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An Investigation into the Attitude of Private and Public Secondary School Students towards the Study of Biology in Minna Metropolis, Niger State

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Abstract: This study was aimed at determining the differences in the Attitude of Private and Public Secondary School Students towards the Study of Biology in Minna Metropolis of Niger State. The study employed a descriptive survey research design. The sample size for the study was 296 (197 males and 139 females) students. The research instrument used for the study was a 4-point like scale questionnaire which consist of Agree (A), Strongly Agree (SA), Disagree (D) and Strongly Disagree (SD) options. The instrument was validated by two experts from Federal University of Technology, Minna. A pilot test was conducted and reliability coefficient of 0.72 was obtained. Data collected were analyzed using mean and standard deviation to answer the research questions while t- test statistical tool was used to test the hypotheses formulated at 0.05 level of significant. It was found that, there was significant difference in the attitude of public and private secondary school student towards Biology in favour of private secondary school students. It was also found that a significant difference existed in the attitude of male and female students in private and public secondary schools towards Biology in favour of male students. It was recommended amongst others that, School administrators should encourage the Biology teachers in their schools by subjecting them to seminars, conferences, workshop as well as further training so as to improve their pedagogical skills in Biology instruction

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I. Introduction

The knowledge of Biology is widely used in all spheres of human life. This is because, Biology plays a significant role in shaping how individuals deal with the various spheres of private, social and civil life (Koroka & Ezenwa, 2011). This is the reason why Biology is classified as a core subject for all students at secondary school level of education in most countries of the world including Nigeria. It is regrettable therefore, that in the contemporary times many students struggle with Biology and perform abysmally low in their final year Senior School Certificate Examinations (SSCE) (Koroka & Ezenwa, 2009; NECO, 2015, 2016 & 2017 & WAEC, 2015 & 2016). Students are reported to exhibit poor understanding of Biology concepts and are unable to effectively explain some basic Biological concepts (WAEC 2012). It has also been realised that many students have developed negative attitude towards the study of Biology as a result of low performance of the previous students of the subject. It is an irrefutable fact that the successfulness of teaching and learning Biology is contingent on myriad of factors. School, classroom, student and teacher factors all impinge on the learning of Biology (Koroka & Ezenwa, 2012). In particular, the seriousness or otherwise attached to the teaching of Biology by Biology teachers invariably affects students' performance in their final examinations (Kareem, 2003; Abraham, & Miller, 2008).

Educational researchers have expended time and energy trying to unravel the possible causes of students' poor attitudes and performance in Biology and reported that the area that needs to be explored extensively is the students' attitude towards the study of Biology (Koroka, Ezenwa, Wushishi, & Omalu, 2015). Research findings indicate that effective teacher facilitates learning by caring about their students' engagement and creating the appropriate atmosphere that enhances students' learning (Ajayi, 2011 & Ahmed, 2013). They also have high expectations about enhancing students' capacity to think, reason, communicate, reflect upon what they have learnt and critique their own practice as well as providing students with opportunities to ask why the class is doing certain things and with what effect (Eze, 2008). The relationships that are developed in the classroom become a resource for developing students' attitudes

Attitude as a concept is concerned with an individual's way of thinking, acting and behaving (Agoha, 2005). It has very serious implications for the learner, the teacher, the immediate social group with which the

individual learner relates and the entire school system. Attitudes are formed as a result of some kind of learning experiences students go through. It also has a part to play in the teaching and learning situation. In this respect, the learner draws from his teachers' disposition to form his own attitude which may likely affect his learning outcomes (Ayeni, 2010). Ayeni and Akinola(2008)opined that teachers with positive attitude towards teaching and learning stimulate favourable attitudes in their students. This immediately puts the teacher in the spotlight as one whose attitude expressed in their behaviour has a direct effect on the students. Teachers' attitude and beliefs play a very significant role in shaping classroom practices (Zobaida, 2008). Teachers' attitude towards teaching significantly predict student attitude towards the learning and enhance students' achievement(Zobaida, 2008 & Lawal, 2011). From the foregoing, it can be seen that the relationship between teachers' attitude and students' attitude towards learning have been anecdotal, hence the need to undertake this study.

There have been a long time controversies over the attitude of students in private and public secondary schools towards learning. Some groups of people and authorities believes that, private school students respond and shows more positive attitude to learning while other groups of people and authorities attributes it to public school students. Therefore, this research work was aimed at addressing this problem by comparing the attitude of public and private school students towards the learning of Biology in Minna metropolis.

II. Aim and Objectives of the Study

The aim of study is to carry out an investigation into the attitude of students in private and public secondary school towards the study of Biology in Minna metropolis of Niger State. The study strived to achieve the following specific objectives by determining the:

1. difference in attitudes between public and private Secondary Schools students towards the study of Biology in Minna metropolis.
2. gender difference in attitudes among private and public Secondary Schools students towards the study of Biology in Minna metropolis.

Research Questions

From the above objectives the following corresponding research questions were raised:

1. Is there any significant difference between the attitudes of private and public secondary schools students towards the study of Biology in Minna metropolis?
2. Is there is any significant gender difference between the attitudes of private and public Secondary Schools students towards the learning of Biology in Minna metropolis?

Hypotheses

For the purpose of the research study, the following null hypotheses were formulated and tested at 0.05 level of significant

H_{01} : There is no significant difference in the attitude of private and public secondary schools students towards the study of Biology in in Minna metropolis.

H_{02} : There is no significant gender difference in the attitude of private and public secondary Schools students towards the study of Biology in Minna metropolis.

III. Methodology

The study employed a descriptive survey research design. Survey was employed because it enables the researcher to obtain information from a sample of individuals through their responses, opinions and feeling. A total of seven thousand, two hundred and ninety six (7296) Senior Secondary School students offering Biology in both public and private schools in Minna metropolis (NSMOE, 2018) constituted the population of the study. The targeted population was all the Senior Secondary II (SS II) students offering Biology in both private and public schools in Minna metropolis of Niger State. The sample size for the study was 296 (197 males and 139 females) students

The sampled students were drawn from four secondary schools randomly selected in Minna metropolis (two private schools and two public Schools). From each of the sampled schools, an intact class was randomly selected making a total of four intact classes which gave the sample size that was used for the study.

Instrumentation

The research instrument used for data collection was a 4-point like scale questionnaire which consist of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) options. The scores are; SA = 4, A = 3, D = 2 and SD = 1 with decision rule of 2.5. The instrument is made up of two sections A and B. Sections A was concerned with bio- data of the students while section B contained 15-items on students' attitudes towards the study of Biology. The instrument was validated by two experts from Federal University of Technology, Minna. They examined the appropriateness of the instrument. The correction, suggestions and modification

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made by the experts were used to produce the final Instrument used for data collection. A pilot test was carried out using test retest method with interval of two weeks. The two sets of data obtained were correlated using Pearson Product Moment Correlation and reliability coefficient of 0.72 was obtained. This indicates that the instrument is reliable.

During data collection, the questionnaires were administered to the students and their responses were collected with the assistance of the school Biology teachers in each of the school used for the study. The data collected were analyzed using Statistical Package for Social Science (SPSS) version 20. Mean and standard deviation were used to answer the research questions while t- test was used to test the hypotheses formulated.

IV. Results

Research Question One

Is there any significant difference between the attitudes of private and public secondary schools students towards the study of Biology in Minna metropolis?

Table 1: Responses of private and public Secondary School Students on their Attitude towards the Study of Biology

S/No	Attitude towards Biology	Public schools (X) Mean	Decision	Private schools (X) Mean	Decision
1.	Biology is important for all students to learn	2.53	Agree	2.56	Agree
2.	Biology is an interesting subject to learn	2.54	Agree	2.60	Agree
3.	I donot have any difficulties when learning Biology	2.15	Disagree	2.51	Agree
4.	I will like to become a Biologist	2.43	Disagree	2.82	Agree
5.	There are enough teachers teaching Biology in my school	2.18	Disagree	2.70	Agree
6.	There are qualified teachers teaching Biology in my school	2.28	Disagree	2.56	Agree
7.	My class is conducive for learning Biology	2.18	Disagree	2.35	Disagree
8.	Extra- mural lesson should be created for teaching Biology	2.20	Disagree	1.78	Agree
9.	Biology have positive effect on other subjects	2.20	Disagree	2.78	Agree
10.	Biology should remain to bea compulsory in the school	2.20	Disagree	2.80	Agree
11.	Biology should be taught everyday	2.23	Disagree	2.70	Agree
12.	A particular text book of Biology should be recommended for students	1.98	Disagree	2.61	Agree
13.	During Biology class students should be allowed to ask questions	2.00	Disagree	3.00	Agree
14.	Class work and assignment in Biology should be encouraged	1.08	Disagree	2.70	Agree
15.	Quiz and competition on Biology should be encouraged	1.70	Disagree	2.70	Agree
Average mean		2.13		2.61	

Table 1 shows the mean response of public and private secondary school students towards the study of Biology. Both public and private school students agreed that Biology is important for all students to learn had a mean response 2.53 and 2.56 respectively which are above the decision rule of 2.5. They also agreed that Biology is an interesting subject to learn with mean response of 2.54 and 2.60 respectively and both are above the decision rule of 2.5. I don't have any difficulties when learning Biology had a mean response of 2.15 and 2.51 for public and private school students respectively. This indicates that, public school students disagreed while private school students agreed. I will like to become a Biologist had a mean response of 2.43 and 2.82 respectively indicating that, public school students disagreed but private school students agreed. The public school students disagreed while private school students agreed that there are enough Biology teachers in their schools had a mean response of 2.18 and 2.70 respectively, The public school students disagreed while private school students agreed that there are qualified teachers teaching Biology in their school had a mean response of 2.28 and 2.56 respectively. Public school students disagreed while private school students disagreed that their classes are conducive for learning Biology had a mean response of 2.18 and 2.35 respectively. Extra- mural lesson should be introduced for teaching Biology had a mean response of 2.20 and 1.78 respectively indicating that they both disagreed. Biology has positive effect on other subjects had a mean response of 2.20 and 2.78 respectively. This indicates that public school students disagreed while private school students agreed. Biology should be made compulsory in the school had mean response of 2.20 and 2.80 respectively. This also indicates that public school students disagreed while private school students agreed. Biology should be taught everyday had a mean response of 2.23 and 2.70 respectively. This is also an indication that public school students disagreed while private school students agreed. A particular text book Biology should be recommended for students had a mean response of 1.98 and 2.61 respectively. This indicates that public school students disagreed while private school students agreed. Both students agreed that, during Biology class, student should be allowed to ask questions with a mean response of 3.00 and 3.00 respectively. The public school students disagree while

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private school students agreed that, class work and assignment should be encouraged during Biology teaching with a mean response of 1.08 and 2.70 respectively. Public school students disagreed while private school students agreed that Quiz and competition in Biology should be encouraged with a mean response of 1.70 and 2.70 respectively. The cumulative average mean response for the public and private school students is 2.19 and 2.61 respectively. This therefore indicates that public school students disagreed while private school students agreed hence, private school students had more positive response towards the learning of Biology than the public school students.

Research Question Two

Is there is any significant gender difference between the attitudes of private and public Secondary Schools students towards the learning of Biology in Minna metropolis?

Table 2. Responses of Male and female Students on their Attitude towards the study of Biology

S/N	Attitude towards Biology	Male (X) Mean	Decision	Female (X) Mean	Decision
1.	Biology is important for all students to learn	1.40	Disagree	1.67	Agree
2.	Biology is an interesting subject to learn	1.95	Disagree	2.80	Agree
3.	I don't have any difficulties when learning Biology	2.30	Disagree	2.57	Agree
4.	I will like to become a Biologist	2.45	Disagree	2.53	Agree
5.	There are enough teachers teaching Biology in my school	2.70	Agree	2.64	Agree
6.	There are qualified teachers teaching Biology in my school	2.60	Agree	2.56	Agree
7.	My class is conducive for learning Biology	2.60	Agree	2.91	Disagree
8.	Extra-mural lesson should be created for teaching Biology	2.00	Disagree	2.00	Agree
9.	Biology have positive effect on other subjects	1.90	Disagree	2.59	Agree
10.	Biology should remain to be compulsory in the school	2.00	Disagree	2.53	Agree
11.	Biology should be taught everyday	2.00	Disagree	2.58	Agree
12.	A particular text book of Biology should be recommended for students	1.90	Disagree	2.95	Agree
13.	During Biology class students should be allowed to ask questions	1.70	Disagree	2.66	Agree
14.	Class work and assignment in Biology should be encouraged	1.85	Disagree	3.90	Agree
15.	Quiz and competition on Biology should be encouraged	2.40	Disagree	2.97	Agree
Average mean		2.08		2.65	

Table 2: shows the mean response of male and female public and private secondary school students towards the learning of Biology. They both disagreed that Biology is important for all student to learn with a mean score of 1.40 and 1.67 respectively, Male students disagreed while female students agreed that Biology is an interesting subject to learn with a mean response of 1.95 and 2.80 respectively. I don't have any difficulties when learning Biology, male students disagreed with a mean response of 2.30 while female students agreed with mean response of 2.57. Male students disagreed while female students agreed to become a Biologist with a mean response of 2.45 and 2.53 respectively. Both male and female students also agreed that there are enough teachers teaching Biology in their schools with a mean response of 2.70 and 2.64 respectively. Both of them also agreed that there are qualified Biology teachers in their schools with a mean response of 2.60 and 2.56 respectively. In addition, they both agreed that their classes are conducive for learning Biology with mean response of 2.60 and 2.91 respectively.

Extra-mural lesson should be introduced for teaching Biology had a mean response of 1.90 for male students and 2.00 for female students respectively. This indicates that they both disagreed. Biology has positive effect on other subjects with a mean response of 2.00 for male and 2.59 for female students respectively. This indicates that male students disagreed while female students agreed. Biology should be made compulsory in the school had a mean response of 2.00 for male and 2.53 for female respectively indicating that male students disagreed while female students agreed. Biology should be taught everyday had a mean response of 1.90 for male and 2.53 for female respectively. This also indicates that male students disagreed while female students agreed. A particular text book Biology should be recommended for students gave a mean response of 1.70 for male and 2.95 for female students respectively indicating that male students disagreed while female students agreed. On the other hand, during Biology class, student should be allowed to ask questions had a mean response of 1.85 for male and 2.66 for female respectively. This also indicates that male students disagreed while female students agreed. On the issue of class work and assignment, male students disagreed with mean response of 2.40 while female students agreed with mean response of 3.90. Female students agreed that quiz and competition should be organized for biology students with mean response of 2.97 while male students disagreed with mean response of 1.95. Summarily the response of male and female students of both public and private secondary schools in Minna metropolis towards the learning of Biology with cumulative mean response of 2.08 differs from that of their female counterparts whose mean response is 2.65. Female students therefore, responds more positively towards the learning of Biology than their male counterparts.

Testing of Hypotheses

Hypotheses One (H₀₁)

There is no significant difference in the attitude of private and public secondary schools students towards the study of Biology in in Minna metropolis.

Table 3t-test Comparison of public and private school students' Attitude towards the study of Biology

Responds	N	X	SD	Df	t-value	p-value	Remark
Public school students	174	32.13	6.056	294	21.469	0.000	significant
Private school student	122	32.38	3.364				

Note P<0.05

Table 3 shows the t-test comparison of public and private secondary schools student towards Biology. The mean response for public school student is 32.13 with a standard deviation of 6.056 while the mean responses for private is 32.38 with standard deviation is 3.364. The t calculated at (78) = 21.469 and P =0.000 < 0.05. This shows that there is a significant difference in the attitude of students towards Biology among public and private secondary school students in Minna metropolis in favour of private secondary school students.

Hypotheses Two (H₀₂)

There is no significant gender difference in the attitude of private and public secondary schools students towards the study of Biology in Minna metropolis.

Table 4t-test Comparison of Male and Female School Students' Attitude towards the study of Biology

Responds	N	X	SD	Df	t-value	p-value	Remark
Male Student	197	32.54	3.748	294	19.921	0.000	Significant
Female Student	139	31.77	6.361				

Note P<0.05

Table 4 shows the t-test comparison of male and female secondary schools student towards Biology. The mean response for male student is 32.54 with a standard deviation of 3.748 while the mean responses for female is 31.77 with standard deviation is 6.361. The t calculated at (78) = 19.921 and P =0.000 < 0.05. This shows that there is a significant difference in the attitude of male and female students towards Biology in Minna metropolis in favour of male students.

V. Summary and Findings

From the above analysis the following findings were made by the researcher.

1. There was significant difference in the attitude of public and private secondary school student towards Biology in favour of private secondary school students.
2. There was significant difference in the attitude of male and female private and public Secondary School student towards Biology in favour of male students

VI. Discussion of Results

Hypothesis one revealed that there is significant difference in the attitude of public and private secondary school student towards Biology in favour of private secondary school students. This finding shows that the null hypothesis was rejected. The finding is in line with the finding of Agolia, (2005) who reported a significant difference between students' attitudes towards learning.

Hypothesis two revealed that there is significant difference in the attitude of male and female private and public Secondary School students towards Biology in favour of male students. This indicates that, the null hypothesis was rejected. This finding is in line with the finding of Zobaida(2008) and Udousoro, (2011) who also reported a gender difference in students' achievement, attitude and interest

VII. Recommendations

As result of the above findings, it is recommended that School administrators should:

- (i) encourage the Biology teachers in their schools by subjecting them to seminars, conferences, workshop as well as further training so as to improve their pedagogical skills in Biology instruction
- (ii) provide relevant and updated instructional materials for Biology teachers in their schools for effective teaching and learning

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