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Influence of Teachers' In-Service Training Content on Implementation of Competence-Based Curriculum in Public Primary Schools in Kilifi County, Kenya

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Abstract

The global shifts towards Competence Base Curriculum (CBC) implementation in education has necessitated the pivotal role of trainers in-service training content. Equipping teachers with relevant content during the in-service training sessions impacts on the success of CBC implementation. This study examined the relevance of in-service training content on implementing Competency-Based Curriculum (CBC) in public primary schools in Kilifi County, Kenya. The study objectives sought to assess how these training programmes equip teachers with the knowledge and skills necessary for CBC. Using a mixed-methods approach, the study analysed educators' survey responses regarding their training experiences. Results revealed a mixed evaluation: 56.5% of educators found the school-based training model inadequate, 62.9% rated curriculum support officers as adequate, and 30.3% still found them lacking. The Kenya Institute of Curriculum Development (KICD) was deemed adequate by 49.3% of educators, and 43.2% found the Ministry of Education's training satisfactory, yet 17% reported inadequacies. Notably, 72.3% of educators reported that training lacked sufficient interactive and hands-on elements, and 77.2% found the training duration inadequate. The study concludes that while current training programmes offer valuable insights, refinement is needed. The study recommends that there is need of increasing practical and interactive components in training sessions to engage educators better and improve hands-on application. Furthermore, there is quest of enhancing ICT integration and modern teaching techniques, extending training duration and tailoring content to specific educator needs are crucial for effective CBC implementation.

Keywords: Competence-Based Curriculum; In-service Teacher Training; Innovative Teaching Strategies; Instructional Delivery and Assessment; Professional Development

1. Introduction

The global push for a more knowledgeable society and increased competitiveness in job markets has led to the adoption of competency-based curricula in education. This shift addresses the gap between the demand for skilled labour and its supply (Mark, 2023). The rapid pace of globalization and technological advancements necessitates changes in teaching and learning methods to meet 21st century skill requirements (UNESCO, 2021). A competency-based curriculum focuses on developing practical skills and competencies essential for success in a dynamic world (Ruth & Ramadas, 2019). It represents a progressive step toward improving education standards and equipping learners with diverse skills necessary for a globalized and tech-driven society (Waruingi, Mbogo, & Mambo, 2022; Okeyo & Kanake, 2021). This approach not only addresses immediate labor market needs but also prepares students for future challenges by emphasizing a holistic, learner-centered education that adapts to individual strengths and learning styles (UNESCO, 2021; Waruingi et al., 2022).

The implementation of the Competence-Based Curriculum (CBC) in Kenya has marked a significant shift in educational practices, emphasizing the need for students to acquire practical competencies over rote memorization (Sifuna & Obonyo, 2019). This change requires teachers to be well-equipped with relevant knowledge and pedagogical



skills through practical in-service training. The relevance of the training content provided during these sessions is paramount in ensuring the successful execution of the CBC. As Mwang'ombe (2021) and Sifuna and Obonyo (2019) suggest, the alignment of training content with curriculum requirements plays a critical role in its seamless application in the classroom.

Kilifi is characterized by a significant teacher shortage, high poverty levels, and a multilingual environment, which directly impact the effectiveness of CBC implementation. Studies have shown that teacher preparedness and contextual understanding are critical to the successful rollout of CBC, particularly in marginalized regions like Kilifi (Nganga & Otieno, 2022). Furthermore, Kilifi's coastal location and rural setting amplify challenges such as accessibility to training and resources, making it a valuable focus area for assessing how in-service training content aligns with local needs (Mwangi, Mutua, & Muriithi, 2023). Consequently, this paper examines how the relevance of teachers' in-service training content influences the implementation of the CBC in public primary schools in Kilifi County, Kenya.

Despite significant efforts by the government to introduce and roll out the Competence-Based Curriculum, its successful implementation has faced numerous challenges. Among these, relevant in-service training content inadequacy has been cited as a key barrier. Many teachers, though attending training sessions, report that the content delivered is often theoretical and not sufficiently aligned with the practical demands of the CBC (Ngwacho, 2019). This misalignment hinders teachers' ability to effectively impart the required competencies to students. This study investigates the influence of in-service training content on CBC implementation in Kilifi county.

2. Research Methods

The study employed a descriptive research design to investigate how in-service training-related factors influence the implementation of the Competency-Based Curriculum (CBC) in Kilifi County, Kenya. This approach allowed for the collection of both qualitative and quantitative data from a subsection of the population. The target population included 213 public primary schools and key stakeholders in the CBC program, such as education officers, curriculum support officers, trainers of trainers, head teachers, and teachers across seven sub-counties. A multi-stage sampling technique was used, including stratified, simple random, and purposive sampling, to ensure diverse representation. A sample of 63 schools and a total of 434 respondents were selected, including education officers, curriculum officers, head teachers, trainers, and teachers. This enabled the study to capture a comprehensive view of training practices and their perceived impact on CBC implementation.

To ensure data reliability and validity, the researcher used methodological triangulation, employing semi-structured questionnaires and interview guides tailored for different respondent groups. These tools captured both general demographic data and specific information on the relevance of training content, delivery, materials, and support systems. Open-ended questions and Likert scales enriched the data by incorporating respondent perspectives. For analysis, the data was initially reviewed for emerging themes, then coded and processed using SPSS version 21. Summary statistics described variable distributions, while Pearson's Chi-square tests examined relationships between variables. This mixed-methods approach provided robust insights into the effectiveness and challenges of in-service training in supporting CBC rollout in Kilifi County.

3. Analysis Results

3.1 Socio-demographic characteristics

The study sought to establish demographic information such as gender, age, working experience, academic qualification, and in-service course attended. Information that was needed included the respondents' gender, age, working experience, and highest professional qualification. The Background information of the respondents is detailed in Table 1.

Table 1: Respondents' Demographic data

		Teachers	Headteachers	Trainers, SCDE&CSO
Gender	Male	40.8	57.1	82.9
	Female	52.4	42.9	17.1



	19-30	30.6	0	0
Age	31-40	39.5	34.9	17.1
	41-60	29.9	65.1	82.9

Findings in Table 1 show that 40.8% of the teachers were male while 52.4% were female, 57.1% of the head teachers were males while 42.9% were female, and 82.9% of the trainers of trainers, Sub-County Education officers (SCDE) and CSO were male while 17.1% were female. The majority, 66.7% of the principals who participated in the study were male while 33.3% were female. The inclusion of both genders is significant because some authors affirm that female teachers play a pivotal role in implementing the curriculum (Sifuna & Obonyo, 2019). Furthermore, the results show that over one-third (30.6%) of the teachers were aged below 30 years, 39.5% of the teachers were between 31-40 years, and 29.9% were above 40 years. Additionally, 34.9% of the head teachers were aged between 31-40 while 65.1% were aged above 41 years. This shows that the teachers were well-distributed.

3.1.2 Working Experience

The study sought to establish the years of experience of the respondents. Working experience is the number of years the people who participated in the study had worked for. Years of experience was crucial in professional development as they contribute to acquiring and refining essential skills, fostering problem-solving abilities and informed decisions. The results are presented in Figure 1.

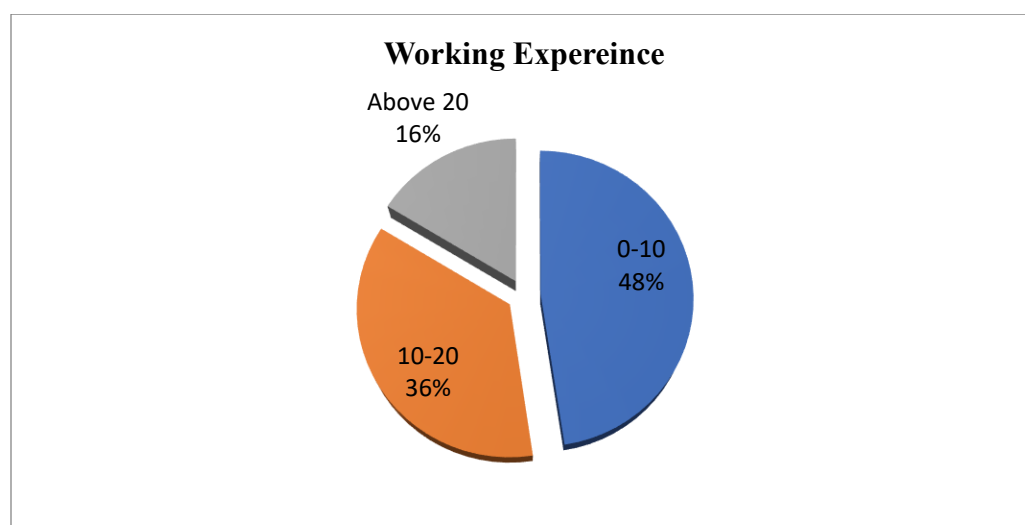


Figure 1: Working Experience

Findings in Figure 1 show that nearly half (48%) of the participants had taught in different schools for less than 10 years, 36% had 10-20 years of teaching experience while 16% had over 20 years in teaching occupation. The study results, noted that the majority of the teachers had experience in teaching, and this depth of experience resulted in a profound understanding of the CBC, allowing professionals to stay abreast of trends and best practices. This diversity in experience implies a range of perspectives and approaches within the teaching cohort.

3.1.2 Level of Education

The study sought to establish the respondents' level of education to validate the credibility of the CBC implementers and stakeholders. The study findings are presented in Figure 2.



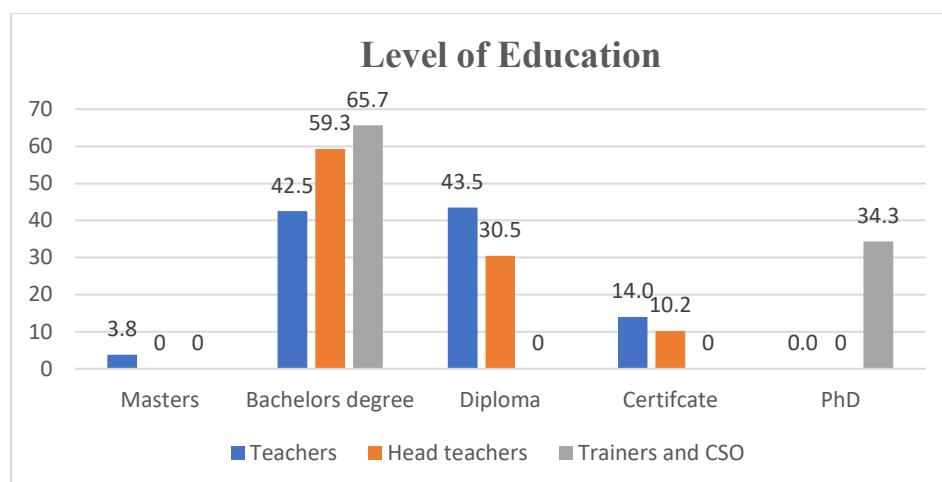


Figure 2: Level of Education

Study findings in Figure 2 show that 3.8% of the teachers had achieved a master's level of education, 42.5 had bachelor's degrees, 43.5 had diplomas while 14% had certificates. Furthermore, over half (59.3%) of the head teachers had a bachelor's degree, 30.5% had a diploma while 10.2% had a certificate. Finally, over three-fifths (65.7%) of trainers of trainers and CSOs had bachelor's degrees while 34.3% had PhD in Education and specialized in CBC.

3.2 Relevance of training content

Table 2: Relevance of training content

Statement	Irrelevant	Slightly Irrelevant	Moderately Relevant	Relevant	Extremely Relevant
Understanding the CBC Framework and pathways	3.1	0	63.6	26.5	6.8
Core competencies in CBC (21 st -century skills)	0	9.5	36.7	46.9	6.8
Competency-Based Assessment	0	0	53.4	39.8	6.8
Curriculum Design (developing CBC-aligned lesson plans, units, and instructional materials)	3.1	0	53.4	29.9	13.6
Differentiated Instruction	10.5	0	33.7	38.2	17.5
Learner-Centered Approaches	0	16.3	6.5	67	10.2
Inclusive Education	3.1	0	13.6	62.9	20.4
ICT Integration:	10.2	0	16.7	46.6	26.5
Parent and Community Engagement	0	0	13.3	70.4	16.3
Professional Development: (Strategies for continuous self-improvement and staying updated on CBC developments)	0	3.1	13.3	57.1	26.5
Classroom Management:	13.3	0	6.1	64.3	16.3
Cross-curricular integration of subjects and competencies to create holistic learning experiences	16.3	0	20.4	46.9	16.3

Table 2 shows that understanding the CBC framework and pathways was viewed as moderately relevant by the majority (63.6%), with fewer considering it extremely relevant (6.8%). Core competencies and 21st-century skills are regarded as necessary, with 46.9% considering them relevant and 36.7% moderately relevant. Competency-based assessment is also seen as moderately relevant (53.4%) and relevant (39.8%), though only 6.8% find it highly relevant. Curriculum design, including the development of CBC-aligned lesson plans and materials, is considered mostly moderately relevant (53.4%) and relevant (29.9%), with 13.6% viewing it as extremely relevant. Significant portions of respondents recognise differentiated instruction and ICT integration as relevant, with 38.2% and 46.6%,



respectively, finding them relevant and 17.5% and 26.5% considering them extremely relevant. Learner-centred approaches and inclusive education are strongly valued, with 67% and 62.9%, respectively, finding them relevant and 10.2% and 20.4% finding them extremely relevant. Parent and community engagement is predominantly seen as relevant (70.4%) and somewhat extremely relevant (16.3%). Professional development is crucial, with 57.1% seeing it as relevant and 26.5% as extremely relevant. Classroom management is also viewed positively, with 64.3% finding it relevant and 16.3% extremely relevant. Lastly, cross-curricular integration is mostly considered relevant (46.9%) and extremely relevant (16.3%). Overall, aspects such as learner-centered approaches, parent and community engagement, and professional development are highly valued, while understanding the CBC framework and curriculum design are viewed as moderately to highly relevant.

3.3 The Effectiveness of In-Service Training Agencies

The teachers' opinion was sought on the adequacy of the training provided by various agencies involved in CBC. The findings are presented in figure 3.

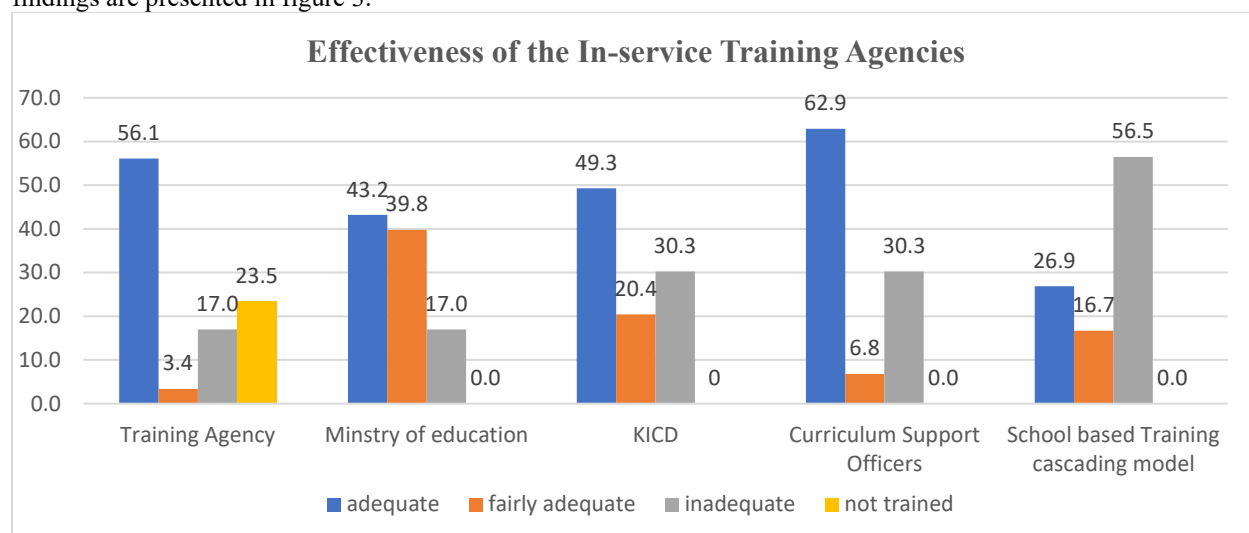


Figure 3: Effectiveness of In-Service Agencies

The study findings in Figure 3 reveal a mixed assessment of the effectiveness of various training models and entities for implementing the Competency-Based Curriculum (CBC). Over half of the trainees (56.5%) felt that school-based training, or the cascading model, was inadequate for imparting CBC-related knowledge and skills, though 26.9% found it adequate. 62.9% of trainees saw curriculum support officers as adequate, but 30.3% considered their training insufficient. The Kenya Institute of Curriculum Development (KICD) was rated as adequate by 49.3% of trainees, while 30.3% felt it fell short. The Ministry of Education received an adequate rating from 43.2% of respondents, with 17% finding their training insufficient. Additionally, 56.1% of trainees found the training agency sufficient, though 17% viewed it as lacking. These findings indicate that while some training entities and models are perceived as effective, there is substantial room for improvement to ensure more comprehensive and impactful CBC implementation.

3.4 The Nature of Training Provided during In-Service Training for the implementation of Competence-Based Curriculum

The training provided for preparedness for Competency-Based Curriculum (CBC) implementation is designed to equip educators with the necessary knowledge, skills, and strategies to effectively adopt and implement the CBC approach in their teaching practices. This training typically covers various aspects, including the philosophy and principles of CBC, student-centric methodologies, skill development strategies, assessment techniques, and technology integration. The study also sought to find out from the teachers the nature of training provided during in-service training. The findings are presented in Table 2.



Table 3: The Nature of Training Provided During In-Service Training

Statement	strongly disagree	moderately disagree	Neutral	moderately agree	Strongly agree
The training content is easy to follow and adequate	3.1	10.2	10.2	76.5	0
The training was comprehensive and very informative	3.1	10.2	13.3	70.1	3.4
The training content was relevant and applicable to the CBC program design	0	16.7	9.5	63.6	10.2
The training content has made it easier to effectively pass skills to students	0	10.2	9.5	66.7	13.6
The training included hands-on, interactive sessions	3.5	72.3	3.2	10.5	10.5
I can instil the core competencies in learners	70.1	13.3	3.1	0	13.6
Training content included ICT gadgets likely to be used in CBC classes	63.9	6.1	16.3	0	13.6
I have applied the material learned in the training in CBC classes	0	69.1	13.7	0	17.2
continuous assessment techniques were practically discussed	3.1	66.7	3.1	10.2	17
I am able to carry out learners' supervision and assessment.	3.1	0	10.2	80.3	6.5
I am able to formulate lesson objectives	0	0	20.4	62.1	17.5
I am able to formulate and prepare CBC lesson plans and schemes of work	0	0	19.4	60.9	19.7
The duration of training was adequate	77.2	0	19.4	0	3.4
I have the pedagogical knowledge and skills required to implement the CBC	3.4	67.7	19.4	3.4	6.5
I can create a conducive environment for learning and cater to learners' individual needs.	0	6.5	10.2	63.3	20.1
I learned modern techniques in classroom management	0	40.2	0	53.3	6.5
I have been trained on the different CBC pathways	0	10.2	6.5	76.5	6.8

Findings in Table 3 show that the majority of respondents (76.5%) found the training content easy to follow and adequate, and 70.1% felt the training was comprehensive and informative. Most participants (63.6%) agreed that the content was relevant and applicable to CBC program design, while 66.7% believed it made it easier to pass skills to students. However, 72.3% found the training lacked hands-on, interactive sessions, and 70.1% felt unable to instil core competencies in learners. A significant portion (63.9%) felt that ICT gadgets were insufficiently included in the training. Regarding application, 69.1% of trainees felt they had not applied the material learned in CBC classes, and 66.7% felt that continuous assessment techniques were not practically discussed. Although most (80.3%) felt capable



of carrying out learners' supervision and assessment, many reported inadequate training duration (77.2%). Additionally, a significant portion (67.7%) felt they lacked the necessary pedagogical knowledge and skills for CBC implementation, though 76.5% were trained on CBC pathways. While certain aspects of the training were deemed useful, there are notable areas for improvement, especially in practical application and training duration.

3.5 Bivariate analysis

Table 4: Cross tabulations

	CBC preparedness			Implementation of CBC		
	χ^2	DF	P	χ^2	DF	P
Understanding the CBC Framework and Pathways	38.793	3	0.000	24.337	3	0.000
Core competencies in CBC (21st-century skills)	21.918	3	0.000	9.364	3	0.025
Competency-Based Assessment	17.742	2	0.000	10.751	2	0.005
Curriculum Design	20.611	3	0.000	16.201	3	0.001
Differentiated Instruction	20.309	3	0.000	15.554	3	0.001
Learner-Centered Approaches	14.315	3	0.003	24.695	3	0.000
Inclusive Education	6.460	3	0.091	17.881	3	0.000
ICT Integration:	14.366	3	0.002	8.419	3	0.038
Parent and Community Engagement	16.784	2	0.000	3.497	2	0.174
Professional Development	9.885	3	0.020	18.413	3	0.000
Classroom Management:	19.356	3	0.000	15.808	3	0.001
Cross-curricular integration of subjects and competencies to create holistic learning experiences	6.897	3	0.075	1.553	3	0.670

Table 4 reveals significant preparedness and challenges in implementing the Competency-Based Curriculum (CBC). For most factors, such as understanding the CBC framework, core competencies, competency-based assessment, curriculum design, differentiated instruction, and learner-centred approaches, both CBC preparedness and implementation show highly significant values ($P < 0.05$), indicating that these are critical areas where both readiness and successful application are closely aligned. However, areas like inclusive education and ICT integration show a notable gap between preparedness ($P > 0.05$) and implementation ($P < 0.05$), suggesting challenges in translating these concepts into practice. Parent and community engagement and cross-curricular integration show weaker significance in implementation ($P > 0.05$), indicating these aspects may be underdeveloped in practice despite moderate preparedness levels. Consequently, professional development and classroom management are areas where preparedness and implementation remain crucial for CBC's success.

4. Discussion

Findings indicate that the majority of respondents view understanding the CBC framework and pathways, curriculum design, and competency-based assessment as moderately relevant, rather than highly relevant. This is consistent with studies like Owino and Wambugu (2021), who found that many teachers in Kenya had only a partial grasp of the CBC framework, largely due to inadequate training and limited exposure to structured professional development. Similarly, KICD (2019) noted that while teachers are generally aware of CBC goals, deeper conceptual understanding and ability to translate policy into practice remain limited. The finding that core competencies and 21st-century skills are widely recognized as relevant echoes studies by Ngugi et al. (2020), which highlighted growing awareness of these skills as vital for modern education, although actual integration into classroom practice remains uneven.

The results also reveal that learner-centred approaches, inclusive education, parent/community engagement, and professional development are highly valued by teachers, with many rating them as either relevant or extremely relevant. This aligns with findings by Wasanga et al. (2020) and MOE (2021), who emphasized that stakeholder engagement and teacher empowerment are essential for successful CBC implementation. Moreover, studies like Muthee and Muthoni (2022) found that when teachers are supported through sustained professional development, they are more likely to adopt inclusive, learner-centred methods. Additionally, the finding that ICT integration and cross-curricular instruction are viewed positively supports research by Makori and Onderi (2020), which emphasised the growing recognition of digital tools and interdisciplinary teaching in modern pedagogy, though barriers like infrastructure and digital literacy still hinder full adoption.



The findings reveal a lack of confidence in the effectiveness of the cascading school-based training model, with over half (56.5%) of the respondents rating it as inadequate. This aligns with the concerns raised in the Taskforce Report on Enhancing Access, Relevance, Transition, Equity, and Quality for Effective Curriculum Reforms (MOE, 2019), which found that the cascade model led to information distortion and inconsistencies in content delivery. Similar critiques were reported by Oduor et al. (2020), who observed that each level of cascade diluted the depth and accuracy of training, leaving many teachers feeling underprepared.

The findings on the mixed perceptions of KICD, the Ministry of Education, and curriculum support officers resonate with those of Mwangi and Muthoni (2021), who found that while these entities play crucial roles in CBC rollout, many teachers questioned the consistency, practicality, and follow-up support of the training provided. The relatively favourable view of curriculum support officers (62.9% adequate) in the study supports findings from Nyambura and Wambua (2022), which emphasised the value of localised, on-the-ground mentorship. However, the significant minority who still find their efforts insufficient points to the need for enhanced capacity building and resourcing of these officers. The respondents' divided views on KICD (49.3% adequate) and the Ministry of Education (43.2% adequate) echo ongoing debates around centralized training versus school-level contextualization, as raised by UNESCO (2021), suggesting a need to decentralize and tailor training further.

The study found that while most respondents appreciated the clarity and relevance of training content (76.5% found it easy to follow and 70.1% considered it comprehensive), a large portion also identified significant gaps in practical application particularly the lack of hands-on sessions (72.3%), insufficient ICT integration (63.9%), and limited discussion of continuous assessment strategies (66.7%). These findings align with KICD (2019) and UNESCO (2021) reports, which observed that although CBC training modules are well-structured on paper, they often fail to translate into practical, interactive experiences for teachers. This shortcoming has hindered teachers' ability to fully internalize core CBC elements, particularly in competency-based assessments and the integration of technology.

Furthermore, the respondents' concerns about limited training duration (77.2%) and inadequate pedagogical preparation (67.7%) reflect issues raised by Ong'ondo and Gudu (2020), who emphasised that one-off workshops and brief in-service sessions do not sufficiently equip educators to implement such a complex curriculum reform. The finding that 69.1% of respondents have not applied the training in CBC classrooms echoes similar concerns from Wasanga et al. (2020), who reported a disconnect between training objectives and classroom realities due to contextual challenges, lack of follow-up, and minimal teaching resources. However, it's notable that 80.3% of the respondents felt capable of supervising and assessing learners, showing that teacher confidence in classroom management remains relatively high, a finding consistent with Mutua and Mwangi (2021), who observed that teachers adapt over time with practice and peer support even when formal training falls short.

The findings demonstrate a strong statistical relationship between teacher preparedness and successful implementation in core CBC areas such as understanding the framework, competency-based assessment, curriculum design, and learner-centred approaches ($P < 0.05$). These results align with studies by MOE (2019) and Ngugi et al. (2020), which found that when teachers are adequately trained in the core elements of CBC, implementation is more consistent and effective. These studies emphasized that preparedness through targeted in-service training and clarity in curriculum content significantly enhances the application of CBC methodologies in classrooms. The findings support this, highlighting the need for continued focus on these foundational areas to sustain CBC success.

However, the study also highlights significant gaps between preparedness and implementation in inclusive education and ICT integration ($P > 0.05$ for preparedness, but $P < 0.05$ for implementation), suggesting that even where teachers report some level of readiness, systemic or infrastructural barriers prevent effective application. These challenges are echoed in Wasanga et al. (2020) and UNESCO (2021) reports, which cited limited access to ICT tools, lack of assistive technologies, and inadequate training in inclusive practices as persistent obstacles. The weaker significance observed in areas like parent and community engagement and cross-curricular integration further mirrors concerns raised by Muthee and Muthoni (2022) that community roles in CBC remain vague or underutilized, and teachers often lack strategies or support for integrating subjects across learning areas. Consequently, the gaps highlight the importance of enhancing professional development and classroom management, both of which the study identifies as critical to bridging preparedness and actual practice.



5. Conclusion

The study concludes that while there are positive aspects of the in-service training for Competency-Based Curriculum (CBC) implementation, significant gaps remain. Although many educators find the training content relevant and informative, with a majority feeling it helps in understanding and applying CBC principles, issues persist in practical application and interactive elements. The school-based cascading model and various training entities, including the Kenya Institute of Curriculum Development (KICD) and the Ministry of Education, received mixed evaluations, highlighting a need for improvement. The training often falls short in areas such as hands-on practice, ICT integration, and the duration of training sessions. Furthermore, many educators reported inadequacies in instilling core competencies and applying learned material effectively. To enhance CBC implementation, it is crucial to address these deficiencies by refining training approaches, increasing practical and interactive components, and ensuring that training duration and content are adequately tailored to meet the evolving needs of educators. Furthermore, the results suggest that while there is strong preparedness in key areas of the Competency-Based Curriculum (CBC), challenges remain in implementing certain components, particularly inclusive education and ICT integration. The gap between preparedness and practice indicates that additional support and resources are needed to fully realise these areas in the classroom. A focus on professional development, classroom management, and cross-curricular integration will be essential for successfully implementing CBC.

6. Recommendation

Based on the research finding the following recommendations are drawn:

- i. Enhance training by incorporating more practical exercises and interactive sessions to improve educators' application of CBC principles. This will help bridge the gap between theory and classroom implementation.
- ii. Focus on integrating ICT tools and modern teaching techniques into the training curriculum. This approach will equip educators with the skills needed to effectively utilize technology in CBC classrooms.
- iii. Extend the duration of training sessions to allow for comprehensive coverage of CBC content. Tailor the training to address specific needs and challenges faced by educators in implementing CBC effectively.

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