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INFLUENCE OF TEACHER TRAINING ADEQUACY ON THE IMPLEMENTATION OF EARLY CHILDHOOD DEVELOPMENT EDUCATION PROGRAMMES IN PUBLIC SCHOOLS IN ISIOLO COUNTY, KENYA

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ABSTRACT

This study examined the relationship between teacher training adequacy and implementation of Early Childhood Development Education (ECDE) programmes in public schools in Isiolo County, Kenya. Guided by Human Capital Theory, the study adopted a descriptive survey design. The target population comprised 10 ward coordinators, 162 headteachers, and 350 ECDE teachers. A sample of 264 respondents consisting of 8 ward coordinators, 81 headteachers and 175 ECDE teachers was selected using purposive and simple random sampling techniques. Data were collected using questionnaires and interviews. Pearson's product-moment correlation was used to test the relationship between teacher training adequacy and ECDE implementation. Findings revealed a positive and statistically significant relationship between teacher training adequacy and ECDE implementation ($r(68) = .463$, $p < .001$). The findings indicate that strengthening teacher training is important for effective ECDE implementation. The study recommends standardised pre-service and in-service training, alongside regular monitoring and evaluation of teacher training programmes.

KEYWORDS: teacher training adequacy, ECDE implementation, early childhood education, public schools, Isiolo County, Kenya

INTRODUCTION

Across global education systems, scholarship consistently underscores teacher training as a decisive determinant of the quality of Early Childhood Education (ECE) implementation. International evidence indicates that although many countries have established formal teacher preparation structures, persistent inadequacies in continuous professional development and specialised pedagogical training continue to undermine effective classroom practice.

In high-income contexts, research reveals both progress and emerging gaps. In England, Sanders and Hutt (2021) observed that despite improvements in initial teacher education, deficiencies in sustained in-service professional development limit teachers' capacity to consistently implement high-quality

early childhood pedagogies. Similarly, in Canada, Fletcher and Olson (2020) highlight structural inconsistencies in professional development provision across provinces, resulting in uneven teacher preparedness, particularly in relation to culturally responsive pedagogy and child development integration. In France, Bourgeois et al. (2022) extend this discourse by arguing that although teacher training is relatively comprehensive, contemporary classrooms increasingly demand enhanced competencies in inclusive education and diversity-responsive pedagogy, indicating a shift from basic training adequacy to specialized instructional capability

Collectively, these studies suggest that in developed contexts, the challenge is not merely access to training but the depth, continuity, and responsiveness of professional development systems to evolving classroom realities.

A more pronounced challenge is evident in many African contexts, where teacher training adequacy directly constrains the implementation of developmentally appropriate ECE practices. In Nigeria, Ogunyemi (2020) found that existing training programmes are often fragmented and insufficiently aligned with child development theory, resulting in limited teacher preparedness in play-based learning, inclusive education, and learner-centred pedagogy. Similarly, Herman and Horn (2019) report that in South Africa, despite policy-level commitments to ECE professionalisation, a significant proportion of educators remain underqualified, particularly in rural areas, thereby constraining effective curriculum implementation.

In Ghana, Yawson and Oppong (2022) further demonstrate that limited pedagogical training reduces teachers' ability to translate theoretical curriculum frameworks into classroom practice, especially in child-centred instruction. Parallel findings in Zimbabwe (Mugweni and Gwarinda, 2021) reveal systemic reliance on primary-trained teachers in ECE classrooms, resulting in inadequate pedagogical alignment with early childhood learning needs. In Tanzania, Mwendapole and Mtinda (2022) and in Uganda, Nakawunde (2021), similarly identify persistent gaps between policy investment in teacher training and actual classroom readiness, particularly in rural and marginalised settings where professional development opportunities remain limited.

Across these African studies, a consistent pattern emerges teacher training deficiencies are not only structural but also pedagogical, affecting the translation of curriculum policy into effective classroom practice.

Within the Kenyan context, the literature reflects similar but more contextualized challenges linked to curriculum reforms and regional disparities. Omondi and Mwaura (2020) found that a substantial proportion of ECDE teachers, particularly in rural areas, lack formal ECE training, which negatively affects the adoption of modern pedagogies such as play-based and child-centred learning. Njiru (2021) extends this argument by demonstrating that while Competency-Based Education (CBE) training has been introduced nationally, teachers continue to experience difficulties in practical implementation due to limited exposure to differentiated instruction and competency-based assessment strategies.

Further, Kipkemoi, Chege, and Mwangi (2023) reveal a significant urban–rural disparity in training access, where teachers in urban settings benefit from continuous professional development

opportunities, unlike their rural counterparts. Kamau and Njoroge (2022) similarly highlight that while play-based learning training has been partially successful, its implementation remains constrained by inadequate follow-up mentoring and insufficient instructional support systems.

Together, these findings indicate that in Kenya, the challenge is not merely training availability but inequitable distribution, weak follow-up systems, and limited practical reinforcement of pedagogical skills.

At the county level, evidence from Isiolo County presents even more pronounced constraints. Maingi, Mwangi and Wambui (2020) report that many ECDE teachers lack formal training in modern pedagogical approaches, largely due to insufficient qualification requirements and limited access to professional training institutions. Omondi and Kihoro (2022) further highlight persistent challenges in CBE implementation, particularly in relation to learner-centred pedagogies, which are inadequately understood by many teachers in the county.

Additionally, Wambui and Maingi (2023) emphasize that although targeted training in inclusive education improves teachers' capacity to support learners with diverse needs, such opportunities remain limited and unevenly distributed. Consequently, many teachers are insufficiently equipped to respond to classroom diversity, particularly in relation to learners with disabilities and those from disadvantaged backgrounds.

RESEARCH GAP

Despite the extensive body of literature on teacher training and ECDE implementation, several critical gaps remain evident.

First, most existing studies focus on general training adequacy, with limited attention to how specific dimensions of teacher preparation, such as career progression pathways, continuous professional development structures, and mentorship systems collectively influence ECDE implementation outcomes.

Second, while substantial evidence exists at global and national levels, there is a dearth of context-specific empirical studies in marginalised and arid regions such as Isiolo County, where structural inequalities in teacher training access may be more pronounced.

Third, existing Kenyan studies tend to isolate training as a single variable, without sufficiently examining its systemic interaction with implementation dynamics of ECDE programmes, particularly under the Competency-Based Education framework.

Therefore, this study addresses a critical gap by examining the influence of teacher training adequacy and professional development structures on the implementation of ECDE programmes in Isiolo County, Kenya, thereby contributing context-specific evidence to the discourse on equitable and effective early childhood education delivery.

STATEMENT OF THE PROBLEM

Early Childhood Development Education (ECDE) constitutes a foundational pillar in human capital formation, given its role in fostering early cognitive, socio-emotional, and developmental competencies that underpin lifelong learning trajectories. In recognition of its strategic importance, the Government of Kenya undertook decentralisation reforms aimed at enhancing resource allocation efficiency, improving programme delivery, and strengthening teacher professional development and career progression pathways within ECDE systems.

Notwithstanding these policy interventions, empirical and policy evidence continues to reveal persistent systemic and implementation challenges within the ECDE sub-sector. National and international evaluative reports, including those of the World Bank (2013) and the Kenya Institute of Education (2012), consistently document inadequacies in infrastructural provision, instructional materials, and teacher preparedness as enduring constraints to effective ECDE programme implementation. These deficiencies are further compounded by limited pedagogical competence among educators, particularly in relation to developmentally appropriate, learner-centred, and play-based instructional methodologies.

Consequently, ECDE programme implementation remains markedly uneven, with pronounced disparities between well-resourced and marginalised settings. In the Kenyan context, these disparities are especially acute in arid and semi-arid regions, where socio-economic deprivation, infrastructural deficits, nomadic pastoralist livelihoods, and recurrent insecurity collectively undermine school attendance stability, teacher retention, and instructional continuity. Although devolved county governments have made considerable investments in ECDE infrastructure expansion, concerns persist regarding the extent to which teacher training systems have evolved in tandem to support effective curriculum implementation and pedagogical transformation (Wawire & Kimamo, 2020).

This situation reveals a substantive empirical and conceptual gap in the literature. Whereas extant studies have predominantly focused on infrastructural deficits, policy reforms, and general resource constraints in ECDE delivery, insufficient scholarly attention has been directed toward interrogating the nexus between teacher training adequacy and the actual implementation efficacy of ECDE programmes within marginalised and resource-constrained county contexts. In particular, there remains limited context-specific empirical evidence on how teacher preparation, professional development, and pedagogical readiness translate into classroom-level implementation outcomes under structurally constrained environments such as Isiolo County.

Accordingly, this study seeks to examine the influence of teacher training adequacy on the implementation of Early Childhood Development Education programmes in public schools in Isiolo County, Kenya.

OBJECTIVES OF THE STUDY

The study was based on the following research objectives:

To determine the influence of Teacher training adequacy on the implementation of the Early Childhood Development Education programme in public schools in Isiolo County, Kenya

RESEARCH HYPOTHESIS

The study was based on the following research hypothesis;

1. H_{01} : There is no statistically significant relationship between Teacher training adequacy and the implementation of the Early Childhood Development Education programme in public schools in Isiolo County, Kenya

LITERATURE REVIEW

Overview of the implementation of the Early Childhood Development Education programme

The Organization for Economic Co-operation and Development (OECD) reports persistent disparities in public expenditure on early childhood education across member states, reflecting significant cross-national variation in prioritization and financing of ECDE systems. For instance, the United Kingdom allocates approximately \$7,462 per child aged zero to five, which is substantially below the OECD average of \$12,749. This divergence underscores systemic inequities in investment levels, which have direct implications for programme quality, access, and sustainability across jurisdictions.

Within this broader discourse, Gayatri (2020), through a systematic review, identifies critical implementation challenges associated with home-based and remote early childhood learning modalities. These include limited self-regulation capacities among young learners, unequal access to digital learning resources, divergent parental beliefs regarding pedagogical approaches, and increased demands on caregiver time and instructional competence. Rather than presenting isolated findings, this body of evidence collectively highlights the fragility of early childhood learning systems when instructional delivery is displaced from structured institutional environments, thereby reinforcing the centrality of pedagogical support systems and parental engagement in ECDE effectiveness.

At the regional level, evidence from Sub-Saharan Africa consistently indicates structural constraints that impede effective ECDE implementation. UNESCO (2021) underscores that the region exhibits some of the lowest levels of ECDE enrolment and public investment globally, a condition largely attributable to constrained fiscal capacity, inadequate teacher preparation systems, and weak institutional policy enforcement mechanisms. Empirical studies from Uganda, Tanzania, and Ethiopia converge on similar systemic constraints, including infrastructural deficits, shortages of qualified ECDE personnel, and sustained dependence on external donor funding (Mwaura, 2015; Tadesse, 2017). However, these studies also reveal an important tension: while policy frameworks for ECDE expansion are increasingly being adopted, their translation into effective implementation remains inconsistent and uneven.

Further comparative evidence from East Africa suggests that decentralized governance structures have produced mixed outcomes. Although devolution has created opportunities for context-responsive educational planning, it has simultaneously exacerbated regional disparities in resource allocation, institutional capacity, and service delivery quality (Obiero, 2020). This indicates that decentralisation,

while theoretically aligned with equity objectives, may reproduce inequality in the absence of robust implementation capacity and financing mechanisms. Collectively, the regional literature suggests that ECDE expansion is constrained not merely by policy absence, but by implementation fragility and institutional asymmetry across jurisdictions.

In Kenya, the enactment of the Constitution (2010) institutionalized devolution, transferring ECDE management to county governments with the intention of reducing regional disparities and improving contextual responsiveness in service delivery. However, emerging evidence suggests that this transition has been characterized by uneven implementation capacity, fragmented policy interpretation, and disparities in resource allocation across counties. A 2024 baseline report further emphasizes the absence of a coherent enabling policy and regulatory framework to guide consistent ECDE implementation, highlighting governance fragmentation between national and county levels as a critical constraint.

Murphy et al. (2018) further reinforces a broader methodological and empirical gap in ECDE scholarship, noting the scarcity of implementation-focused research that interrogates not only programme effectiveness but also the contextual mechanisms through which ECDE interventions operate. This highlights a persistent limitation in literature, where emphasis is often placed on outcomes rather than the underlying implementation processes that determine effectiveness across diverse socio-ecological settings.

Taken together, the literature indicates that while policy frameworks and financial investments are necessary conditions for ECDE expansion, they are insufficient in isolation. Effective and sustainable implementation is contingent upon coherent governance structures, adequately resourced systems, and context-sensitive pedagogical support mechanisms.

Teacher Training Adequacy and the Implementation of the Early Childhood Development Education Programme

Wanyama and Kipkorir (2020) investigated the effect of teacher training on Early Childhood Education Outcomes in Kenya and found that teachers with specialized ECE training implemented age-appropriate teaching strategies more effectively than those without such training, and regular in-service training was highlighted as a significant factor in improving program quality. Mwangi and Tunde (2022) examined the challenges in teacher preparedness for Early Childhood Education in Sub-Saharan Africa and found that teachers in several African countries, including Uganda and Tanzania, faced challenges due to inadequate pre-service training, large class sizes, and a lack of continuous professional development opportunities, which negatively affected curriculum delivery. Adebayo (2021) investigated in-service teacher training and the Implementation of Early Childhood Programs in Nigeria and identified a strong correlation between the frequency of in-service training and the successful implementation of ECE programs. Teachers who received regular training demonstrated better classroom management and instructional techniques

Otieno and Mutua (2023) assessed the impact of competency-based training on Early Childhood Education in Kenya and found that the introduction of competency-based teacher training significantly

enhanced the ability of teachers to implement learner-centred methods, although limited access to training facilities remained a challenge. Nkosi (2019) investigated bridging the training gap in Early Childhood Education: Insights from South Africa and revealed significant gaps in the training of ECE teachers, particularly in rural areas, and that teachers lacked knowledge in areas such as developmental psychology and inclusive education, affecting program implementation. Shikokoti (2023) conducted a study on the influence of continued Teacher professional development on Early Childhood Curriculum Implementation in Kenya and found that continued professional development significantly enhanced teachers' ability to implement the ECE curriculum, although irregular training sessions and limited resources posed challenges. Shikokoti, Okoth and Chepkonga (2023) investigated the impact of teacher professional qualifications on the performance of Early Childhood Education Learners in Kenya and revealed a positive correlation between teachers' professional qualifications and learners' academic outcomes, and that teachers with higher qualifications used child-centered methods more effectively. Mwangi and Njuguna (2020) examined teacher preparedness for the implementation of Competency-Based Education in Early Childhood Education in Kenya and identified gaps in teacher training, particularly in aligning teaching strategies with CBE requirements, and regular in-service training was recommended to bridge competency gaps. Wanyonyi and Simiyu (2019) investigated the adequacy of teacher training in ICT for Early Childhood Education in Kenya and found that teachers who had been trained in ICT were more effective in integrating technology into ECE classrooms, although rural areas faced challenges due to limited access to digital infrastructure.

THEORETICAL FRAMEWORK

This study was guided by Human Capital Theory developed by Gary Becker (1964). The theory posits that investment in education, training, skills development and professional capacity enhances individual productivity and organizational performance. Human capital refers to the knowledge, competencies, skills and experience that individuals acquire and apply in the performance of their duties. In educational institutions, teachers represent a critical form of human capital because their knowledge, pedagogical competence and professional expertise directly influence teaching effectiveness and learner outcomes.

Human Capital Theory suggests that investment in teacher education and professional development improves teachers' capacity to perform their instructional responsibilities effectively. In the context of Early Childhood Development Education (ECDE), adequate teacher training equips educators with knowledge of child development, classroom management, curriculum implementation, assessment techniques and learner-centred pedagogical approaches. Consequently, teachers who receive adequate training are more likely to implement ECDE programmes effectively and contribute positively to children's cognitive, social, emotional and physical development.

The theory informed this study by providing a framework for understanding how teacher training adequacy influences the implementation of ECDE programmes. It assumes that investment in teacher preparation and continuous professional development enhances teacher competence, which subsequently improves curriculum implementation and educational outcomes. Therefore, counties that

invest in quality teacher training programmes are more likely to achieve effective implementation of ECDE programmes through improved teaching practices and learner support.

However, Human Capital Theory has limitations. While it emphasizes teacher knowledge, qualifications, and competencies, it pays limited attention to contextual factors that may influence ECDE implementation, including teacher motivation, remuneration, working conditions, school resources, institutional support and educational policy environments. Therefore, although the theory provides a useful explanation of the relationship between teacher training adequacy and ECDE implementation, its assumptions should be interpreted alongside broader institutional and environmental factors that affect educational service delivery.

METHODOLOGY

Research Design

A descriptive survey research design was used as it allows the researcher to describe characteristics of an individual or group as they really are (Shikokoti, Okoth & Abungana, 2024). A descriptive survey is only concerned with conditions or relationships that exist, opinions that are held, and ongoing processes. The study targeted 10 ward coordinators from the three (3) sub-counties, 162 headteachers and 350 Early Childhood Education (ECDE) teachers in Isiolo County (Isiolo County office, 2020).

A sample of respondents was selected using simple random sampling for headteachers and teachers, while ward coordinators were selected through census sampling because of their relatively small number. Simple random sampling ensured that each teacher and headteacher had an equal chance of participating in the study, thereby enhancing representativeness and minimizing sampling bias (Cohen, Manion, & Morrison, 2018).

Data Collection

Data were collected using mixed methods, i.e., both questionnaires and interviews. Questionnaires were administered to teachers and headteachers as they are effective for gathering large volumes of information within a short time and help reduce researcher bias (Orodho, 2009; Bryman, 2016). The questionnaire contained two sections: Section A gathered demographic information, while Section B measured the influence of teacher training adequacy on ECDE implementation using a five-point Likert scale (*Strongly Disagree* to *Strongly Agree*). Interviews were conducted with ward Coordinators to provide deeper insights and triangulate the questionnaire data, consistent with recommendations in mixed-methods research (Creswell & Plano Clark, 2017).

Validity of Research Instruments

To ensure validity, a pilot study was conducted to test the clarity, suitability of language, and feasibility of the instruments (Kvale & Brinkmann, 2015). Reliability was assessed using the test-retest technique, with Pearson's product-moment correlation used to compute the reliability coefficient, which is a widely accepted method in educational research (Gay, Mills, & Airasian, 2012). The pilot study involved 4 headteachers, 8 ECDE teachers, and 2 ward coordinators who were not included in the final

study sample. The pilot study helped assess the clarity, relevance, suitability of language, and comprehensiveness of the research instruments. Expert judgment from supervisors and specialists in educational research was also sought to evaluate the content validity of the instruments and ensure alignment with the study objectives and variables.

Reliability of the questionnaires was established using the test–retest technique. The instruments were administered to the pilot respondents twice within a two-week interval, and Pearson’s product-moment correlation coefficient was computed to determine the consistency of responses over time. The study obtained a reliability coefficient of 0.81, which was considered acceptable for educational research, as coefficients above 0.70 indicate adequate reliability (Lee J. Cronbach). Feedback obtained during the pilot study was used to revise ambiguous items, improve wording, and strengthen the overall quality of the instruments before the actual data collection process.

Data analysis

For data analysis, descriptive statistics such as frequencies, means, and percentages summarize the data. Inferential analysis employed Pearson’s product-moment correlation to examine the relationships between teacher training adequacy and the implementation of ECDE programmes. Pearson correlation is appropriate when testing linear relationships between continuous variables and is robust in educational research contexts (Field, 2018; Pallant, 2020). Data was coded and analyzed using the Statistical Package for Social Sciences (SPSS) version 22, which is well-suited for handling both descriptive and inferential statistical procedures (Saunders et al., 2019).

Ethical Considerations

Prior to data collection, the researcher obtained the necessary research authorization and approval from relevant institutional and governmental authorities. A research permit was secured from the National Commission for Science, Technology and Innovation (NACOSTI), while permission to conduct the study within public ECDE centres in Isiolo County was obtained from the County Directorate of Education and relevant school administrators.

Ethical principles governing educational research were strictly observed throughout the study. Participants were adequately informed about the purpose, procedures, and significance of the study before their involvement. Informed consent was obtained from all participants, and participation was strictly voluntary. Respondents were informed of their right to decline participation or withdraw from the study at any stage without penalty or adverse consequences.

To safeguard participants’ privacy, confidentiality and anonymity were maintained throughout the research process. No personally identifiable information was recorded in the questionnaires or interview schedules, and responses were used solely for academic purposes. Data collected were securely stored and accessed only by the researcher to minimize the risk of unauthorized disclosure.

Additionally, the researcher ensured that the study adhered to the principles of integrity, respect, and non-maleficence in educational research by avoiding any form of coercion, misrepresentation, or psychological harm during data collection and reporting processes.

RESULTS

Teacher training adequacy and implementation of Early Childhood Development Education programmes

The researcher sought to determine the influence of the level of teacher training adequacy and implementation of ECDE. Descriptive statistics such as frequencies, percentages, Means, and Standard Deviation were utilised. The rating was based on a Likert Scale where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Undecided (UD), 4=To Agree (A), 5=Strongly Agree (SA). The results of objective one was presented in Table 1 shows Head Teachers' responses on Teacher training adequacy and implementation of Early Childhood Development Education programmes

Table 1: Head Teachers' responses on Teacher training adequacy and implementation of Early Childhood Development Education programmes

	SA f %	A F%	UD F%	D f %	SD f %	Mean	Std
Teachers have a well-developed programme to enhance skills	1 (3)	22 (69)	3 (9)	6(19)	0 (0)	2.44	0.83
The teachers take part in teacher training	0 (0)	32(100)	0 (0)	0(0)	0 (0)	2.00	0.00
The teachers are offered grants for further study to acquire a KNEC Diploma	0 (0)	0 (0)	0 (0)	0(0)	32(100)	2.00	0.00
The teachers attend workshops to enhance their skills and knowledge	0 (0)	0 (0)	0(0)	18 (56)	14(44)	2.44	0.50
The teachers are offered grants for Benchmarking trips by the County Government	0 (0)	0 (0)	0 (0)	32 (100)	0 (0)	2.00	0.00

The teachers are adequate in number to handle the children in the centres	0 (0)	0 (0)	0(0)	24 (75)	8(25)	2.75	0.43
Teachers are offered different levels of training on the implementation of ECDE programmes	4(13)	22 (69)	0(0)	5 (16)	1 (2)	3.03	0.64
The duration of training for teachers on ECDE programmes is adequate	17 (53)	8 (25)	0(0)	7(22)	0(0)	4.31	0.81
Teachers are awarded a certificate of participation for different training programmes	22 (69)	10 (31)	0(0)	0 (0)	0 (0)	3.31	0.46
Teachers are encouraged to continue training to improve their capacity	0 0.0	8 (25)	0(0)	13 (41)	0 0.0	2.84	0.79
Average Mean						2.71	0.45

The majority of Head teachers agreed that teachers have a well-developed programme to enhance skills. Specifically, 72% (69% agreed and 3% strongly agreed) affirmed that teachers have well-developed programmes to enhance their skills. This suggests that structured professional development opportunities exist, though a small proportion (19%) noted limitations in coverage and consistency.

All Head teachers 32 (100%) agreed on the teachers taking part in teacher training, with a mean of (M=4.29, SD=0.97). This implies that the teachers take part in teacher training. The findings concur with Njiru and Odundo (2024), who investigated the role of teacher training needs analysis and in-service training in the implementation of the CBE for early childhood education in Kenya and revealed

that conducting thorough training needs analyses and providing regular in-service training through seminars and workshops were significant predictors of successful CBE implementation.

Conversely, 32 (100.0%) of the Head teachers Strongly Disagreed that teachers are offered grants for further study to acquire a KNEC Diploma, with a mean of ($M=4.26$, $SD=1.01$). This implies that the teachers are not offered grants for further study to acquire a KNEC Diploma. The findings concur with Obeywa et al. (2023), who assessed the efficacy of pedagogical strategies in ECDE curriculum implementation in Hamisi Sub-County, Kenya. The study adopted a descriptive survey design and involved curriculum support officers, section heads, ECDE centre-in-charge personnel, and teachers. The findings revealed that the utilisation of selected pedagogical strategies had a statistically significant effect on learners' readiness for primary education.

On the teachers attending workshop to enhance their skills and knowledge, 18 (56%) of the Head teachers disagreed, while 14 (44%) strongly disagreed, with a mean of ($M=4.29$, $SD=0.95$). This implies that the teachers do not attend a workshop to enhance their skills and knowledge. The findings concur with Adebayo (2021), who investigated in-service teacher training and the Implementation of Early Childhood Programs in Nigeria and identified a strong correlation between the frequency of in-service training and the successful implementation of ECE programs, and teachers who received regular training demonstrated better classroom management and instructional techniques.

All Head teachers 32, 100%) disagreed that teachers are offered grants for Benchmarking trips by the County Government, with a mean of ($M=4.26$, $SD=1.01$). This implies that the teachers are not offered grants for Benchmarking trips by the County Government. The findings are in line with Wanyama & Kipkorir (2020) investigated the effect of teacher training on Early Childhood Education Outcomes in Kenya and found that teachers with specialised ECE training implemented age-appropriate teaching strategies more effectively than those without such training, and regular in-service training was highlighted as a significant factor in improving program quality.

Table 1 shows that the majority, 24 (75%) of Head teachers disagreed that the teachers are adequate in number to handle children in centres, while 8 (25%) strongly disagreed with a mean of ($M=4.21$, $SD=1.04$). This implies that the teachers are inadequate in number of teachers to handle the children in centres. The findings are supported by Mwangi & Tunde (2022), who examined the challenges in teacher preparedness for Early Childhood Education in Sub-Saharan Africa and found that teachers in several African countries, including Uganda and Tanzania, faced challenges due to inadequate pre-service training, large class sizes, and a lack of continuous professional development opportunities, which negatively affected curriculum delivery.

The data indicate that 22 (69%) of the Head teachers agreed on whether Teachers are offered different levels of training on the implementation of ECDE programmes, while 4 (13%) strongly agreed with a mean of ($M=4.24$, $SD=0.86$). This implies that Teachers are sometimes offered different levels of training on the implementation of ECDE programmes. The findings are in line with Otieno & Mutua

(2023), who assessed the impact of competency-based training on Early Childhood Education in Kenya and found that the introduction of competency-based teacher training significantly enhanced the ability of teachers to implement learner-centred methods, although limited access to training facilities remained a challenge. The findings concur with Nkosi (2019), who investigated bridging the training gap in Early Childhood Education: Insights from South Africa and revealed significant gaps in the training of ECE teachers, particularly in rural areas, and that teachers lacked knowledge in areas such as developmental psychology and inclusive education, affecting program implementation.

A majority, 17 (53%), of the Head teachers strongly agreed that the duration of training for teachers on ECDE programmes is adequate, while 8 (25%) agreed with a mean of ($M=4.37$, $SD=0.49$). This implies that the duration of training for teachers on ECDE programmes is adequate. The findings concur with Muthoni & Thinguri (2021), who investigated the impact of teacher professional qualifications on the performance of Early Childhood Education Learners in Kenya and revealed a positive correlation between teachers' professional qualifications and learners' academic outcomes, and that teachers with higher qualifications used child-centred methods more effectively.

The majority, 22 (69%), of the Head teachers were agreed Teachers are awarded a certificate of participation for different training programmes, while 10 (31%) strongly agreed with a mean of ($M=4.43$, $SD=0.50$). This implies that Teachers are awarded a certificate of participation for different training programmes. The findings are in line with Ochieng and Mugambi (2022), who conducted a study on the influence of continued Teacher professional development on Early Childhood Curriculum Implementation in Kenya and found that continued professional development significantly enhanced teachers' ability to implement the ECE curriculum, although irregular training sessions and limited resources posed challenges.

13 (41%) of the Head teachers agreed that Teachers are encouraged to continue training to improve their capacity, while 11 (34%) were Undecided, with a mean of ($M=4.65$, $SD=1.48$). This implies that the Teachers are encouraged to continue training to improve their capacity. The findings concur with Obuya (2024) in Homa Bay County, who assessed the impact of ongoing teacher professional development on the implementation of the ECE curriculum and revealed a significant positive correlation between continuous professional development and effective curriculum implementation. Table 2 shows Teachers' responses on Teacher training adequacy and implementation of Early Childhood Development Education programmes.

Table 2: Teachers' responses on Teacher training adequacy and implementation of Early Childhood Development Education programmes

	SA		A		UD		D		SD		Mean	Std
	f	%	f	%	f	%	f	%	f	%		
Teachers have well well-developed programme to enhance skills	0 (0)		0 (0)		22 (31)		38(54)		10(14)		2.17	0.65
The teachers take part in teacher training	70(100)		0 (0)		0 (0)		0 (0)		0(0)		1.00	0.00
The teachers are offered grants for further study to acquire a KNEC Diploma	0 (0)		0 (0)		20 (29)		27 (38)		23 (33)		1.96	0.78
The teachers attend workshops to enhance their skills and knowledge	3 (4)		6 (9)		4 (6)		20 (29)		37 (53)		1.83	1.13
The teachers are offered grants for Benchmarking trips by the County Government	0 (0)		0 (0)		0 (0)		34 (49)		36 (51)		1.49	0.50
The teachers are adequate in number of teachers to handle the children in the centres	0 (0)		9 (13)		6 (9)		34 (49)		21 (30)		2.04	0.95

Teachers are offered different levels of training on the implementation of ECDE programmes	0 (0)	13 (19)	2 (3)	20 (29)	35 (50)	1.90	1.12
The duration of training for teachers on ECDE programmes is adequate	33 (47)	22 (31)	0 (0)	15 (21)	0 (0)	4.04	1.15
Teachers are awarded a certificate of participation for different training programmes	0 (0)	15 (21)	2 (3)	22 (31)	31 (44)	2.01	1.15
Teachers are encouraged to continue training to improve their capacity	0 (0)	0 (0)	0 (0)	32 (46)	38 (54)	1.46	0.50
Average Mean						1.99	0.79

Table 2 shows that the majority, 38 (54%) of the teachers agreed that they have well-developed programme to enhance their skills, while 22 (31%) disagreed with a mean of ($M=2.67$, $SD=1.84$). This implies that the teachers have a well-developed programme to enhance their skills. The findings are in line with Mogere and Mbataru (2023), who investigated the role of teacher training needs analysis and in-service training in the implementation of the Competency-Based Education (CBE) for early childhood education in Kenya and indicated that conducting a thorough training needs analysis and providing regular in-service training through seminars and workshops were significant predictors of successful CBE implementation.

All 70 (100.0%) of the teachers Strongly Agreed that teachers take part in teacher training, with a

mean of ($M=1.00$, $SD=0.00$). This implies that the teachers take part in teacher training. The findings concur with Njiru and Odundo (2024), who investigated the role of teacher training needs analysis and in-service training in the implementation of the CBE for early childhood education in Kenya and revealed that conducting thorough training needs analyses and providing regular in-service training through seminars and workshops were significant predictors of successful CBE implementation.

20 (29%) of the teachers were undecided that teachers are offered grants for further study to acquire a KNEC Diploma, while 16 (23%) strongly agreed, and 7 (10%) strongly disagreed, with a mean of ($M=2.98$, $SD=1.59$). This implies that the teachers are offered grants for further study to acquire a KNEC Diploma. The findings agreed with Obeywa et al. (2023), who assessed the efficacy of pedagogical strategies in ECDE curriculum implementation in Hamisi Sub-County, Kenya, and revealed that the utilisation of selected pedagogical strategies had a statistically significant effect on learners' readiness for primary education

37 (53%) of the teachers Strongly Agreed that the teachers attend the workshop to enhance their skills and knowledge, while 20 (29%) Agreed, and 6 (9%) Disagreed, respectively, with a mean of ($M=3.07$, $SD=1.38$). This implies that the teachers attend workshops to enhance their skills and knowledge. The findings are in line with Njuguna (2020) examined teacher preparedness for the implementation of Competency-Based Education in Early Childhood Education in Kenya and identified gaps in teacher training, particularly in aligning teaching strategies with CBE requirements, and regular in-service training was recommended to bridge competency gaps.

On whether teachers are offered grants for Benchmarking trips by the County Government, 23 (33%) of the teachers disagreed, while 21 (30%) Strongly Disagreed and 15 (21%) Strongly agreed, respectively, with a mean of ($M=3.46$, $SD=1.34$). This implies that the teachers are not offered grants for Benchmarking trips by the County Government. The findings are supported by Wanyonyi & Simiyu (2019), who investigated the adequacy of teacher training in ICT for Early Childhood Education in Kenya and found that teachers who had trained in ICT were more effective in integrating technology into ECE classrooms, although rural areas faced challenges due to limited access to digital infrastructure.

Table 2 shows that the majority, 34 (49%) of the teachers disagreed that the teachers are adequate in number to handle children in centres, while 9 (13%) agreed with a mean of ($M=3.80$, $SD=1.24$). This implies that the teachers are not adequate in number of teachers to handle children in centres. The findings concur with Wanjiru & Ng'ang'a (2020) conducted a study on teacher training and Early Childhood Curriculum Implementation in Nakuru County, Kenya, and revealed that pre-service training programs did not fully equip teachers with skills for the Competency-Based Education (CBE) and highlighted the need for in-service training and capacity-building workshops to improve ECE delivery.

Data shows that 35 (50%) of the teachers Strongly Agreed that Teachers are offered different levels of training on the implementation of ECDE programmes, while 20 (29%) Agreed, and 13 (19%) Disagreed, respectively, with a mean of ($M=2.74$, $SD=1.81$). This implies that Teachers are not offered different levels of training on the implementation of ECDE programmes. The findings are in agreement with Kamau & Muriithi (2022) investigated the impact of continuous professional development on the implementation of ECE Programs and emphasised the positive impact of continuous professional development on teachers' ability to adapt to modern pedagogical approaches in ECE, particularly in rural counties such as Turkana.

The majority, 33 (46%) of the teachers, Strongly Agreed that the duration of training for teachers on ECDE programmes is adequate, while 22 (31%) agreed with a mean of ($M=2.91$, $SD=1.49$). This implies that the duration of training for teachers on ECDE programmes is adequate. The findings concur with Mbugua (2009) noted that while the set durations aim to provide comprehensive training, there are concerns about whether this time frame is adequate to cover the extensive content required for effective ECDE teaching. The study suggested that the existing training periods might need to be extended or supplemented with continuous professional development to ensure teachers are well-prepared.

The majority of teachers strongly agreed that they are awarded a certificate of participation for different training programmes, with 31 (44%) indicating strong agreement, 22 (31%) agreeing, and 15 (21%) disagreeing, yielding a mean of ($M = 2.94$, $SD = 1.81$). This implies that teachers are awarded a certificate of participation for different training programmes. The findings are in line with Otieno and Nyaga (2019), who examined barriers to effective teacher training in Early Childhood Education in Kenya and identified key challenges such as inadequate government funding, lack of standardisation in teacher training curricula, and insufficient teacher-to-pupil ratios, which hampered the effectiveness of ECE programs.

Similarly, most teachers indicated that they are encouraged to continue training to improve their capacity, with 38 (54%) strongly agreeing and 32 (46%) agreeing, resulting in a mean of ($M = 2.85$, $SD = 2.00$). This implies that teachers are encouraged to continue training to improve their capacity. Obuya (2024), in Homa Bay County, assessed the impact of ongoing teacher professional development on the implementation of the ECE curriculum and revealed a significant positive correlation between continuous professional development and effective curriculum implementation.

The researcher further used inferential statistics, Pearson's product-moment correlation, to analyse the hypothesis. Hypothesis one was tested using Pearson's product-moment correlation to test the relationship between Teacher training adequacy and Implementation of Early Childhood Development Education programmes. The hypothesis stated:

H01: There is no significant relationship between Teacher training adequacy and Implementation of Early Childhood Development Education programmes in public schools in Isiolo County, Kenya.

To test hypothesis one Pearson product-moment correlation was done to determine the relationship between Teacher training adequacy ($M=2.84$, $SD=1.49$) and Implementation of Early Childhood Development Education programmes ($M=3.17$, $SD=1.38$)

Table 3 shows the correlation matrix between Teacher training adequacy and the Implementation of Early Childhood Development Education programmes.

Table 3: Correlation matrix between Teachers' Training Adequacy and Implementation of ECDE

		Teachers' Training Adequacy		Implementation of Early Childhood Development Education programmes
Teachers' Adequacy	Training	Pearson Correlation	1	.463*
		Sig. (2-tailed)		.000
		N	70	70
Implementation of Early Childhood Development Education programmes		Pearson Correlation	.463*	1
		Sig. (2-tailed)	.000	
		N	70	70

*. Correlation is significant at the 0.05 level (1-tailed).

The correlation result in Table 3 indicates a positive and statistically significant relationship between Teachers' training Adequacy and Implementation of Early Childhood Development Education programmes ($r = .463$, $p < .05$). Consequently, the null hypothesis was rejected, indicating that teacher training adequacy significantly influences the implementation of ECDE programmes in public schools in Isiolo County. The correlation coefficient ($r = .463$) indicates a moderate positive relationship between teacher training adequacy and ECDE implementation. This suggests that improvements in

teacher training are associated with improvements in programme implementation. Teachers who receive adequate training are more likely to possess the pedagogical knowledge, classroom management skills, assessment competencies, and curriculum implementation capabilities required for effective ECDE delivery.

The findings support Human Capital Theory, which argues that investment in education and professional development enhances individual productivity and organizational performance. By improving teachers' knowledge, skills, and professional competencies, training strengthens their ability to effectively implement ECDE programmes and support learner development. These findings are consistent with Wanyama and Kipkorir (2020), Otieno and Mutua (2023), and Mwangi and Tunde (2022), who reported that teacher training significantly improves curriculum implementation, instructional effectiveness, and learner outcomes in early childhood education settings.

The interview data from ward coordinators were analyzed thematically. Three major themes emerged: teacher training and preparedness, resource and infrastructure constraints, and parental awareness and support.

Theme 1: Teacher training and preparedness

Ward coordinators reported that although some training opportunities had been provided, many ECDE teachers still lacked adequate competencies required for effective implementation of ECDE programmes. Concerns were raised regarding limited pedagogical skills, inadequate ICT competencies, and insufficient professional development opportunities.

One ward coordinator stated:

“Even though some training had been provided, many pre-school teachers felt ill-equipped to effectively implement the ECDE and lacked the necessary computer skills” (W3).

Another coordinator observed:

“There was a notable lack of adequately trained teachers to facilitate ECDE implementation” (Ward 5).

These findings suggest that teacher training remains a critical determinant of successful ECDE implementation and that continuous professional development is necessary to strengthen instructional effectiveness.

Theme 2: Resource and infrastructure constraints

Ward coordinators highlighted shortages of instructional resources and inadequate infrastructure as major barriers to effective ECDE implementation. Although some schools had access to electricity, essential facilities required for modern teaching and learning practices were often unavailable.

One respondent stated:

“Schools lacked sufficient resources necessary for effective CBE delivery” (Ward 1).

Another explained:

“Despite most schools being connected to electricity, essential facilities like computer labs and libraries were absent, hindering the integration of technology in teaching” (Ward 2)

These responses indicate that teacher training alone may not guarantee successful programme implementation unless schools are adequately resourced and supported through appropriate infrastructure.

Theme 3: Parental awareness and support

The coordinators also identified inadequate parental awareness regarding ECDE programmes as a challenge affecting implementation. Community understanding and parental involvement were viewed as important components of learner support and programme success.

One coordinator remarked:

“Many parents were not adequately informed about the ECDE and their role in its implementation, limiting their ability to support their children's education under the new system” (W4)

This finding suggests that effective ECDE implementation requires not only trained teachers but also active parental participation and community engagement.

Integration of qualitative and quantitative findings

The qualitative findings support the quantitative results, which revealed a positive and statistically significant relationship between teacher training adequacy and implementation of ECDE programmes ($r = .463$, $p < .05$). While the quantitative findings demonstrate that teacher training significantly influences ECDE implementation, the qualitative findings explain the mechanisms through which this influence occurs, including enhanced pedagogical competence, improved teacher preparedness, and increased confidence in curriculum implementation. The findings further suggest that resource availability and parental support also affect implementation outcomes, indicating that teacher training operates alongside other contextual factors in influencing programme effectiveness.

Implications for Practice

The findings of this study have important implications for educational practice and policy. County governments and education stakeholders should strengthen teacher support systems through continuous professional development, fair promotion structures, and adequate provision of teaching and learning resources to improve the ECDE programme. School administrators should also create supportive working environments that motivate teachers and enhance instructional effectiveness. In addition, policymakers may use the findings to formulate evidence-based strategies aimed at improving the quality, accessibility, and sustainability of ECDE programmes, particularly in marginalised counties such as Isiolo.

Limitations and Further Research

This study focused on public ECDE centres in Isiolo County, which may limit the applicability of the findings to private institutions or other counties with different educational conditions. Variations in staffing, infrastructure, and policy implementation across regions may produce different outcomes. Future studies should therefore conduct comparative research across counties and between public and private ECDE centres to broaden understanding of ECDE implementation in diverse contexts. Context refers to the specific environment, settings, conditions, or circumstances in which the study was conducted. In Isiolo County, resource inadequacy may be linked to ASAL conditions, dispersed settlements, and limited county funding for ECED centres, hence not generalizable to well-resourced urban settings.

The study also concentrated on selected teacher-related factors influencing the implementation of ECDE programmes. However, ECDE implementation is influenced by multiple interconnected factors, including parental involvement, school leadership, community support, funding, and government policy. Future researchers should examine these factors to provide a more holistic understanding of the challenges influencing ECDE programme delivery.

The study relied heavily on self-reported data obtained through questionnaires and interviews. Self-reported responses are subject to limitations such as social desirability bias, exaggeration, selective responses, and differences in respondents' interpretation of questions. In some cases, participants may provide responses they perceive as socially acceptable or favourable rather than reflecting their actual experiences and practices. This may influence the accuracy of findings related to teacher perceptions and implementation practices. However, To minimize bias associated with self-reported data, the researcher assured respondents of confidentiality and anonymity to encourage honest and accurate responses. The questionnaires were designed using clear and neutral statements to reduce leading responses and misinterpretation of items. Future researchers may strengthen the credibility of findings by integrating additional methods such as classroom observations, document analysis, and focus group discussions to allow triangulation of data.

Future studies should examine the implementation of ECDE programmes in private schools and other counties to allow comparison across different educational contexts. Further research may also employ longitudinal or mixed-method approaches to establish causal relationships between teacher-related factors and ECDE implementation outcomes. In addition, future studies should investigate other determinants of ECDE implementation, including teacher remuneration, leadership practices, parental involvement, and government policy support.

CONCLUSION

The adequacy of teacher training significantly influences the successful implementation of Early Childhood Development Education (ECDE) programs. Well-trained teachers are better equipped with the necessary pedagogical skills, knowledge of child development, and competency in curriculum implementation, all of which enhance the quality of early childhood education. Effective training programs, including pre-service and in-service training, ensure that teachers can deliver age-

appropriate content, apply learner-centred methodologies, and create a supportive learning environment for young children. Furthermore, continuous professional development (CPD) plays a critical role in keeping ECDE teachers updated with emerging trends, such as the integration of digital learning tools and competency-based teaching approaches. The lack of adequate training often results in poor instructional delivery, ineffective classroom management, and limited ability to address the diverse learning needs of early learners. For ECDE programs to be effectively implemented, there is a need for sustained investment in teacher training, well-structured career progression pathways, and strong policy frameworks to support professional development. Therefore, enhancing teacher training adequacy is fundamental to improving early childhood education outcomes and fostering holistic child development in Kenya.

Recommendation for policy and practice

1. **Strengthen Pre-Service Training:** Teacher training colleges and universities should review and standardize ECDE curricula to ensure trainees acquire adequate pedagogical skills, child-centred methodologies, and classroom management techniques necessary for effective programme implementation.
2. **Enhance Continuous Professional Development (CPD):** The County Government of Isiolo, in collaboration with the Ministry of Education, should institutionalize regular in-service training, workshops, and refresher courses to equip ECDE teachers with updated knowledge and practices.
3. **Certification and Recognition of Training:** ECDE teachers should consistently be awarded certificates for training participation, which not only motivates them but also provides tangible evidence of professional growth and competence.
4. **Resource Support for Training:** Adequate funding should be allocated by county governments to support teacher training initiatives, including the provision of training materials, facilitation of workshops, and incentives for teachers pursuing higher qualifications.
5. **Monitoring and Evaluation of Training Programmes:** Education stakeholders should establish mechanisms to assess the level, quality, adequacy, and influence of training on classroom practices, ensuring that training directly translates into improved ECDE implementation.

Declaration Statement

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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