

EFFECT OF TEAM-BASED INSTRUCTIONAL STRATEGY ON JUNIOR SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN BASIC SCIENCE IN ILE-IFE, OSUN STATE, NIGERIA

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Abstract

The study investigated the effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science in Ile-Ife, Osun State. The study employed the non-equivalent pre-test, post-test and control group quasi-experimental research design involving 47 junior secondary school II students in two intact classes selected from two schools in Ile-Ife, Osun State using simple random sampling technique. One research instrument tagged "Basic Science Achievement Test" (BSAT) was used to collect data for the study. Data collected were analysed using frequency count, percentage, mean, standard deviation, and analysis of covariance (ANCOVA). The results of the study showed a significant effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science in Osun State ($F = 55.910$; $p < 0.05$). It also revealed no significant interaction effects of team-based instructional strategy and gender on junior secondary school students' academic achievement in Basic Science in the study area ($F = 1.415$; $p > 0.05$). The study concluded that team-based instructional strategy as an activity-based method could be used to improve students' academic achievement in junior secondary schools if properly monitored.

Keywords: Basic Science, Team-based Instructional Strategy, Academic Achievement, Gender.

Introduction

Science can be explained as the resolute human determination used to comprehend the historical background of how the natural world works, with apparent physical proofs as the foundation of understanding the world as a whole (Animola & Bello, 2019). It is a systematic approach to acquiring knowledge through carefully documented investigation and experimentation (Olajide, Ajewole & Amusat, 2018). According to Alebiosu & Bilesanmi (2005), they submitted that science aims at searching for the causes and providing reasons for and/or solutions to phenomena or experiences in life. Science is an attempt to gain better understanding and clearer interpretation and explanation of human kind and the

environment. In addition, it is the underpinning upon which the greater part of technological innovation is put up. Science is the foundation of all technological advancements and breakthroughs in the world (Olajide & Ajewole, 2020).

Science education plays an important role in the being of everyone and in the advancement of a country technologically and scientifically (Alebiosu & Ifamuyiwa, 2008). As a matter of fact, it is a general belief that the road map to the existence of a country both technologically and scientifically is scientific literacy which can only be attained via science education. The Federal Republic of Nigeria (FRN) through her policy on education entrenches the training of science at all stages of education in the nation including primary, secondary and tertiary institutions (FRN, 2014). This may be connected with the fact that the valuable contribution of science in the growth of a country needs not be over stressed.

Despite the vital roles of science in the society, students' academic performance is poor in science subjects in external and internal examinations. Owing to this, researchers in the field have embarked on a range of studies to discover reasons for the horrid situation. They discovered that the trouble emanated from the kind of science a learner is exposed to at the elementary level. Among these researchers are Afuwape & Olatoye (2004), they found out that inadequate number of trained teachers, inadequate number of necessary facilities needed for training and demonstration, inadequate practical/experimental works, adoption of poor teaching methods and deficient allocation of periods for Basic Science on the school time-table are the major conditions limiting the successive putting into practice of this major curriculum in Basic Science as a whole. In the same vein, poor training strategies adopted by teachers have been a big challenge to teaching-learning process in science subjects (Agboola & Oloyede, 2007; Olajide & Aladejana, 2016). Okigbo (2010) submitted students' lack of interest in science subjects; gender (Oluwatosin & Bello, 2015); availability and usability of science laboratory equipment (Bello, 2012) and students' anxiety (Jegede, 2010) as factors influencing students' performance in science subjects.

Basic Science is among the core science subjects taught in junior secondary schools. It is taught in order to expose learners to the basic workings of the scientific innovativeness and it also provides the learners with the necessary foundation upon which to build subsequent science learning in the senior secondary school. Ultimately, core curriculum is projected to offer every student with a training that is capable of acquainting them well with unrelatedly choices upon graduation from school. It builds up the training of essential abilities and presents an extended scope of new information and abilities to the educational plan. Rutherford (2000) underlined four properties that science course content should be: significant; accurate; aligned with desired or declared learning goals and coherent. The science core curriculum places prominence on understanding and using skills. Hence, the Basic Science scheme was planned to instill into the present generation of students, the requisite skills to light tasks in the society.

For years now, science tutors have been making concrete efforts to simplify the instructions given in science by going yonder the traditional method of knowledge acquisition in sciences. Emphases have been laid on training and on active involvement of students who are undergoing science training. Science develops skills like cautious classification, designing, events, experiment, generalization, interpreting, observations, organizing information and reporting. According to Umeh (2002), teachers have been discovered to be imperative in the implementation of science educational plans. Ajaja and Kpangban (2000) stressed that what the students know or do not understand chiefly hinge on their teachers. Handlers of Basic Science subject should be equipped with the necessary training techniques or methods for effective, meaningful and sensible teaching-learning process to be achieved.

However, team-based instruction is designed to necessitate learners to learn and acquire information about the substance as well as involve in the intellectual practices of the control, letting students to figure out how to consider the subject, express their musings and points of view, give freedom to thoughts to be tested, think about viewpoints of others, and socially build information through connection and talk with others. In this direction, discourse-based instruction and collaborative learning symbolize significant features of the team-based instruction plan letting for the assumption of multiple roles, collective problem-solving opposition of misconstructions, and cooperative work skills. According to Michaelsen and

Sweet (2011), team-based instruction involves four foundational components. The first component is the creation of tactically molded, mixed, stable teams of students in the class. The procedure deviates from certain uses of helpful learning in the regard that such groups are thought of long-term rather than short-term for a particular action, taking into account expanded correspondence and trust. The other component is a willingness declaration process, and gives a check on learners' knowledge of the subject and their willingness for upper grade exercises. The willingness declaration procedure is followed by re-teaching and explanation of substance to address spaces of disarray as confirmed in the individual and group evaluations.

The third segment includes requesting that groups take part in an application activity that need students to utilize the substance to tackle an issue, settle on a particular decision, and report group choices among colleagues. The final component of team-based instruction is a peer evaluation process letting learners to think on the contributions of group members and the group's success. According to Applebee (2003), Guthrie (2000) as well as Hattie and Timperley (2007), team-based instruction integrates numerous evidence-based instructional activities, including group and individual answerability, feedback chains as well as re-teaching, motivational aspects, and organized discussions. The team-based instruction permits it to be used for a variety of content-area domains. The sequence of team-based events takes emphasis of class period away from about one hundred percent (100%) substance 'delivery' to learners keenly assisting each other in the application of the content (Michaelsen & Sweet, 2011). It is therefore important that teachers should consider independently the points of every theme and utilize fitting strategy for encouraging it so that learners can build up an independent reasoning and business as usual for each. Therefore, an investigation into the effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science with respect to gender in Ile-Ife, Osun State becomes imperative.

Statement of the Problem

Previous studies have shown that junior secondary school students performed poorly in Basic Science owing to inappropriate instructional strategies (Bello, 2012, Animota & Bello, 2019, Olajide & Ajewole, 2020). However, the extent to which team-based instructional strategy could enhance junior secondary school students' academic achievement in Basic Science to have conceptual understanding of it with

respect to gender in Ile-Ife, Osun State requires investigation; hence this study.

Purpose of the Study

The main purpose of the study is to investigate the effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science in Ile-Ife, Osun State.

The specific objectives of the study are to:

- determine the effect of team-based and conventional instructional strategies on junior secondary school students' academic achievement in Basic Science in Ile-Ife, Osun State; and
- examine the effect team-based and conventional instructional strategies on junior secondary school students' academic achievement in Basic Science based on gender in the study area.

Hypotheses

In line with the objectives of the study, the following null hypotheses were formulated and tested at 0.05 level of significant:

- There is no significant effect of team-based and conventional instructional strategies on junior secondary school students' academic achievement in Basic Science in Ile-Ife, Osun State.
- There is no significant effect of team-based and conventional instructional strategies on junior secondary school students' academic achievement in Basic Science based on gender in the study area.

Methodology

The study adopted the non-equivalent pre-test, post-test and control group quasi-experimental research design. The population for the study comprised all junior secondary school two (JSS II) students of Basic Science in Ile-Ife, Osun State. The sample for the study consisted of forty-seven junior secondary school two (JSS II) students of Basic Science in their two intact classes that were selected using simple random sampling technique. A multi-stage sampling procedure was used to select the sample for the study. In the selected area, two junior secondary schools were selected using simple random sampling

technique. In each selected school, an intact class of junior secondary school two was selected using simple random sampling technique. The two schools were randomly assigned to one experimental group and one control group respectively. Students in the experimental group were taught using team-based instructional strategy while students in the control group were also taught using conventional instructional strategy. One research instrument tagged "Basic Science Achievement Test" (BSAT) was used to collect data for the study. The BSAT was used to determine students' achievement in Basic Science and it has two sections; Section A contained students' socio-demographic information while Section B contained twenty items with four options A to D. The instrument was validated by experts in the field of science and pilot-tested outside the scope of the study. The reliability test conducted on the BSAT on 20 students outside the scope of the study using Kuder Richardson-20 yielded 0.81. The reliability test obtained from the instrument showed good internal consistency, which was adequate enough for the study. The instrument was administered on the students in the two groups before and after the treatment. Data obtained after the administration of the instrument were analyzed using frequency, percentage, mean, standard deviation and analysis of covariance (ANCOVA).

Results

Hypothesis One: There is no significant effect of team-based and conventional instructional strategies on junior secondary school students' academic achievement in Basic Science in Ile-Ife, Osun State.

In order to test this hypothesis, data collected on the academic achievement of the students in Basic Science having been taught with Team-based Instructional Strategy (TIS) and Conventional Instructional Strategy (CIS) were subjected to descriptive analysis and analysis of covariance (ANCOVA) using the students' post-test scores as dependent variable and pre-test scores as the covariate. The results are presented in Tables 1 and 2 respectively.

Table 1: Descriptive Analysis of the Effects of TIS and CIS on Junior Secondary School Students' Academic Achievement in Basic Science

S/N	Instructional Strategies	N	Mean	Standard Deviation
1.	TIS	25	20.5600	1.70978
3.	CIS	22	16.5909	1.76363
Total		47	18.7021	2.63682

The results in Table 1 showed the descriptive analysis of the effect of team-based and conventional instructional strategies on junior secondary school students' academic achievement in Basic Science in Ile-Ife, Osun State. It can be deduced from the Table

that the learners taught with team-based instructional strategy had the most elevated mean score of ($\bar{x} = 20.5600$) while their colleagues taught with conventional instructional strategy have a mean score of ($\bar{x} = 16.5909$).

Table 2: Analysis of Covariance (ANCOVA) of the Effect of TIS and CIS on Junior Secondary School Students' Academic Achievement in Basic Science

Tests of Between-Subjects Effects						
Dependent Variable: Post-test						
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squares
Corrected Model	184.789 ^a	2	92.395	30.105	.000	.578
Intercept	201.222	1	201.222	65.564	.000	.598
Pre-test	.438	1	.438	.143	.707	.003
Strategies	171.592	1	171.592	55.910	.000	.560
Error	135.040	44	3.069			
Total	16759.000	47				
Corrected Total	319.830	46				

R Squared = .578 (Adjusted R Squared = .559)

(F=55.910; p<0.05)

The results in Table 2 indicated a significant effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science in Ile-Ife, Osun State at (F = 55.910, p < 0.05). Therefore, the null hypothesis stating no significant effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science in Ile-Ife, Osun State is hereby rejected. The partial eta squared value of 0.560 accounted for the effect size of 56.0% of the strategy on students' academic achievement in Basic Science in Ile-Ife, Osun State.

on junior secondary school students' academic achievement in Basic Science based on gender in the study area.

In order to test this hypothesis, data collected on the academic achievement of the students in Basic Science based on gender having been taught with Team-based Instructional Strategy (TIS) and Conventional Instructional Strategy (CIS) were subjected to descriptive analysis and analysis of covariance (ANCOVA) using the students' post-test scores as dependent variable and pre-test scores as the covariate. The results are presented in Tables 3 and 4 respectively.

Hypothesis Two: There is no significant effect of team-based and conventional instructional strategies

Table 3: Descriptive Analysis of the Effects of TIS and CIS on Junior Secondary School Students' Academic Achievement in Basic Science based on Gender

Strategies	Sex	N	Mean	Standard Deviation
TIS	Male	12	20.5833	1.88092
	Female	13	20.5385	1.61325
	Total	25	20.5600	1.70978
CIS	Male	10	16.5000	2.06828
	Female	12	16.6667	1.55700
	Total	22	16.5909	1.76363
Total	Male	22	18.7273	2.83149
	Female	25	18.6800	2.51197
	Total	47	18.7021	2.63682

The results in Table 3 showed the descriptive analysis of the effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science based on gender in the study area. Considering the total mean scores, it can be observed from the Table

that male students with a mean score of ($\bar{x}$ =18.7273) and female students with a mean score of ($\bar{x}$ =18.6800) indicated no significant difference in the academic achievement of students in junior secondary schools in the study area.

Table 4: Analysis of Covariance (ANCOVA) of the Effect of TIS and CIS on Junior Secondary School Students' Academic Achievement in Basic Science based on Gender

Tests of Between-Subjects Effects						
Dependent Variable: Post-test						
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squares
Corrected Model	186.547 ^a	4	46.637	14.696	.000	.583
Intercept	202.564	1	202.564	63.832	.000	.603
Pretest	.651	1	.651	.205	.653	.005
Strategies	169.821	1	169.821	53.514	.000	.560
Gender	.616	1	.616	1.194	.662	.005
Strategies * Gender	1.316	1	1.316	1.415	.532	.010
Error	133.283	42	3.173			
Total	16759.000	47				
Corrected Total	319.830	46				

R Squared = .583 (Adjusted R Squared = .544)

(F=1.415; p<0.05)

The results in Table 4 revealed that there was no significant effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science based on gender in the study area (F = 1.415; p > 0.05). Hence, the null hypothesis that states that there is no significant effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science based on gender in the study area is hereby not rejected. The result implied that gender is not a predictor of junior secondary school students' academic achievement in Basic Science in the study area.

Discussion of Findings

Findings of the study showed a significant effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science in Ile-Ife, Osun State. The results corroborates the findings of Olajide and Ajewole (2020) when they found out a significant effect of guided discovery and jigsaw instructional strategies on students' learning outcomes in Basic Science in Osun State. Their findings indicated that activity-based strategies

significantly improve students' learning outcomes. Results of the study also revealed that there was no significant effect of team-based instructional strategy on junior secondary school students' academic achievement in Basic Science based on gender in the study area. The results supports the findings of Adesoji and Babatunde (2008) when they discovered that sex contrast had no effect on understudies' presentation in science and science assessments. The finding suggests that whether an understudy is male or female, sex does not have an effect in their scholastic accomplishment hence understudies' scholarly accomplishment is not an element of sexual orientation. All understudies regardless of their genders profited in about a similar edge from the utilization of problem-solving strategy.

Conclusion

The study concluded that team-based instructional strategy as an activity-based strategy could be used to improve students' academic achievement in Basic Science junior secondary schools if properly monitored.

Recommendations

Based on the findings of the study, the following

recommendations were made:

1. Curriculum planners should involve active and innovative methods of teaching Basic Science concepts such as team-based instructional strategy in the junior secondary school curriculum.
2. Government should ensure that education policies are well translated into reality.
3. Workshop, conference and seminars should be organized for Basic Science teachers on the appropriate methods of teaching the subject in junior secondary schools.

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TEACHER FACTOR AND POLICY ISSUES ON BASIC EDUCATION IN ONDO TOWN, ONDO STATE, NIGERIA

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Abstract

The paper investigated teacher factor and policy issues on basic education in Ondo town, Ondo State, Nigeria. It also investigated how the policy on UBE affects teachers' productivity and determined whether adequate resources were supplied for the programme to boost teachers' competence. It further evaluated the level of awareness that has been created for teachers on UBE programme. The study adopted the ex-post facto design of the descriptive survey to carry out the study. One hundred teachers selected from ten secondary schools using random sampling method were involved in this study. A structured questionnaire titled Teachers Factor and Policy Issues on Basic Education in Ondo State were used to obtain data. The validity and reliability of the instrument were duly ensured. The data obtained were analyzed using frequency count and simple percentage. The results from the study revealed that UBE is a very popular programme whose objectives were partially achieved. The study concludes that the drive of success and failure of UBE policies lies with the teachers. This study among others recommends the improvement in the release of funds for the implementation of the policy by the government.

Keywords: Teacher factor, policy, Universal basic education.

Introduction

Notable permanent changes in individual's behavior as a result of acquisition of knowledge, skills and right attitude is called Education. It is a veritable tool to transform the socio economic status of the nation. The role of education in the march towards development for any nation cannot be overemphasized. According to Ochoyi and Danladi (2010), education is generally concerned with the transmission of worthwhile values such as skills, knowledge and planned activities that can develop learners' potentials for national development. Adeyanju (2015) noted that no development can occur at all without education, and no peace or security without development. To him, at personal level of development, education is one of the strongest weapons for escaping poverty because it improves the quality and chances of the individual's progress.

It is a desirable way to harrow the existing gap between members of the society who are from the affluent line and those who are poor. Various governments encourage children to get enrolled in school to secure a bright future for them.

At the International level, there was declaration of human rights in 1948 which include the right to education. This was repeated by the United Nations in 1959. Nigerian leaders, knowing this, have made concerted efforts to make Basic Education available for the citizens. The International conference in Paris in 1968 on "the world crisis in education" gave full support to the quest for basic education in Nigeria and this birthed the Jomtien World Conference for All (WCEFA) in 1990.

The official statement of the government's intention on a sector of government is referred to as policy (Aja, Egwu, Aja-Okorie, Ani & Amuta, 2018). The processes of formulating, taking decisions, adopting, implementing, violating, evacuating, revising and rescinding a policy take a long period. The national policy on education is the policy which provides the principles, guidelines, persons, programmes, contents, methods, supervision and evaluation of all the processes to achieve the educational goals in Nigeria. Policies on education are produced as a result of brainstorming of high powered committees and are revised over the years. Educational policies are course of actions recommended and adopted by leaders that is government agencies or those in political power.

According to the national policy on education, Universal Basic Education programme was introduced by the government in Nigeria to achieve education for all (EFA) with the aim of eradicating illiteracy, ignorance and poverty by increasing the opportunities and creating awareness to the citizens to be educated. Also it aimed to lay sound basis for scientific and reflective thinking, developing sound attitude and manipulative skills in every child to be responsible in the society. This is in accordance with John Dewey theory on making learning experiences centered on students' interests and developing responsible citizens.