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JECAN, the official journal of Early Childhood Association of Nigeria (ECAN), presents its Volume 8 (2019). Membership of the association is open to students, graduates, practitioners and scholars of early childhood education and/or related fields in Nigeria and abroad.

All the articles that feature in this volume are those presented at the 2018 National Conference of the association held between 23 and 27 July, 2018 at FCT College of Education, Zuba, Abuja. Arrangements are on to make it possible for interested researchers to submit articles directly for publication in the journal.

It is therefore, the expectation of the Editorial Board that readers will not only find this volume a good companion in their continuous search for knowledge but also a reliable source of literature for further research activities.

Prof. Olusegun Akinbote
Editor-in-Chief

TABLE OF CONTENTS

Editorial Board	
Editorial Comments	ii
Table of Contents	iii
Assessing Confidence Level of Pre-Service Primary Education Teachers in Teaching Mathematics and Science for Sustainable Development in Ilorin Metropolis T. A. AHMED and M. O. OGUNJIMI	iv 370
Availability and Implementation of One Year Pre-Primary School Curriculum In Ibadan Metropolis, Nigeria A.O. OLANIYAN and I. A. SALAMI	381
Influence of Early-Schooling and Parental Educational Background on Pupils' Aptitude in Primary School Mathematics in Ogbomoso, Oyo State N. OLANIRAN and M. G. IKUENOMORE	393
Lecturers' Perception of Quality in the Pre-Service Training of Early Childhood Education Teachers: Implication for the Achievement of SDGS In Nigeria Victoria I. IROEGBU and Bukola O. SAMUEL	406
Early Childhood Education Pre-Service Teachers' Perception of Participatory Learning Method: Implications for the Achievement of Sustainable Development Goals in Nigeria P. K. OLOWE and Esther A. ODUOLOWU	420
Early Childhood Development as a Tool for Achieving Sustainable Development Goals Regina V. AKUME ¹ and Abigail A. OGODA	439

- Early Childhood Education and Achievement of Sustainable Development Goals In Nigeria
Chidinma. J. OKOSUN¹ and Rita ONYEIZU 449
- Effects of Graphic Organisers Strategy on Pupils' Learning Outcomes in Social Studies in Elementary Schools in Ife, Osun State
J. O. OKEWOLE and Olufunke A. OSINOWO 463
- Inclusive Education in Early Childhood Education Settings in Nigeria: Policy and Practice
W. I. ACHAGH, E. C. OKENYI, M. MUSA and Comfort B. EKELE 477
- Knowledge and Relevance of Creativity in Pre-School Children among Caregivers in Lagos State
M. A. LAMIDI, A. T. ESOIMEME, S. A OGUNMADE and Ilamina R. JACKRICH 493
- Parental Financial Status, Literacy Levels and Pupils' Achievement in Early Schooling in Niger State, Nigeria
R. C. OKOLIE and Mfon-Ette T. ADALIKWU 505
- Teachers' Improvisation Skills in Science Classroom: A Pathway for Sustainable Development Goals in Ondo West Local Government Area of Ondo State
Monisola O. OLOTU and I.A. SALAMI 517
- Role of Libraries in Providing Information Services for Early Childhood Care and Education: Pathways for Achieving Sustainable Development Goals in an ICT Age
Omobolanle O. AINA, A. J. AINA and B. G. ABIDOGUN 527

Counselling Needs at Pre- Primary School Level in Lagos State, Nigeria Sarah SOPEKAN and Abiola Y. FASHINA	548
Entrepreneurship Education and Creativity: Teachers' Role Towards its Promotion amongst Primary School Pupils in Lagos State, Nigeria Temitope HARRY, Joyce E. OGWAZU, Esther OWOJINRIN, Justina C. AGUH and Monsurat A. BANIRE	563
Entrepreneurial Education as a Tool for Achieving Sustainable Development Goals in Ojo Local Government Area of Lagos State Nkechinyere M. OKORONKWO, Gertrude O. NNAMSO and Perpetual N. UGORJI	579
The English Language Teacher in an ECCE Centre as Conduit for a Sustainable Language Development K. I. DUNG and G. T. KITGAKKA	597
A Survey of Parents' and Caregivers' Attitude to Nutrition of Pre-School Children in Lagos State B. G. ABIDOGUN, M. A. LAMIDI, A. T. ESOIMEME and S. A. OGUNMADE	607
Early Childhood Care and Education as a Tool for Achieving Sustainable Development Goals Mairo OMAR	618
Nutritional Deficiencies: A Major Factor to Developmental Conundrum A. A. AKANJI and Adefunke T. KOMOLAFE	631
Religious Education in The Early Childhood Stage: A Pathway to Sustainable Development in Nigeria O. D. OJO and Eniola K. OLA-ALANI	646

Childhood Education Teacher Training and Teaching of
Science and Mathematics: Implications for Nigerian
Teacher Education

Olabisi ADEDIGBA and Blessing O. OLOFINTOYE

656

The Educational Implications of Teachers-Pupils' Gender
on Achievement and Interest of Primary School Pupils in
Social Studies

Elizabeth O. ABOLUWARIN

68

Education Psychology for the Training of Mind and
Character in Childhood Education to Achieve Sustainable
Development Goals

A. A. BABANGIDA, A. MUSTAPHA and Otu P. AWEH

69

A Qualitative Study of Children's Experience of Poverty
in their Education: Implications for the Achievement of
Sustainable Development Goals in Nigeria

B. G. ABIDOGUN, Joy C. OKECHUKWU, O. ADEYEMI
and Olubunmi OLALOYE

7

ASSESSING CONFIDENCE LEVEL OF PRE-SERVICE PRIMARY EDUCATION TEACHERS IN TEACHING MATHEMATICS AND SCIENCE FOR SUSTAINABLE DEVELOPMENT IN ILORIN METROPOLIS

T. A. AHMED¹ and M. O. OGUNJIMI²

¹Department of Adult and Primary Education, Faculty of Education, University of Ilorin, Ilorin. E-mail: ahmed.ta@unilorin.edu.ng

²Department of Adult and Primary Education, Faculty of Education, University of Ilorin, Ilorin. E-mail: ogunjimi.mo@unilorin.edu.ng

Abstract

Pre-service teachers' confidence is important not only because of the potential to replicate positive or negative effect in students but also because pre-teacher confidence has been linked to the quality of pedagogy. This study adopted a descriptive survey design to assess the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development in Ilorin metropolis. Simple random sampling technique was adopted to select 300 final year students of Primary Education Studies in higher institutions within Ilorin. A researcher designed questionnaire entitled "Confidence Level of Pre-service Primary Education Teachers' Assessment Questionnaire" (CLPPEAQ) was used for the collection of data. The instrument was validated by experts in the field of primary education studies as well as research methodology. A pilot study was thereafter conducted to establish the reliability of the instrument and a reliability coefficient of 0.88 was achieved. The data collected were analysed using descriptive and inferential statistics. The result revealed that the confidence level of pre-service primary education teachers in Ilorin was high and that there was no significant difference in the level of confidence of both male and female pre-service teachers in teaching Mathematics and Science for sustainable development. It was, therefore, concluded that the confidence level of the pre-service primary education teachers is of a satisfactory standard. It was, therefore, recommended that primary education teacher training institutions should maintain this standard for sustainable development.

Keywords: Confidence Level, Pre-service Teachers, Primary Education, Sustainable Development, Teaching Pedagogy

Introduction

Understanding Basic Science and Mathematics is recognised as being important in everyday life, and cuts across many professional occupations, including engineering, medicine, science and education. There is a strong societal expectation that teachers themselves will be competent at mathematical skills, have a deep understanding of Mathematics, and be able to teach effectively so that their pupils/students are successful in Mathematics. Furthermore, it is widely accepted that having good understanding and knowledge of Science and Mathematics, and confidence in one's ability to learn Mathematics and other related sciences, are of prime importance for teachers (Wilson, 2009).

Pre-service teacher education often provides the first step in the professional development of teachers. It exposes pre-service teachers to new perspectives as well as prepares them in knowledge and skills (Wilke, 2014). It equips them with knowledge of subject matter, and pedagogical content knowledge, or knowledge of how to teach (Wilke, 2014). The pre-service teachers need to know how to organise and present the content in a way that makes it accessible for the students. They should be able to make decisions about choosing materials, instructional approaches, and assessment. In addition, teachers should possess general competencies in the areas of classroom management and discipline. In addition to equipping pre-service teachers in knowledge and skills (Wilke, 2014), the teacher educators should also take into consideration the perception that the pre-service teachers bring to and develop during their training (Pajares, 2013).

Pre-service teachers' confidence is important not only because of the potential to replicate positive or negative effect in students as noted by Stipek, Givvin, Salmon, and MacGyvers (2011), but also because pre-teacher confidence has been linked to the quality of pedagogy. This manifests in several ways. When confidence is related to confidence to teach or perform a job/task, in this case the enactment of pedagogy, the term "self-efficacy" is frequently used (Bleicher, 2014).

The process of preparing, training and supplementing the pre-service teachers with the basic skills of teaching is considered to be one of the most important tasks in faculties of education. This is done

through teaching academic, educational and general cultural courses; in addition to the actual practical training supervised by a group of specialised people, usually one of the faculty professors or subject supervisors (Rahabav, 2016). Teaching Practice is an important stage in pre-service teachers' teaching lives, for it gives them a good opportunity to practise all what they have learnt from the academic, educational and general cultural courses, and they directly face students and live in the school environment with all its internal and external elements (Saunders, 2006). Akinsola (2014) points out that teaching practice is the period in which the real levels of the pre-service teachers' basic skills are determined, which will enable them to be successful teachers in the future. Ponte and Brunheiras (2009) maintain that teaching practice will lead to a constructive change in the pre-service teachers towards teaching process because the experiences through which they pass, and the activities that they practise will help them form general perspective concerning teachers' job and responsibilities.

Pre-service teaching is a period guided by supervised teaching. The pre-service teacher begins as an observer and finishes the pre-service teaching experience as a competent professional. Cooke (2015) asserts that confidence and attitude are the primary watchdogs for Science and Mathematics teachers' professional classroom behavior and they profoundly impact on decision making in any Science and Mathematics classroom. Pre-service teachers' dispositions are seen as a combination of their confidence about the nature of and attitudes towards the learning of Science and Mathematics have a pertinent influence on their initial teaching strategies and practices (Cooke, 2015). Beswick (2011) reveals that if Mathematics is seen as "an accumulation of facts, skills and rules", learning is typically viewed as a passive reception of knowledge and teaching will then primarily focus on content and optimal student achievement. If Mathematics is regarded as a "pre-existing knowledge awaiting discovery", learning typically involves active meaning-making, while teaching will usually be geared at an understanding of the content (Beswick, 2011). The overall goal of this study is to provide an insight into confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development.

Few studies have investigated the importance of pre-teacher confidence in teaching various subjects (Bowd and Brady, 2003; Anderson, Bartholomew and Moeed, 2009; Osaki, 2009; Jung, Cho and Ambrosetti, 2011; Wilson, 2013; Omari, 2014; Brown and Cox, 2014; Gu and Papageorgiou, 2016). A cursory look at these researches shows that they focused on subjects taught in higher level of education such as the subjects taught in secondary schools and tertiary institutions. The aforementioned studies were carried out in localities different from Ilorin which, therefore, creates paucity of research in this area. This study, therefore, intends to fill this gap by assessing confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development in Ilorin metropolis.

The general purpose of this study is to assess the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development in Ilorin metropolis. Specifically, it seeks to:

- 1) to find out whether the confidence level of the teachers in teaching Mathematics and Science for sustainable development depends on gender;
- 2) to determine whether the confidence level of the teachers in teaching Mathematics and Science for sustainable development depends on age and
- 3) to determine whether the confidence level of the teachers in teaching Mathematics and Science for sustainable development depends on their institutions.

This study sought answers to the following:

- 1) What is the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development in Ilorin Metropolis?

To further enhance the focus of this study, the following hypotheses were tested:

H₀₁: There is no significant difference in the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development on the basis of gender.

- H₀₂:** There is no significant difference in the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development based on their age.
- H₀₃:** There is no significant difference in the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development based on institutions.

Methodology

This study adopted a descriptive survey design to assess the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development in Ilorin metropolis. Simple random sampling technique was adopted to select 210 final year students of Primary Education Studies in higher institutions within Ilorin. There are three institutions in Ilorin metropolis, namely: University of Ilorin, Kwara State University and Kwara State College of Education, Ilorin. 75% of the final year populations in each of the institutions were selected to be the respondents (UNILORIN 110, KWASU 25, COED 75). A researcher designed questionnaire entitled "Confidence Level of Pre-service Primary Education Teachers' Assessment Questionnaire" (CLPPEAQ) was used for the collection of data. The instrument was validated by experts in the field of Primary Education Studies as well as research methodology. A pilot study was thereafter conducted to establish the reliability of the instrument and a reliability coefficient of 0.88 was achieved. The data collected were analysed using descriptive statistics to answer the research question, t-test and analysis of variance to test the stated hypotheses at 0.05 level of significance.

Results

Research Question 1: What is the confidence level of pre-service primary education teacher in teaching Mathematics and Science for sustainable development in Ilorin metropolis?

To provide answer to this research question, the response of the participants on each item was subjected to descriptive analysis using mean and standard deviation. The result of the analysis is presented in Table 1.

Table 1: Analysis of confidence level of pre-service teachers

S/N	Items	Mean	SD	Rank
1.	Feel confident in ability to teach Maths and Science	2.48	0.99	19th
2.	Confident to use new technologies with students in teaching Maths and Science	2.78	0.97	7th
3.	Have knowledge of current methods and strategies in teaching Maths and Science	2.53	0.91	18th
4.	Can provide accurate information to students about Maths and Science	2.38	0.89	20th
5.	Ability and knowledge to develop learning materials in Maths and Science	2.63	0.81	13th
6.	Possess knowledge of current teaching methods in Maths and Science	2.65	0.88	12th
7.	Provide pupils with opportunities for success in Maths and Science	2.68	0.83	11th
8.	Make effective use of Maths and Science instructional materials	2.91	0.79	3rd
9.	Eager to teach primary Maths and Science	2.59	1.07	17th
10.	Solve different primary Maths problems	2.63	1.03	15th
11.	Manage safety of students in primary Science class	2.99	0.76	1st
12.	Handle negative attitudes of pupils in Maths and Science classes	2.77	0.79	8th
13.	Easily get students' attention in Maths and Science	2.75	0.84	9th
14.	Easily engage pupils in primary Maths and Science activities	2.87	0.88	4th
15.	Explaining lesson content in primary Maths and Science is not difficult	2.63	0.89	14th
16.	Confident that I understand primary Maths and Science very well	2.73	0.91	10th

17.	Help students when they have difficulty in learning Maths and Science	2.78	0.93	6th
18.	Confident about keeping curricular goals in mind when selecting an ideal way to assess students learning in Maths and Science	2.61	0.83	16th
19.	Responsive to students' need during Maths and Science class	2.83	0.77	5th
20.	Consistently use Maths and Science instructional materials in teaching	2.95	0.81	2nd

Average Mean

2.71 > 2.50

Results in Table 1 shows the ranking order of the items used to assess the confidence level of pre-service teachers in teaching Mathematics and Science. As contained in Table 1, item number 11 had mean value of 2.99 and was ranked 1st, item number 20 recorded a mean score of 2.95 and was ranked 2nd; item number 8 with mean value of 2.91 was ranked 3rd. Most of the items (eighteen out of twenty items which is ninety percent) had a mean value that is higher than the benchmark of 2.50. This indicates that confidence level of the pre-service primary education teachers in teaching Mathematics and Science for sustainable development is high.

Hypothesis One: There is no significant difference in the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development on the basis of gender.

To test this hypothesis, the data collected were analysed using t-test for independent sample and the result of the analysis is presented below.

Table 2: Summary of t-test analysis on confidence level of male and female pre-service teachers

Gender	N	Mean	SD	Df	T	Sig.	Remark
Male	77	56.01	10.08	208	1.97	0.28	Not significant
Female	133	52.90	11.52				

The result in Table 2 indicates that the t-value of 1.97 is not significant at 0.05 level of significance ($p>0.05$). Hence, the null hypothesis stated above is not rejected. It means that there is no significant difference in the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development on gender.

Hypothesis Two: There is no significant difference in the confidence level of pre-service Primary education teachers based in teaching mathematics and science for sustainable development on their age.

The data collected from the respondents were analysed using Analysis of Variance (ANOVA) to test the above stated hypothesis.

Table 3: Summary of ANOVA on confidence level of pre-service teachers based on age

Sources	Sum of squares	Df	Mean squares	F	Sig.	Remark
Between Groups	157.78	4	39.45	0.32	0.87	Not significant
Within Groups	25569.74	205	124.73			
Total	25727.52	209				

The result in Table 3 reveals that the F-value of 0.32 is not significant at 0.05 alpha level ($p>0.05$). Therefore, the hypothesis that there is no significant difference in the confidence level of pre-service primary education teachers based on their age is accepted. It signifies that pre-service primary education teachers do not differ in their confidence level to teach primary Mathematics and Science for sustainable development on the basis of their age.

Hypothesis Three: There is no significant difference in the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development based on institutions.

To test this hypothesis, the data collected from the respondents were analysed using analysis of variance. The result of the analysis is shown in Table 4.

Table 4: Summary of ANOVA on confidence level of pre-service teachers based on institution

Source	Sum of squares	Df	Mean squares	F	Sig.	Remark
Between Groups	285.76	2	142.87	1.16	0.31	Not significant
Within Groups	25441	207	122.91			
Total	25727.52	209				

It is revealed in Table 4 that the F-value of 1.16 is not significant at 0.05 alpha level ($P > 0.05$). Hence, the null hypothesis stated above is not rejected. It indicates that there is no significant difference in the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development on the basis of their institution.

Discussion

The result of this study indicates that the confidence level of the pre-service primary education teachers in teaching Mathematics and Science is high. This supports the findings of Anderson, Bartholomew and Moeed (2009) that pre-service teachers expressed a positive shift in their attitude toward Science teaching and that primary pre-service teachers reported improvements in personal attributes such as level of interest, understanding and confidence.

The findings of this study also revealed that there is no significant difference in the confidence level of pre-service primary education teachers based on gender. Male and female pre-service primary education teachers do not differ in their confidence level in teaching Mathematics and Science. This negates the findings of Bowd and Brady (2003) that female pre-service teachers showed higher confidence in teaching than their male counterparts. The discrepancy may be due to the fact that the separate studies were carried out in different locale.

Furthermore, the result of this study indicated that pre-service primary education teachers do not differ in their confidence level to

teach primary Mathematics and Science on the basis of their age. This supports the findings of Jung, Cho and Ambrosetti (2011) that pre-service teachers showed high confidence in teaching regardless of their individual differences which include their age.

Lastly, the outcome of this study pointed out that there is no significant difference in the confidence level of pre-service primary education teachers in teaching Mathematics and Science for sustainable development on the basis of their institution. The respondents across the tertiary institutions in Ilorin metropolis were not different in their confidence level to teach primary Mathematics and Science. This is in line with the findings of Gu and Papageorgiou (2016) that pre-service teachers showed high confidence in teaching regardless of their institutions.

Conclusion

It can be concluded from the results obtained that the confidence level of pre-service primary education teachers in teaching Science and Mathematics is high but there is still room for improvements so as to increase their level of confidence in teaching Science and Mathematics for sustainable development.

Recommendation

It was, therefore, recommended that primary education teacher training institutions in Ilorin metropolis should maintain this standard for sustainable development.

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