

Students Attitudes towards Science Education: Evidence from Secondary Schools in Onitsha South of Anambra State

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ABSTRACT

This study examine on secondary school students' attitude towards science education in Onitsha South Local Government Area of Anambra State, Nigeria. Descriptive survey research design was adopted for the study. The population for this study consisted of all the senior secondary school students in the eight secondary schools in Onitsha South of Anambra State. In each of these schools, simple random sampling technique was used to select 15 students each from senior secondary schools. This total of 90 students was used as the sampled schools. Data were collected from the questionnaire distributed to the senior secondary schools students. The hypothesis was tested using one sample t-test with the aid of SPSS version 20. The study revealed that the attitude of students in science significantly affects their science education in Onitsha South Local Government Area of Anambra State. It is therefore, recommended that for the teacher to improve the students' attitude toward science, they can use learning methods that can attract students' interest to learn about science. On this note, effort should be made by parents, teachers and governments to maintain and increase the positive attitude of students towards science in secondary schools.

KEYWORDS: *Students' attitude, Science education and Secondary schools*

INTRODUCTION

Science education attempts to increase public understanding of science and raise social awareness of scientific discoveries and concerns. Learning science necessitates learning its language, which is frequently different from everyday language. Science education encompasses more than scientific facts, ideas, and hypotheses. Its goal is to achieve a conceptual knowledge of science (Monika and Surita, 2021). Science today aims to generate citizens who can deal with the words, concepts, and scientific symbols that are required in today's technologically evolved age. Many people think of science as an organized collection of knowledge about the natural world, both animate and inanimate, but a proper definition would also have to include the attitudes and methods through which this body of knowledge is formed; thus, science is both a particular activity and also the results of that activity National Research Council (2007).

For the past 40 years, the study of students' attitudes about science has been an important part of the

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scientific education research community's work (Osborne, Simon, & Collins 2003). The development of favorable attitudes toward science, scientists, and learning science, which has long been a part of science education, is becoming an increasingly pressing issue (Trumper, 2006). According to Oludipe (2008), biases and misconceptions regarding women and science have remained a major source of concern in the realm of science education. Many studies have been conducted on gender concerns in science education, with conflicting results. Girls are being encouraged and sensitized into developing positive attitudes towards science.

However, a variety of factors influence secondary school pupils' views and achievement. Some of the variables are linked to parental history and family environment. Individual traits such as self-concept, locus of control, and achievement drive are among the other factors. Other factors that have an impact on schools include classroom climate, teachers, and administrative approaches (Talton and Simpson,

1985). According to Osborne, et al, (2003), studies have incorporated a range of components in their measures of attitudes to science including the perception of the science teacher; anxiety toward science; the value of science; motivation towards science; enjoyment of science; the nature of the classroom environment; achievement in science; and fear of failure on course.

Meanwhile, a number of studies have found that secondary school students have good attitudes toward science (Sakariyau, Taiwo, & Ajagbe, 2016; Yunus, & Ali, 2013; & Sarjou, Soltani, Afsaneh, & Mahmoudi, 2012). Secondary school pupils, on the other hand, have a neutral attitude toward science, according to Mavrikaki et al. (2012). In contrast, White and Harrison (2012) found that secondary school pupils regard science as unimaginative and difficult. They don't see it as necessary for the development of transferable skills like technical competence, numeracy, analytical thinking, and problem-solving. In their study, Ogava and Shimode (2008) found no significant differences in girls' and boys' attitudes toward science. They thought school science was necessary and simple to learn, but they opposed adding more science content to the science curriculum. Students' interests in science are generally neutral (neither positive nor negative), according to Trumper (2006), however boys are more interested in science than girls. Boys demonstrated stronger learning interests in sustainability issues and scientific themes than girls, according to Chang, Yeung, and Cheng (2009). Girls, on the other hand, recalled more science-related life events than boys. Anderson (2006) looked at the opinions of 1027 pupils from Ghana's central region. His findings revealed that the vast majority of students believe science is beneficial to society and can aid in the reduction of poverty and deprivation around the world.

On the other hand, it appears that the educational system is still unable to pique students' interest in science and science learning, despite the fact that one of the primary goals of science education at the school level is to build students' attitudes toward science. Therefore, this study sought to investigate on secondary school students' attitude towards science in Onitsha South Local Government Area of Anambra State, Nigeria.

Review of Literature

Student Attitude

Attitude refers to a person's proclivity to categorise objects and situations and to react to them in a consistent manner. A person's reaction to anything is based on his perception of it rather than its real state.

People acquire attitudes as a result of various learning experiences; if the experience is pleasant, a positive attitude is produced, and vice versa (Orunaboka, 2011). People's attitudes frequently influence how they act in person and in larger situations. As a result, administrators, psychologists, and sociologists are interested in the evolution of attitudes, how they affect behavior, and how they might be modified. Positive attitudes, which encompass our connection and allegiance to people, objects, and ideas, are frequently referred to as sentiment, and include not only negative attitudes such as prejudices, biases, and dislikes, but also positive attitudes such as prejudices, biases, and dislikes (George, 2000). As a result, attitude appears to be a collection of concepts with an emotional core or content. Humans do not inherit attitudes; rather, they learn them. Some people's attitudes are formed based on their own experiences, knowledge, and talents, while others are formed based on information obtained from other sources. The mindset, on the other hand, does not remain unchanged. It progressively changes over a period of time (Olasheinde and Olatoye, 2014). Fasakin (2012) identified attitude as a significant factor in subject selection. He also saw attitude as a mental and natural state of readiness that is organized by experiences and has a direct influence on an individual's responses to all things and events with which it is associated. Individuals who organize their thoughts, feelings, and behaviors towards psychological objects are said to have an attitude, according to Erdemir & Bakirci (2009).

Review of Empirical Studies

Jebson and Hena (2015) investigated students' attitudes about science disciplines in Adamawa state's senior secondary schools. A stratified random selection procedure was used to pick a sample of 250 science students. Data was collected using the Science Students Attitude Questionnaire (SSAQ). Students in Adamawa state have a positive attitude toward science topics, according to the findings, and gender has a big impact on their attitude. Sethi (2015) investigated students' attitudes toward science in connection to non-school issues. A total of 100 students were included in the sample. The significance of differences in means in respect to gender, location, and socioeconomic status of pupils was tested using the mean, standard deviation, and t-test. There is a considerable difference between urban and rural students, but no significant differences were discovered when gender and socioeconomic level were taken into account. Students' motivational beliefs in scientific learning and their relationships with science accomplishment were investigated by Liou and Liu (2015). The Trends in International

than students from rural areas, according to the study. It was also discovered that a student's attitude toward science is linked to his or her previous class performance. Students who received first place in their last class had a more positive attitude toward science than those who did not. In the Jammu district, Monika and Surita (2021) analyze students' attitudes toward science in a number of government and private secondary schools. A total of 200 pupils from five private and government secondary schools in the Jammu district were included in the sample. Grewal (2012) created the Science Attitude Scale (SAS) to examine students' attitudes toward science. Students at both public and private institutions have a positive attitude toward science, according to the findings. Secondary school students' attitudes toward science fluctuate greatly depending on their academic achievement, according to this study.

Science has become an integral component of our daily lives. It has greatly expanded the boundaries of our curiosity and expanded the ways in which we might spend our spare time. Science and technology have had a significant impact on our lives. As a result, it is critical to encourage science knowledge at all levels of education. It's also critical to foster positive attitudes toward science in our high school pupils so that they can solve problems and fit into society. According to a review of related literature, there have been few research investigations in this topic in this state. As a result, this investigation was carried out.

Methodology

Research Design

Descriptive survey research design was adopted for the study. Descriptive survey design uses questionnaire to explore the opinions of given population or its representative sample on existing phenomena (Uzoagulu 2011). However, in survey research the focus is on people, their beliefs, opinions, attitudes and behavior. Based on this, the design is appropriate for the study.

Data Analysis

Out of ninety questionnaires distributed, eight six were returned, this represent 96%.

Research Question

Table 1: What is the attitude of students towards science education in Onitsha South Local Government Area of Anambra State?

S/N	Statements	SA	A	D	SD	X	SD
1	Knowing science can help me make better health decisions Science has no bearing on my life outside of school.	17	36	22	11	2.69	10.67
2	Learning science will not help me achieve my goals in the future.	20	42	15	9	2.85	14.39
3	In science class, we conduct a variety of fun activities.	11	23	41	11	2.40	14.18

Population/ Sample of the Study

The population for this study consisted of all the senior secondary school students in the eight public secondary schools in Onitsha South of Anambra State.

A two-stage sampling approach was used to constitute the sample. In the first stage, a purposive sampling approach was used to select two co-educational schools since gender was being studied as a moderator variable. Learning field and Metu Memorial Secondary School were selected. In each of these schools simple random sampling technique was used to select 15 students each from senior secondary schools. A total of 90 students were used from the sampled schools.

Instruments for Data Collection

The instrument for data collection was a researcher structured questionnaire titled student attitude towards science education. Information for the instrument was gotten from literature reviewed. It is divided into two parts: A and B. Part A contained demographic information of the students, such as gender. Part B contained general questions on the subject matter.

Method of Data Collection

The researcher administered the instrument with the help of the two research assistants, one from each of the sampled schools. These research assistants helped in the distribution and retrieval of the instrument. All the copies of the instrument returned which were properly filled were used for analysis.

Method of Data Analysis

The collected data were analyzed using mean and standard deviation to answer the research questions. The mid-point for the likert scale obtained was 2.5 calculated as follows; $4+3+2+1/4 = 10/4 = 2.5$, hence any item with a mean score of 2.5 and above is accepted while an item with mean less than 2.5 is rejected. The accepted instruments were used to test the hypothesis using one sample t-test with the aid of SPSS version 20.

4	Students pay attention to the teacher's demonstrations and participate in science activities in order to record the demonstrations on the results sheet.	23	43	20	0	3.03	17.60
5	The teacher demonstrates the correct response to the observation finding, along with a scientific explanation.	13	33	25	15	2.51	9.29
6	The teacher does a demonstration and records which prediction was right.	20	20	27	19	2.50	6.56
7	Science is helpful in resolving challenges in everyday life.	17	40	20	9	2.76	13.18
8	Knowing science can help me make better health decisions Science has no bearing on my life outside of school.	26	42	15	3	3.06	16.58

Data presented in table 1 shows the item by item analysis of students' attitude on science education in secondary schools of Onitsha South Local Government Area of Anambra State. The result revealed that all the questions answered have scores above the benchmark (2.50), showing that the level respondents rated the item is normal and highly effective. The standard deviation scores means that the mean scores of the respondents are not widely spread apart.

Test of hypothesis

H_{01} : Attitude of students in science does not statistically affect their science education in Onitsha South Local Government Area of Anambra State.

Table 2: One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
1	4.033	3	.027	21.50000	4.5352	38.4648
2	2.989	3	.058	21.50000	-1.3937	44.3937
3	3.033	3	.056	21.50000	-1.0595	44.0595
4	2.444	3	.092	21.50000	-6.5013	49.5013
5	4.628	3	.019	21.50000	6.7150	36.2850
6	6.557	3	.007	21.50000	11.0657	31.9343
7	2.837	3	.066	21.50000	-2.6146	45.6146
8	3.263	3	.047	21.50000	.5304	42.4696
9	2.593	3	.081	21.50000	-4.8875	47.8875
10	2.628	3	.078	21.50000	-4.5332	47.5332

From the above table, one sample t-test table, the result of the hypothesis test on students attitude towards science education shows that questions 1, 5, 6, and 8 were significantly related to students attitude in terms of science education, such as knowing science can help me make better health decisions, students pay attention to teacher demonstrations, and students conduct science experiments. Other questions raised though have positive influence over student's attitude towards science education but were not statistically significant at 5% level of significance. The study therefore accepts alternate hypothesis which stated that attitude of students in science significantly affects their science education in Onitsha South Local Government Area of Anambra State.

Conclusion and recommendation

It was discovered that 422 (61%) of the 86 secondary school students have a positive attitude toward science, whereas only 266 (39%) have an unfavorable attitude toward science. There is a considerable correlation between secondary school pupils' attitudes about science and their academic achievement.

Based on the data gathered, the conclusion was that learning science can help me make better health decisions, and that students pay attention to the teacher's demonstrations and do science activities to record the findings of the demonstrations on the result

sheets. They did agree, however, that the teacher demonstrates the correct solution to the observation result with scientific explanation and proof, proving that the prediction is true. Science is vital in every subject, and students often have a good attitude toward it. As a result, it is suggested that teachers adopt learning approaches that can pique students' interest in learning science in order to improve their attitude toward science. On this note, parents, teachers, and the government should work together to maintain and improve kids' good attitudes about science in secondary schools.

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