception of the problem of learning Biology practical in senior secondary schools based on gender and school type.

Recommendations

Based on the findings made in this study, it is therefore recommended that:

1. The Government through the ministry of Education should endeavour to make provisions for the establishment of new infrastructure and rehabilitation of obsolete infrastructure to encourage the learning of Biology practical in secondary schools.
2. Male and female students should be encourage to participate actively in biology practical class.
3. School management should work towards fully equipping Biology laboratories and power supply as well technology and internet connection that helps in graphical delivery of instructions to students.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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