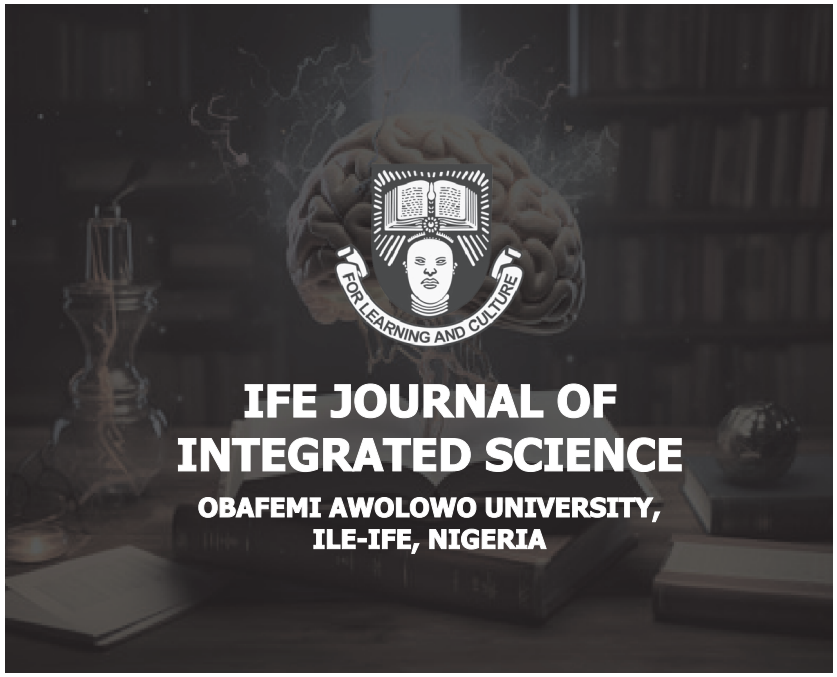

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ABSTRACT

The study examined the influence of teachers' self-efficacy on junior secondary school students' learning outcomes in Basic Science in Southwestern Nigeria. These were with a view to providing empirical information on the position of effective teachers' self-efficacy in improving students' learning outcomes in Basic Science. Descriptive survey research design was used in this study. The study's population consisted of all Basic Science teachers and junior secondary school II (JSS2) students in Southwestern Nigeria. The sample size consisted of 27 JSS 2 Basic Science teachers and 850 JSS 2 students in their intact classes using multistage sampling procedure. Three States were selected from southwestern Nigeria. One senatorial district was chosen in each state, and three Local Government Areas (LGAs) were chosen from each senatorial district. Three junior secondary schools were chosen from each of the LGAs. One Basic Science

teacher and one intact class were finally selected. Instruments used for data collection were: Basic Science Teachers' Self-Efficacy Rating Scale (BSTSERS); Basic Science Achievement Test (BSAT); and Students' Attitude to Basic Science Questionnaire (SABSQ). The results showed that there was a significant influence of teachers' self-efficacy on students' academic achievement in Basic Science in Southwestern Nigeria $F_{(1,\ 848)} = 218.298,\ p < 0.05$*). The results also revealed that there was a significant influence of teachers' self-efficacy on students' attitude towards Basic Science* $F_{(1,\ 848)} = 12.514,\ p < 0.05$*).*
The study concluded that the teachers' self-efficacyis high which brings positivity in students' learning outcomes.
Keywords: Self-Efficacy, Achievement, Attitude, Influence and Learning Outcomes

Introduction

Education serves as the keystone for the development of the nations. It is viewed as a systematic, ongoing teaching meant to convey the integration of information, skills, and deep understanding relevant to all spheres of life. Federal Republic of Nigeria (2004) stated in the National Policy on Education that education acts as a crucial tool for change; therefore, if society should experience substantial and pivotal changes intellectually and socially, it has to pave the way for an education revolution. Furthermore, Nnaboua and Asodike (2014) eloquently portrayed that education serves as a transformative voyage, allowing both individuals and societies to realize their utmost capacities. Education emerges as a dynamic process that empowers human beings and communities toevolve, grow, and flourish in various aspects of life (Nnaboua & Asodike, 2014). This holistic approach to education emphasizes its pivotal role in fostering personal development, intellectual enlightenment, and the nurturing of social progress.

Similarly, the advancement and development of almost

every country in the world has been largely attributed to science and technology. It is not an overstatement to say that science plays an important role in improvement in convenience and well-being of mankind**.** Science is succinctly viewed as the collaborative human endeavour to understand the natural world's historical evolution and its underlying mechanisms, rooted in tangible physical evidence. This endeavour is pursued through the study of inherent occurrences in nature and deliberate experimentation aimed at replicating natural processes within controlled environments. Furthermore, Sheldon, as cited in Bruce (2019), asserted that science is an intellectual effort done by people with the objective of knowing more about the natural world where humans reside and learning how to organize this knowledge into meaningful patterns. Consequently, science was introduced into Nigerian school curricula (Babajide, 2015), bringing about science education.

Science education is broadly understood as the study of interconnectedness between science and the utilization of the principles of education to comprehend, teach, and learn about it. Science education focuses on the dissemination of scientific content and methods to individuals who are not typically regarded as belonging to the scientific community; individuals may include farmers, market vendors, students, or the entire community (Aina, 2013).Traditionally, science education in schools has included three subjects, namely Physics, Biology, and Chemistry. At the junior secondary school level, students are introduced to the sciences through Basic Science, a foundational subject designed to prepare them for more advanced scientific studies in senior secondary school (Oludipe, 2012). The teaching of Basic Science involves fostering dynamic engagement from students, wherein students are motivated to cultivate their understanding by bridging the gap between fresh insights and existing knowledge.

It has been noted that in spite of Basic Science teaching and learning being crucial for a country's socioeconomic development, Nigerian schools' Basic Science learning outcomes are not very encouraging. Numerous studies have shown that

Nigerian science classrooms face many difficulties, the most obvious of which are poor teaching strategies adopted by teachers' non-acquisition and application of science process skills (Oyagbile& Bello, 2018); and presentation of science in a dogmatic way by science teachers (Ibiyengibo, 2012).The necessity of incorporating more Basic Science approaches into science education has been increasingly emphasized in recent years by global policy reforms (Opetushallitus, 2014; Li*et al.,* 2020). To implement these methods to science education, teachers' self-efficacyand their views as vital elements of everyday science teaching practices are considered, which have the potential to improve students' learning outcomes (Stinson *et al.*, 2009).

One element influencing human behaviour is self-efficacy, which is thought to be a key mechanism that influences the courses of action chosen by the teachers, the cultivation of cognitive skills in organizing lessons, persistence when confronted with challenges, and their eventual achievements. Self-efficacy is an inherent capacity within an individual to believe in their capabilities. It is the self-assurance teachers possess in their abilities. Teachers' self-efficacy is the teachers' conviction in their ability to instigate positive transformations in both the behaviour and academic achievement of their students (Guo*et al.,*2011). Strong self-efficacy teachers foster the desired levels of learning and achievement. This, in turn, cultivates students' cognitive processes and enhances their motivation to engage in the learning process. Moreover, Bal-Taştan, *et al.* (2018) opined that the beliefs of teachers' self-efficacy are reflected in their self-assessment regarding their capacity to facilitate the attainment of intended learning outcomes and to actively involve students in the processes of learning and achievement.

Learning outcomes consist of expressions highlighting the significant abilities that learners should showcase following a period of instruction and learning. Self - efficacy is a major influencing factor in teachers' effective delivery of lessons in

classrooms globally. Researches have indicated that the poor learning outcomes of students in Basic Science are attributed to teachers' negative beliefs about one's competence to organize the actions necessary for reaching his designated goals.

Academic achievement simply means reflection of how students are doing in their studies and classes. It also means performance outcomes that show how effectively a student has completed certain goals that constitute the major purpose of engagement in learning settings, such as schools, colleges, and universities (Steinmayr*etal*., 2014). It is not overemphasizing to say that academic achievement is a multifaceted construct comprising diverse realms of learning because it covers a broad variety of educational outcomes.

Attitude can be perceived as a predisposition for categorizing objects and occurrences and responding to them consistently with evaluation. Attitude is the emotional and mental state of preparedness that is influenced by experiences and exerts a directional or dynamic impact on a person's behaviours toward various objects and circumstances (Ünal&Işeri, 2012).A positive attitude is a pivotal factor influencing students' learning (Subramaniam & Silverman, 2007).In spite of the extensive research that exists regarding this topic, there is a dearth of studies corroborating the connection between teachers' self – efficacy and students' learning outcomes. This study aims at examining the influence of science teachers' self – efficacy on students' academic achievement in Basic Science as well as determining their influence on students' attitudes towards Basic science in Nigerian Junior Secondary Schools

Statement of the Problem

Even though the value of science to a country's socioeconomic and technological development is becoming more widely recognized, the academic achievement and attitude of students towards science subjects (Physics, Chemistry, and Biology) remain unimpressive in Senior School Certificate

Examinations (SSCE). This may not be unconnected with the teaching and learning processes that fail to capture teachers' self - efficacy in the teaching of Basic Science as a subject in junior secondary schools, as reported in the literature. Research studies have offered remedies intending to solve students' learning difficulties in Basic Science, but poor academic achievement of students however abounds in Basic Science examinations annually. Many of the previous studies seeking improved students' learning outcomes in Basic Science have not factored teachers' self - efficacy into their variables of consideration, thus the wide gap.

Research studies have worked on teachers' self-efficacy in mathematics in senior secondary schools (Hill, Ball & Schilling, 2008; Horn, 2009; Hulya, 2009). Hence, there is a dearth of information on teachers' self - efficacy in junior secondary schools Basic Science regarding students' learning outcomes (academic achievement and attitude).Thus, the study intends to empirically explore the ways in which junior secondary school students' learning outcomes in Basic Science are influenced by the teachers' self-efficacy.

Purpose of the Study

The purpose of the study was to investigate the influence of teachers' self-efficacy on Junior Secondary School students' learning outcomes in Basic Science in Southwestern Nigeria.

The specific objectives of the study are to:

a. determine the influence of teachers' self-efficacy on junior secondary school students' academic achievement in Basic Science in Southwestern Nigeria;
b. determine the influence of teachers' self-efficacy on junior secondary school students' attitude towards Basic Science in the study area

Hypotheses

$H_0$1: There is no significant influence of teachers' self-efficacy

on junior secondary school students' academic achievement in Basic Science in Southwestern Nigeria

$H_0$2: There is no significant influence of teachers' self-efficacy on junior secondary school students' attitude towards Basic Science in the study area.

Methodology

The study employed the descriptive survey research design of correlational type. The study's population included all Basic Science teachers and students in junior secondary schools II (JSS 2) classes. The sample for the study included Basic Science teachers and JSS 2 students in their intact classes selected using multistage sampling procedure. Three states out of the six states in southwestern Nigeria were chosen utilizing simple random sampling technique. One senatorial district was selected in each state using simple random sampling technique. Also, three Local Government Areas (LGAs) were chosen from each senatorial district utilizing simple random sampling technique. Three junior secondary schools were selected from each of the LGAs using simple random sampling technique. From each school selected, one Basic Science teacher and one intact class were selected using simple random sampling technique. A total of 27 Basic Science teachers and 850 students formed samples for the study. To collect the data, three instruments were used namely; Basic Science Teachers' Self-Efficacy Rating Scale (BSTSERS), Basic Science Achievement Test (BSAT) and Student Attitude to Basic Science Questionnaire (SABSQ).

BSTSERS has four sections, namely: Section A consisted of details regarding the teachers' demographic backgrounds, and Section B comprised 25 items specifically addressing the self-efficacy of Basic Science teachers. Each item was rated on a 4-point Likert-type rating scale from Very High (VH =4), High (H=3), Low (L=2), and Very Low (VL=1).

The BSAT comprised two sections: Section A contained Bio-data of the respondents. Section B included a researcher-created twenty-five-item multiple-choice objective test. The items

were drawn from the Basic Science topics taught in the second term of the academic session. Each question had four choices, labeled A to D, from which students were required to select the option that most accurately addressed the question. The instruments were given to an expert in test creation for validation.

This is done to ensure that the questions asked are appropriate and in line with the research variables for the study. The suggestions and corrections made by the expert in test creation was included in the final draft of the instruments. The SABSQ comprised two sections: Section A consisted demographic information of the respondents. Section B included 20 items to which the students responded using a 4-point Likert-type rating scale from Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) =1. The instruments were trial tested by administering them on some selected respondents selected outside the scope of the study of the study. TPECKORS reliability value was calculated using Cronbach's Alpha in SPSS Statistics and value was 0.94. BSAT reliability coefficient of the instruments was calculated utilizing Kuder-Richardson formula 20 and the value was 0.84. SABSQ reliability coefficient was calculated by employing Cronbach's Alpha in SPSS Statistics and the value was 0.89. Hypotheses one and two were analysed utilized Linear Regression analysis.

Results

Hypothesis One: There is no significant influence of teachers' self-efficacy on junior secondary school students' academic achievement in Basic Science in Southwestern Nigeria.

Data gathered on the influence of teachers' self-efficacy on junior secondary school students' academic achievement in Basic Science in Southwestern Nigeria were analysed using Linear Regression Analysis in SPSS Statistics. The results of the findings are displayed in Table 4.1.

TABLE 4.1

Regression Analysis of the influence of TSE on junior secondary school students' academic achievement in Basic Science in Southwestern Nigeria.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2747.327	1	2747.327	218.298	0.000[b]
Residual	10672.268		848	12.585	
Total	13419.595		849		

R = 0.452[a], **R Square** = 0.205, **Adjusted R Square** = 0.204

($F = 218.298$, $p < 0.05$)

a. Dependent variable: Academic Achievement

b. Predictors (Constant) Teacher Self-Efficacy

Results in Table 4.1 revealed that Teachers' Self-Efficacy significantly influenced junior secondary school students' academic achievement in Basic Science in Southwestern Nigeria $F(1, 848) = 218.298$, $p < 0.05$, $R2 = 0.205$). Therefore, the null hypothesis that teachers' self-efficacy has no significant influence on junior secondary school students' academic achievement in Basic Science in Southwestern Nigeria is thus rejected. The R value of 0.452a showed a higher correlation between the teachers' self-efficacy and junior secondary school students' academic achievement in Basic Science in Southwestern Nigeria. Similarly, the R2 value of 0.205 explained 20.5% recorded as the variation in JSS students' academic achievement in Basic Science in Southwestern Nigeria due to the influence of their teachers' self-efficacy.

Hypothesis Two: There is no significant influence of teachers' self-efficacy on junior secondary school students' attitude towards Basic Science in the study area

In a bid to test the hypothesis, data collected on teachers' self-efficacy on junior secondary school students' attitude towards Basic Science in the study area were put through Linear

Regression Analysis using SPSS Statistics. Table 4.2 shows the results

TABLE 4.2
Regression Analysis of the influence of teachers' self-efficacy on junior secondary school students' attitude towards Basic Science in the study area

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	724.664	1	724.664	12.514	0.000[b]
Residual	49107.637		848	57.910	
Total	49832.301		849		

R = 0.121a, **R Square** = 0.015, **Adjusted R Square** = 0.013
($F = 12.514$, $p < 0.05$)

a. Dependent variable: Students Attitude
b. Predictors (Constant) Teacher Self-Efficacy (TSE)

Results in Table 4.2 revealed that TSE significantly influenced junior secondary school students' attitude towards Basic Science in the study area $F_{(1, 848)} = 12.514$, $p < 0.05$, $R^2 = 0.015$). Therefore, the null hypothesis that TSE has no significant influence on junior secondary school students' attitude towards Basic Science in the study area is thus rejected. The teachers' self-efficacy and the junior secondary school students' attitude toward Basic Science in the study area were highly correlated, as indicated by the R value of 0.121a.Similarly, the R^2 value of 0.015 indicates that 1.5% of the variation in junior secondary school students' attitude towards Basic Science in the study area is influenced by teachers' self-efficacy.

Discussion of Findings

The results showed a significant influence of teachers' self-efficacy (TSE) on junior secondary school students' academic achievement in Basic Science in Southwestern Nigeria. It can be deduced from the result that the primary external factor that boosts students' self-belief about learning and helps them reach their

academic attainment is self-efficacy. The finding validated Sariçoban and Bheejo (2016) outcomes of the analysis showed a noteworthy and substantial positive association between the academic self-efficacy of male students and their academic achievement scores, as well as between the academic self-efficacy of female students and their scores on the Academic Self-Efficacy Scale (SAAS). Additionally, the study identified a strong positive correlation between self-efficacy and SAAS scores. In addition, the research output corresponded with Shahzad and Naureen (2017) outcomes of their investigation, as they showed a favorable connection between teacher self-efficacy and students' academic achievement.

Furthermore, the findings showed a significant influence of TSE on junior secondary school students' attitude towards Basic Science in the study area. This outcome was corroborated with Al-Alwan and Mahasneh's (2014) findings of the research which showed a moderate teachers' self-efficacy level and the significant positive association that was established between the self-efficacy of teachers and students' school-related attitudes. Notably, TSE was identified as a strong predictor of students' attitudes towards school. Like Ghaffar*et al*. (2019)findings of their investigation, the study established a noteworthy positive relationship between teachers' self-efficacy and several aspects of the learning process, such as goal achievement, active learning, and the learning environment. Moreover, the study established a notable and positive correlation between teachers' self-efficacy and performance goals, as well as the value students placed on science learning.

Conclusion

The present study's hypotheses were verified and demonstrated noteworthy affirmative relationship between TSE and junior secondary school students' learning outcomes in Basic Science in Southwestern Nigeria. More so, Basic Science teachers are very effective and have a substantial amount of self-efficacy, both of which have a beneficial influence on students' attitudes

and crucially on academic achievement of the students. Greater amounts of self-efficacy in teachers lead to better results for students' academic achievement.

Recommendations

Based on the conclusion of the findings of the study, it is hereby advised that;

i. Programs that support Basic Science teachers in increasing their self-efficacy beliefs should be created by school administrators. By doing this, the teachers will be able to enhance their supervision of instruction, raise the standard of instruction, and ultimately raise the academic achievement

ii. Basic Science teachers should be introduced to diverse instructional strategies on science to enhance students' academic achievement and their attitude towardBasic Science.

iii. Since teachers' self-efficacy drives students, government and professionals should concentrate on helping teachers grow in this area. Enhancing students' motivation to learn Basic Science can be achieved through initiating appropriate training and focusing on embracing self-efficacy.

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