

Team Teaching Strategy and Students' Interest in Basic Science in Anambra State

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ABSTRACT

The study investigated the effect of team teaching strategy on students' interest in Basic Science and Technology in Junior Secondary Schools in Anambra State. The quasi-experimental design was adopted. The sample consisted of 150 JSS II students from four co-educational Schools in Aguata Education Zone of Anambra State Nigeria. The experimental group comprised 76 students made up of 39 boys and 37 girls, while 74 students were used as control comprising 36 boys and 38 girls. The instruments for data collection was Basic Science and Technology interest Scale (BSTIS) with reliability coefficient of 0.98. Data obtained were analyzed using mean and standard deviation for research questions and analysis of covariance (ANCOVA) for the hypotheses. The results from the study showed a significant difference in interest scores of students exposed to Basic Science and Technology using team teaching strategy and their counterparts exposed to Basic Science and Technology using conventional teaching strategy. It also revealed gender has significant difference in interest of students exposed to Basic Science and Technology using team teaching strategy in favour of boys. The combined effect of exposing students to team teaching strategy and their gender significantly affected their interest in Basic Science and technology. On the premise of the findings, the study posit that team teaching Strategy has been very effective in teaching and learning of Basic Science and Technology in the classrooms. Thus, teachers are enjoined to use of team teaching strategy to enhance students' interest in the classrooms as well as improve teachers' classroom productivity.

KEYWORDS: Students' interest, Basic Science and Technology, teaching strategy, team teaching, conventional teaching method, gender

INTRODUCTION

Basic Science and Technology is one of the compulsory subjects in the Junior Secondary School programme of study. The programme was developed to enable students acquire the basic scientific literacy and skills that will enable them fit into the study of the different components of science subjects in senior secondary schools as well as live comfortably in this technological age. Basic Science and Technology consists of four components - Integrated Science, Introductory Technology, Physical and Health Education and Computer studies. Notably, most teachers in the Junior Secondary School may not have complete knowledge of all the components of Basic Science and Technology Curriculum, nor the

pedagogical content knowledge and skills to enhance students' achievement and interest in the subject.

In order that learners should have interest in class activities, appropriate teaching strategy should be put in place so as to develop and enhance educational success, because students learn better in subjects they have interest in. Sambo, IKuwi, Mohamadu and Eggari (2014) blamed the lack of students' interest in Science (including Basic Science and Technology) on poor teaching method employed by most teachers. The curiosity and interest of students, according to Aydin and Coskun (2011) manifest in their performance. The authors reiterated that students whose interest had not been developed do not have the zeal to attend classes regularly. Even when they

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attend classes, they do not listen attentively neither do they do their class work because they do not have interest in learning the subject being presented to them. Njoku (2009) states that it is self-evidence that teachers' effectiveness and teaching styles/strategies contribute much to students' development of interest in any subject. Obodo (2002) emphasizes the existence of low interest among students in the study of science in Nigeria, of which Basic Science and Technology is included.

The learners' interest is a fundamental factor in inculcating the right knowledge, skills, values and attitudes that the curriculum seeks to attain. Therefore, interest is an important aspect of the learning process. Interest helps in sustaining concentration, purpose, commitment and co-operation with the teacher in the learning process, Gardner (2009). According to Ardodo and Gboro (2012), science interest possesses the strongest strength for predicting performance. Teachers should endeavour to use good innovative methods that will stimulate students' interest in their attempt to make the learning of Basic Science and Technology more meaningful to learners. Interest is the key to educational success because learners learn better in subjects they have some interest. Generally, if one has interest in something, one will want to learn or hear more about it and will take pleasure in doing it (Anekwe, 2012).

Interest is the tendency to seek and participate in certain activities (Habor-Peters, 2010). Chukwu (2011) stated that an effective learning has to do with feelings and values and these influence our behaviour in one way or the other. Anekwe (2012) submitted that interest can be seen as the feeling one has in the course of wanting to know or learn more about somebody or something. Obiekwe (2013) stated that interest is an activity or object that can be sustained depending on whether the individual whose interest is engaged stand to gain or lose by doing so.

Survey at the secondary education level are generally concerned with specific subjects or subject areas. Habor-Peter (2010), Anekwe (2012) and Obiekwe (2013), provided evidence that many students tend to lose interest in science over the course of time. Though all subjects suffer from a steady decline in interest, only science and mathematics remained in decline when the intrinsic worth is considered (Wilson, 2011). This being the case, it is very necessary for Nigerian science educationists to device ways of developing and sustaining students' interest in Basic Science and Technology, since Basic Science and Technology is the foundation of science and technology education in Nigeria.

Interest in science can be generalized at a more concrete level. In first case, the content area of science interest would comprise the whole body of science related subjects and topics of which a person is aware. In the second case, one would take into account that an individual's interest can be limited to a particular school science subject (e.g. biology not chemistry or physics) or particular topics and activities within a subject domain, a discipline or a research field. Gardner (2009), Ekon, Ekwueme and Meremikwu (2014) stated that students are not performing up to expectation in Basic Science and Technology. It is a very good innovation including Basic Science and Technology in the new UBE programme, to ensure that students at the basic level of education were able to acquire basic knowledge and skills in science and technology, applying the knowledge and skill acquired to meet societal needs, take advantage of numerous career opportunities offered by Basic Science and Technology, become prepared for further studies in science and technology among other objectives. The problem is not yet solved, probably because of the inability of the Basic Science and Technology teachers to win students' interest as reported in a coroporative analysis of students' interest in Basic Science and Technology (Sambo, Ikukwi, Muhamadu & Eggarri, 2014). Furthermore, for any meaningful achievement in science, students' interest in Basic Science and Technology must be developed and sustained because interest produced effort, effort increase interest and combination of the two produce achievement (Sambo *etal*, 2014). They blamed lack of students' interest in science and Technology to the poor teaching method employed by most teachers. They submitted that when motivating methods are used, students' interests are evolved.

In the last four decades, there has been concern about low participation rate of women in science, Gardner (2009) Research has focused on practical and pedagogy as barriers to girls performing well 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 leaning process.

Iman and Dada (2011) defined gender as the social roles, responsibility and behaviour created in our families, societies and culture. Gender can also be viewed as socially ascribed attributes which differentiates feminine from masculine (Anegbe & Adeoye, 2006), the association between gender and response to science, technology and mathematics (STM) education has been widely studies. According

to Adeoye (2006), the main focus of their finding, is lack of girls opting to study the physical sciences. Obviously, studies on gender differences in science achievement, interest and participation are enormous in science education. Achieving equity in Basic Science and Technology is important because of its relationship to economic development. If women suffer discrimination in basic science and technology, lack of appropriate qualification will limit their financial record and ban them from prestigious positions, (Otuka 2012).

Gender and Science, accordingly had been and remains the focus of great concern and extensive study Ukah (2015). Survey about the general level of interest or other indicators of positive achievement towards Basic Science and Technology often try to identify substantial differences between subgroup of students that can be separated according to relevant educational or sociological variables such as gender, cultural background among others, (Nwagbo 2015).

In a more recent International Comparative studies by the International Association for the Evaluation of Educational Achievement (I.E.A) and the Organization for Economic Co-operation and Development (OECD), it was observed that the differences between girls and boys in the area of achievement and interest are now very small (Martins, Olson, & Gaha, 2014). Similarly, no indications were found that boys systematically differed in their expectations of having a future career which is related to science and technology.

However, while the benefits of Basic Science and Technology education for women in sustainable, social and economic development are numerous in some major parts of the world, Africa still lags behind other continents in terms of provision of an effective science education for girls, Eze and Egbo (2012). Since the driving force for success in life is interest, there is need for the girl child to be guided by the Basic Science and Technology teachers to develop interest by using appropriate teaching strategy that would probably lead her to participate actively in Basic Science and Technology learning activities. Trumper (2006) identifies gender as one of the factors affecting students' interest towards science. He stated that females lose interest in Science even when they perform well or even when they are better in Science than their male counterparts. However, the researcher felt that if a better teaching strategy like team teaching strategy is employed the gender difference observed by Trumper may not hold.

The team teaching strategy encourages students to not only learn from different teachers, it allows them to also participate and share ideas among students and

share ideas on a given subject with many teachers. In a team teaching method, two teachers or more are jointly responsible for a class; they plan teaching together, share teaching duties and design collectively all teaching aids (Angelides, 2006). This ensures that students benefit from the expert knowledge of different teachers, since each teacher teaches on an aspect of the subject in which he is a specialist (Ibegbu, 2010). This teaching strategy brings with it a two-folds benefits to both the teachers and the students. On one hand, teachers would take advantage of "division of labour, flexibility, opportunity to learn from each other, and partnership; on the other hand it benefits students in terms of styles, and enhanced classroom teaching dynamics" which was illustrated in a specific study of technology (Cullen, 2009, Murphy, Beggs & Carlisle, 2013). Therefore in this study, the researcher wish to ascertain if team teaching strategy will change the interest level of both gender in Basic Science and Technology.

Purpose of the Study

The main purpose of the study is to investigate the effect of team teaching strategy on Upper Basic Education students' interest in Basic Science and Technology (BST). Specifically, the study intends to determine:

1. The mean interest scores of students exposed to Basic Science and Technology using team teaching strategy and their counterparts exposed to traditional teaching strategy.
2. The influence of gender and teaching strategy on students' interest in Basic Science and Technology (BST).

Research Questions

The following research questions were stated to guide the study:

1. What is the mean interest scores of students taught Basic Science and Technology using team teaching strategy and those taught with traditional teaching strategy?
2. What is the influence of gender and teaching strategy on students' interest in Basic Science and Technology?

Hypotheses

The following null hypotheses tested at 0.05 level of significance guided the study.

Ho₁: The mean interest scores of students taught Basic Science and Technology using team teaching strategy did not differ significantly from their counterparts taught with traditional teaching strategy.

Ho₂: Gender has no significant influence on the students' interest in Basic Science and Technology.

RESEARCH METHODS

The study was a quasi-experimental design. The population of the study comprised 2865 Upper Basic Two (JSS2) students of Government owned coeducational schools in Awka and Aguata Education Zones in Anambra State of Nigeria. The sample of the study comprised 320 JSS2 students. The study employed stratified random sampling techniques. The schools in the two Education Zones was first stratified according to those with complete number of teachers that will teach the four components of Basic Science and Technology and those with single teacher that teach the subject. Simple random sampling was used to select four coeducational schools from each Education Zone. Two schools with complete teachers to teach the four components of Basic Science and Technology were assigned as experimental group and two schools with single teacher to teach the subject were also assigned as the control group in each Zone. In these schools one class of JSS2 was randomly selected for the study. Experimental group was made up of 162 students comprising 80 boys and 82 girls from four intact classes while the control group was consisted of 158 students comprising 78 boys and 80 girls from another four intact classes.

The research instrument used was interest scale tagged Basic Science and Technology Interest Scale (BSTIS). The BSTIS comprised 15 items in which students' interest was rated using five points rating scales with options: Very High Extent (VHE)=5, High Extent (HE)= 4, Moderate Extent (ME)=3, Low Extent (LE)=2, Very Low Extent (VLE)=1. The reliability of the instrument was tested using split-half method. The instrument was administered on 20 participants from Enugu State owned Secondary Schools for the Pilot study. The scores obtained were calculated using Spearman's correlation coefficient for both achievement test and interest scale and was found to be 0.74.

RESULTS

Table 1: Mean Interest Scores of Students Exposed to Team-Teaching Strategy and Traditional Teaching Strategy

Group	N	Post Test Score (A)		Pre Test Score (B)		Mean Difference Score (A – B)
		Mean	SD	Mean	SD	
Team-Teaching Strategy (Experimental group)	162	2.97	0.57	1.70	0.54	1.27
Traditional Teaching Strategy (Control Group)	158	2.14	0.79	1.54	0.53	0.6

Table 1 indicates that the pretest and posttest mean interest scores of students the experimental group were 1.70 and 2.97, respectively with mean difference of 1.27 while the pretest and posttest mean interest scores of the control group were 2.14 and 1.54, respectively with mean difference of 0.6. This shows that those taught with team teaching achieved slightly higher than their counterparts taught with traditional teaching strategy.

The lesson plans was drawn on the course contents. The course content covered the specific objectives including living things, habitat adaptation, chemicals and hazardous nature, Geometric construction and polygon as well as computer soft-wares. The lesson plan for the control group was left for the teacher assistants in the class to write as that is also the teaching strategy.

Two treatment groups were involved in the study: the experimental group and the control group. The experimental group was taught using team teaching strategy while the control group was taught using traditional teaching strategy. The team teaching class involved four teachers. Random sampling was used to select one biology teacher to teach living things and their habitat, adaptation and adaptive features; one chemistry teacher to teach types of chemicals and their uses, their hazardous nature and percussions in handling them. Mathematics teacher teaching the class was chosen to teach Introductory Technology where there is no technology teacher in that area as the topics involved were also in JSS2 mathematics curriculum; then the Computer teacher taught types and examples of computer software, their applications, generation and differences. In the control group, all these topics were taught by one teacher. Treatments commenced after the two groups have been subjected to Basic Science and Technology Interest Scale (BSTIS) in order to determine their entry point. The same sets of instruments were used for both pretest and posttest.

The treatments were given for a period of eight weeks in order to cover the course contents. The pretest and posttest given to students were marked and scored with a marking guide prepared by the researcher. Each question was scored $2\frac{1}{2}$ marks giving a total of 100 marks for the 40 multiple-choice test items. The data collected were analyzed using mean and standard deviation. Analysis of covariance (ANCOVA) was used to test the hypotheses.

Table 2: Mean Interest Scores of Male and Female Students Exposed to Team-Teaching Strategy

Gender	N	Post Test Score (A)		Pre Test Score (B)		Mean Difference Score (A – B)
		Mean	SD	Mean	SD	
Male	80	2.77	0.54	1.69	0.57	1.69
Female	82	3.19	0.52	1.70	0.52	1.49

In Table 2, the mean interest scores of male students for posttest and pretest were 2.77 and 1.69, respectively with mean difference of 1.69 while that of the females were 3.19 and 1.70, respectively with mean difference of 1.49. Looking at the mean differences, the interest of the male students seem to be motivated than that of females.

Table 3: Analysis of Covariance (ANCOVA) on students' interest and team teaching strategy

Source	Type III Sum of Squares	Df	Mean Square	F-Cal	Sig.	F-Crit
Corrected Model	42.116 ^a	3	14.039	38.880	.000	3.84
Intercept	989.583	1	989.583	2740.647	.000	
Gender * Method	1.704	1	1.704	4.719	.031	
Gender	15.023	1	15.023	41.607	.000	
Method	25.139	1	25.139	69.621	.000	
Error	52.717	216	.244			
Total	1083.000	320				
Corrected Total	94.833	219				

Table 3 shows that the F-cal of 69.62 was significant at since F-cal is greater than F-Crit of 3.84 at $p=0.05$. Therefore the null hypothesis of no significant difference in the mean interest scores of students exposed to team teaching and those exposed to traditional teaching strategy was rejected which implies that those taught with team teaching have higher interest scale than their counterparts.

Table 3 also shows that the F-Cal of 41.61 was significant at 0.05 since the F-Crit is less than F-Cal at 0.05 level of significance. Therefore, the null hypothesis that there is no significant difference in the mean interest scores of male and female students exposed to Team Teaching Strategy (TTS) in Basic Science and Technology (BST) was rejected. This implies that gender has significant influence on their interest in Basic Science and Technology.

DISCUSSION AND CONCLUSION

The study has shown that there is significant difference in the mean interest scales of students taught Basic Science and Technology using team teaching and those taught with Traditional teaching strategy. The study conforms to that of Ekon, Ekwueme & Meremikwu (2014) who discovered significant difference in the achievement and interest of students in Basic Science and Technology using constructivist instructional model. This simply indicates that the teaching strategy used by teachers have the power to increase students interest and participation in the class or to decrease it.

Equally, the study revealed that there is a significant difference in the interest of male and female students in Basic Science and Technology using Team Teaching Strategy. It was observed that males have more interest in the subject than females. The reason for this disparity may be because boys are more or less scientifically and technically inclined than girls. These findings disagree with the findings of Ardodo and Gboro (2012) which state that interest possesses the strongest strength for predicting performance. The females have been observed in this study to achieve

more than males but males have more interest in the subject. These findings are in line with that of Trumper (2006) where he observed that females lose interest in science even when they performed well or even when they are better than their male counterparts.

The study thus posit that Team Teaching Strategy has been very effective in teaching and learning of Basic Science and Technology in the classrooms. It further posits that team teaching is capable of closing up interest dichotomy among male and female students in basic science classes. Thus, teachers are enjoined to use of team teaching strategy to enhance students' interest in the classrooms as well as improve teachers' classroom productivity.

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