BIOLOGY TEACHERS' PERCEPTIONS ON THE INFLUENCE OF THEIR SELF-EFFICACY ON THEIR CLASSROOM PRACTICES IN AWKA SOUTH LOCAL GOVERNMENT AREA

Chukwuemeka, Chisom, V. & OSUAFOR, Abigail M.

Department of Science Education, Nnamdi Azikiwe University Awka, Nigeria

Abstract

The researcher, over time, has observed that poor classroom management, poor students' engagement as well as poor instructional delivery are huge sources of worry among stakeholders in the secondary education system. Although, there are many variables that may interplay with classroom practices in secondary schools, the researcher is interested in investigating the Biology teachers' perceptions of the influence of their self-efficacy on their classroom practices in Awka South LGA. Three research questions were raised to guide the study. Survey research design was utilized for the study. The population of the study was made up of 58 Biology teachers in the public secondary schools in Awka South LGA. No sampling was done as the population was of manageable size. Questionnaire titled 'Perceived Impact of Self-Efficacy on Biology Teachers' Classroom Practices (PISEBTCP)' was used for data collection. PISEBTCP was validated by three experts in Nnamdi Azikiwe University, Awka. The reliability of PISEBTCP which was established using Cronbach alpha statistics yielded alpha coefficient value of 0.83.Data analysis was done using mean. The findings of the study indicated that Biology teachers' self-efficacy positively influenced their use of instructional strategies, classroom management and student engagement. It was recommended in view of the findings that government should organize seminars and workshops for Biology teachers on the need to exude self-efficacy for efficient use of instructional strategies, classroom management and students' engagement.

Keywords: Self-efficacy, instructional strategies, classroom management and students' engagement

Introduction

Secondary education in Nigeria has witnessed active participation by non-governmental agencies, communities, and individuals as well as government interventions. It is therefore desirable for the nation to spell out in no uncertain terms the philosophy and aims that underlie its investment in secondary education. As stated in the National Policy on Education (FGN, 2013), the primary aim of secondary school education inNigeria is to prepare the individual child for useful living in the society and for higher education. Instructively, in the course of secondary education in Nigeria, some compulsory subjects are taught the students among which is Biology.

Biology as a science subject deals with the study of living things.Biology is defined as the study of living organisms, their origins, anatomy, morphology, physiology, behavior and distribution (National Eligibility Entrance Test, 2022). The teaching of biology is very important because the knowledge of biology helps in improving the quality of life. It further helps to solve many societal problems relating to health, poverty, food shortage, crop production and environmental conservation (Ogunleye, 2012).The teaching of Biology will not only serve as a pre-requisite for further science study but a means of developing a manipulative skill development. The teaching of biology in secondary schools could be effective if teachers' classroom practice is prioritized.

Teacher classroom practices refer to such practices that are implemented by teachers in the classroom that influence students' outcomes (Muijs et al., 2014). They are teaching approaches deployed by the teacher in the classroom to bring about effective learning as well as improved academic achievement of students. According to Sadeghi, Khezrlou and Modirkhameneh (2017), some of the classroom practices employed by the teacher include: the advancement of thinking skills, the development of creative problem solving approaches, use of suitable approaches and materials, ease of autonomous research, and knowledge of affective needs. In the context of the current study, classroom practices embody activities or instructional strategies employed by biology teachers in the classroom to drive home their lesson. However, teacher classroom practices can be divided into three domains: keeping an adequate classroom management to facilitate both socio-emotional and academic student's progress (Vandenbroucke,Spilt, Verschueren, Piccinin & Baeyens, 2018); provision of high quality instruction that encourage students' critical thinking and analysis (Kraft,Blazar & Hogan, 2018; Stockard,Wood, Coughlin & Khoury, 2018); and establishing supportive

teacher-students relationships (Korpershoek et al., 2016).Within the context of the current study, teacher classroom practices that can be adopted by biology teachers include instructional strategies, classroom management and student engagement.

Instructional strategies refer to the techniques employed by a teacher to facilitate effective learning. The instructional strategies adopted by science teachers that pertain to how the curriculum can be modified and how science content can be presented to the students are largely influenced by their pedagogical content knowledge (Sofianidis&Kallery, 2021). This knowledge could further help the teacher in matters of classroom management.

Classroom management is the art of creating and maintaining a classroom environment that grants students the opportunity to engage in meaningful learning. Similarly, lower self-efficacy in classroom management can culminate in disruptive student behaviors; a reflection of poor classroom management (Varghese, Garwood, Bratsch-Hines,& Vernon-Feagans, 2016). On the contrary, a teacher with a high sense of self-efficacy is bound to be efficient in classroom management.

Student engagement refers the teaching of students the relevance of working together towards the accomplishment of an instructional goal (Fredricks, 2014). The author further noted that high-quality teacher–student relationships are a key factor in determining student engagement. Uden, Ritzen, and Pieters (2013) found that teacher support, positive teacher-student relationships, structure, support, and challenging tasks have been associated with student eng2agement. Teacher self-efficacy beliefs influenced student engagement as well as a conceptual framework for effective teaching (Cason, 2018).

Teachers' self-efficacy focuses on their judgments of capacity to successfully organize and execute actions required to perform instructional tasks and by extension, exert a positive impact on students' learning (Perera,Calkins,& Part, 2019). Contextually, it can further be defined as teachers' confidence in their ability to use various teaching approaches to implement the contents of the biology curriculum in classroom situation. In the observation of Al-Alwan and Mahasneh (2014), teachers with a high sense of efficacy exhibit high levels of planning, management, organization are open to novel ideas and are more willing to experiment with new methods to better meet the needs of their students. Similarly, Katz and Stupel (2016) found that teachers with high self-efficacy invests much time in planning; collaborating with peers are open to implementing innovative ideas; perceive students' mistakes as learning and growth opportunities as well as are committed to eliciting and

maintaining students' classroom engagement. Deductively, teachers' self-efficacy could influence their classroom practices.

In secondary schools in Awka South Local Government Area of Anambra State, the researcher observed that unsatisfactory state of classroom management, students' engagement as well as instructional delivery exist. This is evidenced by the fact that some Biology teachers do not employ the requisite teaching activities and learning experiences to drive home their lesson. Although, there are many variables that may interplay with classroom practices in secondary schools, the researcher is interested in investigating the Biology teachers' perceptions of the influence of their self-efficacy on their classroom practices in Awka South Local Government area, Anambra State.

Purpose of the Study

The main purpose of this study was to determine the biology teachers' perceptions of the influence of their self-efficacy on their classroom practices in Awka South Local Government Area, Anambra State**.** Specifically, the study sought to determine:

1. Biology teachers' perceptions of the influence of their self-efficacy on instructional strategies in Awka South LGA.
2. Biology teachers' perceptions of the influence of their self-efficacy on classroom management in Awka South LGA.
3. Biology teachers' perceptions of the influence of their self-efficacy on student engagement in Awka South LGA.

Research Questions

The following research questions guided the study:

1. What is the Biology teachers' mean perception on the influence of their self-efficacy on 2instructional strategies in Awka South LGA?
2. What is the Biology teachers' mean perception on the influence of their self-efficacy on classroom management in Awka South LGA?
3. What is the Biology teachers' mean perception on the influence of their self-efficacy on student engagement in Awka South LGA?

Methods

The study adopted survey research design. According to Nworgu (2015), survey research design seeks to collect and analyze data from a group of items or people which are studied from only a few people or items deemed to be representative of the entire group. The population of the study was made up of 58 Biology teachers in public secondary schools in Awka South LGA of Anambra State. No sampling was done as the population was of manageable size. Questionnaire titled 'Biology Teachers' Perceptions on the Influence of their Self-Efficacy on their Classroom Practices (BTPISECP)' was used to collect data. BTPISECP is divided into three clusters – one, two and three. Cluster one sought information on Biology teachers' perceptions of the influence of their self-efficacy on instructional strategies and contains eight items. Cluster two sought information on Biology teachers' perceptions of the influence of their self-efficacy on classroom management and contains eight items while Cluster three sought information on Biology teachers' perceptions of the influence of their self-efficacy on student engagement and contains eight items. BTPISECP was structured in such a manner that the respondents responded in a four-point scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with numerical indexes of 4, 3, 2 and 1 respectively. BTPISECP was validated by three experts in NnamdiAzikiwe University, Awka. The reliability of BTPISECP was established by administering it to 15 Biology teachers in Awka North LGA which is outside the study area. The internal consistency of the items in the BTPISECP was determined using Cronbach alpha statistics which yielded alpha coefficient value of 0.83. This value was considered adequate and the BTPISECP reliable. Data collected were analyzed using mean.

RESULTS

Table 1: Biology Teachers' Perceptions of the Influence of their Self-Efficacy on Instructional Strategies.

S/N	I perceive that:	Mean	Remark
1.	I have confidence in my ability to make students understand biology concepts through questioning.	2.75	Agree
2.	I'm confident in my ability to use rewards and reinforcements at appropriate times.	2.70	Agree
3.	I have confidence in my ability to remodel Biology lessons based on students' needs.	3.15	Agree
4.	I lack confidence in my capability to summarize lessons for better students' retention.	1.96	Disagree

5.	I have confidence in my ability to use the laboratory to concretize practical lessons.	2.77	Agree
6.	I lack confidence in my capacity to vary my teaching strategies to facilitate learning.	2.42	Disagree
7.	I have confidence in my ability to assess existing knowledge to guide lesson planning	2.60	Agree
8.	I lack confidence in my ability to improvise unavailable instructional materials to drive home my lesson8s.	2.05	Disagree
	Cluster Mean	**2.60**	**Agree**

Data in Table 1 show that item 3 has the highest mean score of 3.15. This shows that agoodnumber of the respondents are in agreement that they have confidence in their ability to remodel Biology lessons based on students' needs. This is followed by item 5 with a mean score of 2.77; indicating that also a good number of respondents agree that they have confidence in their ability to use the laboratory to concretize practical lessons. Items 4, 6 and 8have mean scores less than the cut-off mean of 2.50 which indicates that the respondents are in disagreement with those listed items. The cluster mean of 2.60 shows that the respondents perceive that self-efficacy positively influence their instructional strategies.

Table 2: Biology Teachers' Perceptions of the Influence of their Self-Efficacy on Classroom Management.

S/N	**I perceive that**:	**Mean**	**Remark**
9.	I'm confident in my capacity to make my expectations clear to students.	2.64	Agree
10.	I'm not confident in my ability to device techniques to redirect a student in my class that is becoming disruptive and noisy.	2.07	Disagree
11.	I have confidence in my ability to increase the retention of students in the next class who could not remember information I gave in the previous class.	3.10	Agree
12.	I'm confident in my ability to adjust to the level of a student that is having troubles with assignment.	3.36	Agree
13.	I am not confident in my ability to communicate to students about my seriousness about a particular behaviour.	2.18	Disagree
14.	I have confidence in my capability to keep a few problematic students from ruining my class.	3.00	Agree
15.	I have no confidence in my ability to keep track of several activities in the class.	2.43	Disagree
16.	I have confidence in my ability of getting back students who stop working in class.	2.72	Agree

	Cluster Mean	**2.69**	**Agree**

Data in Table 2 show that item 12 has the highest mean score of 3.36. This shows that a good number of the respondents are in agreement that they have confidence in their ability to adjust to the level of a student that is having troubles with assignment. This is followed by item 11 with a mean score of 3.10; indicating that also a good number of respondents agree that they have confidence in their ability to increase the retention of students in the next class who could not remember information I gave in the previous class. Items 10, 13 and 15have mean scores less than the cut-off mean of 2.50 which indicates that the respondents are in disagreement with those listed items. The cluster means of 2.69 shows that the respondents perceive that self-efficacy positively influence their classroom management.

Table 3: Biology Teachers' Perceptions of the Influence of their Self-Efficacy on Student Engagement.

S/N	I perceive that:	**Mean**	**Remark**
17.	I'm confident in my capacity to make my students make a list of important items in Biology and memorize them.	2.75	Agree
18.	I'm confident in my ability to get my students involved in critical thinking.	2.50	Agree
19.	I have no confidence in my ability to help students analyze basic elements of an idea, experience, or theory.	2.36	Disagree
20.	I'm confident in my ability to make my students apply theories or concepts to practical problems or in new situations.	2.61	Agree
21.	I am confident in my ability to make my students keep up with the weekly classwork and assignments for Biology subject.	2.57	Agree
22.	I have confidence in my capability to make my students practice what they have been taught in Biology lesson by saying the material to themselves over and over.	2.82	Agree
23.	I have no confidence in my ability to help my students in making judgments about the value of information, arguments, or methods.	2.40	Disagree
24.	I have no confidence in my ability of getting my students to apply ideas from readings in other class activities such as lecture and discussion.	2.35	Disagree
	Cluster Mean	**2.55**	**Agree**

Data in Table 3 show that item 22 has the highest mean score of 2.82. This shows that the good numbers of the respondents are in agreement that they have confidence in their ability to make their students practice what they have been taught in Biology lesson by saying the

material to themselves over and over. This is followed by item 17 with a mean score of 2.75; indicating that many of respondents also agree that they have confidence in their ability to make their students make a list of important items in Biology and memorize them. Items 19, 23 and 24have mean scores less than the cut-off mean of 2.50 which indicates that the respondents are in disagreement with those listed items. The cluster means of 2.55 shows that the respondents perceive that self-efficacy positively influence their student engagement.

Discussion

The findings of the study indicated that Biology teachers perceived that self-efficacy positively influenced their use of instructional strategies. This is attributed to the fact that Biology teachers are expected to be persuasive in the use of their instructional strategies in order to drive home their lesson. More so, for a science subject like Biology, students are bound to show favourable disposition towards a teacher that is self-efficacious in the use of instructional strategies for effective learning. The revelation of the finding of the current study is in tandem with the position of Perera, Calkins and Part(2019) that teachers' self-efficacy focuses on their judgments of capacity to successfully organize and execute actions required to perform instructional tasks and by extension, exert a positive impact on students' learning. Thus, teacher self-efficacy is integral to effective teaching and learning in secondary schools.

The revelation of the findings of the study is that Biology teachers perceived that self-efficacy positively influenced their use of classroom management. This implies that teachers' self-efficacy is a pre-condition for class control. Put differently, the exertion of teacher self-efficacy in the classroom is capable of managing disruptive behaviours among students in a Biology class. The indication of the finding of the current study corroborates with the finding of Varghese, et al. (2016) that lower self-efficacy in classroom management can culminate in disruptive student behaviors8; a reflection of poor classroom management. In contrast, a teacher with a high sense of self-efficacy is bound to be efficient in classroom management.

The indication of the findings of the study is that Biology teachers perceived that self-efficacy positively influenced student engagement. In other words, the extent to which a student feels engaged in the classroom is dependent on teachers' self-efficacy. Student engagement is enabled by teacher-student relationship which is sustained by teachers' self-efficacy. Lending credence to this assertion, Fredricks(2014) noted that high-quality teacher–student relationships are a key factor in determining student engagement. In similar vein,

Uden, Ritzen, and Pieters (2013) found that teacher support, positive teacher-student relationships, structure, support, and challenging tasks have been associated with student engagement. The finding of the current study is in consonance with that of Cason (2018) who found that teacher self-efficacy beliefs influenced student engagement as well as a conceptual framework for effective teaching.

Conclusions

In line with the findings of the study, it was concluded that Biology teachers perceive that their self-efficacy positively influenced their classroom practices. This implies that Biology teachers' self-efficacy had a positive influence on their use of instructional strategies, classroom management and student engagement in secondary schools.

Recommendations

From the findings of the study, the following recommendations were made:

1. Government should organize seminars and workshops for Biology teachers on the need to exude self-efficacy for efficient use of instructional strategies.
2. Biology teachers should make conscious efforts towards sustaining their self-efficacy for efficient classroom management.
3. Biology teachers should continuously exude self-efficacy with a view to engendering an efficient student classroom engagement.

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