PRE-SERVICE BIOLOGY TEACHERS' EVALUATION OF THEIR LECTURERS' TEACHING EFFECTIVENESS IN BIOLOGY COURSES IN NNAMDI AZIKIWE UNIVERSITY, AWKA

Obialor, Chris Okwuchukwu (*Ph.D*)
Chrisokwuchukwuo@yahoom.com, co.obialor @unizik.edu.ng; 08037328449
Department of Science Education, Nnamdi Azikiwe University Awka, Anambra State, Nigeria

Chukwudiebube C. Beautiful
Department of Biology Nwafor Orizu College of Education, Nsugbe Anambra State, Nigeria.

Ugwuibe V. Ngozichukwu
Department of Biology Nwafor Orizu College of Education, Nsugbe Anambra State, Nigeria.

Ezenwobodo Chidimma Adaeze
Ezenwobodochy24@gmail.com; 07035002147
Department of Biology Nwafor Orizu College of Education, Nsugbe Anambra State, Nigeria.

Abstract

This study investigated pre-service Biology teachers' evaluation of their lecturers' teaching effectiveness in biology courses in Nnamdi Azikiwe University, Awka. Descriptive survey design was adopted for the study. Three research questions guided the study. The population of the study comprised 99 fourth year (400 level) students of department of Science Education. There was no sampling because the population is of manageable size. The instrument for data collection was Evaluation of Teaching by Students Questionnaire (ETSQ) adapted from National University Commission (NUC, 2008) which was validated by two experts from the Faculty of Education, Nnamdi Azikiwe University, Awka. The reliability of the instrument was obtained using Cronbach alpha which yielded the coefficient value of 0.89. Data used for the study were collected through online form link. The data collected were analyzed using mean and standard deviation. The findings of this study revealed that pre-service Biology teachers rated their lecturers as being effective though the result also revealed that lecturers are not very punctual to class and do not give feedback on tests given. Based on the findings of the study, it was recommended that administrators of Nigeria universities should encourage a system of peer observations where biology lecturers can observe and provide constructive feedback to their colleagues in order to foster a culture of continuous improvement and collaborative learning. The faculty should also develop a structured feedback system that includes input from both lecturers and students.

Key words: Biology, Pre-Service teachers, Evaluation, Teaching Effectiveness

Introduction

It has become a universally accepted fact that science and technology have enhanced the standard of living all over the world. In Nigeria today, the quest for scientific and technological advancement has led to increased emphasis on the study of science subjects. For instance, at secondary school levels, students are exposed to different science subjects, biology inclusive.

Biology is the study of living things which involves plants and animals. Biology is a science subject which describes how living organism carry out their life activities and how they interact with their environment (Obialor, Ezeobi & Ezenwabuchili, 2020). Biology is also the study of life and evolution of organisms and their structures, processes and interactions with each other and their environment (Aloh & Afamah, 2013). However, in the Faculty of Education in the Nigeria universities, the study of biology is usually combined with education as Biology Education.

Biology education is the transfer of principles of teaching and content knowledge of various concepts, principles, theories, laws and conceptual schemes of biology to pre-service biology teachers. According to Okenyi, (2012), Biology education is the art of teaching and training in order to inculcate or transfer the knowledge of biology to students. Nwagbo, (2008) asserted that Biology education exposes learners to processes and attitude as well as equips them with professional skills of a biology teacher. Biology education is very important for any growing economy like that of Nigeria. It equips students with the necessary skills and knowledge that will enable them to be self-employed and employers of labour (Okenyi 2012). Many graduates of biology education own schools of their own where people work and earn their living while some are into teaching profession and other business (Obialor, 2018). Moreover, Biology education is one of optional courses for science education students in different undergraduate programmes of regular, sandwich and continuing education programmmes in Nnamdi Azikiwe University Awka. These undergraduate students are known as pre-service teachers.

Pre-service teachers are undergraduate students in Colleges of Education and Faculty of Education in the universities who are exposed to core education courses that are capable of providing them with the necessary skills, methods and materials that will enable them to effectively and efficiently implement curriculum on graduation. In the view of Darling-Hammond, (2006), pre-service teachers are defined as candidates who are enrolled in accredited teacher preparation programs, pursuing licensure or certification to teach in schools. From the researchers' point of view, pre-service Biology teachers are Biology student-teachers who are general trained on the knowledge of Biology and its concepts as well as the instructional skills, methods and materials needed for effective implementation of the curriculum planned. This simply means that pre-service Biology teachers are qualified to teach Biology at senior secondary school level after their training. Moreover, the initial teacher training in the knowledge of the subject matter plays a key role in supporting the development of effective teachers. Teachers who have acquired sufficient academic preparation-usually subject matter content and pedagogical skills are generally regarded as effective in classrooms (Scheeren, 2010) but the reverse is the case as Lederman and Gess-Newsome (2001) found that , despite the fairly high level of confidence pre-service teachers have in the knowledge of their subject matter and attainment of a bachelor's degree in their academic area, most of them do not understand the

content that they are to teach in a conceptually rich or accurate manner and if this continues the poor performance of students offering Biology at senior secondary school level will continue to exist (Obialor , 2022). This because teachers have a fundamental role in students' academic achievement and the extent to which they utilize their training in the classroom is greatly influenced by their knowledge of the subject matter/content of the courses which they are exposed to during their training. However, to determine the success of a pre-service teacher, who are future educators themselves, evaluating the teaching effectiveness of their lecturers becomes a crucial aspect of their training and development. This evaluation process allows pre-service teachers to critically evaluate their lecturers' pedagogical methods, instructional strategies and overall teaching performance in their respective courses, Biology inclusive.

Evaluation is the systematic assessment or appraisal of an event or something in order to determine its value, significance or effectiveness. According to Onyemerekeya (2006) evaluation is the process of obtaining information and analyzing it in order to determine accurately the extent to which desired educational objective has been achieved. On the other hand, Obialor (2022) defined evaluation as the systematic collection of evidence in order to determine the extent at which a particular programme is achieved. However, teacher evaluation is conducted to ensure teacher quality and to promote professional learning with the goal of improving future performance and effectiveness in the classroom.

Teacher effectiveness requires that a teacher should have an adequate knowledge of the subject matter, curriculum, pedagogical skills and methods necessary for effective instructional delivery. Teacher effectiveness refers to the extent to which a classroom teacher performs his instructional rules given the necessary facilities such that the learners will achieve a reasonable degree of learning (Okonkwo in Obialor & Osuafor, 2019). Teacher effectiveness is inherent or acquired abilities, attributes, skill methodologies, instructional strategies and techniques employed by an effective teacher in cognizance with subject mastery to implement efficient instructional delivery for expected teaching/learning outcome (Kano, 2004; Obih, 2016). Effective teaching is the teacher doing the right thing in the teaching process so that at the end of teaching events, the teacher can truly say that the goals and objectives of the lesson (s) have been achieved which implies that the students for whom the lessons were planned have learnt (Obialor & Osuafor, 2019). Effective teaching is also closely linked to student achievement and success in a globalized and competitive world. Limited feedback from the pre-service biology teachers on their lecturers' teaching effectiveness can limit the lecturers' from exploring different teaching techniques, skills and content knowledge of biology and its concepts needed for effective and efficient teaching and learning of biology in secondary school. However, gender may be a factor affecting students' assessment of lecturers' teaching effectiveness.

Gender refers to the roles, behaviours, activities, expectations and societal norms that cultures consider appropriate for men and women who encompass the social and cultural aspects of being male and female. Gender is a cultural construct that distinguishes the roles, behaviour, mental and emotional characteristics between males and females developed by a society (Udosoro, 2011). Gender is also a social or cultural construct, characteristics, behaviours and roles which society ascribes to males and females (Collins, 2021). The role that gender play in evaluation of lecturers' teaching effectiveness cannot be over emphasized. Syzanne in Hawthorne (2022) examined gender bias on students' evaluation of effective teaching in university of Wyoimig and found out that gender bias plays a role in students' views of effective teaching in terms of how female students evaluate pedagogical and content characteristics and

that this bias generalizes across students' level. Carrell and West in Agu and Anachunam (2020) opined that the male students may likely rate the male teachers higher, whereas female students may be more likely to rate female teachers higher. Carrell and West in Agu and Anachunam (2020) further added that female students might rate female teachers higher according to the role model effect (identifying with teachers of their own gender) but they might also rate male teachers higher if they associate competency to men. Thus, this study aimed at ascertaining the pre-service Biology teachers' evaluation of their lecturers' teaching effectiveness in Biology courses in Nnamdi Azikiwe University, Awka, Anambra State.

Purpose of the Study

The purpose of this study was to examine the pre-service Biology teachers' evaluation of their lectures' teaching effectiveness in Biology courses in Nnamdi Azikiwe University, Awka, Anambra state. Specifically, the study sought to determine;

1. The pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses.
2. The male pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses.
3. The female pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses.

Research Questions

1. What are the pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses?
2. What are the male pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses?
3. What are the female pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses?

Method

A descriptive survey design was adopted in this study. The study was carried out in Nnamdi Azikiwe University, Awka, Anambra State. The population of the study consisted 99 fourth year (400 level) undergraduate Biology students from the department of Science Education in the Faculty of Education, Nnamdi Azikiwe University, Awka. The sample size for the study was 99 fourth year (400 level) undergraduate Biology students. There was no sampling as the population was not large and of manageable size. The instrument for data collection was Evaluation of Teaching by Students Questionnaire (ETSQ) adapted from National University Commission (NUC, 2008) questionnaire developed for students' evaluation of teaching effectiveness in universities. The instrument consisted two sections A and B. Section A was used to obtain bio data of the respondents while section B consists 23 items with four scale response option of strongly Agree, Agree, Disagree and Strongly Disagree. The instrument was validated by two experts in the Faculty of Education, Nnamdi Azikwe University, Awka. The reliability of the instrument was established using Cronbach alpha and coefficient value of 0.89 was obtained. The researchers personally distributed copies of the questionnaire to the pre-service Biology teachers in the study area through Google form link. 99copies of the questionnaire were sent to the pre-service Biology teachers to which out of the 99 respondents, 63 questionnaires were returned. Data collected were analyzed using mean and standard deviation to answer the research questions. However, the average individual score for response on a 4 point rating scale is as

follows: SA =4, A=3, D=2, SD=1. This was represented as thus: 4+3+2+1 = 2.50. Decision rule: mean score of 2.50 and above indicated accepted while mean score below 2.50 indicated rejected.

Results

Research Question One:

What are the pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses?

Table 1: Mean and standard deviation of the pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses

S/N	Item	Mean (N=63)	SD	Remark
	A. Good Organization and Planning			
1.	Each class period was carefully planned.	2.83	0.83	Accepted
2.	Lecturers were well organized to ensure maximum learning.	2.65	0.81	Accepted
3.	Lecturers facilitated note taking.	2.56	0.88	Accepted
4.	Lecturers were very punctual to class.	2.06	0.76	Rejected
	B. Teacher-Student Interaction			
5.	The lecturer encouraged students to ask questions during instruction	3.06	0.69	Accepted
6.	The lecturer treated students with respect.	2.71	0.77	Accepted
7.	The lecturer seemed willing to offer individual help	2.81	0.50	Accepted
8.	The lecturer motivated me to work hard	3.11	0.54	Accepted
9.	The lecturer is approachable	2.89	0.48	Accepted
	C. Clarity and Effective Communication			
10.	The objectives for each course were clear.	2.87	0.61	Accepted
11.	The lecturer used examples to clarify different points/concepts.	3.08	0.52	Accepted
12.	The lecturer's explanations were clear.	2.75	0.57	Accepted
13.	My lecturer communicated effectively.	2.89	0.60	Accepted
	D. Grading			
14.	Grading criteria were clearly explained.	2.81	0.84	Accepted
15.	The lecturer used feedback on tests given.	2.35	0.74	Rejected
16.	The lecturer's awards of grades in tests were objective.	2.56	0.76	Accepted
17.	Examinations/tests emphasized course content.	3.11	0.63	Accepted
	E. Flexibility Approaches towards Teaching			
18.	The lecturer varied the use of activities in class.	2.76	0.71	Accepted
19.	The lecturer uses lecture and discussion methods.	3.25	0.57	Accepted
20.	The Lecturer was well-prepared for each class.	2.97	0.54	Accepted

21.	The lecturer led classes through a logical sequence of materials and presentations.	2.67	0.67	Accepted
	F. Rating of Supplementary Materials			
22.	My assignments were relevant to the course.	2.95	0.71	Accepted
23.	The lecturer used of teaching aids contributes to my learning.	2.95	0.71	Accepted
	Overall mean and Standard Deviation	**2.81**	**0.32**	**Accepted**

Data in Table2 1 shows that items 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22 and 23 were accepted since their mean scores were above the mean cut-off point of 2.50, whereas items 4 and 15 were rejected because the mean scores were below the mean cut-off point of 2.50. Moreover, 2.81 and 0.32 were obtained as the overall mean score and standard deviation respectively. This indicates that the pre-service Biology teachers rated their Biology lecturers as effective teachers and their Biology courses learning experience as meaningful due to the fact that all the criteria for the evaluation such as good organization and planning, teacher-students interaction, clarity and effective communication, grading, flexibility approaches towards teaching and rating of supplementary materials criteria were accepted . However, the result also reveals that lecturers are not very punctual to class and do not give feedback on tests given.

Research Question Two:

What are the male pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses?

Table 2: Mean and standard deviation of the male pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses

S/N	Item	Mean (N=22)	SD	Remark
	A. Good Organization an8d Planning			
1.	Each class period was carefully planned.	3.18	0.73	Accepted
2.	Lecturers were well organized to ensure maximum learning.	2.64	1.00	Accepted
3.	Lecturers facilitated note taking.	2.50	1.10	Accepted
4.	Lecturers are very punctual to class.	2.27	0.77	Rejected
	B. Teacher-Student Interaction			
5.	The lecturer encouraged students to ask questions.	3.09	0.75	Accepted
6.	The lecturer treated students with respect.	2.95	0.79	Accepted
7.	The lecturer seems willing to offer individual help	2.95	0.49	Accepted
8.	The lecturer motivated me to work hard	3.23	0.81	Accepted
9.	The lecturer is approachable	2.77	0.69	Accepted
	C. Clarity and Effective Communication			
10.	The objectives for each course are clear.	2.86	0.71	Accepted
11.	The lecturer used examples to clarify different points/concepts.	3.05	0.65	Accepted8
12.	The lecturer's explanations are clear.	2.90	0.61	Accepted
13.	My lecturer communicated effectively.	3.09	0.61	Accepted

	D. Grading			
14.	Grading criteria are clearly explained.	2.95	0.95	Accepted
15.	The lecturer gives feedback on tests given.	2.23	0.87	Rejected
16.	The lecturer's awards of grades in tests were objective.	2.55	0.86	Accepted
17.	Examinations/tests emphasized course content.	3.05	0.72	Accepted
	E. Flexibility Approaches towards Teaching			
18.	The lecturer varied the use of activities in class.	2.95	0.65	Acc2epted
19.	The lecturer used 8lecture and discussion methods.	3.14	0.71	Accepted
20.	The lecturer was well-prepared for each class.	3.05	0.65	Accepted
21.	The lecturer led classes through a logical sequence of materials and presentations.	2.73	0.70	Accepted
	F. Rating of Supplementary Materials			
22.	The assignments were relevant to the course.	3.00	0.69	Accepted
23.	The lecturer used of teaching aids contributes to my learning.	3.16	0.73	Accepted
	Overall mean and Standard Deviation	**2.88**	**0.44**	**Accepted**

Data in Table 2 shows that male pre-service Biology teachers rated their lecturers as effective teachers in teaching Biology courses as indicated in the overall mean score of 2.88 which is above the mean cut-off point of 2.50. Moreover, the male pre-service Biology teachers agreed to the fact that their lecturers are not very punctual to class and do not give feedback on tests given as indicated in items 4 and 15. Thus, the mean scores were below the mean cut point which is 2.50.

Research Question Three:

What are the female pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses?

Table 3: Mean and standard deviation of the female pre-service Biology teachers' evaluation score of their lecturers' teaching effectiveness in Biology courses

S/N	Item	Mean (N=41)	SD	Remark
	A. Good Organization and Planning			
1.	Each class period was carefully planned.	2.63	0.83	Accepted
2.	Lecturers were well organized to ensure maximum learning.	2.66	0.69	Accepted
3.	Lecturers facilitated note taking.	2.59	0.74	Accepted
4.	Lecturers are very punctual to class.	1.95	0.74	Rejected
	B. Teacher-Student Interaction			
5.	The lecturer encouraged students to ask questions.	3.05	0.67	Accepted
6.	The lecturer treated students with respect.	2.59	0.74	Accepted
7.	The lecturer seemed willing to offer individual help.	2.73	0.50	Accepted8
8.	The lecturer motivated me to work hard	3.05	0.31	Accepted

9.	The lecturer was approachable	2.95	0.31	Accepted
	C. Clarity and Effective Communication			
10.	The objectives for each course were clear.	2.88	0.56	Accepted
11.	The lecturer used examples to clarify different points/concepts.	3.10	0.44	Accepted
12.	The lecturer's explanations were clear.	2.66	0.53	Accepted
13.	The lecturer communicated effectively.	2.78	0.57	Accepted
	D. Grading			
14.	Grading criteria were clearly explained.	2.73	0.78	Accepted
15.	The lecturer used feedback on tests given.	2.41	0.67	Rejected
16.	The lecturer's awards of grades in tests were objective.	2.56	0.71	Accepted
17.	Examinations/tests emphasized course content.	3.15	0.57	Accepted
	E. Flexibility Approaches towards Teaching			
18.	The lecturer varied the use of activities in class.	2.66	0.73	Accepted
19.	The lecturer used lecture and discussion methods.	3.32	0.47	Accepted
20.	The lecturer was well-prepared for each class.	2.93	0.47	Accepted
21.	The lecturer led classes through a logical sequence of materials and presentations.	2.63	0.66	Accepted
	F. Rating of Supplementary Materials			
22.	My assignments were relevant to the course.	2.93	0.72	Accepted
23.	The lecturer used of teaching aids contributes to my learning.	2.83	0.67	Accepted
	Overall mean and Standard Deviation	**2.77**	**0.23**	**Accepted**

Data in Table 3 shows that the overall mean score of 2.77 which is above the mean cut-off point of 2.50 was obtained for the female pre-service Biology teachers evaluation score of their lecturers' teaching effectiveness in Biology courses which is high. Also, with the exception of items 4 and 15 which show that female pre-service teachers agreed that their lecturers are not very punctual to class and do not give feedback on tests given, all other items were accepted. This indicates that the female pre-service Biology teachers rated their lecturers as effective teachers in teaching Biology courses.

Discussion

The findings of the study showed that the pre-service Biology teachers rated their Biology lecturers as effective teachers. This is connected to the fact that their Biology courses learning experience are meaningful as they carefully observe their lecturers and evaluate them based on different indices of good organization and planning, teacher-students interaction, clarity and effective communication, grading, flexibility approaches towards teaching and rating of supplementary materials criteria. This finding is in agreement with the findings of Bransford, Brown and Cocking in Hamidu (2022) who reported that teachers need an understanding of how to teach specific subject matter (pedagogical content knowledge) to be more effective and that they should possess a general understanding of learners in order to perform their job. This includes creation of relaxed and enjoyable atmosphere and retention of control in the classroom.

It also includes presentation of work in a way that students understand the concept taught. This finding is also in line with the finding of Burton and Wilson (2010) who found out that, among undergraduate science students, those who felt that they had positive interactions with their instructors were more likely to have positive learning outcomes and view their instructors as effective. The finding also relies on research work of Bendixen and Schreiner (2013) who reported that pre-service teachers were more likely to rate their instructors as effective when they perceive the instructor to be knowledgeable, fair and supportive. This suggested that pre-service Biology teachers will be more likely to view their lecturers' as being effective when they feel supported and engaged in the learning activities.

Conversely, the result also revealed that lecturers are not very punctual to class and do not give feedback on tests given. Meanwhile, teaching as a profession required that teachers must know and put into practice the code of professional ethics/ conduct for teachers as well as the core values, attitudes, conduct, rights, privileges and obligations expected of professional teachers. Secondly, the Nigeria policy on Education (2004) sees teaching as a profession that needs to be legally and publicly recognized. The policy recommended that all teachers in education institutions shall be professionally trained with the minimum qualification of Nigeria Certificate in Education (NCE).Prior to this, one can say that the inability of Biology lecturers in Faculty of Biosciences not being punctual to class and not given feedback on tests administered to the students could be as a result of them not being aware of this code of professional ethics/ conduct for teachers as well as not having the necessary professional training expected of professional teachers'.

The findings of the study also showed that male and female pre-service Biology teachers' rated their lecturers' as effective teachers in teaching Biology courses. This can be connected to fact that lecturers teaching Biology courses irrespective of their gender ensured effective teacher-students interaction during their teaching. This findings is in agreement with the assertion of Obialor and Osuafor (2019) that effective teaching is the teacher doing the right thing in the teaching process so that at the end of teaching events, the teacher can truly say that the goals and objectives of the lesson (s) have been achieved which implies that the students for whom the lessons were planned have learnt. Hence, teachers are generally expected to perform their pedagogical responsibilities with high level of effectiveness in all facets of their encounter both in the classroom and outside the classroom irrespective of their gender.

Conclusion

Based on the findings of this study, it was concluded that pre-service Biology teachers, irrespective of their gender evaluated their lecturers to be effective teachers of Biology courses in Nnamdi Azikiwe University, Awka, Anambra State. Again that lecturers are not very punctual to class and do not give feedback on tests given.

Recommendations

Based on the findings of the study, the researcher made the 8following recommendations;

1. The administrators of Nigeria universities should encourage a system of peer observations, where Biology lecturers can observe and provide constructive feedback to their colleagues to foster a culture of continuous improvement and collaborative learning.

2. The Institution should organize workshops focused on awareness of code of professional ethics/conduct for teachers and teaching skills, with an emphasis on effective communication, diverse instructional methods, course organization and necessary psychosocial skills.
3. The faculty should develop a structured feedback system that includes input from both lecturers and students. Regular evaluations can offer valuable insights into teaching effectiveness, helping lecturers identify strengths and areas for improvement.
4. The federal ministry of education should continue to encourage the administrators of Nigeria universities on the need to ensure that the employment of Biology lecturers into university education is based on academic qualification, knowledge experience and merit. The candidate should also have a certificate in Education such as Post graduate diploma in Education (P.G.D.E), Nigeria Certificate in Education (N.C.E) among others and must be registered with the Teacher Registration Council of Nigeria (TRCN). This is to ensure that only quality and competent Biology lectures are employed into university education and also to enhance effective teaching of the subject.

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