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PRE-SERVICE TEACHERS' BELIEFS REGARDING MICRO-TEACHING AND TEACHING PRACTICE IN BIOLOGY TEACHERS TRAINING PROGRAMME

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Abstract

The study investigated the beliefs of pre-service biology teachers on the influence of micro-teaching on teaching practice experience. A multistage sampling was used to select two universities in Lagos State. Four hundred level Pre-service biology teachers were randomly selected for the study. The instrument - Pre-service Biology Teachers' Beliefs on Micro-teaching and Teaching Practice (PBTBMTP), with reliability value(r) = 0.75 using Cronbach alpha was used to collect data from the participants. Data collected were analysed using descriptive statistics. Results of the study revealed that pre-service biology teachers believed that micro-teaching influences their Lesson Preparation and Management, Language Improvement and, Teaching Practice Competence and Awareness in teaching practice positively. Results also show respondent' beliefs of positive personal attitudes and feelings toward micro-teaching. It is therefore recommended that; micro-teaching should be a pre-requisite for teaching practice by pre-service teachers in biology teacher training.

Introduction

Introduction

Biology is a science and the pre-requisite subject for many fields of learning such as medicine, forestry, agriculture, nursing, pharmacy, biotechnology, etc. It is a natural science subject that is concerned with the study of life and living organisms, including their structures, functions, growth, origin, evolution and taxonomy. The knowledge of the science subject makes an individual to be conversant and knowledgeable about one's being, internal functions, the environment and relationship with the environment. The knowledge of biology add value to the totality of education and wellbeing of an individual. Therefore, biology as a subject is of great importance, hence educating individuals or citizens of a country with the knowledge of the subject is a valuable exercise. Educating people according to Grant (2017), has widely been acknowledged as a way of promoting economic development, eliminating poverty and introducing social welfare. This may be one of the reasons why biology is thought at Senior Secondary Schools (SSS) Level in Nigeria, not only as a science subject but also as the commonly choose science subject (Adewale, Nzewuihe and Ogunsola, 2016).

The main objectives of teaching biology at SSS in Nigeria according to Federal Ministry of Education (FME) (2009) include acquisition of:

- Adequate laboratory and field skills in biology
- Meaningful and relevant knowledge
- Ability to apply scientific knowledge to everyday life on matters of personal and community health and agriculture.
- Reasonable and functional scientific attitudes

In accordance with the above stated objectives, it is evident that the content will assist individuals with the knowledge in the development of attitudes and scientific process skills such as observation, inferring, classifying, hypothesizing, questioning, measuring, predicting, communicating, etc. In order to achieve these objectives, biology needs to be adequately taught in schools. Teaching is an act of passing knowledge from teachers across to learners. Such knowledge is required for relevance or successful living or existence in the natural world. One major way to ensure adequate teaching of knowledge of biology in secondary schools is through training of teachers for appropriate delivery of the subject at SSS. Such training occurs at Faculties of Education in Universities and Colleges of Education. During the process of training, the intended teachers are exposed to theory and practice of teaching biology at SSS. Part of the practical on-campus training for the preparation of future biology teachers is micro-teaching and teaching practice.

Elias (2018) described micro-teaching as a teacher training technique which diminishes teaching condition to simpler and more skillful encounter achieved by regulating practice teaching to a specific skill and dropping teaching time and class size. In micro-teaching, there is a scale down in class size as well as in the time allotted for teaching. This method of career preparation of future biology teachers, offers the trainees different and new opportunities about planning and implementation of new teaching strategies. Onwuagboke, Osuala, and Nzeako (2017) described micro-teaching as organized practice teaching which aimed at giving instructors confidence, support and feedback by allowing them to try out among their friends what they learnt and what they plan to do with their students during teaching practice. Therefore, micro-teaching may be considered as one of the tools in bridging the gap between theory and practice of teaching (Adedapo, 2013, Ghanaguru, Nasir and Young 2013). Significant characteristics of micro-teaching identified by Otsupius (2014) and Onwuagboke, Osuala and Nzeako (2017) include; reduction in complexity of teaching regarding class size, duration of lesson, subject matter to be taught to enable the trainee to concentrate on particular teaching skill at a time; focuses on teaching skills and teaching strategies; availability of immediate feedbacks provided by the supervisor to reinforce the trainees' skill;- provision of safe practice ground for trainee in micro-teaching laboratory inherent with real classroom with teaching performance under simulated condition and; availability of trainee to get teaching study designed teaching model from the supervisor.

It could be observed from above that the essence of micro-teaching is to allow pre-service teachers to develop teaching skills by examining and assessing personal teaching techniques through examining and analyzing the teaching methods of others. In such instances, areas of error are discovered and it's imperative to retry after correction. In doing these, the pre-service biology teachers will learn how to teach, identify, analyse and isolate various pedagogical practices and skills involved in teaching biology individually. Micro-teaching has an essential groundwork for the teaching profession because of its perspective to underline the relationship between theory and practice. This may be one of the reasons why it is expected to take place before pre-service teachers' involvement in teaching practice. The micro-teaching is assumed to prepare pre-service teachers for teaching practice which is the first real-life classroom experience in teacher training especially in biology teaching where acquisition of science skills is needed for appropriate delivery or teaching of theory and practical biology.

Teaching practice is an integral component of teacher training. The practice is the practical aspect of teacher training with assortment of factual and dramatic characteristics when pre-service teachers find an opportunity to use the acquired knowledge of psychology, teaching methods, teaching principles and teaching techniques. It is a process which grants pre-service teachers the opportunity to experience the art of teaching in the real world of teaching profession in actual teaching and learning environment. Kiggundu and Nayimili (2009) described teaching practice as the range of experiences to which pre-service teachers are exposed to, in classrooms and schools. Since micro-teaching enhances the development and acquisition of teaching skills through examining self and others while teaching, implementation of micro-teaching before teaching practice for pre-service biology teachers who need to acquire scientific skills in addition to the teaching skills is not out of place. Recently, it has been noted that micro-teaching does not attract the attention of some universities. This may be because it has not been given prominence in degree teacher education supervised by the Nigeria Universities Commission (NUC) (Ijioma, Obasi and Ifegbo, 2017). In the light of this, some universities have discontinued microteaching as a course while others retained it. However, the perception of pre-service biology teachers' who need acquisition of scientific and teaching skills for appropriate teaching of biology have not been sought, on the influence micro-teaching has on their teaching practice experience to alleviate the stoppage or continuity of the process as part of teacher training programme. This study explored how micro-teaching experiences of pre-service biology teachers has contributed to their teaching practice experiences.

Statement of the Problem

Micro-teaching has been identified as on-campus training to prepare pre-service teachers for teaching practice. As part of teacher training programme, it guides the future teachers in the provision of adequate knowledge and skillful experience which bridge theory with practice. It could be more beneficial in the teaching of biology especially where acquisition of certain skills is required in the teaching of both theory and practical. However, it has been observed that micro-teaching is not part of pre-service teacher training programme in some universities in Nigeria. In others, where they had existed it has been discontinued. Meanwhile, the pre-service biology teachers who require certain scientific skills to teach biology adequately were not sorted on their belief about the impact or influence micro-teaching had or would have had on their teaching practice in biology. Therefore, this study found out pre-service biology teachers' beliefs on the contribution of micro-teaching experience to teaching practice exercise.

Objective of the Study

The study specifically found out pre-service biology teachers' beliefs about the contributions of lesson preparation and management, language improvement, teaching awareness and competence in micro-teaching to teaching practice experience. The purpose also included the pre-service teachers' opinions on their personal attitudes towards micro-teaching.

Research Questions

1. What are pre-service biology teachers' beliefs about the contribution of micro-teaching on teaching practice experience as regards:

i) Preparation and management of lesson
ii) Language improvement and course satisfaction
iii) Teaching practice awareness and competence

2. What are pre-service biology teachers' beliefs about personal attitudes and feelings toward micro-teaching as a contributor to teaching practice exercise?

Methodology

The study employed descriptive survey design. Multistage sampling techniques were adopted. Purposive sampling was used to select two public Universities in Lagos State. These are Universities with the inclusion of Micro-teaching and Teaching Practice as part of teacher training curriculum. The universities selected are University of Lagos and Lagos State University. Since biology teacher training was the focus of this study, pre-service biology teachers were purposively selected for the study. The 400 Level Biology Education pre-service teachers who have attempted Micro-teaching as a course (with all the practical activities) in 200 Level and Teaching Practice at 300 Level were randomly selected for the study. At the end 165 pre-service teachers participated in the study.
The instrument Pre-service Biology Teachers' Beliefs on Micro-teaching and Teaching Practice (PBTBMTP), a four Likert type questionnaire, was developed by the researcher. The instrument was divided into sections. Section A was on respondents bio-data, Section B was made of items on Lesson Preparation and Management, Section C was on Language Improvement and Course Satisfaction while Section D was on Teaching Practice Competence and Awareness, and Section E on Personal Attitudes and Feelings towards micro-teaching. This was given to two university lecturers in biology education for content validation, and twenty-five 200 Level biology education students in a university that was not part of the study. This was used to the reliability using Cronbach alpha and it stood at (r) = 0.76. Descriptive statistics was used to analysed the data collected from the study. Results are presented according to research questions.

Results

The results of the study were presented in tables and descriptions as per nature of analysis and demand of the research questions.
Question 1 (i): What are pre-service biology teachers' beliefs about the contributions of micro-teaching to preparation and management of lesson on teaching practice experience?

Table 1: Pre-service biology teachers' beliefs about contributions of micro-teaching to preparation and management of lesson on teaching practice experience.

S/N	Lesson Preparation and Management:	Mean
1	Helped me learn to organize my time in practical lesson	3.52
2	Helped me learn how to manage class	3.56
3	Offered me a practical opportunity to teach a lesson	3.54
4	Gave me an opportunity to improve my lesson planning	4.02
5	Helped me write good performance objectives	3.33
6	Encouraged me to develop teaching activities and materials	3.31
7	Helped me learn how to predict classroom problems	3.01
8	Helped me learn to use technology appropriately	2.52
	Grand Mean	3.77

In Table 1 above, pre-service biology teachers endorsed that micro-teaching helped learn to organize time for practical lesson ($\overline{X}$ =3.52), learn how to manage class ($\overline{X}$ =3.56), offers a practical opportunity to teach a lesson ($\overline{X}$ = 3.54), gave an opportunity to improve lesson planning ($\overline{X}$ = 4.02), helped to write good performance objectives ($\overline{X}$ = 3.33). It was also revealed that, micro-teaching encouraged the development of teaching activities

and materials ($\overline{X}$ = 3.31), helped learn how to predict classroom problems ($\overline{X}$ = 3.01), and helped learned to use technology appropriately ($\overline{X}$ = 2.52) among pre-service biology teachers.
Based on the analysis, with a grand mean of 3.77 which is higher than 2.50, it could be deduced that pre-service biology teachers are of the belief that micro-teaching contributes to preparation of lesson and its management during teaching practice.
Question 1 (ii)
What are pre-service biology teachers' beliefs about the contributions of micro-teaching to language improvement on teaching experience and course satisfaction?

Table 2: Pre-service biology teachers' beliefs about contributions of micro-teaching on language improvement in teaching practice experience and course satisfaction.

S/N	Language Improvement and Performance Satisfaction:	Mean
1	Helped me develop confidence in my speaking ability	3.67
2	Helped me learn to speak clearly	3.50
3	Encouraged me to develop my vocabulary	3.55
4	Allowed me to apply ideas I learned from different courses	3.64
5	Encouraged me to work harder in practicals	3.60
6	Raised my motivation in the present methods course	3.59
7	Helped me to better understand different teaching methods and activities	3.61
8	Helped me discover and fix my language problems	3.45
	Grand Mean	3.57

Table 2 shows that majority of pre-service biology teachers reported that micro-teaching helped to develop confidence in speaking ability ($\overline{X}$ =3.67), learn to speak clearly ($\overline{X}$ =50), encouraged to develop vocabulary ($\overline{X}$ = 3.55), allowed apply ideas learned from different courses ($\overline{X}$ = 3.64), encouraged to work harder ($\overline{X}$ = 3.60), Also, micro-teaching raised motivation in the present methods course ($\overline{X}$ = 3.59), better understand different teaching methods and activities ($\overline{X}$ = 3.61), and discover and fix my language problem ($\overline{X}$ = 3.58).
With the grand mean of 3.57, it could be concluded that pre-service biology teachers are of the views that micro-teaching assisted language improvement and performance in teaching practice experience.
Question 1 (iii): What are pre-service biology teachers' beliefs about the contribution of micro-teaching to teaching practice awareness and competence?

Table 3: Pre-service biology teachers' beliefs about the contributions of micro-teaching to teaching practice awareness and competence.

S/N	Teaching Practice Awareness and Competence:	Mean
1	Helped me develop awareness of my teaching competence	3.64
2	Helped me develop the scientific skills needed for teaching biology	3.53
3	Gave me an opportunity to learn by observing others	3.66
4	Made me aware of what makes a good biology teacher	3.71
5	Gave me a valuable opportunity to apply my teaching and scientific skills	3.50
6	Encouraged me to develop autonomy in teaching practical	3.15
7	Helped me discover my teaching strengths and weakness	3.61
	Grand Mean	3.54

The table 3 above shows that pre-service biology teachers endorsed that micro-teaching helped in training to develop awareness of teaching competence ($\overline{X}$ =3.64), the scientific skills needed for teaching biology ($\overline{X}$ =3.53), an opportunity to learn by observing others ($\overline{X}$ = 3.66). It was also revealed the pre-service teachers are of the view that micro-teaching create awareness of what makes a good biology teacher ($\overline{X}$ = 3.71), gave a valuable opportunity to apply teaching and scientific skills ($\overline{X}$ = 3.50), encouragement to develop autonomy in teaching practical ($\overline{X}$ = 3.15) and discover individual teaching strengths and weakness ($\overline{X}$ = 3.61).
The grand mean of 3.54 shows that pre-service biology teachers have the opinion that micro-teaching contribute to teaching practice awareness and competence.
Question 2: What are pre-service biology teachers' beliefs about personal attitudes and feelings toward micro-teaching as a contributor to teaching practice exercise?

Table 4: Pre-service biology teachers' beliefs about personal attitudes and feelings toward micro-teaching as a contributor to teaching practice exercise.

S/N	Personal Attitudes and Feelings:	Mean
1	Was carried out in an artificial environment	2.50
2	Resulted in neglecting key activities in the method courses	1.95
3	Consumed a lot of my time	2.04
4	Made me feel bored	1.98
5	Forced me to do difficult tasks	2.11
6	Was time limited and controlled	2.66
7	Made me feel embarrassed when teaching my colleagues	2.26
8	Forced me to think of the evaluation criteria while planning	2.78
9	Forced me to think of the evaluation criteria while teaching	2.36
	Grand mean	2.29

In response to research question four, Table 4 above shows that pre-service biology teacher agreed that microteaching is carried out in an artificial environment ($\overline{X}$ = 2.50), was time limited and control ($\overline{X}$ = 2.66) and forced them to think of evaluation criteria while planning ($\overline{X}$ = 2.78) . The table revealed further that the respondents disagreed that, microteaching resulted in neglecting key activities in the methods courses ($\overline{X}$ = 1.95), consumed a lot of their time ($\overline{X}$ = 2.04), made them feel bored ($\overline{X}$ = 1.98), forced them to do difficult tasks ($\overline{X}$ = 2.11), made them embarrassed when teaching their colleagues ($\overline{X}$ = 2.26), and forced them to think of evaluation criteria while teaching ($\overline{X}$ = 2.36).

Discussion

Evidence from the result of the study shows that pre-service biology teachers are of the opinion that exposure to micro-teaching contributed positively to the preparation and management of lesson during teaching practice. This implies that the experiences the pre-service teachers had during micro-teaching assisted in the practical way or method of preparing for and managing a class lesson. This supports Elias (2018) submission that micro-teaching is an essential groundwork for teacher training because it's perceived to provide transition between theory and practice. The pre-service teachers believed that the theory of writing lesson plan and manage lesson learnt in methodology courses were put into practice, thereby prepared them for the teaching practice encounter. This finding is also in support of Zhou and Xu (2017), and Elias (2018) submissions that practice is better than theory, that micro-teaching method of practice is skill-oriented rather than content-oriented which forms the most important component for planning in the teaching-learning.

The study also shows that pre-service biology teachers believed that micro-teaching experience improved language and performance during teaching practice. This finding is in line with Nasir and Zafar (2018) study that micro-teaching held at institutions improved pre-service teachers use of language and clarity of voice during teaching practice. The finding is also similar to Bilen (2015) submission that micro-teaching technique positively affects pre-service teachers' beliefs regarding mathematics teaching efficacy. Swars and Dooley (2010) also reported that pre-service teachers perceived positive effects of micro-teaching experience on teaching competence during teaching practice exercise. This is also in line with the finding of this study.
Responses from this study show that pre-service biology teachers' belief in positive personal attitudes and feelings toward micro-teaching experience. This is supported by the study of Umeh, Mogbo and Msofor (2015), and Onwuagboke, Osuala and Nzeako (2017) submissions that micro-teaching is effective in improving pre-service teacher behaviours in all dimensions. However, this is against the findings of Bilen (2015) who reported that negative attitudes toward micro-teaching due to presentation in an artificial environment, critique by classmates and the instructor and recording during presentation. Furthermore, Bilen (2015) submitted that the observation of classmates while teaching and feedback from presentations produced positive attitudes.

Conclusion

Evidences from the result of the study showed that the respondents believed that pre-service biology teachers' experience of micro-teaching contributes to and influences teaching practice experiences positively. Based on the findings, it could be deduced and concluded that taking micro-teaching as a course and exposing pre-service biology teachers to the practical experiences of micro-teaching have positive influence on teaching practice activities of the pre-service teachers.

Recommendations

Based on the findings of this study, the following are recommended:
1) Micro-teaching should be an important and compulsory part of teacher training curriculum for biology education programme in all institutions preparing teachers for the teaching of biology.
2) Micro-teaching should be a methodology course which pre-service biology teachers on training will take before proceeding for teaching practice.
3) The micro-teaching methodology course should include all accessories which will support the practical teaching which will enable the pre-service teachers to translate theory of teaching and scientific skills to practice. The course is expected to be 100% practical.
4) There should be a micro-teaching laboratory which will specifically be for preparation of teachers for the teaching of biology.

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