VOL. 12 NO. 2,
MAY, 2026
E-ISSN 3027-1533
P-ISSN 3026-8648

African Scholar Publications & Research International
www.africanscholarpub.com

Journal of African Innovation & Advanced Studies (JAIAS)

Educational Equity and Teacher Innovation Practices as Predictors of Foundational Learning Outcomes in Early Childhood Education Centres in Kano State, Nigeria

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DOI: https://doi.org/10.70382/ajaias.v12i2.0106

Abstract

The key learning outcomes children develop in the early years are crucial in helping them make a successful transition to formal education and future learning. However, disparities in educational opportunities and differences in teaching approaches across some Early Childhood Education (ECE) centres in Nigeria continue to affect the achievement of these outcomes. This study examined the predictive relationship between educational equity and teachers' innovation practices on foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria. A correlational survey research design was adopted. The study population comprised teachers in public and private Early Childhood Education centres in Kano State. Respondents were selected using a multi-stage sampling technique. Data were collected using the Educational Equity, Teacher Innovation Practices and Foundational Learning Outcomes Questionnaire. The instrument was validated by experts in Early Childhood Education, Educational Psychology, and Measurement and Evaluation. The Cronbach's alpha reliability coefficients for the scales were 0.82, 0.85, and 0.88, respectively. Pearson's Product-Moment Correlation and Multiple Regression Analysis were used to analyse the data at the 0.05 level of significance. The results indicated a significant positive relationship between educational equity and foundational learning outcomes ($r = .663$, $p < .05$). Educational equity explained 44.0% of the variance in foundational learning outcomes. Teacher innovation practices alone did not significantly predict foundational learning outcomes; however, the combined effect of educational equity and teachers' innovation practices was a significant predictor of foundational learning outcomes ($R = .674$, $R^2 = .454$), accounting for 45.4%

of the variance. Finally, the findings showed that educational equity is a key factor in achieving foundational learning outcomes and that innovative teaching approaches are more effective when supported by equitable learning conditions. The study recommends improving the equitable distribution of educational resources and providing continuous professional development for teachers to enhance foundational learning outcomes in Early Childhood Education centres.

Keywords: Educational Equity, Teacher Innovation Practices, Foundational Learning Outcomes, Early Childhood Education, Kano, Nigeria.

Introduction

Early childhood education is one of the most crucial stages of human development. During this period, children develop cognitive, language, social, emotional, and physical skills that influence future learning and life opportunities. Core competencies in early childhood education typically include basic literacy and numeracy, as well as socio-emotional skills such as self-regulation, collaboration, curiosity, and problem-solving. The benefits of these competencies extend beyond school readiness, as they form the foundation for further education and lifelong learning (UNESCO, 2024; World Bank, 2022).

Over the past decade, increasing global attention has been given to foundational learning in response to concerns about a growing learning crisis and the slow pace of educational progress in low- and middle-income countries. Evidence indicates that approximately 70 per cent of 10-year-old children in these countries cannot read and understand a simple, age-appropriate text. This situation worsened following disruptions to education caused by the COVID-19 pandemic. Consequently, international development agencies and education stakeholders have emphasized foundational learning as a critical strategy for achieving Sustainable Development Goal (SDG) 4. Beyond its educational value, foundational learning is also regarded as a key driver of poverty reduction, improved economic productivity, active citizenship, and social participation (World Bank, 2022).

These challenges are particularly evident in Sub-Saharan Africa, where access to quality early childhood education remains highly uneven. Many children begin school without the foundational skills needed to engage effectively in formal learning. In Nigeria, only 35.6 per cent of children aged 36 to 59 months are enrolled in any Early Childhood Development (ECD) programme. Participation rates are considerably lower in the northern regions of the country due to socio-cultural barriers, shortages of qualified teachers, and inadequate infrastructure, all of which continue to limit access to quality education. Disparities also exist between urban and rural areas, socioeconomic groups, and genders, placing many children from disadvantaged backgrounds at a significant educational disadvantage from the earliest stages of schooling (UNICEF, n.d.).

The Nigerian government recognizes the importance of early childhood development and has developed policy frameworks to promote access to quality ECD services. The National Policy on Education (2013) emphasizes the holistic development of the child and advocates greater access to, improved quality of, and better coordination of early childhood education services. Similarly, the National Policy for Integrated Early Childhood Development and its implementation guidelines establish standards for the delivery of quality early childhood education services nationwide. Despite these policy commitments, implementation challenges remain. The Federal Government has yet to make substantial progress towards achieving these policy objectives due to inadequate funding, inconsistent regulation of public and private centres, shortages of professionally trained teachers, and limited opportunities for continuous professional development (Federal Republic of Nigeria, 2013; Salami, 2016).

These challenges are particularly evident in Kano State, where Early Childhood Education centres serve as the primary formal learning environment for many young children outside the home. The quality of these centres varies considerably across urban and rural Local Government Areas, with many experiencing inadequate infrastructure, limited learning materials, and poorly qualified teachers. Public centres often face overcrowded classrooms and shortages of instructional materials, while private centres vary significantly in the quality of services they provide. These inequalities contribute to children's unequal opportunities to develop essential literacy, numeracy, and socio-emotional skills before entering primary school (Ogunkoya, 2023; UNICEF, n.d.).

In this context, educational equity becomes a crucial factor in improving foundational learning outcomes. Educational equity is not merely about increasing enrolment or providing equal educational opportunities. Rather, it focuses on fairness by ensuring that every child, regardless of background, ability, gender, location, or socioeconomic status, receives the resources, support, and learning experiences needed to achieve meaningful developmental and learning outcomes. Disparities in foundational learning often begin early and persist throughout a child's educational journey when learning opportunities are inequitable. In under-resourced centres in Kano State, children frequently encounter conditions that hinder the acquisition of basic learning skills due to shortages of instructional materials, overcrowded classrooms, and inadequate numbers of qualified teachers (Adeleke, 2023; Levinson, 2022).

Beyond equitable access to quality learning opportunities, teachers play a critical role in shaping children's learning experiences and outcomes. Teacher innovation practices refer to the creative, child-centred, and adaptive approaches teachers use to enhance teaching and learning. These practices include play-based learning, the innovative use of locally available resources, interactive teaching strategies, and flexible instructional approaches that accommodate diverse learning needs. Such practices have been associated with improved learner engagement, motivation, and the development of foundational skills. Innovative teaching strategies are particularly valuable in resource-constrained settings, such as many Early Childhood Education centres in Kano State, where teaching materials and educational equipment are often inadequate (Ogunyemi & Ragpot, 2015; Cai et al., 2021).

Although previous studies have examined access, quality, and educational outcomes in Early Childhood Education programmes, relatively little research has explored the interaction between educational equity and teachers' innovation practices and their combined influence on foundational learning outcomes in Kano State. Existing studies have primarily focused on access inequalities, implementation challenges, and general measures of educational quality, with limited attention given to how equitable learning conditions and innovative teaching practices jointly influence children's foundational learning. This gap underscores the need for empirical evidence to inform policies, programmes, and interventions aimed at improving foundational learning outcomes for young children in Kano State and similar educational contexts.

Statement of the Problem

Children need to develop literacy, numeracy, and socio-emotional skills to successfully transition to primary school and continue learning throughout their lives. Early Childhood Education (ECE) plays a crucial role in developing these skills by providing appropriate learning experiences and supportive learning environments. Although Nigeria has increasingly recognized the importance of ECE, concerns remain regarding the extent to which children acquire the foundational skills required for future academic success.

In Kano State, various policies and educational programmes have been introduced to improve access to Early Childhood Education. However, significant disparities remain in children's access to quality learning opportunities across different educational settings. Access to learning resources, qualified teachers, and supportive learning environments is unequal, which may adversely affect children's learning outcomes. Consequently, many children enter primary school without the literacy, numeracy, and socio-emotional skills required to meet age-appropriate developmental expectations.

Educational equity has been recognized as a critical factor in ensuring that all children receive quality learning opportunities regardless of their socioeconomic status, gender, or geographical location. Similarly, teachers' innovative instructional practices, including child-centred, creative, and adaptive teaching approaches, have been identified as important contributors to improving classroom learning environments and children's educational outcomes. However, the combined influence of educational equity and teachers' innovation practices on foundational learning outcomes in Early Childhood Education centres in Kano State remains largely unexplored.

Although previous studies have examined access to Early Childhood Education, educational quality, and learning outcomes, there is limited empirical evidence on the relationship between educational equity, teachers' innovation practices, and foundational learning outcomes in Kano State. This knowledge gap underscores the need to investigate the predictive influence of these factors on children's foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria.

Purpose of the Study

The purpose of this study was to investigate the predictive influence of educational equity and teachers' innovation practices on foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria. Specifically, the study sought to:

1. determine the relationship between educational equity and foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria;
2. assess the predictive influence of educational equity on foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria; and
3. determine the joint predictive influence of educational equity and teachers' innovation practices on foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria.

Research Questions

The following research questions guided the study:

1. Does any relationship exist between educational equity and foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria?
2. To what extent do educational equity and teachers' innovation practices individually predict foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria?
3. To what extent do educational equity and teachers' innovation practices jointly predict foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria?

Literature Review

Foundational learning outcomes refer to the essential competencies children develop during the early years of education, including basic literacy and numeracy skills, as well as socio-emotional competencies such as self-regulation, cooperation, and problem-solving. These outcomes are widely recognized as the building blocks for future educational success, school participation, and social engagement (World Bank, 2022; UNESCO, 2021). Research across multiple disciplines has demonstrated that early childhood represents a critical period of development during which children's experiences significantly influence brain development and establish the foundation for lifelong learning (Shonkoff & Phillips, 2000; Britto et al., 2017).

High-quality Early Childhood Education has been shown to produce substantial improvements in children's cognitive, language, and socio-emotional development. Longitudinal studies and meta-analyses have consistently demonstrated that children who participate in well-designed early childhood programmes exhibit greater school readiness, stronger academic performance in primary and secondary education, and lower rates of grade repetition and school dropout (Heckman, 2016; Mitchell, 2008). These benefits are particularly pronounced among children from disadvantaged backgrounds, especially when they have equitable access to high-quality

Early Childhood Education, highlighting the potential of equitable ECE programmes to reduce educational inequalities (Duncan et al., 2007; von Suchodoletz et al., 2023).

Given that many primary school pupils in Sub-Saharan Africa continue to struggle with basic literacy and numeracy, foundational learning has become a major policy priority across the region. Global and regional assessments indicate that many children complete the early grades without acquiring the foundational competencies required for future learning (World Bank, 2022). Consequently, quality Early Childhood Education is regarded as a strategic intervention for developing essential competencies before children enter primary school. However, access to ECE remains limited in many parts of the continent, and available services often vary considerably in quality, resulting in unequal developmental outcomes among children (Akkari, 2022).

In Nigeria, increasing attention has been given to foundational learning outcomes in both educational policy and research. The National Policy on Education recognizes Early Childhood Education as a vital stage in children's holistic development and emphasizes that quality provision during the early years promotes cognitive and socio-emotional development (Federal Republic of Nigeria, 2013). Nevertheless, implementation has been constrained by inadequate infrastructure, shortages of qualified teachers, and ineffective pedagogical practices (Salami, 2016; Ogunkoya, 2023). These challenges contribute to disparities in children's foundational learning, as those attending under-resourced or rural centres often have fewer opportunities to benefit from rich and stimulating learning experiences (UNICEF, n.d.).

Educational equity refers to the principle of fairness in education, whereby all children receive the differentiated support, resources, and learning opportunities necessary to achieve comparable developmental and educational outcomes, irrespective of their backgrounds or circumstances. Unlike equality, which provides everyone with the same resources or opportunities, educational equity recognizes existing disparities and seeks to address systemic barriers that prevent certain groups from achieving their full potential (Levinson, 2022; UNESCO, n.d.). This principle is particularly important in Early Childhood Education because the quality of children's early learning experiences can either reduce or reinforce existing developmental disadvantages (Heckman, 2016; von Suchodoletz et al., 2023).

A substantial body of research has consistently demonstrated that equitable access to quality Early Childhood Education contributes to more balanced developmental outcomes and helps reduce educational inequalities. Children who learn in inclusive, well-resourced early childhood environments generally demonstrate stronger literacy, numeracy, and socio-emotional skills than those in poorly resourced or less inclusive settings. These positive outcomes are especially evident among children from low-income households, rural communities, and other disadvantaged groups, highlighting the potential of Early Childhood Education to serve as an equalizing force when educational equity is prioritized (Heckman, 2016; Ige, 2024).

Educational Equity

Educational equity in early childhood settings remains a major concern in Sub-Saharan Africa. Although access to Early Childhood Education (ECE) has increased across many countries in the region, significant socioeconomic, geographical, and gender disparities persist. Children from low-income households and rural communities are less likely to have access to quality ECE programmes, whereas children from urban areas and higher-income families are more likely to attend well-equipped private institutions (Akkari, 2022; UNICEF, n.d.). These disparities in access and quality result in unequal foundational learning outcomes and may perpetuate inequalities in educational opportunities from an early age.

Educational equity in Early Childhood Education has received increasing attention in educational policy discussions in Nigeria. The National Policy on Education and other policy documents emphasize the provision of quality early childhood education for all children. However, implementation has been hindered by inadequate funding, inequitable resource allocation, and weak regulatory frameworks (Federal Republic of Nigeria, 2013; Salami, 2016). Public ECE centres, particularly those in rural areas, are often under-resourced, with inadequate facilities, limited learning materials, and shortages of qualified teachers. In contrast, private centres generally serve more affluent families who can afford higher-quality educational services. These disparities create unequal learning opportunities for children from different socioeconomic and geographical backgrounds (Ogunkoya, 2023; Adeleke, 2023).

The quality of teaching in early childhood centres is closely linked to educational equity. Teachers working in under-resourced environments are often constrained in their ability to implement innovative and flexible pedagogical approaches. Without adequate training, instructional support, or teaching resources, teachers may have limited opportunities to adopt creative, child-centred instructional practices. Consequently, children who are already disadvantaged by their home or community circumstances may experience additional disadvantages in the classroom (Ogunyemi & Ragpot, 2015). Conversely, when equitable learning conditions exist, teachers are better positioned to implement innovative teaching strategies that enhance learner engagement and improve foundational learning outcomes.

Teacher Innovation Practices in Early Childhood Education

Teacher innovation practices in Early Childhood Education refer to the creative and flexible approaches teachers use to plan, adapt, and deliver learning experiences that promote children's holistic development. These practices are characterized by a shift from teacher-centred, highly structured instruction to more flexible, responsive, play-based, and child-centred pedagogies. Teachers may introduce innovative ways of using locally available instructional materials, integrate meaningful socio-emotional learning experiences, adapt learning activities to suit children's developmental levels, or employ interactive storytelling and hands-on exploration to stimulate curiosity and active participation (Ogunyemi & Ragpot, 2015; von Suchodoletz et al., 2023). Such innovation does not necessarily depend on sophisticated technology or expensive resources; rather, it involves making thoughtful,

contextually appropriate decisions that address the needs of children and the classroom environment.

Evidence indicates that innovative pedagogical practices in Early Childhood Education are associated with higher levels of children's engagement, motivation, and development of foundational literacy, numeracy, and socio-emotional skills. Creative and responsive teaching approaches encourage greater participation in learning activities while fostering children's self-regulation, problem-solving abilities, and overall learning outcomes. In resource-constrained settings, teachers who creatively adapt their instructional strategies and effectively utilize available resources are often able to provide rich learning experiences that produce meaningful developmental gains (Cai et al., 2021; Mitchell, 2008).

Several factors influence teachers' capacity and willingness to adopt innovative teaching practices. Supportive school environments, opportunities for continuous professional development, collaborative relationships among colleagues, and teachers' sense of professional autonomy all contribute to innovation in classroom practice. When teachers receive support from school leaders and colleagues and possess high levels of self-efficacy, they are more likely to experiment with and sustain innovative instructional approaches over time (Cai et al., 2021). Conversely, innovation may be constrained by large class sizes, inadequate training in child-centred pedagogies, and rigid curriculum requirements that limit instructional flexibility (Salami, 2016; Ogunkoya, 2023).

Within the Nigerian educational context, policy documents advocate play-based and learner-centred approaches to Early Childhood Education. Nevertheless, many centres continue to rely on traditional, teacher-centred instructional methods. Research has shown that inadequate professional development in innovative teaching strategies, coupled with limited instructional resources and overcrowded classrooms, often discourages teachers from adopting responsive and child-centred instructional practices (Salami, 2016; Ogunkoya, 2023). Teachers' capacity to innovate is particularly important in northern states such as Kano, where many Early Childhood Education centres face persistent challenges related to infrastructure, staffing, and instructional resources, thereby increasing the need for developmentally appropriate teaching practices.

Teacher innovation practices also complement efforts to promote educational equity. In under-resourced public centres and rural communities, innovative teachers can help bridge learning gaps by adapting instructional experiences to meet the diverse needs and strengths of children who may otherwise be disadvantaged due to limited resources or large class sizes. Through the creative use of locally available materials and contextually appropriate instructional strategies, teachers can make learning opportunities more inclusive and equitable both within and across Early Childhood Education centres (Ogunyemi & Ragpot, 2015; Adeleke, 2023). This relationship suggests that strengthening teachers' innovative capacities may serve as an effective strategy for reducing early learning disparities.

Although considerable research has examined foundational learning outcomes and the factors that support their development, relatively few studies have investigated the combined

predictive influence of educational equity and teachers' innovation practices on these outcomes within specific local contexts such as Kano State. Existing studies in Nigeria have primarily focused on access to Early Childhood Education, policy implementation, or individual dimensions of educational quality, with limited attention given to how equitable learning conditions and innovative teaching practices jointly influence children's literacy, numeracy, and socio-emotional development (Salami, 2016; Ogunkoya, 2023). This gap in the literature highlights the need for context-specific empirical research to inform interventions aimed at strengthening foundational learning outcomes among young children in northern Nigeria.

Theoretical Framework

This study is anchored in the Capability Approach and Ecological Systems Theory. These theoretical frameworks provide complementary perspectives on the relationship among educational equity, teachers' innovation practices, and their influence on foundational learning outcomes in Early Childhood Education (ECE) centres in Kano State, Nigeria. The Capability Approach offers a normative perspective on fairness, opportunity, and human development, while Ecological Systems Theory explains how children's learning and development are shaped by their surrounding environments. Together, these frameworks provide a comprehensive understanding of the factors influencing foundational learning outcomes in early childhood settings (Sen, 1999; Bronfenbrenner & Morris, 2006).

The Capability Approach, developed by Amartya Sen and further advanced by Martha Nussbaum, emphasizes individuals' opportunities to achieve valued outcomes rather than merely having access to resources. The theory is built around the concepts of *capabilities* and *functionings*. Capabilities refer to the genuine opportunities and freedoms individuals have to achieve desired outcomes, while functionings represent the actual achievements resulting from those capabilities. Within the educational context, the Capability Approach argues that every child should have the opportunity to develop their abilities and realize their full potential, regardless of socioeconomic background or personal circumstances (Nussbaum, 2011; Walker & Unterhalter, 2007).

From this perspective, educational equity extends beyond providing equal access to educational resources; it involves creating the conditions necessary for every child to achieve meaningful learning outcomes. Consequently, children who experience poverty, geographical disadvantage, gender-related inequalities, or limited access to quality education are less likely to develop the capabilities required for educational success than their more advantaged peers (Sen, 1999; Nussbaum, 2011). Teachers' innovation practices are equally relevant within this framework because creative, adaptive, and child-centred instructional approaches can expand children's learning opportunities by addressing their diverse needs and circumstances. Through innovative teaching practices, teachers can transform available educational resources into meaningful learning experiences that strengthen children's foundational competencies (Unterhalter, 2009).

The Capability Approach is complemented by Ecological Systems Theory, developed by Urie Bronfenbrenner, which emphasizes the interconnected environmental systems that influence children's development and learning. The theory identifies five interrelated systems: the microsystem, mesosystem, exosystem, macrosystem, and chronosystem. The microsystem comprises the child's immediate environment, such as the family and Early Childhood Education centre, where direct interactions occur. The mesosystem refers to the relationships among the child's immediate settings. The exosystem consists of external environments and institutions that indirectly influence the child, while the macrosystem encompasses the broader cultural, economic, political, and social values that shape development. Finally, the chronosystem represents changes and transitions that occur over time and influence children's developmental experiences (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006).

Ecological Systems Theory is particularly relevant to this study because it recognizes that children's foundational learning outcomes result from interactions among multiple environmental influences. The extent to which children experience supportive learning environments, adequate educational resources, and quality learning opportunities across these ecological systems reflects the degree of educational equity they receive. Similarly, teachers' innovation practices operate primarily within the microsystem, where teachers directly influence children's learning through instructional strategies, teacher-child interactions, and the organization of classroom activities. The theory also highlights the influence of broader contextual factors, including school conditions, community resources, and educational policies, which may either facilitate or constrain innovative teaching practices and equitable educational provision. Applied to the context of Kano State, Ecological Systems Theory explains how variations in school resources, teachers' working conditions, and broader socioeconomic factors influence equitable learning opportunities, innovative teaching practices, and children's foundational learning outcomes.

Together, the Capability Approach and Ecological Systems Theory provide a strong theoretical foundation for this study. The Capability Approach highlights the importance of educational equity and teachers' innovation practices in expanding children's opportunities to develop foundational competencies and achieve meaningful educational outcomes. Ecological Systems Theory complements this perspective by explaining how these opportunities are shaped through interactions among children, teachers, families, schools, communities, and broader societal systems. Collectively, the two frameworks provide a comprehensive explanation of how educational equity and teachers' innovation practices contribute to foundational learning outcomes while recognizing the influence of both individual opportunities and contextual factors. This integrated perspective is particularly appropriate for investigating Early Childhood Education in Kano State, where systemic inequalities and local contextual factors interact to shape children's early learning experiences and outcomes (Walker & Unterhalter, 2007; Bronfenbrenner & Morris, 2006).

Methodology

This study adopted a correlational survey research design to investigate the predictive influence of educational equity and teachers' innovation practices on foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria. The correlational survey design was considered appropriate because it enabled the researcher to examine the relationships among the study variables as they naturally occurred without manipulating them. It also provided a suitable framework for investigating how educational equity and teachers' innovation practices predict children's foundational learning outcomes in Early Childhood Education settings.

The study population comprised teachers in both public and private Early Childhood Education centres in Kano State. Teachers were selected as respondents because they are directly involved in instructional delivery and possess firsthand knowledge of children's developmental outcomes, classroom environments, and learning experiences. A multistage sampling technique was employed to select the study participants. The first stage involved stratifying the Local Government Areas (LGAs) in Kano State into urban and rural categories to ensure adequate representation of both educational contexts. Subsequently, the required Local Government Areas were selected using simple random sampling. Early Childhood Education centres were then randomly selected from the sampled LGAs. Finally, teachers were selected proportionately from the participating centres based on the number of teachers in each school.

Data were collected using the Educational Equity, Teacher Innovation Practices and Foundational Learning Outcomes Questionnaire (EETIPFLOQ), which was developed by the researcher. The instrument consisted of four sections. Section A collected respondents' demographic information, while Sections B, C, and D measured educational equity, teachers' innovation practices, and foundational learning outcomes, respectively. The questionnaire contained 30 items measured on a four-point Likert scale ranging from *Strongly Agree* to *Strongly Disagree*. Negatively worded items were reverse-scored to ensure consistency in score interpretation.

The instrument underwent face and content validation by experts in Early Childhood Education, Educational Psychology, and Measurement and Evaluation, who confirmed its suitability for the study. Their observations and recommendations were incorporated into the final version of the questionnaire before administration. A pilot study involving Early Childhood Education teachers outside the study area was conducted to establish the instrument's reliability. Cronbach's alpha reliability coefficients of 0.82, 0.85, and 0.88 were obtained for the Educational Equity Scale, Teacher Innovation Practices Scale, and Foundational Learning Outcomes Scale, respectively. These coefficients indicated satisfactory internal consistency and confirmed the reliability of the instrument for data collection.

Following approval from the relevant educational and school authorities, copies of the questionnaire were administered to the selected respondents with the assistance of trained research assistants. The purpose of the study was clearly explained to the participants, and

they were assured that the information provided would be treated with strict confidentiality and used solely for academic purposes. Participation in the study was entirely voluntary, and respondents were informed that they were free to withdraw at any stage without any consequences.

Data were analysed using Pearson's Product-Moment Correlation and Multiple Regression Analysis. Pearson's Product-Moment Correlation was employed to determine the relationships among educational equity, teachers' innovation practices, and foundational learning outcomes. Multiple Regression Analysis was used to examine the predictive influence of educational equity and teachers' innovation practices on foundational learning outcomes. All statistical analyses were conducted at the 0.05 level of significance.

Results

Demographic Characteristics

Table 1 presents the demographic characteristics of the respondents. The majority of respondents had a Bachelor's degree (135, 67.5%), followed by a Master's degree (54, 27.0%) while only 11 (5.5%) had a PhD. As far as teaching experience goes, 152 (76.0%) had experienced the teaching profession for 1 year to 10 years and 48 (24.0%) had been teaching for 11 years or more. Also, the majority of the respondents was from public ECE centres (174, 87.0%) and there were fewer from private centres (26, 13.0%).

Table 1: Demographic Characteristics of Respondents (N = 200)

Variable	*Category*	*Frequency*	*Percentage (%)*
Qualification	Bachelor's Degree	135	67.5
	Master's Degree	54	27.0
	PhD	11	5.5
Teaching Experience	1 - 10 Years	152	76.0
	11 years and above	48	24.0
School Ownership	Public	174	87.0
	Private	26	13.0

RQ1: Does any relationship exist between educational equity and foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria?

Pearson Product-Moment Correlation was used to examine the relationship.

Table 2: Pearson Correlation between Educational Equity and Foundational Learning Outcomes

Variable	*Mean*	*SD*	*r*
Educational Equity	26.68	5.65	.663
Foundational Learning Outcomes	32.59	7.19	

Results in Table 2 showed a positive and significant relationship between educational equity and foundational learning outcomes (r =.663, p<0.05). The finding suggests that children in the Early Childhood Education centres in Kano State had better foundational learning outcomes with higher level of educational equity. The positive correlation also indicates that in the context of increasing learning equity, the learning outcomes at the foundation level are also improving.

RQ2: To what extent do educational equity and teacher innovation practices individually predict foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria?

Table 3: Simple Linear Regression for Educational Equity

Variable	*R*	*R²*	*Adj. R²*	*F*	*β*	*t*	*p*
Educational Equity	.663	.440	.437	152.296	.663	12.341	< .001

The results presented in Table 3 indicate that educational equity significantly predicted foundational learning outcomes ($R = .663$, $R^2 = .440$, $F_{(1, 194)} = 152.296$, $p < .001$). The model explained 44.0% of the variance in foundational learning outcomes, indicating that educational equity is a substantial predictor of children's foundational learning outcomes in Early Childhood Education centres in Kano State. These findings suggest that improvements in educational equity are associated with corresponding improvements in foundational learning outcomes.

Table 4: Simple Linear Regression for Teacher Innovation Practices

Variable	*R*	*R²*	*Adj. R²*	*F*	*β*	*t*	*p*
Teacher Innovation	.119	.014	.009	2.791	.119	1.671	.096

As shown in Table 4, teacher innovation practices did not significantly predict foundational learning outcomes ($R = .119$, $R^2 = .014$, $F_{(1, 195)} = 2.791$, $p = .096$). The model accounted for just 1.4% of the variance in the prediction of foundational learning outcomes, suggesting that the innovation practices of the teachers are a statistically non-significant and negligible contributor to the prediction of the foundational learning outcomes. The finding indicates that independently, the innovation practices of teachers were not found to have a significant impact on children's foundational learning outcomes in Early Childhood Education centres in Kano State.

RQ3: To what extent do educational equity and teacher innovation practices jointly predict foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria?

Table 5: Multiple Regression Analysis

Predictor	*B*	*β*	*t*	*p*
Constant	6.923		2.994	.003
Educational Equity	.845	.663	12.475	< .001
Teacher Innovation	.126	.120	2.256	.025

Model Summary

R	*R²*	*Adj. R²*	*F*	*p*
.674	.454	.449	80.296	< .001

Furthermore, the results in Table 5 showed that educational equity and teacher innovation practice jointly and significantly predicted the foundational learning outcomes ($R = .674$, $R^2 = .454$, Adjusted $R^2 = .449$, $F_{(2.\ 193)} = 80.296$, $p < 0.05$). The regression model accounted for 45.4% of the variance in foundational learning outcomes, suggesting the two predictor variables together account for a significant portion of the variation in children's foundational learning outcomes. When the regression coefficients were examined further, the results indicated that the greatest predictor of foundational learning outcomes was educational equity and the innovation practices of teachers also had a positive and statistically significant independent relationship with the model. From these results, there is a relationship between the improvement of educational equity and the enhancement of the foundational learning outcomes of ECE centres in Kano State, Nigeria with the introduction of innovative pedagogy.

Discussion

This study investigated the predictive influence of educational equity and teachers' innovation practices on foundational learning outcomes in Early Childhood Education (ECE) centres in Kano State, Nigeria. The findings provide empirical evidence on the influence of equitable educational opportunities and innovative teaching practices on children's foundational learning outcomes.

The findings revealed a positive and statistically significant relationship between educational equity and foundational learning outcomes. This indicates that improvements in educational equity are associated with improvements in children's literacy, numeracy, and socio-emotional competencies. The finding underscores the importance of ensuring that all children, regardless of their socioeconomic status, gender, or geographical location, have equitable access to quality learning environments, adequate instructional resources, and supportive learning experiences. This result is consistent with the Capability Approach, which posits that children's developmental outcomes depend not only on access to educational resources but also on their ability to utilize those resources effectively (Sen, 1999; Nussbaum, 2011). The finding also supports the argument of Walker and Unterhalter (2007) that equitable educational opportunities enhance children's capabilities to achieve meaningful educational outcomes. Furthermore, it corroborates previous empirical studies that reported positive relationships between educational equity and children's learning and developmental outcomes

(Levinson, 2022; Adeleke, 2023). Overall, the finding highlights educational equity as a critical determinant of children's foundational learning outcomes in Early Childhood Education centres.

The study further revealed that educational equity significantly predicted foundational learning outcomes, accounting for 44.0% of the variance in the dependent variable. This finding suggests that educational equity is one of the major determinants of children's foundational learning outcomes in Early Childhood Education centres in Kano State. The result reinforces the view that equitable access to quality education, qualified teachers, adequate instructional resources, and supportive learning environments provides children with greater opportunities to develop foundational competencies. This finding is consistent with the Capability Approach, which argues that equitable educational conditions expand children's capabilities and enable them to realize their developmental potential (Sen, 1999; Nussbaum, 2011). It also supports the findings of Walker and Unterhalter (2007), who emphasized that educational equity is central to improving learning outcomes, particularly for children from disadvantaged backgrounds.

Interestingly, the study found that teachers' innovation practices did not independently predict foundational learning outcomes. This finding suggests that innovative teaching practices alone may not be sufficient to improve children's foundational learning outcomes in the absence of equitable educational conditions. Although innovative teaching remains an important strategy for enhancing classroom instruction and learner engagement, its effectiveness may be constrained by inadequate instructional resources, overcrowded classrooms, and other contextual challenges commonly experienced in many Early Childhood Education centres. Under such conditions, teachers may find it difficult to implement innovative instructional approaches effectively enough to produce substantial improvements in children's learning outcomes. This finding contrasts with previous studies that reported significant positive effects of innovative teaching practices on children's learning outcomes (Ogunyemi & Ragpot, 2015; Cai et al., 2021). The difference may be attributed to variations in educational resources, policy implementation, teachers' preparedness, and learning environments across different study settings.

The findings further showed that although teachers' innovation practices did not have a significant independent effect, educational equity and teachers' innovation practices jointly exerted a significant influence on foundational learning outcomes. Together, the two variables accounted for 45.4% of the variance in foundational learning outcomes, indicating that they collectively contribute to children's early learning and development. Educational equity emerged as the stronger predictor, while teachers' innovation practices made a positive contribution when considered alongside educational equity. This finding suggests that innovative teaching practices are more effective when implemented within equitable educational environments characterized by adequate instructional resources, supportive learning conditions, and opportunities for effective teaching. The result is consistent with Ecological Systems Theory, which emphasizes that children's development is influenced by

interactions among multiple environmental systems, including the classroom, school, community, and broader educational policies (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006). It also aligns with the Capability Approach by demonstrating that innovative teaching practices produce greater benefits when children have equitable opportunities to access quality education. Overall, the findings highlight the complementary roles of educational equity and teachers' innovation practices in promoting children's foundational learning outcomes in Early Childhood Education centres in Kano State.

Conclusion

This study concludes that educational equity is one of the key determinants of children's foundational learning outcomes in Early Childhood Education centres in Kano State, Nigeria. The findings demonstrate that equitable access to quality education, adequate instructional resources, qualified teachers, and supportive learning environments plays a vital role in developing children's foundational literacy, numeracy, and socio-emotional skills. Although teachers' innovation practices did not independently predict foundational learning outcomes, they made a meaningful contribution when combined with educational equity. This suggests that innovative teaching practices are most effective within educational environments characterized by equity, inclusiveness, and adequate instructional resources. Therefore, improving educational equity while strengthening teachers' capacity to implement innovative teaching practices is essential for enhancing foundational learning outcomes in Early Childhood Education centres.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Government and other education stakeholders should prioritize policies and interventions that promote educational equity by ensuring the equitable distribution of instructional resources, qualified teachers, and learning facilities across public and private Early Childhood Education centres.
2. School leaders should create supportive learning environments that encourage teachers to adopt innovative, child-centred instructional approaches capable of improving children's foundational learning outcomes.
3. Regular professional development programmes should be organized to strengthen teachers' competencies in innovative instructional strategies, particularly play-based and child-centred pedagogies suitable for Early Childhood Education.
4. Educational policymakers should strengthen monitoring and quality assurance mechanisms to reduce disparities in the quality of Early Childhood Education services between urban and rural areas.
5. Collaboration among government agencies, development partners, local communities, and proprietors of Early Childhood Education centres should be strengthened to improve equitable access to quality early childhood education and promote inclusive

learning opportunities for all children.

Limitations of the Study

This study was limited to teachers in public and private Early Childhood Education centres in Kano State, Nigeria. Consequently, the findings may not be generalizable to other states or regions with different educational, cultural, and socioeconomic contexts.

In addition, the study relied on self-reported questionnaire data, which may be subject to response bias arising from participants' perceptions and personal judgments.

Furthermore, the correlational survey design made it possible to examine relationships and predictive associations among the study variables but did not permit causal inferences.

Finally, this study focused exclusively on educational equity and teachers' innovation practices as predictors of foundational learning outcomes. Other factors, including parental involvement, school leadership, teacher motivation, class size, and children's socioeconomic backgrounds, were not examined and may also influence foundational learning outcomes.

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