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Abstract

Purpose: The pedagogical potential of outdoor learning in fostering the well-being and holistic development of children have been extensively documented in literature. Most pre-primary school children in Nigeria are however rarely exposed to outdoor learning experiences, owing probably to the inadequacies in knowledge and expertise among pre-primary school teachers. This study developed, implemented and determined the effectiveness of school-based experiential outdoor pedagogical training programme on the teaching practices of pre-primary school teachers in Oyo State, Nigeria.

Methodology: The study adopted explanatory sequential design of mixed research methods, where qualitative data supported quantitative findings and provided evidences of the effectiveness of the training programme on outdoor teaching practices. The study used outdoor teaching competencies of the teachers, before and after the training, to provide quantitative evidence as well as interviews to elucidate the perspectives of the teachers on the impact of the training. The participants were ($n = 36$) pre-primary school teachers who were selected through multi-stage sampling technique across the three Senatorial districts in Oyo State, Nigeria. Experts in outdoor learning in early childhood facilitated the training. The participants were exposed to various critical aspects of their role in facilitating meaningful and enriching outdoor learning experiences for pre-primary children. The participants were engaged in hands-on training with various aspects of effective implementation of the early childhood curriculum in the outdoor environment. Aspects covered included lesson planning, sourcing lesson materials, organization of learning environment, instructional approaches and techniques, assessment and safety management, among others. The study was carried out between September, 2022 and June, 2023.

Findings: The study found a variety of improvement in the outdoor teaching practices and learning opportunities for the children. The training showed positive effects on teaching practices and the overall performance of the teachers. The teachers showed increased skillfulness in lesson planning, instructional effectiveness, creativity and innovation in facilitating learning as well as deployment of varieties of teaching methods. The teachers broadly reported positive perspective of the training and believed it was helpful to their teaching practices. In addition, the teachers agreed that the training increased their confidence and expertise to engage children in quality outdoor learning as well as improved children's participation and enthusiasm for learning. Lack of policy support, parental concerns, time and availability of resources were some of the barriers reported by the teachers in the study.

Unique Contribution to Theory, Practice and Policy: This study was anchored on experiential theory which emphasized the transformational effect of learning through direct experience, reflection and active experimentation. The findings appeared to lend support to the realms of theory, practice and policy within the domains of early childhood education. It enriched theoretical understanding by offering concrete, real-world applications of outdoor learning concepts, thereby, fostering a deeper comprehension of learning in the practical setting. It also provided pre-primary teachers with practical tools and strategies to effectively implement outdoor learning methodologies, thereby, promoting a more holistic and experiential approach to early childhood education. The study similarly provided a basis for the integration of outdoor pedagogy in the formal educational structure, emphasizing the significance of nature-based education and, suggesting the need for a broader integration of outdoor strategies in the context of educational policy development in Nigeria.

Keywords: *School-Based Outdoor Learning, Outdoor Training, Experiential Learning, Teaching Competencies, Pre-Primary School Teachers*

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INTRODUCTION

Bequeathing quality education in the area of early childhood requires constant improvement in pedagogical approaches and practices, in order to meet the evolving needs of the young learner and the society at large. The outdoor learning is a valuable pedagogy that is capable of improving educational practices by its provision of meaningful and effective learning experiences in different areas of the early childhood curriculum (Knight, 2013; Sahrakhiz, 2018). There is therefore in recent years, an increasing interest in outdoor learning in many countries of the world (Passy, Bentsen, Gray & Ho, 2019). In spite of the huge potential of outdoor learning, Nigerian teachers rarely incorporate it into their teaching practices, as have been reported in studies involving many preschool teachers (Lawani, 2012; Oduolowu and Leigh, 2015).

Similar observations to this, reported with recurrent evidences, have attributed deficiency of exposure to outdoor pedagogy during initial teacher-training programmes as one of the main barriers to implementation of school-based outdoor learning (Scott, Boyd, Scott & Colquhoun, 2015; Tuuling, Öun & Ugaste, 2019; Van Dijk-Wesselius, Van den Berg, Maas & Hovinga, 2020). This suggests that many in-service teachers lack required knowledge, skillfulness and strategies to implement curriculum contents in the outdoor. While literature has shown that the gap in knowledge and experiences of teachers in outdoor learning has been widening, much efforts has not been directed to bridging this gap. Provision of intervention in form of hands on training for in-service teachers may be crucial to enhancing their teaching practices, most especially, in the area of outdoor pedagogy. This study therefore developed, implemented and determined the effectiveness of outdoor pedagogical training programme on the teaching practices of pre-primary school teachers in outdoor engagement of children, in Oyo State, Nigeria.

Importance of School-Based Outdoor Learning

Outdoor pedagogy is an innovative approach to education. It is considered as school learning activities that occur outside of the normal classroom setting. Learning can take place at: a prepared place within the school premises or a close natural or cultural site (Finn, Yan & McInnis, 2018); a field trip (Hamilton-Ekeke, 2007; Mellvig and Nilsson, 2015) or a special outdoor learning center (Brown, Harris & Porter, 2016). Eaton (1998) defined outdoor learning as an approach to teaching which utilizes community, natural and human resources, as means of curriculum enrichment. In this study, outdoor learning is considered as an approach where teaching/learning takes place at a prepared place within the school premises, with focus on integrating the National curriculum prepared for pre-primary education by the Federal Government of Nigeria.

The outdoor environment has a number of attributes that makes it a necessary learning context that can be effective for delivery of quality early childhood education. In the outdoor based education, learning is designed based on concrete experiences in authentic situations. Teaching and learning are also practical oriented experiences that help children to connect school learning to daily life activities (Ertaş and Fägerstam, 2014). Outdoor learning provides children with the space and freedom to experience new things (Tovey, 2008). Importantly, the outdoor environment is endowed with stimulating natural materials and phenomenon that can be utilized in various ways to provide concrete, real-life, meaningful and multi-sensory learning experiences for children (Szczepanski, 2008).

The school-based outdoor learning holds an important responsibility and has immense potential to grant children access to the natural environment through teaching activities. The positive effects on children's development and well-being are extensively documented in literature (Knight, 2013; Mawson, 2014; Mulan, 2018; Waite, 2019). Research exploring the impact of the outdoor learning have indicated its huge pedagogical possibilities (Ramos, Manzano-Redondo, Barrios-Fernandez, Garcia-Gordillo, and Adsuar, 2021; Lugg and Quay, 2020). Engaging children in school-based outdoor learning has been associated with improvements in children's skills and development (Bølling, Niclasen, Bentsen, and Nielsen, 2019; Lovell, White, Wheeler, Taylor and Elliott, 2020). Likewise, participation in outdoor learning in the green school grounds that include natural elements has also been connected with improved behaviour and attention restoration (Fiennes, Oliver, Dickson, Escobar, Romans, and Oliver, 2015) as well as better learning processes and attainment (Waite et al., 2016a). Children who participated in outdoor learning have been found to be more attentive, engaged and interested in learning (Dettweiler, Ünlü, Lauterbach, Becker, and Gschrey, 2015; Becker, Lauterbach, Spengler, Dettweiler, and Mess, 2017). Moreover, evidence has shown great potential of outdoor learning in promoting health and well-being which is an essential factor for child development (Quibell, Charlton and Law, 2017; Tiplady and Menter, 2020).

Studies have similarly showed that school-based outdoor classroom methods significantly improved children's cognitive and social skills (Leigh, 2021), achievements in science, social science, mathematics, languages and arts (Cooper, 2015). This is because the outdoor environment enables children to develop new perspectives of the world, offering them avenue to experiment and develop their skills (Gray and Pigott, 2018; Lovell et al., 2020; Gray and Bailey, 2022). Outdoor activities equally offer flexible opportunities for creative play, communication and social skills (Chawla *et al.*, 2014; White *et al.*, 2019).

The huge benefits of outdoor learning explicate why outdoor pedagogy is receiving significant attention in the educational policies and curriculum reforms of many countries across the world. For example, outdoor education is considered an important pedagogy in Northern Europe, the United States of America, and Asia (Boileau and Dabaja, 2020; Waite, 2020). Attempt to incorporate outdoor learning into the curriculum have been observed across the United Kingdom (Marchant et al., 2019; Waite, 2020), Denmark (Bølling et al., 2019; Bentsen et al., 2021) and Canada (Breunig et al., 2015). In Spain, the significance of situating children's learning in the milieu of their natural environment and culture has been recognized (Sanchis et al., 2022). Unfortunately, not much attention is given to harnessing the potential of outdoor environment to support learning and overall development of children in early childhood settings in Nigeria. This may have been responsible for the paucity of research findings on outdoor learning in the Nigerian context. Apparently corroborating this is the report of Oduolowu and Leigh, (2015) which established that preschool teachers rarely practiced outdoor learning. Observation similar to this was recorded in the baseline data collected in the present study. Lack of outdoor learning practices have been attributed to in-training inadequacies in knowledge and expertise of the teachers, regarding delivery of outdoor educational experiences (Oduolowu and Leigh, 2015).

Similarly, off-shore literature have cited lack of experience and training opportunities during initial teacher training as one of the main barriers to implementing school-based outdoor learning (Scott et al., 2015; Tuuling et al., 2019; van Dijk-Wesselius et al., 2020). To some large extent, the Nigerian situation appears to compare with those of other parts of the world where teachers have reported low confidence in teaching outdoors. These include Australia

(Kubat, 2017; Torkos, 2018; Tuuling et al., 2019) and the Middle East (Ihmeideh and Al-Qaryouti, 2016). The UK (Scott et al., 2015; Glackin, 2016; Marchant, Todd, Cooksey, Dredge, Jones, Reynolds, Stratton, Dwyer, Lyons, and Brophy, 2019) and the US (Torquati, Leeper-Miller, Hamel, Hong, Sarver, and Rupiper, 2017).

Lack of training in utilizing outdoor learning can result in missed opportunities for the teachers to align outdoor activities with curriculum goals and educational objectives, potentially leading to gaps in learning. Apart from this, teachers may struggle to design and implement engaging outdoor lessons that can effectively foster holistic development and hands on learning experiences for children. The challenge of lack of training may have limited the possibilities of practicing outdoor learning in early childhood schools in Nigeria. To mitigate these challenges, providing comprehensive training programmes and resources for teachers to develop their expertise in outdoor education is crucial. Exposing the teachers to direct learning experiences in the natural outdoor environment would increase their knowledge and stimulate their interest to realizing the curricular goals by constant engagement of children in outdoor learning. While more of research efforts exploring the outdoor teaching in teacher training have focused on pre-service teachers (Wolf *et. al.*, 2022), only a few have explored the effectiveness of experiential intervention outdoor training on in-service teachers in early childhood education. This study therefore developed, implemented and determined the effectiveness of outdoor pedagogical training programme on outdoor teaching practices of pre-primary school teachers.

Theoretical Framework

This study was anchored on experiential theory of learning which states that individuals acquire knowledge, skills and understanding through hands on, practical encounters that engages learners in reflective processes. Outdoor pedagogical training approach employed in this study aligns with principle of experiential learning. The teachers participated in hands on immersive experiences in the outdoor environment similar to those they would perform with the children. This experience does not only foster their understanding of outdoor learning in the early years, but also equip them with practical skills vital to creating stimulating and effective outdoor learning experiences for the children. Outdoor training with the teacher also promoted collaborative work with colleagues and the trainers, problem-solving and reflective engagement and adaptation qualities that the teachers can easily integrate into their teaching practices for a more holistic and effective education for the children.

Problem Statement

Pre-primary children's natural inclination to be active, to play, and discover their world in their environment has been limited. Teaching in early childhood settings have excluded purposeful engagement of children in outdoor learning, consisting mainly of the traditional textbook-driven instruction which is teacher-dominated, highly restrictive and ineffective. Consequently, children are being denied of meaningful learning experiences in their natural environment and in the development of functional skills and sustainability. Preliminary study revealed that early childhood education teachers (ECE) rarely practiced outdoor learning because they have not been sufficiently prepared to do it. While studies have established the effectiveness of outdoor learning in promoting children's well-being and holistic development, not much attention is given to capacity development of pre-primary school teachers with regards to outdoor pedagogy particularly, in Nigerian context. Hence, there is a dire need for research efforts in

capacity development of ECE teachers on outdoor pedagogy to ensure improved outdoor teaching practices in early childhood education.

Research Questions

1. What are the perspectives of the pre-primary school teachers about effectiveness of the training?
2. Do participants identify any challenges or limitations while implementing the training programme?

Hypothesis

There will be no significant difference in the outdoor teaching practices of pre-primary school teachers before and after the training in the dimensions of: Instructional effectiveness, engagement and interaction, organization of learning environment, integration of curriculum, creativity and innovation, safety and risk management.

METHODOLOGY

Research Design

This study adopted mixed methods research design where quantitative and qualitative approaches in data collection, analysis were utilized (Creswell, 2009). A sequential-explanatory design of mixed research design was applied in this study, where quantitative and qualitative data are collected sequentially such that the qualitative process presents in-depth understanding of quantitative findings (Creswell & Plano Clark, 2011). This approach is suitable to this study as it enabled a comprehensive assessment of the program's effectiveness, providing both statistical evidence and meaningful insights into the experiences and perceptions of efficacy of the outdoor participating preschool teachers. Quantitative data was collected on outdoor teaching competencies of the teachers before and after training. Thereafter, qualitative data were gathered through interviews of the teachers after the study to document how the training has impacted them as well the challenges they experienced while implementing outdoor learning with the children.

Selection of Participants

Multistage sampling techniques were used to select the participants in this study. Two Local Government Areas (LGA) were randomly selected in each of the three Senatorial districts in Oyo State, making a total of six (6) LGAs. Two (2) public primary schools were purposely selected from each LGA making a total of 12 schools which were selected based on the following criteria:

- a) Not practicing outdoor learning before the study.
- b) Willingness to participate in the training programme
- c) Readiness to implement the outdoor pedagogy with the children for the stipulated time.
- d) Availability of large space and presence of natural elements such as trees, flowers, in the school compound for outdoor activities and exploration on the school ground.

The teachers in pre-primary class (n= 36) in all the selected schools were involved in the study. At least two teachers were involved from each participating school.

Research Procedure

Context of the Study

This study was a training programme that sought to provide professional development opportunities in outdoor pedagogy for a group of selected pre-primary school teachers in Oyo State, Nigeria. The training provided a thorough blend of theoretical instruction and hands on learning experiences, using interactive teaching methods and practical demonstrations, which aimed at equipping the teachers with knowledge and expertise to implement school-based outdoor learning effectively. The training took place on the school grounds of each of the participating schools. Thirty-six (36) pre- primary school teachers from twelve public primary schools selected across the three Senatorial districts of Oyo State, Nigeria, participated in the programme. The study was conducted once a week for an average of 2 hours between September, 2022 and June, 2023 in each of the participating schools.

Ethical approval for the study was granted by Research Ethics Committee of Oyo State College of Education. Approvals were also obtained from all the six Local Government Education Authorities (LGEA) to use the selected schools in their respective LGAs. The Head Teacher of each of the participating school was contacted physically in their various schools to seek for their permission to use their various schools for the study. Following the approval of the Head Teachers, all the participating teachers provided informed written consent before participation, the parental consent of the children were also obtained. The participants were informed that they could withdraw from the research at any point they wished to. Personal data of the school and participants were also protected.

Overview of the Outdoor Pedagogical Training

The outdoor training package utilized in this study was developed by the researchers in line with the findings of baseline data as well as literature on effective practices in outdoor learning in early childhood education. The training package highlighted key activities carried out in the programme and how they were done, which broadly focused on theoretical understanding, interactive teaching methods, hands on experiences and reflective practice. The training was facilitated by experts in outdoor learning in early childhood education who provided guidance, facilitating the connection between outdoor experiences and teaching strategies. The training offered a comprehensive and engaging learning experience for the pre-primary school teachers, equipping them with knowledge, principles, strategies and skills necessary to implement effective outdoor learning in early childhood settings.

The training covered topics such as importance of outdoor play, understanding outdoor learning concepts, designing outdoor learning environments, incorporating loose parts, natural materials, open-ended resources, integrating curriculum, designing a developmental appropriate and engaging outdoor activities, strategies to maximize children's learning and development. Other topics covered included documentation and assessment of learning in outdoor environments, ensuring safety, protocols for managing outdoor activities and learning outcomes.

There were also copious opportunities for practical hands on experiences in the outdoor. The participants actively engaged in outdoor activities, such as sensory play, science activities, numeracy and literacy activities, which they can easily adapt to their teaching practices. The potential of these activities in promoting learning and development of children were equally emphasized.

There was weekly, home work as well as feedback and assessment sessions where each of the participants developed and implemented at least one outdoor activity per week. This was to give opportunity to the teacher to implement what they have learnt with the children and to also be able to receive corrective feedback from the trainers.

Self-assessment and reflection sessions were also important components of the training. Here, the participants were required to conduct self-assessments and reflections on weekly basis. This was to encourage the teachers to identify areas requiring improvement.

Data Collection

All data were collected by researchers and research assistants who had been trained with the instrument utilized in the study. Two main data instrument utilized in the study were: “Preschool Teachers Outdoor Teaching Practices” and Semi-Structured Interview Guide on Pre-primary School Teachers Perspective of Outdoor Pedagogical Training.

Pre-primary School Teachers Outdoor Teaching Competencies Assessment Scale

This is an observation based assessment instrument designed to determine pre-primary school teachers’ outdoor teaching practices. The instruments include eight competency areas which were: Instructional skills in outdoor teaching, Integration of curriculum, Organization of learning environment, Adaptability and differentiation, Innovation and creativity, Safety and risk management, Incorporation of child development principle and Assessment of lesson activities. The instruments were measured on 4-point scale ranging from exemplary (4 points), proficient (3 points), developing (2 points) and needs improvement (1 point).

Three experts in early childhood education reviewed, and made corrections to the first draft of the instrument, to ensure face, content, and construct validity. The final copy was produced and copies were administered on twenty pre-primary school teachers who were outside of the selected schools for the study. Two trained observers rated each teacher simultaneously while engaging children in outdoor activities and inter-rater method was used to determine the reliability of the instrument of which overall value of 0.87 was obtained. This value indicated that the instrument was reliable in the context of the research.

Semi-Structured Interview Guide on Pre-School Teachers Perspective of Effectiveness of Outdoor Pedagogical Training

This instrument was an open ended document designed to understand the teacher's perspectives of the outdoor pedagogical training and how it has impacted them. The teachers were interviewed face to face in their various schools (n = 36) immediately after the training to gain deeper understanding of their thoughts on their experiences of the training, the overall effectiveness of the training as well as challenges they encountered during implementation. Each teacher provided demographic information such as gender, educational background and experience (in years), as well as responded to eight open ended questions on their experiences of the training. The interview lasted for an average of 40 minutes.

The data were coded by two experts with experience in qualitative research. All interview responses were recorded and transcribed verbatim and analyzed using an open coding approach to assign codes to words with the most important meaningful thought. The codes were combined into categories based on the research questions and aims of the study, codes were then categorized into theme and sub-themes. The major theme and sub-themes that emerged from the interview are presented in Table 2.

Data Analysis

Qualitative and quantitative data analyses were employed. Thematic approach was used to analyze qualitative data, where data were transcribed, coded, and analyzed to answer the research questions while descriptive [Frequency count, percentage, mean and standard deviation as well as inferential statistics (paired t - test)] statistics were used to test the significance of the null hypotheses set.

RESULTS

The results are presented in Tables 1 – 3. The demographic information of participants in the study are as presented in Table 1 while Table 2 shows the major themes and sub-themes that emerged from the interview on the impact of outdoor pedagogical training on pre-primary school children. Table 3 shows the paired samples of T - test on pre- and post- outdoor teaching competencies of pre-primary school teachers.

Table 1: Demographic Information of Participants in the Study

Demographic Factors	Gender:	Educational Level: Masters Bachelors NCE	Years of Teaching Experience: Average Range
	Females Males		
N (%)	27 (75%) 09 (25%)	18 (50%) 06 (16.67) 12 (33.33)	20.44 8-30

NCE- National Certificate of Education

Table 1 shows the demographic information of the participants. Table 1 indicates that a larger percentage of the participants were females (75%) while 25% were males. The table also indicates that a higher percentage of the teachers had Bachelor's degree (50%), followed by National Certificate of Education NCE (33.33)% while very few (16.67) had post graduate degree. With regards to the teaching experiences the participants ranged from 8 to 30 years.

Table 2: Major Themes and Sub-Themes That Emerged from the Interview on the Impact of Outdoor Pedagogical Training on Pre-Primary School Children

Themes	Sub-themes
*Improved knowledge and perception about practice of outdoor teaching and learning	*Planning outdoor lesson. *Managing children in the outdoor. *Incorporating different curriculum activities outdoor. *Innovative use of natural materials.
*Enhanced confidence to implement outdoor learning	*Active engagement in real life setting. *Collaborative support and Instructional feedback. *Continuous practice. *Reflective practice.
*Improved teacher-students participation and enthusiasm for learning	*One on one engagement, cooperation, excitement about learning activities
*Barriers	*Time. *Lack of policy support. *Parental concerns. *Inadequate resources.

Improved Knowledge and Perception about Practice of Outdoor Teaching and Learning

The results in Table 2 shows that pre-primary school teachers had positive perception of the training and believed that the training impacted them positively. The teachers stated that the training was interesting, beneficial, impactful, engaging and easy to understand. Many of the pre-primary school teachers submitted that they enjoyed the training as all lessons and activities carried out emphasized strategies and practical applications of outdoor learning in preschool settings, which they believed has greatly helped them while implementing outdoor learning activities with the children. They noted that the training addressed their fears and challenges as they were allowed to express themselves freely, especially on areas they were not really clear about. They confessed the instructors were very enthusiastic and friendly. They believed the interactive and engaging learning environment was instrumental to their improvement on outdoor teaching practices. The following statements were made by some of the pre-primary school teachers:

“I really like the way the training was conducted, especially the practical hands on experience I had because, through this method, I was able to understand the process of planning outdoor learning for children and how to work freely with the trainers and my partner. The method really inspired me and stirred up my interest in outdoor learning” T5

“For me, I don’t know that the real teaching can take place outside but after the training, I became interested in it. I like all aspects of the training, especially the lessons that I taught in the outdoor environment. I like the way the children responded to the lesson. I enjoyed the lesson myself, how we interacted, and learnt from many things in the environment. It made me realize that learning in the outdoor is fun and engaging and should be encouraged among early childhood teachers” T4

“As for me, I enjoyed everything very well. The practical oriented approach utilized in the training helped my understanding of outdoor learning and what to do with the children when engaging them in outdoor activities. For example, I was able to plan and implement topics from the curriculum in the outdoor. Not only that, the training exposed me to various ways to focus the lesson on promoting different aspects of child development” T10

“I learn a lot from this training, the trainers’ enthusiasm about outdoor learning were infectious and their attitude motivated me to improve on my outdoor teaching” (T1)

The teachers also mentioned that they received support from experienced trainers who facilitated their outdoor training. The teachers noted that the opportunity to work closely with the experts has been of tremendous help to their understanding of outdoor learning in early years. They noted that corrective feedback opportunities and insights from the experts had helped them to refine their skills and improve their practices. Likewise, the teacher said that they learned from collaborative interactions with their colleagues. They mentioned that they

enjoyed working with their partners in planning and solving problems in the outdoor environment. They believed such collaborative efforts were so beneficial at improving their outdoor teaching competencies. Some of the participants explained the importance of such support as follows:

“The trainers supported me and provided necessary guidance and insight into my practices. This made me more competent” T11

“Initially when I started, I was so nervous not knowing how to proceed. Later, as I continued practicing and receiving practical information and feedback from the experts and in collaboration with my partners, I became more proficient in my practices” T10

“I can say the training was very effective and has been of great help to me especially, in the area of lesson planning and delivery, sourcing for learning materials, and working together” T 7

“I really enjoyed the training, the practical approach utilized in the training stimulated my interest in outdoor learning. I can now say that I like outdoor teaching more than before. I have never taught real lesson outdoor before but the training made me to do it and I am happy I did, as I had opportunity to engage with the children more closely than we used to have in the indoor classroom. I observed that the children were more cooperating, enthusiastic and confident during outdoor activities” T13

“The way our trainers engaged us helped me to remember the topics better and has assisted me during implementation where I planned and engaged children in outdoor learning in the outdoor environment” T15

In addition, some of the pre-primary teachers reported that the training helped them to develop better attitude towards outdoor teaching. They appreciated the outdoor environment better than before especially, as they were exposed to several ways in which the outdoor environment could help them to achieve the early childhood curriculum goals. One important area mentioned is the use of natural materials to provide stimulating learning experiences for the children in the areas of outdoor play, socio-dramatic activities, numeracy, literacy, creative arts, science and, even more. The teachers reported that the training stimulated them to think of creative ways to utilize outdoor environment to support learning and development of children.

For example, the use of nature based materials, how to identify and utilize natural materials such as plants, animals, rocks, water, to facilitate quality learning experiences with the children. They found the experience helpful because the materials were not only accessible in the school compound, but also very fascinating to the children. They also believed that children were naturally attracted to these materials and they love exploring them. Additionally, leaves were used for counting, arts, design and sorting activities according to size, colour and shape. The teachers reported that the natural materials helped them to integrate different activities. The following is a remarks by one of the teachers:

“All of the activities were helpful, and easy to understand. I enjoyed doing the activities very much. The opportunity gave me insights into experiences and likely challenges that the children might have while learning in the outdoor environment. For example, the instructor demonstrated how to incorporate the curriculum in the outdoor, how to use natural materials such as leaves, sticks, stones to support learning. We also learned how to organize the learning environment and make it adaptable to the various needs of individual children” T8

Improved Confidence

Majority of the pre-primary teachers who spoke during the interview acknowledged the fact that the outdoor environment allowed them to gain more confidence and to retain more information from the different learning experiences they had during the training. They observed that they usually did not have such opportunity in their initial training. The following were statements made by two of the teachers/participants:

“In my own opinion, this training was very good. We didn’t have it this way during our initial training in Teacher Education. I am more confident teaching outdoors than before, because the training simplified it for me. I lacked experience and skills to engage children in the outdoor learning before but now, I am better informed and equipped to teach in the outdoor environment. I can say the training has contributed in no small measure to my professional development” T8

In addition, the teachers confessed that the engaging interactions they had with the trainers motivated them about outdoor learning and that such experience inspired and boosted their confidence about outdoor learning in the natural environment.

“The training was detailed and all the areas covered were helpful to me and have improved my confidence in outdoor learning. Before the training I was naive, I thought it will be almost impossible to effectively teach in the outdoor but the training has provided me with the insight on how to go about it”. T3

“The experience gave me confidence and makes me feel more competent.” T2

Table 3: Paired Samples of T - Test on Pre- and Post- Outdoor Teaching Competence of Pre-Primary School Teachers

Variables	Categories	N	Mean	S.D	Mean difference	T	df	P-value
Instructional proficiency in outdoor teaching	Before	36	11.20	0.60	11.60	18.42	35	0.000
	After	36	22.80	0.72			35	
Integration of Curriculum and lesson planning,	Before	36	13.00	0.78	1.66	10.24	35	0.001
	After	36	28.60	0.87			35	
Safety and risk management	Before	30	11.40	1.02	14.40	9.64	35	0.000
	After	30	25.80	1.04			35	
Incorporation of child development principle	Before	30	12.40	0.85	11.20	4.46	35	0.001
	After	30	23.60				35	
Innovation and creativity	Before	36	10.40	0.78	17.8	0.64	35	0.000
	After	36	28.20				35	
Assessment of learning.	Before	36	10.58	0.84	16.30	8.40	35	0.000
	After	36	26.92				35	
Adaptation and flexibility	Before	36	10.02	0.92	13.04	11.5	35	0.000
	After	36	23.04				35	

Table 3 presents the results of a paired samples t-test conducted to compare the effect of outdoor pedagogical training on pre-primary school teachers' outdoor teaching competencies. As shown in Table 3, comparisons of mean for: instructional effectiveness- mean before (11.20) and after (22.80), integration of curriculum and lesson planning- mean before (13.0) and after (28.6), safety and risk management- mean before (11.4) and after (25.8), incorporation of child development principles- mean before (12.4) and after (23.6), innovation and creativity- mean before (10.4) and after (28.2), assessment of learning- mean before (10.58) and after (26.92) and, adaptation and flexibility- mean before (10.02) and after (23.04). The intervention shows that there might be some differences. The result of this test showed that there were statistical significant differences between pre- and post- test mean scores in the seven dimensions of teaching competencies examined in the study as follows: instructional proficiency in outdoor teaching/effectiveness ($t = 18.42$; $df = 35$; $p = 0.000$), Integration of curriculum and lesson planning ($t = 10.24$; $df = 35$; $p = 0.001$) safety and risk management, ($t = 9.64$; $df = 35$; $p = 0.000$) incorporation of child development principles, ($t = 4.46$; $df = 35$; $p = 0.001$) innovation and creativity ($t = 0.64$; $df = 35$; $p = 0.000$), assessment of learning, ($t = 0.84$; $df = 35$; $p = 0.000$), adaptation and flexibility ($t = 11.5$; $df = 35$; $p = 0.000$).

Discussion

Outdoor pedagogical training opportunities have been recommended as being crucial to facilitating regular school-based outdoor learning experiences for children. The current study designed outdoor intervention training programme based on experiential theory of learning and literature on best practices in outdoor pedagogy and exposed pre-primary school teachers to the process of school-based outdoor learning for a period of nine months, where each participants implemented what they learnt directly to facilitate children's learning in the outdoor environment. The impacts of the training on the teaching practices and confidence of

the teachers was explored in this discussion. The study also documented the challenges encountered while implementing outdoor learning.

The participants in this study started the training with very little knowledge and skills as well as experience in outdoor learning. The data from pre-/post- test and interviews suggest that the participants significantly deepened their appreciation and understanding of outdoor teaching and learning, evidenced by significant increase in their outdoor teaching competencies which may have in turn led to the observed improvement in their confidence with outdoor teaching. These findings implied that the training was effective and has apparently equipped the teachers with knowledge and strategies that supported the observed improvement in outdoor teaching competency. The reason for this finding may be connected to the fact that the training gave opportunity to the teachers to experience real outdoor environment through active engagement in hands on activities, facilitating a deeper understanding of the benefits and challenges associated with outdoor training pedagogy. The current study is in consonance with findings of previous interventional studies (Dettweiler et al., 2015; Becker et al., 2017) where the hands on opportunities offered to participants helped them to internalize the processes which can be adapted easily. This study also affirmed the findings of Skarstein and Skarstein, (2020) that provision of knowledge and skill in outdoor was important for pre-service teachers in order to facilitate variety of effective learning possibilities in the outdoor environment.

Other finding from this study also indicates that pre-primary school teachers had a positive perception of the training. They saw the approach utilized in the training as the one that encouraged enthusiasm and confidence in them. This finding is in tandem with the finding of some previous studies in which participants reported positive perception of outdoor teaching due to the interesting experiences they had (Niklasson and Sandberg, 2012). The finding may also be due to the fact that the training allowed the participants to engage in deep thinking as well as reflection especially, about their experiences, teaching methods, and the impact of outdoor education on their professional growth.

This experience is believed to have enabled the participants in this study to refine their strategies and adapt their learning experiences to improve their teaching competencies in outdoor learning, in a manner which met the needs of the children in their care. This observation is in line with studies of Clayton et al., (2014) and North, (2017), which emphasized that reflective practices are important for effective outdoor teaching. The finding of Höper & Köller, (2018) aligns with this view that outdoor teaching units needed to be followed up with reflective teaching practices to make sure that intended learning outcomes are achieved.

Conclusion

Outdoor pedagogy training which involved practical hands on opportunities, self -reflections and collaborative supports from experts have enhanced the outdoor teaching proficiency of pre-primary school teachers and improved their confidence in engaging children in outdoor learning. The teachers also generally expressed a positive perception of the training.

Recommendation

We recommend the inclusion of outdoor educational components in the National early childhood education standards, allocation of resources for outdoor learning infrastructures, creation of professional development opportunities and institutional support for teachers to access training. The study lend support to the realms of theory, practice and policy within the domains of early childhood education. It enriched theoretical understanding by offering concrete, real-world applications of outdoor learning concepts, thereby, fostering a deeper

comprehension of learning in the practical setting. It also provided pre-primary teachers with practical tools and strategies to effectively implement outdoor learning methodologies, thereby, promoting a more holistic and experiential approach to early childhood education. The study similarly provided a basis for the integration of outdoor pedagogy in the formal educational structure, emphasizing the significance of nature-based education and, suggesting the need for a broader integration of outdoor strategies in the context of educational policy development in Nigeria.

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