

An Investigation on Secondary School Students' Attitude Towards Science in Ogun State, Nigeria

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Abstract

The study investigated the attitudes of secondary school students towards science in Odeda Local Government Area of Ogun State, Nigeria. Two hundred senior secondary school students consisting of 84 males and 116 females were selected from five secondary schools using stratified random sampling techniques. A 20-item Attitude to Science Questionnaire on a five-point likert scale was adopted for the study. The instrument has a reliability coefficient of 0.73 using Cronbach's reliability method. Frequency counts and percentages were used to obtain an overall picture of students' attitude towards science while student's t-test was used to find out whether there was significance difference between the attitude of male and female students. Findings showed that a higher proportion of the students display positive attitude towards science. Also, there was no significant difference between the attitude of male and female students towards science.

Keywords: Attitude, Science, Student, Secondary school.

Introduction

Attitude refers to predisposition to classify objects and events, to react to them with evaluative consistency. A person who shows a certain attitude towards something is reacting to his conception of that thing rather than to its actual state. Attitude are formed by people as a result of some kinds of learning experience if the experience is favourable a positive attitude is found and vice versa (Orunaboka, 2011). The attitude people hold can frequently influence the way they act in person and larger situation. For this reason, administrators, psychologists and sociologists are concerned with attitude development, how they affect behaviour and how they can be changed.

Attitude does not only include the negative attitude such as prejudices, biases and dislikes, but also positive attitudes are sometimes called sentiment, which include our attachment and loyalties to person, objects and ideas (George, 2000). Attitude thus seems like a system of ideas with an emotional core or content. Human beings are not born with attitudes, they learn afterwards. Some attitudes are based on the peoples own experience, knowledge and skills and some are gained from other sources. However, the attitude does not stay the same. It changes in the couple of time and gradually (Olasheinde and Olatoye, 2014).

Fasakin (2012) recognized attitude as a major factor in a subject choice. He also considered attitude as a mental and natural state of readiness, organized through experiences exerting a directive influence upon the individual's responses to all objects and situation with which it is related. Erdemir and Bakirci (2009) described attitude as tendency for individuals who organize thought, emotions, and behaviours towards psychological object.

The investigation of students' attitudes towards studying science has been a substantive feature of the work of the science education research community for the past 40 years. (Osborne *et al.*, 2003). Development of positive attitudes towards science, scientists, and learning science, which has always been a constituent of science education, is increasingly a subject of concern (Trumper, 2006). According to Oludipe (2008), what has remained the main focus of great concern in the field of science education are the biases and misconceptions about women and science. Many researches had been carried out on gender issues with mixed reports in science education. Girls are being encouraged and sensitized into developing positive attitudes towards science.

For about two to three decades in Nigeria, researchers have reported that students' enrolment in the sciences dwindled year after year. The trend was described with such terms as "a swing away from science" (Akpan, 1986a), "a movement away from science" (Bojuwoye, 1985), "a drift away from science" (Ukoli, 1986), and "unimpressive enrolment in science" (Orukotan, 1997). Salim (1998) aptly described this trend as unhealthy for a technologically ambitious country like Nigeria. According to Ellis (1996), the attitude of a learner towards science or mathematics will determine his attractiveness or repulsiveness to science or mathematics. Research findings by Aghenta (1982) showed that Nigerian students have negative attitude towards science. Again, Balogun (1975) reported that, in general, the attitudes of Nigerian students towards the basic sciences tend to decrease in the order, Biology, Chemistry, Physics and Mathematics.

Many researchers (Ogunniyi, 1986; Akpan, 1986b, 1987; Akale, 1990; STAN, 1992, Eze, 1996; Habour- Peters, 1997) reported that the negative attitudes of Nigerian students towards science were responsible for their low enrolment in the science subjects in secondary schools. According to them, students demonstrated lack of interest in the study of science; they were generally truant, lukewarm and disenchanted with the whole enterprise. The implication is that students who possess these dispositions tend to reject science as a subject.

Akpan (1986b) showed that among four factors of intelligence, attitude, personality and type of school; attitude stood out as the most important determinant of students' choice of science subjects in Nigerian secondary schools. In his study, attitude accounted for 64.8 percent of the variance in students' choice of science subjects. The study thus establishes a cause-effect relationship between attitude and science enrolment in Nigerian secondary schools. It follows logically that the situation of low student enrolment in science subjects may be reversed by changing the negative attitude of students towards science (Piburn and Baker, 1993), using an appropriate attitude change model.

Statement of the Problem

The differences in attitudes of male and female students towards science have been an issue in many countries. In response to this, many different researches have been carried out with mixed reports. Therefore, this research sought to investigate on secondary school students' attitude towards science in Odeda Local Government Area of Ogun State, Nigeria.

Research Questions

In designing this study, the following research questions were formulated;

1. What are secondary school students' attitudes toward science?
2. Is there any difference between the attitudes of male students and their female counterparts toward science?

Research Hypotheses

The below hypotheses were set and tested at 0.05 level of significance.

H₀₁: The secondary school students' attitude towards science is positive.

H₀₂: There is no significant difference between the attitude of male and female students' towards science.

Methodology

Population and Sample Size

This study is a survey type of research and descriptive research design was adopted. The target population for this study comprised of senior secondary two (SS 2) science students in Odeda Local Government Area of Ogun State. Stratified random sampling technique was used to select five (5) senior secondary schools (three public and two private schools). Simple random sampling technique was employed to select a total of 40 SS 2 science students (male and female) from each of the participating schools. Altogether, 5 schools and 200 students were involved in the study.

Instrumentation

In order to collect data and provide answers to the research hypotheses, the Attitude to Science Questionnaire (ASQ) was employed by the researcher. The questionnaire was adopted from Olasheinde and Olatoye (2014). The questionnaire has 20 items with a five-point Likert-scale of 'Strongly agree', 'Agree', 'Undecided', 'Disagree' and 'Strongly disagree'. The students were asked to respond to the items by choosing any of the five responses on the scale.

Validity of the Instrument

For the purpose of this study, both the face and content validity of the instrument were ensured. To ensure validity of the instrument, the initial draft of the instrument was scrutinised by experts in questionnaire and content construction who checked for all non-technical flaws in the instrument. Such inputs enhanced a thorough validation in order to ensure that the instrument actually measured what it was intended to measure in relation to the research hypotheses. The final version of the instrument was trial tested on a sample of 30 students who were not part of the real study sample, in Abeokuta South LGA of Ogun State. The data collected showed that the students did not have problems responding to the items in the questionnaire.

Reliability of the Instrument

In computing the reliability of this research instrument, Cronbach's alpha () was utilised in estimating the reliability coefficient. The Cronbach's alpha reliability of the instruments was 0.73. The construct, content and criterion related validities were found to be adequate.

Data Collection and Analysis

The necessary data for this study were obtained from 200 students selected from 5 secondary schools in the Odeda LGA. The questionnaires were distributed to the students in their various classrooms during the school

hour. The data collection lasted for 3 days. After collection of data, questionnaires that were not fully responded to were discarded. The data were analysed using frequency and percentage as well as student t-test.

Results

Table 1: Attitudes towards science

	Frequency	Percent	Cumulative Percent
NEGATIVE ATTITUDE	78	39.0	39.0
POSITIVE ATTITUDE	122	61.0	100.0
Total	200	100.0	

Table 1 shows that positive attitude towards science has 61 percent while negative attitude towards science has 39 percent. It can therefore be concluded that the attitude of the students towards science is positive.

Table 2: Student t-test summary for male and female students' attitude toward science

GENDER	N	Mean	Std. Deviation	Std. Error Mean	df	t _{calc.}	t _{critical}
MALE	84	78.8810	11.94203	1.30298	198	0.42	1.97
FEMALE	116	79.6207	12.75703	1.18446			

The result in table 2 showed that t-calculated for male and female students' attitude toward science was 0.42 which is less than the t-table value of 1.97 at 0.05 level of significance. The result was therefore not significant hence the null hypothesis (H_{02}) was not rejected. This showed that there was no significant difference between the attitude of male and female students' toward science.

Discussion of Findings

The finding of this study on hypothesis one (H_{01}) showed that the attitude of secondary school students towards science is positive. This finding is also in agreement with Babatunde (1982) who studied the attitude of students and their academic achievement in biology and found that there was a positive attitude to biology. The finding also agreed with Olusola and Rotimi (2012) who reported that students have positive attitude towards the study of physics in College of Education. However, the finding of this study is against the findings of Akale (1990), Eze (1996) and Habour-Peters (1997) who reported that Nigerian students' negative attitude towards science is responsible for their low enrolment in the science subjects in secondary schools. It is also against the findings of Aghenta (1982) which showed that Nigerian students have negative attitude towards science.

The finding of this study on hypothesis two (H_{02}) showed that there was no significant difference between the attitude of male and female students towards science. This finding agreed with the findings of Ominrin (1999) and Adebule (2002) who reported that there was no significant difference between the attitude of male and female students towards mathematics. This finding is also in agreement with Adebule and Aborishade (2014) who reported that both male and female students have almost the same attitude towards science. However, this finding disagreed with the finding of Oloyede (1984) who indicated that male students have positive attitude and perform better than their female counterparts. It is also against the findings of David *et al.*, 2013 who reported that male students developed more positive attitudes than their female counterparts.

Conclusion and Recommendations

From the findings of this study, it was concluded that secondary school students have positive attitude towards science lessons. Also, both male and female students have almost the same attitude towards science. Finally, there is no disparity in the attitudes of students towards science based on sex.

With reference to the findings of this study, the following recommendations are considered important for the current education system;

- Female students should not be avoided from choosing and offering science.
- Science as a male domain should be discouraged by parents, teachers and counsellors in secondary schools.
- Effort should be made by parents, teachers and governments to maintain and increase the positive attitude of students towards science in secondary schools.

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