



# STUDENTS' INTEREST AS AN ATTRIBUTE NEEDED FOR BASIC SCIENCE AND TECHNOLOGY LEARNING

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## ABSTRACT

This study focused on Students' interest as an attribute needed for Basic Science and Technology (BST) learning among Junior Secondary School students in Oredo Local Government Area of Edo State, Nigeria. Two research questions were raised, and one hypothesis formulated for the study. The study consisted of 352 (168 males and 184 females)

## INTRODUCTION

The scientific proficiency and technological competence of the citizens of a nation through colossal acquisition of knowledge, skills, values, and attitudes of the learners right from the basic level of education ascertain the level of the advancement of the nation. The school subject responsible for this development in Nigeria is Basic Science and Technology (BST). BST means the practical application of scientific ideas or concepts to provide solutions to technological challenges. It deals with the individual learner's acquisition of basic knowledge, skills, values, and attitudes that are useful for scientific advancement and technological independence. BST is the aspect of education which leads to acquisition of practical and applied skills as well as basic scientific knowledge (National Policy of Education, FRN 2013). BST was introduced as a core subject at the six years of primary school (lower and middle basic) and three years of junior secondary school (upper basic) in Nigeria for national advancement as countries that are regarded as developed and largely considered as civilized attained



Junior Secondary Schools two students from the twelve (12) public Junior Secondary Schools as sample. The survey research design was adopted for the study while the simple random sampling technique was used in selecting the sample. A 10-item BST Students' Interest (BSTSI) Questionnaire was adopted for the study. Twenty copies of the instrument were administered to twenty students who were not part of the main study but from the study population and their responses were subjected to a reliability test using Cronbach's alpha statistics and a reliability coefficient of 0.74 was obtained. The instrument was administered to the students by the researcher with the assistance of the teachers and they were collected and collated for analysis. Descriptive statistics of mean and standard deviation were used for the data analysis while t-test was used in testing the hypothesis at 0.05 level of significance. The findings revealed that students' interest as attribute needed for the learning of BST is low. It was also found that there is no significant difference between male and female students' interest for the learning of BST. It is recommended among others that Students should be enlightened of the high value placed on science and technology to enable them to develop high or positive interest for the learning of BST and the gender parity for students' interest in learning should be sustained. Also, parents/guardians should encourage their children to develop commendable interest in science and technology education for national development.

**Keywords:** Students' Interest, Attribute, Gender, BST, Learning.

the status through purposeful scientific and technological education of their citizens. Its teaching and learning are designed to enable students at the junior secondary school (upper basic) level to build up and concretize the knowledge of the subject that they had at the primary school (lower and middle basic) levels and to have a solid background for the study of the science subjects such as Biology, Chemistry, Physics at the senior secondary level of education.



To actualize this structure, the curriculum is required but it was quite unfortunate and demoralizing to note that the science curriculum in use from 2008 to 2011 could not meet the innovative and growing needs of the society as it was not integrated. The lapses in the curriculum in use were: Basic science, Basic technology, Physical and Health Education (PHE) and Information Communication and Technology (ICT) were taught and learnt as separate subjects at the basic level of education, it was overloaded with repetition of and duplication of concepts, the traditional lecture method was mostly used, the effective promotion of the holistic view of science was a mirage and the necessary structure to infuse issues that are of national and global interest could not be created and this paved way for its revision in 2012 by Nigerian Educational Research and Development Council (NERDC).

The Basic Science and Technology Curriculum (BSTC) was realigned to integrate the four school subjects; Basic science, Basic technology, Physical and Health Education (PHE) and Information Communication and Technology (ICT) into a single subject called BST. The BSTC was restructured to eliminate overloaded curriculum, encourage innovative teaching and learning strategies that promote skills acquisition, promote the holistic view of science at the basic education level for better understanding of contemporary society and infuse emergent issues that are of national and global interest such as globalization, security challenges etc.

However, Igbokwe (2015) asserted that the Basic Science and Technology Curriculum, BSTC (Revised: 2012) is expected to enable the learners to develop interest in science and technology, acquire basic skills in science and technology, apply scientific and technological knowledge and skills to meet societal needs, take advantage of the numerous career opportunities offered by science and technology, avoid drug abuse and related vices, be safety and security conscious and become prepared for further studies in science and technology.

To accomplish the objectives of the BSTC, interest is needed as an attribute in students' learning of BST. Interest is the level of concern accorded to something or someone and it has the capacity to determine one's goal. It refers to the learner's propensity to learning for academic success. In the submission



of Harackiewicz, Smith and Priniski (2016) interest is a powerful motivational process that energizes learning, guides academic and career trajectories, and it is essential to academic success. They further asserted that interest is both increased attention, effort, and affect toward a particular object or topic and an enduring predisposition to reengage over time.

Interest is an essential ingredient in students learning of BST and this blends with the assertion of Hijazi and Naqvi (2006) that interest of students also makes way for a positive attitude of students towards attendance in class, which acts as a plus point for the betterment of outcomes. Interest of students allows them to focus attentively and deeply on the subject matter, which leads to an enhanced performance academically (Silvia, 2006; Dev, 2016) and this makes it clear that interest governs our feeling and attitudes towards a particular thing or activity in learning. Students' interest in BST supports the students' learning, development, and achievement and can go as far as determining how much time, effort, energy and other available resources that a student can put in learning to attain tremendous academic success.

Interest as a crucial factor in the learning process is key to educational success because learners learn better in subjects, they have some interest and when students are interested in BST, they are more likely to be engaged to learn the subject because interest helps the students to be able to enhance their engagement during the classes. The learners' interest is a fundamental factor in inculcating the right knowledge, skills, values, and attitudes that the curriculum seeks to attain (Okechukwu & Opara, 2021). Therefore, teachers should endeavour to use good innovative methods that will stimulate students' interest in their attempt to make the learning more meaningful to learners. Getting students to learn and sustaining their interest in what they are learning should be the sole objective of teachers in the classroom (Filgona, Sakiyo, Gwany & Okoronka, 2020).

Survey at the secondary education level is generally concerned with specific subjects or subject areas (Krapp & Prenzel, 2011). They further stated that taken together, the data provide evidence that many students tend to lose their interest in science over the course of time. The decline in interest is particularly strong in mathematics and science (Potvin & Hasni, 2014). Sambo, Ikukwi,



Muhamadu and Eggarri (2014) and Okechukwu and Opara (2021) asserted that despite the inclusion of BST in the new Universal Basic Education (UBE) programme, that the problem of students' low interest is not yet solved, probably because of the inability of the Basic Science and Technology teachers to win students' interest. The findings of Christidou (2011), Potvin and Hasni (2014) and Okolie, Elom and Inyiagu (2014) in their various studies revealed that students' interest in science learning is low as many students tend to lose interest over a period whereas Conel (2021) revealed high students' interest in science learning.

However, numerous researches have been conducted globally on the issue of gender and its impact on science education and many of the findings and suggestions were contributed towards having a balanced opportunity for students who are interested in science right from the secondary school level irrespective of their gender. Gardner (2009) asserted that in the last four decades, there has been concern about low participation rate of women in science. Otuka (2012) observed that teachers pay more attention to boys than girls, furthermore, lack of role models, over dependence on textbook and so on, do not enhance female participation in the learning process. Gardner (2009) and Otuka (2012) in their studies revealed gender disparity with more males in science participation. However, Baran (2016), Godpower-Eichie and Ihenko (2017) and Hassan, Jiya, Kanu and Egbita (2019) reported that there was no significant difference between the female and male students' interest in science.

The accumulated evidences on students' level of interest and their gender interest are contradictory and it is on this note that the researchers are prompted to carry out this study to assess the level of students' attribute needed for BST learning based on gender.

### **Statement of the Problems**

It is expected that students possess interest as a key attribute for their BST learning. Unfortunately, this has not been achieved because of the existence of students with declining interest probably because the teachers have not been able to develop and sustain the students' interest. However, it has been



observed that the graduates of Junior Secondary School (JSS) did not leverage on BST learning opportunities to acquire relevant skills and become independent and this could be attributed to lack of interest in the subject and there is also a public mentality that science is for males and as such the females seem not to pay much attention to the learning of BST as the bedrock of science and technology.

It worthy to point out that no study has been sighted on students' interest in the geographical location for this study. Hence this study is designed to assess students' interest as attribute needed for BST learning in Oredo Local Government Area, Edo State to fill the gap that has not been filled by other researchers.

### **Research Questions**

The following questions were generated to provide proper guidance for this study.

1. What is the level of students' interest for Basic Science and Technology learning?
2. Is there a difference in the level of students' interest for Basic Science and Technology learning based on gender?

### **Hypothesis**

#### **Research hypothesis**

The following hypothesis was formulated for this study, and it corresponds to research question 2.

1. There is no significant difference in the level of students' interest for Basic Science and Technology learning based on gender.

### **Purpose of the Study**

The main objective of this study is to assess students' interest as an attribute needed for BST learning at Junior Secondary School in Oredo Local Government Area of Edo State. The precise objectives are to:

2. OBJECTIVES OF THE STUDY The main objective of this study is to assess students' factors in the effective learning of basic science and technology at





the Junior Secondary School level in Oredo Local Government Area of Edo State. The precise objectives include the following:

1. ascertain the level of students' interest for Basic Science and Technology learning.
2. determine if there is a difference in the level of students' interest for Basic Science and Technology learning based on gender.

### **Significance of the Study**

The researcher believes that by carrying out this study on students' interest as an attribute needed for BST learning at Junior Secondary School (JSS) level in Oredo Local Government Area of Edo State, that the findings of this study would be beneficial to students, BST teachers, teachers in other science related subjects, researchers and curriculum planners.

School proprietors, school principals, education authorities and Ministry of Education will as well benefit from this study as it would enable them to have a better insight of the effectiveness of students' learning and make useful and adequate suggestions and recommendations that will improve student's attitude for effective learning academic success.

### **Scope and Delimitation of the Study**

The scope of this study is concerned with students' interest as an attribute needed for BST learning at JSS level in Oredo Local Government Area of Edo State and the dependent variable is gender. This study was delimited to JSS students in public schools in Oredo Local Government Area of Edo State.

### **Methodology**

This study adopted the descriptive survey research design which involves obtaining information concerning the status of a phenomenon to describe "what exists" with respect to variables or conditions in a situation and it is of great relevance as it is the researchers' intention to collect data to investigate students' interest as attribute needed for BST learning in Oredo Local Government Area.



The study has a population of 3,515 which comprises of 1,222 males and 2,293 females of all Junior Secondary School two (JSS2) BST students in the twelve (12) public secondary schools in Oredo Local Government Area of Edo state.

The sample for the study is 352 (168 males and 184 females) selected using simple random sampling technique by selecting ten (10) percent of the study population.

The research instrument for the study is a ten (10) item questionnaire referred to as Basic Science and Technology Students' Interest (BSTSI) questionnaire and it was divided into two (2) sections. Section A consists of students' demographic data. Section B consists of items on students' interest for Basic Science and Technology learning. The respondents were required to tick [x] as only one option for their response. Responses to sections B were rated using four points rating scales with options: Very High Extent (VHE)=4, High Extent (HE)= 3, Low Extent (LE) =2, Very Low Extent (VLE) =1 while section E was rated based on the 4-point Likert scale responses: Strongly Agree (SA)=4, Agree (A)=3, Disagree (D)=2, Strongly Disagree (SD)=1.

The validity of the instrument was determined by one curriculum expert and two BST teachers, and their corrections were incorporated in the final copy of the instrument.

The reliability of the instrument was determined by carrying out a pilot test of administration of twenty copies of the instruments to twenty respondents who were not part of the main study. The completion of the questionnaire was closely guided by the researchers and the completed questionnaire was collected from the respondents and subjected to Cronbach alpha statistics. Cronbach alpha coefficient of 0.74 was obtained.

The instrument was administered to JSS two students by the researcher with the assistance of their teachers after due permission from the schools' principals. The teachers and the researcher administered the instrument, and the completed questionnaire were collected for collation and analysis by the researchers.

The analysis of the research questions was done using mean and standard deviation with a criterion mean of 2.50 set for decision-making and the null





hypothesis was tested at 0.05 level of significance using the independent sample t-test.

## Results

This is the provision of answer and results to the research questions and hypothesis that backed up the study. It focused on the discussion of the findings of this study and supported the findings with other existing results of previous findings in the related area of study.

### Research Question 1: What is the level of students' interest needed for Basic Science and Technology Learning?

**Table 1: Mean Responses on the Level of Students' Interest needed for Basic Science and Technology Learning.**

S/N	Statement	N	Sum	Mean Score	Standard Deviation	Remark
1	I feel that if I work hard, I can become a good student of Basic Science and Technology	352	1059	3.01	.619	High Extent
2	I like to answer questions in Basic Science and Technology class	352	795	2.26	.794	Low Extent
3	I like Basic Science and Technology very much because it is easy to learn	352	848	2.41	.616	Low Extent
4	I feel that Basic Science and Technology is difficult because it requires a lot of understanding	352	859	2.44	.463	Low Extent
5	My Basic Science and Technology teacher has made me to feel that I can do well in the subject	352	975	2.77	.406	High Extent
6	I like spending much time to learn Basic Science and Technology	352	672	1.91	.239	Low Extent
7	I like Basic Science and Technology because learning materials in the laboratory and workshop are available and enough	352	574	1.63	.926	Very Low Extent



8	My friend's view about Basic Science and Technology makes me feel like studying other easy subjects	352	852	2.42	.458	Low Extent
9	I prefer theory to practical work in my Basic Science and Technology lesson teaching	352	891	2.53	.288	High Extent
10	I dislike Basic Science and Technology because our teacher takes full control of the teaching and does not allow us to participate very well in the class	352	1123	3.19	.456	High Extent
	Overall			2.46	.527	Low Extent

**Source: Field Survey, 2024.**

**Mean Benchmark: 0.75-1.74 Very Low Extent; 1.75-2.49 Low Extent; 2.50-3.25 High Extent; 3.26-4.00 Very High Extent**

The result from Table 1 was based on the analyses of the participants' responses on the level of students' interest for BST learning. It was found that six (6) out of the ten (10) items considered were found to be of low extent with respect to students' interest in the subject-matter; specifically, items 2, 3, 4, 6, and 8 respectively with item 7 further showing a very low extent. However, items 1, 5, 9 and 10 respectively, were found to be of high extent. In overall, the interest level is of low extent. Therefore, the result was interpreted to imply that students have a low interest in BST learning in public JSS in Edo State.

**Table 2: Independent Sample t-test Summary of Difference in the Level of Students' Interest needed for Basic Science and Technology Learning Based on Gender**

Gender	N	Mean	Std D.	Mean Diff.	df	t	Sig. (2-tailed)
Male	168	29.71	4.328	.388	350	.791	.429
Female	184	29.33	4.833				

**Source: Survey data, 2024.**

alpha = 0.05



Table 2 shows the difference in the mean level of students' interest for the learning of BST based on gender. The data revealed a computed t-test value of .791 at a degree of freedom (df) of 350 with its corresponding p-value of 0.429, which is far higher than 0.05 alpha level that was set for the study ( $p=0.429>0.05$ ). From this data, the null hypothesis which states that there is no significant difference in the level of students' interest for BST learning based on gender is therefore, retained. This implies that no significant difference existed between the male and female students with respect to their level of interest needed for the learning of BST in Oredo local government area of Edo State.

**H<sub>03</sub>:** There is no significant difference in the level of students' interest for BST learning based on gender.

### Discussion of findings

This study investigated, "students' interest as an attribute needed for the learning of BST". The study was guided by two research questions and one hypothesis. The formulated hypothesis was tested at 0.05 level of significance. Appropriate descriptive statistics of mean and standard deviation were used to answer the research questions while t-test of independent was used to analyze the hypothesis. The results of the research questions in table one shown that the interest is low/negative. The summary of the t-test analysis results shows that there was no significant difference in the levels of students' interest for the learning of BST based on gender.

The response from question one, table two revealed that the level of students' interest for the learning of BST is low and this corresponds with the results from the empirical studies on students interest level as reported by Christidou (2011), Potvin and Hasni (2014), and Okolie, Elom and Inyagu (2014) revealed students' declining interest whereas Conel (2021) revealed otherwise that high students' interest in science learning.

The result of hypothesis one shows no significant difference in existence between the male and female students with respect to their level of interest for the learning of BST and this finding is in agreement with the reports of Baran (2016), Godpower-Eichie and Ihenko (2017) and Hassan, Jiya, Kanu and



Egbita (2019) whose studies revealed no significant gender difference in students' learning and achievement interest. However the report of Gardner (2009) and Otuka (2012) reported that there is gender disparity with more males in science participation.

The findings would help the BST teacher to apply innovative teaching strategies in developing and improving their lessons. It will also enable the curriculum developers and curriculum planners to develop and plan to be concerned and efficient in their developing and planning task over a given period since learning involves the construction of prior knowledge to gain new ideas for learning to be effective.

### **Conclusion/Recommendations**

The findings and discussion of the study are evidence that students' interest for BST learning is low and the level of students' interest for BST learning based on gender has no significant difference. This implies that both male and female students have the same level of interest in BST learning.

The findings revealed that students' interest can be enhanced in learning for improvement of achievement success. The findings have some educational implications for students, teachers, school administrators, curriculum developers and curriculum planners

The following recommendations were made based on the findings from this study:

- i) the school authorities should put measures in place that would enable the students to develop high interest in BST learning.
- ii) the gender equity for students' interest in learning should be sustained.
- iii) Government should ensure that schools are well equipped with teachers to boost students' interest in BST learning.
- iv) Students should be enlightened of the high value placed on science and technology to enable them to develop high or positive interest for the learning of BST.



- v) Parents/guardians should encourage their children to develop commendable interest in science and technology education for national development.
- vi) teachers should ensure that their instructional strategies enhance high students' interest in BST learning

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