ASSESSMENT OF STUDENTS' ATTITUDE TOWARDS LEARNING IN PRACTICAL BIOLOGY CLASSES

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Abstract
The study investigated the influence of practical classes on students' attitude towards Biology in Secondary Schools in Ekiti State. The study adopted descriptive research design. Simple random sampling technique was used to select 500 senior secondary school Biology students. The instrument consists of questionnaire. Construct and content validity of the instrument was ascertained and the reliability was determined through test retest method and coefficient value of 0.87 was obtained using Pearson's Product Moment Correlation statistics. The data collected were analysed using frequency counts and percentages. Findings from the study revealed provision of few basic laboratory equipment for practical lessons, and students interest in Biology practicals. The study thus recommends the provision of more and modern scientific facilities for the teaching of Biology, to meet the students' population demand and promote positive attitude towards practical biology classes.

Keywords: Assessment, Practical classes, Students, Attitude, Biology

Introduction

Science is a great enterprise which nations depend on in order to advance technologically. Science therefore, receive much attention in education because of its significance and relevance to life and society. Ali (2002) explained that the word science stands for a variety of information, abilities and operations about natural environment. He explained that science is more concerned with various investigative processes and activities with regards to developing, acquiring and controlling knowledge, skills and attitudes about the natural factors of the environment. Ofuebe (2007) defined science as a dynamic human activity concerned with understanding of the working of our world. Biology is among the popular science subjects offered in Nigeria Senior Secondary Schools and contributes

immensely to the technological growth of the nation. Aniodoh (2001) in his study noted that a sound theoretical and practical knowledge of biology is needed for the management of our natural resources, provision of good health facilities, adequate food supply and favourable life environment.

The studying of Biology is only adequate when it involves both the theoretical and practical aspect. The Science Community Representing Education (2008) described 'practical work' as any science teaching and learning activity which involves students working individually or in small groups, manipulating and or observing real objects and materials, as opposed to the virtual world. Practical work is an established part of the Nigerian Secondary School Science curriculum. The inclusion of practical work in an academic subject is one of the distinguishing features of science from other subjects in Secondary Schools. For most teachers, practical work encompasses what teaching and learning science is all about (Woodley, 2009). It appears difficult to explain science education without considering practical work. Abrahams and Millar (2008) indicated that many teachers view practical work as central to the appeal and effectiveness of science education. Indeed, reference is often made to the adage, 'I hear, and I forget, I see, and I remember, I do and I understand'. However, there is a growing debate surrounding the effective and affective value it has on students, and their learning (Abrahams, 2009; Abrahams & Millar, 2008).

There is no controversy that Science practical lessons must take place in a laboratory, but student's attitude towards Biology practical work can be gotten by thinking of Biology practical which affects behaviour of student with consideration to the objectives of learning. Adetunji (2000) while considering students' attitudes explained that learning takes place most effectively when student has a motive for working. Meaningful learning experience presented by teacher will influence the students' interest towards Biology practical. Students' attitudes toward biology practical is related to teacher's methodology, which is in a large measure dependent on the technical, professional and general education of the teachers.

There is credible evidence that the nature and quality of teachers' interactions with children has a significant effect on their learning (Brophy-Herb, Lee, Nievar, and Stollak, 2007; Taylor and Bub, 2007). The different approaches teachers use to conduct practical work can have an influence on the attitude of students. It is important therefore for Biology teachers to have adequate knowledge of laboratory practice management. Teachers' skill in laboratory management should be one which will encourage a good interaction amidst the students, teachers, and laboratory. Biology

teachers may be responsible for more of the negative attitudes of students due to poor management and use of their skills. Many Biology teachers do not organize their practical works, in such a way that, it would help to develop skills and knowledge in the students. Opuh, Ezeh and Ezema (2008) supported the above statement while discussing some approaches to creative teaching. They were of the opinion that many teachers present their subjects to be difficult. As a result, students with such experiences, shy away from learning the subject. In some cases, the potential motivational value of practical work is not being fully utilised by teachers due to lack of clarity to the teacher regarding students' attitudes towards Biology.

Ani (2007) established that when students perform experiments themselves during practical and obtain their results, they will not only remember the procedures involved, but also feel proud of themselves for obtaining the correct results; this serves as motivation or creates an attitude of visiting the laboratory for more practical work. It is therefore essential that the laboratory is properly equipped for the study of Biology practical classes. Observably in many Schools, teachers and students strive to teach and learn with inadequate and antiquated facilities (Dike, 2011). Teachers rarely conduct practical work, mainly due to the insufficient supply of resources. Science is in practice, there is no other science than the science that gets done. In the findings of Abrahams (2009) it was noted that students tend to prefer practical teaching method over other methods of teaching science. Though Ukpai, (2014) lamented that the state of laboratory facilities in many public Secondary Schools is inadequate. This he recorded are at variance with the tenets of education which stipulates that education should aim at helping the child acquire appropriate skills, abilities and competences both mental and physical as equipment for individual not only to excel in School but to live and contribute to the development of his Society. Previous studies have reported on the affective value of practical work, claiming that it motivates students Wellington (2005) and that it is better than writing (Abrahams, 2009).

Overtime, adequate provisions have not been made for effective teaching and learning of biology in Senior Secondary Schools. This has affected the quality of teaching and attitude of students. Being a science subject, there is need for the establishment of laboratory, adequate supply of equipment for practical work which will enhance good attitude towards Biology. However, wrong attitude to Biology practical is based on teachers' failure to recognise the importance of practical

work in science teaching, government uncared attitude in funding of the Schools laboratory for the supply of required equipment.

Solutions to these problems could only be achieved through provision of adequate materials and equipment for practical by government and School Authorities, the two parties should strictly supervise classes taken by teachers after they've been enlightened on practical work and methodology. Not only the teachers should be supervised, attention should be paid to students too. This study aims to investigate the attitude of students towards the learning of practical work in Biology

Research Questions

The following research questions guided the study.

- What is the relevance of the available basic equipment on students' attitude towards practical Biology?
- What is the relevance of practical classes to students' attitude towards Biology ?

Research Methodology

The descriptive research design of survey type was adopted. This enables a researcher to obtain the opinions of representative sample of target population so as to generalise on the entire population of the study.

The population comprises of all Biology students in public Senior Secondary Schools in Ekiti State of Nigeria. The sample for the study consisted of 500 biology students selected through multi-stage sampling procedure; stratified sampling technique was used to select the Schools in each of the three Senatorial Districts, three Schools were selected from each using random sampling technique, making a total of nine (9) Schools. Purposive sampling was then used to select an additional School from the State Capital, making the total of ten (10). Fifty (50) students were then purposively selected from each of the 10 sampled schools.

The instrument used was a self constructed questionnaire. The face and content validity was determined by Biology educationists and the reliability done using test-retest method which was done by administering the test to students outside the sample twice within an interval of two weeks. Pearson Product Moment Correlation analysis was used to obtain a correlation value of 0.87. This was considered relatively high enough to be used for the study. The Schools were visited by the researcher for the administration of the questionnaire.

The data collected were analysed by the researcher using descriptive statistics of frequency counts and simple percentage.

Result

- **Research Question 1:** What is the relevance of the available basic equipment to students' attitude towards practical Biology?

Table 1: Relevance of available equipment to students' attitude towards practical classes.

S/N	ITEMS	SD	%	D	%	A	%	SA	%
1	There is laboratory kit in my School	88	17.6	137	27.4	150	30	125	25
2	There are functional equipment in my School	75	15	112	22.4	188	37.6	125	25
3	I enjoy the class when taught with practical	75	15	75	15	213	42.6	137	27.4
4	Our laboratory has basic equipment for Biology practical	87	17.4	113	22.6	188	37.6	112	22.4
5	The Laboratory Attendant partakes in my practical classes	112	22.4	87	17.4	188	37.6	113	22.6
6	I can get help in the use of equipment when I need it from my practical Teacher	75	15	75	15	250	50	100	20
7	Biology laboratory is open at all time and organised.	77	15.4	105	21	165	33	153	30.6
8	I can identify Biology practical equipment if seen	47	9.4	88	17.6	190	38	175	35

The table above showed that 88(17.6%) of the respondent strongly disagree that there is laboratory kit in their school, 137(27.4%) disagree to this, 150(30%) agree to this while 125(25%) strongly agree to this. 75(15%) of the respondent strongly disagree that their laboratory equipment are functional, 112(22.4%) disagree to this, 188(37.6%) agree to this while 125(25%) strongly agreed to it. 75(15%) of the respondent strongly disagree that they enjoy the class when taught with practical, 75(15%) also disagree, 213(42.6%) agree to this while 137(27.4%) strongly agree to this. 87(17.4%) of the respondent strongly disagree that the laboratory is equipped with basic equipment, 113(22.6%) disagree to this, 188(37.6%) agree to this, 112(22.4%) strongly agree to this. 112(22.4%) of the respondent strongly disagree that the Laboratory Attendant partakes in their practical class, 87(17.4%) disagree to this, 188(37.6%) agree to this, 113(22.6%) strongly agree to this. 75(15%) of the respondent strongly disagree and 75(15%) disagree that they can get help in the use of equipment when they need it from their Biology practical teachers, 250(50%) agree to this, 100(20%) strongly agree to this. 77(15.4%) of the respondent strongly disagree that Biology laboratory is open at all time and well organized, 105(21%) disagree to this, 165(33%) agree to this, while 153(30.6%) strongly agree to this. 47(9.4%) of the respondent strongly disagree

that they can identify Biology practical equipment if seen, 88(17.6%) disagree to this, 190(38%) agree to this, 175(35%) strongly agree to this. This analysis shows that the provision of basic Biology practical equipment is very relevant to the attitude of Students towards practical classes in Biology.

Research Question 2: What is the relevance of practical classes to students' attitude towards Biology?

Table 2: The relevance of practical classes to students' attitude towards Biology.

S/N	ITEMS	SD	%	D	%	A	%	SA	%
1	I like Biology practical class	50	10	80	16	188	37.6	182	36.4
2	Nature of Biology is strange to me	168	33.6	206	41.4	70	14	55	11
3	Biology practical works are very difficult to me	175	35	188	37.6	70	14	67	13.4
4	I enjoy Biology class when taught theory	62	12.4	80	16	213	42.6	145	29
5	I would like to have Biology practical classes more often	55	11	82	16.4	195	39	168	33.6
6	During Biology practical classes, I am always bored	193	38.6	165	33	82	16.4	60	12
7	The learning of Biology, improves the quality of our lives	45	9	60	12	215	43	180	36
8	Biology practical help us solve many environmental problems	40	8	75	15	235	47	150	30
9	Biology practical is not important compared to other science courses	180	36	180	36	90	18	50	10
10	I make many efforts to understand Biology practical	70	14	75	15	205	41	150	30
11	Biology classes help learn many things about our lives	37	7.4	65	13	203	40.6	195	39
12	I hate Biology practical classes	205	41	135	27	95	19	65	13
13	I find Biology practical interesting	57	11.4	73	14.6	155	31	215	43
14	Practical work with animals in biology classes is very interesting than plant aspect	57	11.4	75	15	198	39.6	170	34
15	Biology practical classes is only understandable when taught in the morning	65	13	140	28	175	35	120	24
16	Teacher's competency on the use of the laboratory equipment make me hate practical classes	168	33.6	185	37	90	18	47	9.4
17	My parent bought practical Biology textbook for me	92	18.4	113	22.6	135	27	160	32
18	I have enthusiasm, vigour, involvement and interest in practical classes presentation	90	18	47	9.4	168	33.6	185	37
19	Biology practical classes make biology one of the easiest subjects for me	80	16	50	10	182	36.4	188	37.6
20	If I have access to better equipment it will improve my performance in Biology	60	12	45	9	180	36	215	43

The table above revealed that 50(10%) of the respondent strongly disagree that they like Biology practical work, 80(16%) disagree to this, 188(37.6%) agree to this, while 182(36.4%)

strongly agree to this.168(33.6%) of the respondent strongly disagree that nature of Biology is strange to them, 206(41.4%) disagree to this, 70(14%) agree to this, while 55(11%) strongly disagree to this. 175(35%) of the respondent strongly disagree that biology practical classes are very difficult for them, 188(37.6%) disagree to this, 70(14%) agree to this, while 67(13.4%) strongly agree to this. 62(12.4%) of the respondent strongly disagree that they enjoy Biology class when taught theory, 80(16%) disagree to this, 213(42.6%) agree to this while 145(29%) strongly agree to this. 55(11%) of the respondent strongly disagree that they would like to have Biology practical classes more often, 82(16.4%) disagree to this, 195(39%) agree to this, while 168(33.6%) strongly agree to this. 193(38.6%) of the respondent strongly disagree that during Biology practical classes, they are bored. 165(33%) disagree to this, 82(16.4%) agree to this, while 60(12%) strongly agree to this. 45(9%) of the respondent strongly disagree that the progress of Biology practical improves the quality of our lives, 60(12%) disagree to this, 215(43%) agree to this while 180(36%) strongly agree to this. 40(8%) of the respondent strongly disagree that Biology practical is our ultimate hope for solving many environmental problems, 75(15%) disagree to this, 235(47%) agree to this while 150(30%) strongly agree to this. 180(36%) of the respondent strongly disagree that Biology practical is not important compared to other science subjects, 180(36%) disagree to this, 90(18%) agree to this while 50(10%) strongly agree to this. 70(14%) of the respondent strongly disagree that they make many efforts to understand Biology practical, 75(15%) disagree to this, 205(41%) agree to this, while 150(30%) strongly agree to this. 37(7.4%) of the respondent strongly disagree that Biology is important part of our lives, 65(13%) disagree to this, 203(40.6%) agree to this, while 195(39%) strongly agree to this. 205(41%) of the respondent strongly disagree that they hate Biology practical classes, 135(27%) disagree to this, 95(19%) agree to this, while 65(13%) strongly agree to this. 57(11.4%) of the respondent strongly disagree that they find Biology practical very interesting, 73(14.6%) disagree to this, 155(31%) agree to this while 215(43%) strongly agree to this. 57(11.4%) of the respondent strongly disagree that practical work with animals in Biology classes is very interesting than plant aspect, 75(15%) disagree to this, 198(39.6%) agree to this while 170(34%) strongly agree to this. 65(13%) of the respondent strongly disagree that Biology practical classes is only understandable when taught in the morning, 140(28%) disagree to this, 175(35%) agree to this while 120(24%) strongly agree to this. 168(33.6%) of the respondent strongly disagree that teacher's competency on the use of the laboratory equipment make them

hate practical classes, 185(37%) of the respondent disagree to this, 90(18%) agree to this, while 47(9.4%) strongly agree to this. 92(18.4%) of the respondent strongly disagree that their parent bought practical Biology textbooks for me, 113(22.6%) disagree to this, 135(27%) agree to this while 160(32%) strongly agree to this. 90(18%) of the respondent strongly disagree that they have enthusiasm, vigour, involvement and interest in practical classes presentation, 47(9.4%) disagree to this, 168(33.6%) agree to this, while 185(37%) strongly agree to this. 80(16%) of the respondent strongly disagree that Biology practical classes make Biology one of the easiest subjects for them, 50(10%) disagree to this, 182(36.4%) agree to this, while 188(37.6%) strongly agree to this. 60(12%) of the respondent strongly disagree that if they have access to better laboratory equipment, it will improve their performance, 45(9%) disagree to this, 180(36%) agree to this, while 215(43%) strongly agree to this. This analysis shows that the practical classes has relevance, and can influence the attitude of students towards Biology.

Discussion of Findings

From the finding, the study discovered that the attitude of students towards practical classes is good when they have equipment to work with. Many Schools have basic equipment in the laboratory to teach and for the student to practise, at least, equipment in each School is good for a start, though there is need increase in the quality of these equipment in most Schools from time to time. Also, only basic Biology practical equipment were available in Schools, which may not be adequate for Senior Secondary Biology. Many of these laboratory equipment are discovered to be functional, this is in opposition to some researchers who stated that science laboratories in Nigeria Senior Secondary Schools are poorly or inadequately equipped (Cirfat and Zumyil, 2000; Onipede, 2003; Adeyemi, 2008; Ado 2009; Lakpini and Atadoga, 2012). The students are able to identify Biology practical equipment when seen. Students' attitudes towards practical classes are positive based on the availability of basic laboratory facility.

It was also discovered in the findings that the attitudes of students towards Biology is improved with constant Biology practical classes. During the practical classes, only few students get bored, and these can be checked by engaging them, while many of the students are interested. They see it as the ultimate hope for solving many environmental problems. This is in line with Adetunji (2000), who has pointed out that as regards the attitudes of students, learning takes place most

effectively based on student motive for working. Many students make efforts to understand Biology theory, but enjoys practical classes, as it is activity based and involves the use of multi-sensory organs. Students are noted to enjoy practical work using animal than plant aspect because it gives awareness about their own body system. Biology classes can be taught in the morning or afternoon periods, it's understanding depends on the interest and response of the students.

The findings revealed that practical classes helped students to understand many concepts in Biology. The practical has helped many students to be able to define many terminologies by practising the theoretical part in the laboratory.

Conclusion

Based on the result of this study, it was concluded that practical class is very essential for developing good attitude towards Biology in students. Practical work has a significant positive effect on learners' performance. Students retain more of what is seen than that which is abstract. Basic practical equipment are imperative for practical classes and are supplied to Schools, but there is the need for its adequacy and improved supply. Practical equipment supply should meet up with students enrolment. Practical classes are visible and help develop positive attitude in students especially when the laboratory equipment are adequate.

Recommendations

The under listed are hereby recommended based on the findings of the study;

i. The School and the Government should provide adequate laboratory facilities to improve the teaching of Biology practical classes.
ii. Practical classes should be made compulsory for Biology, and monitored in Schools.
iii. Laboratory facilities in Secondary Schools, should be subject specific
iv. Practical facilities should be provided in Secondary Schools, with consideration to students' enrolment.
v. The basic practical equipment in Schools should be upgraded to meet the needs of Senior Secondary science.
vi. Teachers should realize the best method that enhances teaching-learning for students' active participation and learning.

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