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*Original Article*

# Rethinking Teacher Education for a Changing World: New Competencies for a New Era

*Alice Omariba*[1*] *& April Noah*[2]

[1] Murang'a University of Technology, P. O. Box 75-10200, Murang'a, Kenya.
[2] Hope Organization, Tanzania.
[*] Author for Correspondence ORCID ID; https://orcid.org//0000-0002-9313-8476; Email: aomariba@mut.ac.ke

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**Keywords**: *Teacher Education, Digital Literacy, Inclusive Pedagogy, Professional Development, 21st-Century Skills.*

**ABSTRACT**

As education systems evolve in the 21st century, teacher education must adapt to prepare educators with the competencies needed to navigate increasingly complex and dynamic classrooms. This study examined innovative approaches to pre-service and in-service teacher preparation that emphasise digital literacy, reflective practice, learner-centred pedagogy, inclusivity and emotional intelligence. Drawing on best practices from Finland, Singapore, Estonia and East Africa, they explored how teacher training institutions can design curricula that respond to global competencies while remaining aligned with Kenya's Competency-Based Education (CBE). A mixed-methods research approach was employed, utilising an unstructured questionnaire administered to 300 education stakeholders drawn from teacher training institutions, universities, schools and education agencies across Kenya. This approach provided a holistic understanding of how teacher education programmes are preparing pre-service teachers for effective CBE implementation in a digitally driven and inclusive environment. Findings revealed notable gaps in digital competency integration, limited inclusive pedagogy and inconsistent mentorship and practicum experiences. Systemic challenges such as inadequate ICT infrastructure, limited continuous professional development (CPD) and weak linkages between policy and practice were also highlighted. The study recommended strengthening the integration of CBE-aligned competencies across teacher education programmes to promote learner-centred and outcome-based teaching. It further called for enhanced digital literacy and ICT infrastructure through structured competency frameworks and targeted CPD initiatives. Moreover, embedding inclusive education and reflective practice supported by mentorship, experiential learning and professional learning communities was vital for cultivating adaptive and innovative teachers. The paper concluded that rethinking teacher education through these reforms will enhance instructional quality and position teachers as transformative agents for sustainable educational and societal development in Kenya.

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## INTRODUCTION

Globally, teacher education is undergoing a fundamental transformation driven by demands for inclusive, technology-integrated and competency-based education. The 21st-century classroom requires educators to be agile, reflective, digitally literate and equipped with social-emotional intelligence. According to the UNESCO Global Education Monitoring Report (2021), teacher quality remains the single most important in-school factor affecting student learning outcomes. This has prompted a shift from content-heavy teacher training models to those emphasising professional competencies, continuous learning and classroom innovation. In high-performing systems, teacher preparation is increasingly rooted in research, mentorship and practical experience, all supported by strong policy and institutional frameworks (Schleicher, 2020).

Countries like Finland, Estonia and Singapore have become benchmarks in reimagining teacher education. In Finland, teacher education is a research-based master's level programme where critical thinking, curriculum design and pedagogical reflection are core components (Sahlberg, 2021). Estonia's model emphasises digital competence and collaboration, equipping teachers to effectively integrate technology into pedagogy (OECD, 2020). Singapore's National Institute of Education (NIE) applies the "teacher-practitioner-researcher" model, integrating theory and practice while maintaining a rigorous teacher selection process (Tan et al., 2021). These systems share common features—strong entry requirements, a culture of professional learning, a well-structured practicum and policy alignment that ensure continuous professional growth and high learner outcomes.

In West Africa, several countries have launched reforms to strengthen teacher training through competency-based approaches and digital integration. Ghana, for example, implemented a 4-year B.Ed. programme emphasising inclusive education, reflective practice and school-based experience (Akyeampong et al., 2021). Nigeria has also begun retooling teacher colleges through digital platforms and capacity-building in inclusive practices. In South Africa, teacher education policies focus on equity, social justice and decolonised curricula. Institutions like the University of Johannesburg offer programs that blend pedagogy, indigenous knowledge and ICT to prepare teachers for diverse classrooms (Mestry, 2021). However, despite these innovations, regional disparities in infrastructure, funding and teacher retention remain major constraints.

In East Africa, teacher education remains constrained by outdated pedagogical methods, weak policy implementation and limited integration of digital tools. Countries like Uganda and Tanzania are experimenting with blended learning and competency-based training, yet implementation is uneven. In Kenya, the education sector has undergone significant reform with the introduction of the Competency-Based Curriculum (CBC). However, teacher education has struggled to keep pace with these reforms. According to the Teacher Service Commission (TSC, 2022), only 30% of teachers have received sufficient training on CBC implementation, especially in using learner-centred approaches and integrating ICT. The disconnect between

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teacher training colleges and classroom realities has widened, resulting in low confidence among new educators and inconsistent learning experiences for students (Mugo & Ngugi, 2023).

While the CBC reform emphasises creativity, collaboration and problem-solving, teacher education programmes in Kenya still largely rely on traditional, lecture-based instruction. Pre-service teacher education lacks sufficient practicum time, modern digital infrastructure and exposure to real-world teaching scenarios. Furthermore, there is limited mentorship and support for early-career teachers, despite evidence that structured induction programs improve retention and performance (Wambugu & Gikungu, 2021). A 2023 study by the Kenya Institute of Curriculum Development (KICD) found that most teacher educators are underprepared to deliver CBC-aligned training. This systemic gap between policy ambition and institutional practice underscores the urgent need to rethink teacher education models to align with evolving educational demands and societal needs.

**Rationale for the Study**

Kenya is at a critical juncture where the success of curriculum reforms hinges on the capacity of teachers to deliver relevant, engaging and inclusive instruction. Given the country's ambition to produce globally competitive learners, teacher education must be re-engineered to equip educators with 21st-century competencies. This study is necessitated by the gap between policy frameworks and actual teacher preparation practices in Kenya, especially in adapting to CBC, integrating ICT and managing diverse classrooms. By examining global and regional best practices and assessing their applicability in the Kenyan context, the study aims to propose actionable strategies for transforming teacher education. Ultimately, it contributes to strengthening the teaching profession as a driver of societal empowerment and sustainable development.

**Statement of the Problem**

Globally, the role of teacher education is undergoing a fundamental transformation driven by the demands of 21st-century learning, technological advancements, changing learner needs and shifting pedagogical paradigms. Countries such as Finland, Singapore and Estonia have restructured their teacher education systems to align with learner-centred, digitally integrated and competency-based models, with a strong emphasis on reflective practice, research-informed instruction and ongoing professional development (Sahlberg, 2021; OECD, 2020). Similarly, West African nations like Ghana and Nigeria have adopted teacher professionalisation frameworks emphasising continuous teacher training and ICT integration to support quality education (UNESCO, 2022). In Southern Africa, particularly South Africa, the Policy on the Minimum Requirements for Teacher Education Qualifications (MRTEQ) focuses on differentiated teacher preparation and inclusive education (DHET, 2020). East African nations, including Rwanda and Uganda, have begun implementing competency-based curricula, which demand a parallel transformation in teacher training to ensure alignment with the new pedagogical approaches (World Bank, 2023).

Despite these global and regional developments, Kenya's teacher education system has been slow to adequately transform in response to the demands of the Competency-Based Curriculum (CBC), digital disruption, inclusive education needs and globalisation. Most teacher training institutions continue to adopt traditional content delivery models, placing insufficient emphasis on innovative pedagogical strategies, ICT integration, personalised learning, and socio-emotional development (Kereri et al., 2021). The transition to CBC at both primary and secondary levels has exposed glaring inadequacies in the preparedness of teachers, especially in terms of implementing learner-centred instruction, performance-based assessment, and interdisciplinary teaching (KICD, 2023).

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Moreover, there remains a significant gap between teacher education policies and actual practice, with limited use of research-based instructional approaches and inadequate partnerships between universities and schools for pre-service practicum and mentorship (MOE, 2022). While reforms such as the Diploma in Primary Teacher Education (DPTE) and the Diploma in Secondary Teacher Education (DSTE) have been introduced, these changes have not been matched by a systematic and evidence-based overhaul of the curriculum content, delivery models, or assessment frameworks in teacher training colleges and universities (TSC, 2023). Further, continuous professional development (CPD) remains fragmented, lacking a coherent structure aligned to contemporary teacher competencies and classroom realities.

The lack of alignment between pre-service training, in-service development and the realities of teaching in a rapidly evolving socio-economic and technological landscape presents a significant barrier to the successful implementation of education reforms in Kenya. There is a critical need for empirical research to assess the extent to which teacher education programmes in Kenya are equipping educators with the competencies needed for 21st-century teaching and learning. Without this knowledge, efforts to transform the education system may fall short, undermining national goals related to quality education, equity and employability under Kenya Vision 2030 and the African Union's Agenda 2063.

### Specific Objective

- To examine how teacher education programmes in Kenya are preparing pre-service teachers with the core competencies required for effective implementation of the Competency-Based Curriculum in a digitally-driven and inclusive learning environment.

### Research Question

- How are teacher education programmes in Kenya preparing pre-service teachers with the core competencies required for effective implementation of the Competency-Based Curriculum in a digitally-driven and inclusive learning environment?

## LITERATURE REVIEW

Teacher education systems globally are undergoing transformation in response to the demands of the 21st-century learning characterised by rapid technological advancement, inclusive pedagogy and competency-based education (CBE). Countries such as Finland, Singapore, and Estonia have gained international recognition for their teacher preparation models that emphasise research-based practices, practical experience, digital literacy and lifelong professional development (Sahlberg, 2021; Leu, 2023). In Finland, for instance, all teacher education takes place at the master's level, and there is a strong emphasis on pedagogical content knowledge, autonomy and critical reflection (Toom & Husu, 2021). Singapore integrates structured practicum with mentorship and a tight nexus between policy, curriculum and teacher capacity (Ng, 2020). These models show a systemic approach to developing educators who can adapt to changing societal needs.

In Sub-Saharan Africa, however, teacher education reforms have been inconsistent, despite the increasing adoption of Competency-Based Curriculum frameworks. In West Africa, particularly Ghana and Nigeria, attempts have been made to professionalise teaching and incorporate digital tools, but structural challenges such as low investment in teacher training institutions, outdated curricula and limited access to practicum opportunities have hindered progress (Adu-Yeboah et al., 2022). In South Africa, there has been a push toward inclusive education and digital transformation through frameworks like the Integrated Strategic Planning for Teacher Education and Development (DBE, 2021), yet disparities persist in rural versus urban training quality and resource distribution.

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The East African region, including Kenya, Uganda, and Tanzania, is at a critical juncture in transitioning from traditional content-based teaching to Competency-Based Education. In Kenya, the shift to the Competency-Based Curriculum (CBC) has placed significant demands on teacher preparation programmes. However, research shows a disconnect between what is taught in teacher training institutions and the pedagogical expectations of CBC classrooms, particularly regarding learner-centred methods, digital integration and inclusive practices (Mwanza & Too, 2022; Koech et al., 2023). While policy documents underscore the need for teacher retooling, many institutions continue to operate under outdated frameworks that do not address emerging educational technologies or diverse learner needs.

This growing mismatch between teacher training and CBC implementation highlights a significant research gap. Although various studies have assessed challenges in CBC adoption, few have interrogated how pre-service teacher education programmes are building the specific competencies needed for this paradigm shift. There is limited empirical evidence on the extent to which Kenya's teacher education institutions are preparing pre-service teachers to integrate technology, implement inclusive strategies and adopt problem-based pedagogies. This study seeks to fill this gap by providing data-driven insights into the preparedness of Kenya's teacher education programmes to meet the competency demands of the 21st century.

## RESEARCH METHODOLOGY AND DESIGN

### Research Methodology and Research Design

This study adopted a mixed-methods research approach, combining both qualitative and quantitative data to gain a comprehensive understanding of how teacher education programmes in Kenya were equipping pre-service teachers with competencies required for implementing the Competency-Based Curriculum (CBC). The rationale for this approach lies in its strength to integrate numerical data (quantitative) with rich, contextual insights (qualitative), thereby enhancing the depth and breadth of analysis (Creswell & Plano Clark, 2021). Mixed methods are especially relevant in educational research where understanding both systemic patterns and lived experiences of educators is essential for policy and program improvement (Ivan Kova, 2020).

The study employed a convergent parallel design, where qualitative and quantitative data will be collected simultaneously but analysed separately before integrating the findings during interpretation. This design allowed triangulation of data from multiple sources, increasing the validity and reliability of the study outcomes (Fetters & Molina-Azorin, 2020). The qualitative strand explored perspectives of teacher educators, curriculum developers and pre-service teachers through semi-structured interviews. The quantitative strand involved structured questionnaires administered to a stratified sample of 300 stakeholders drawn from teacher training institutions, universities, schools and education agencies across Kenya.

Sampling used a multistage stratified technique, ensuring representation across different institutional types (universities and diploma colleges), geographical regions and programme levels (bachelor's and diploma). The target population included teacher educators and final-year pre-service teachers actively engaged in CBC-aligned training. Quantitative data was analysed using descriptive and inferential statistics with SPSS, while qualitative data was thematically analysed, guided by Braun and Clarke's (2021) six-step approach to thematic analysis.

To enhance research validity and ethical integrity, the study observed all ethical guidelines, including informed consent, confidentiality and institutional research authorisation. The research will fill a critical knowledge gap on the effectiveness of CBC-aligned teacher preparation

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in Kenya, a domain where empirical data remains limited, fragmented, or largely anecdotal (Ngaruiya et al., 2023). By employing a robust mixed methods approach, this study will contribute actionable insights for teacher education reform aligned with the 21st-century learning needs.

## RESULTS AND DISCUSSION OF THE STUDY

This study set out to examine how teacher education programmes in Kenya are preparing pre-service teachers with the core competencies required for effective implementation of the Competency-Based Curriculum in a digitally-driven and inclusive learning environment in education in Kenya. Data was gathered from a diverse group of stakeholders, including stakeholders drawn from teacher training institutions, universities, schools, and education agencies across Kenya, to provide a comprehensive understanding of the extent to which pre-service teachers were prepared, as discussed.

### Demographic Information

The demographic distribution of respondents in this study provides a strong foundation for understanding the dynamics of the stakeholders to provide a comprehensive understanding of the extent to which pre-service teachers were prepared, as discussed.

#### *Gender Distribution*

The gender distribution shows a near balance between male (50%) and female (48.3%) participants, with a small portion (1.7%) preferring not to disclose their gender, as shown in Table 1. This balance indicates gender inclusivity and provides a diverse range of perspectives from both male and female stakeholders in teacher education. The participation of both genders helps in understanding how teacher education reforms and new competencies are perceived across gender lines, reflecting the commitment to gender equality in Kenya's education sector.

**Table 1: Gender Distribution**

| Gender | Frequency (n) | Percentage (%) |
|---|---|---|
| Male | 150 | 50.0 |
| Female | 145 | 48.3 |
| Prefer not to say | 5 | 1.7 |
| **Total** | **300** | **100** |

#### *Age Distribution*

Most respondents were aged between 25–34 years (30%) and 35–44 years (26.7%), representing active professionals and early-career educators in Table 2. The younger category (below 25) mainly comprises pre-service teachers still in training, while those above 45 are experienced teacher educators and policymakers. The diversity in age ensures that views capture both contemporary perspectives from youth and seasoned insights from veteran educators, important for analysing competency development across generations.

**Table 2: Age Distribution**

| Age Category | Frequency (n) | Percentage (%) |
|---|---|---|
| Below 25 | 70 | 23.3 |
| 25–34 | 90 | 30.0 |
| 35–44 | 80 | 26.7 |
| 45 and above | 60 | 20.0 |
| **Total** | **300** | **100** |

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***Role in Teacher Education***

Teacher educators (43.3%) and pre-service teachers (40%) formed the majority of respondents, indicating a strong representation from the two main actors in teacher education. Curriculum developers (16.7%) contributed a policy and design perspective, ensuring a comprehensive view of how teacher education programmes are being rethought to align with current and future educational needs, as shown in Table 3.

**Table 3: Role in Teacher Education**

| Role | Frequency (n) | Percentage (%) |
|---|---|---|
| Pre-service Teacher | 120 | 40.0 |
| Teacher Educator | 130 | 43.3 |
| Curriculum Developer | 50 | 16.7 |
| **Total** | **300** | **100** |

***Institution Type***

Half of the participants (50%) were drawn from universities, followed by diploma colleges (26.7%). Private and mixed public institutions accounted for smaller portions, as shown in Table 4. This composition shows that universities are the key hubs driving teacher education reforms in Kenya, but the inclusion of diploma and private colleges ensures a holistic representation of the country's teacher training ecosystem.

**Table 4: Institution Type**

| Institution Type | Frequency (n) | Percentage (%) |
|---|---|---|
| University | 150 | 50.0 |
| Diploma College | 80 | 26.7 |
| Private | 40 | 13.3 |
| Public (Mixed) | 30 | 10.0 |
| **Total** | **300** | **100** |

***Programme Level***

The Bachelor of Education programme (53.3%) dominates, reflecting its central role in producing qualified teachers in Kenya. Diploma (26.7%) and postgraduate diploma (20%) participants highlight the continuing professional development of educators and the layered structure of teacher education pathways, as shown in Table 5. This mix underscores the evolution toward competency-based, flexible training models.

**Table 5: Programme Level**

| Programme Level | Frequency (n) | Percentage (%) |
|---|---|---|
| Bachelor of Education | 160 | 53.3 |
| Diploma in Education | 80 | 26.7 |
| Postgraduate Diploma | 60 | 20.0 |
| **Total** | **300** | **100** |

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**Area of Specialisation**

The distribution reveals a strong presence of arts (30%) and science (26.7%) specialisations, with a growing interest in Early Childhood Education (20%) and Special Needs Education (13.3%), as shown in Table 6. This reflects Kenya's diversification in teacher education to accommodate specialised learning needs and promote inclusivity in line with global Sustainable Development Goal (SDG) 4 on quality education.

**Table 6: Area of Specialisation**

| Specialization | Frequency (n) | Percentage (%) |
|---|---|---|
| Arts | 90 | 30.0 |
| Science | 80 | 26.7 |
| Early Childhood | 60 | 20.0 |
| Special Needs | 40 | 13.3 |
| Other | 30 | 10.0 |
| **Total** | **300** | **100** |

**Years in Teacher Education (Educators Only)**

Educators with 5–10 years (30%) and 11–15 years (26.7%) of experience dominate the sample, representing mid-career professionals. The presence of newer entrants (23.3%) and highly experienced practitioners (20%) ensures a balanced mix of perspectives on evolving teacher education reforms and competency demands, as shown in Table 7.

**Table 7: Years in Teacher Education (Educators Only)**

| Years of Experience | Frequency (n) | Percentage (%) |
|---|---|---|
| Less than 5 years | 70 | 23.3 |
| 5–10 years | 90 | 30.0 |
| 11–15 years | 80 | 26.7 |
| 16 years and above | 60 | 20.0 |
| **Total** | **300** | **100** |

**Exposure to CBC Training**

A majority (60%) have been exposed to Competency-Based Curriculum (CBC) training, reflecting the national focus on transitioning to competency-based education. However, 40% without such exposure indicate the need for intensified capacity-building efforts to ensure uniform understanding and implementation of CBC across teacher education institutions, as shown in Table 8.

**Table 8: Exposure to CBC Training**

| CBC Training Exposure | Frequency (n) | Percentage (%) |
|---|---|---|
| Yes | 180 | 60.0 |
| No | 120 | 40.0 |
| **Total** | **300** | **100** |

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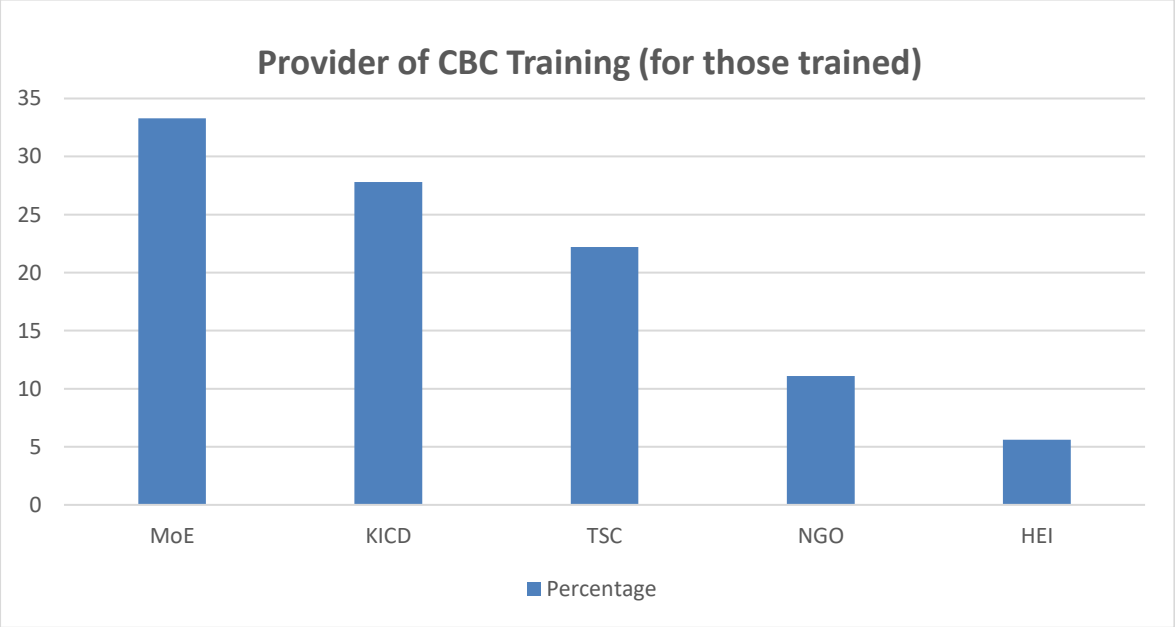
**Provider of CBC Training (for those trained)**

The Ministry of Education (33.3%) and KICD (27.8%) were the main providers of CBC training, showing strong government leadership. The involvement of TSC (22.2%) and NGOs (11.1%) signifies cross-sectoral collaboration, while HEIs' smaller role (5.6%) points to an opportunity for universities and colleges to take a more proactive role in developing CBC pedagogies and research-based teacher training interventions, as shown in Table 9.

**Table 9: Provider of CBC Training (for those trained)**

| Provider | Frequency (n) | Percentage (%) |
|---|---|---|
| Ministry of Education, Science and Technology (MoEST) | 60 | 33.3 |
| Kenya Institute of Curriculum Development (KICD) | 50 | 27.8 |
| Teachers Service Commission (TSC) | 40 | 22.2 |
| Non-Governmental Organisation (NGO) | 20 | 11.1 |
| Higher Education Institution (HEI) | 10 | 5.6 |
| **Total** | **180** | **100** |

**Figure 1: Provider of CBC Training (for those trained)**




The demographic profile provides a critical foundation for understanding the diversity and representativeness of participants in the study. It enables interpretation of findings within the context of stakeholders' roles, experience and institutional backgrounds. Knowing who the respondents are: teachers, curriculum developers, or lecturers, helps explain variations in perspectives on teacher education reforms and competency needs. Moreover, factors such as exposure to CBC training, specialisation, and institutional type are essential for tailoring policy recommendations that address gaps in capacity, inclusivity and innovation within Kenya's teacher education landscape.

**Curriculum Alignment to CBC Competencies**

The study sought to establish whether the curriculum aligned with CBC competencies. An item in the questionnaire sought to establish whether the teacher education curriculum integrated CBC principles across all courses, as shown in Table 10.

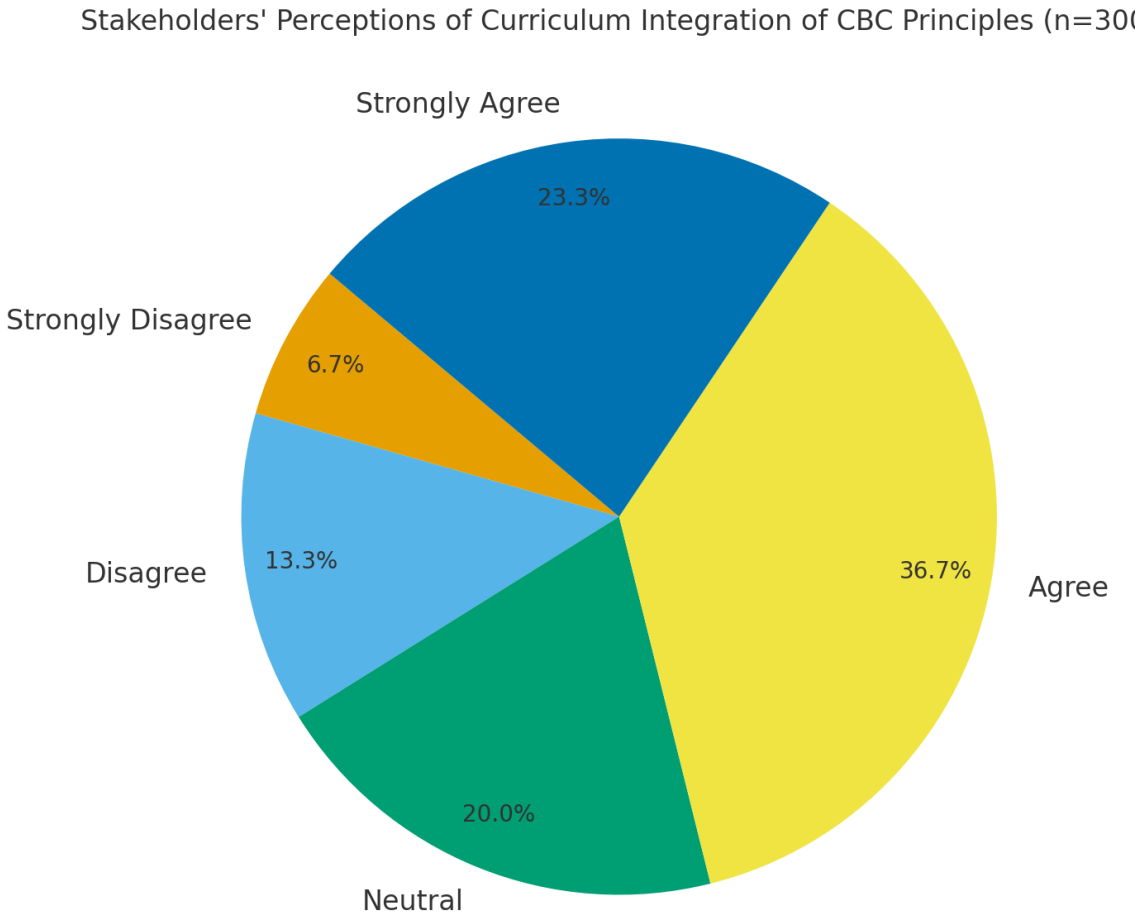
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**Table 10: The Teacher Education Curriculum Integrates CBC Principles across All Courses.**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 20 | 6.7 |
| Disagree | 40 | 13.3 |
| Neutral | 60 | 20.0 |
| Agree | 110 | 36.7 |
| Strongly Agree | 70 | 23.3 |
| **Total** | **300** | **100** |

**Figure 2: Stakeholders' Perceptions of Curriculum Integration of CBC Principles**




The findings revealed that out of the 300 respondents, (36.7%) agreed that CBC principles are integrated across teacher education courses, 23.3% strongly agreed that CBC principles are integrated across teacher education courses. However, 20% remained neutral, while a minimal percentage disagreed. This mixed perception indicated partial progress toward curriculum reform, suggesting that while institutions are adopting CBC philosophies, full integration remains uneven. The findings concluded that there was a need for continuous review and

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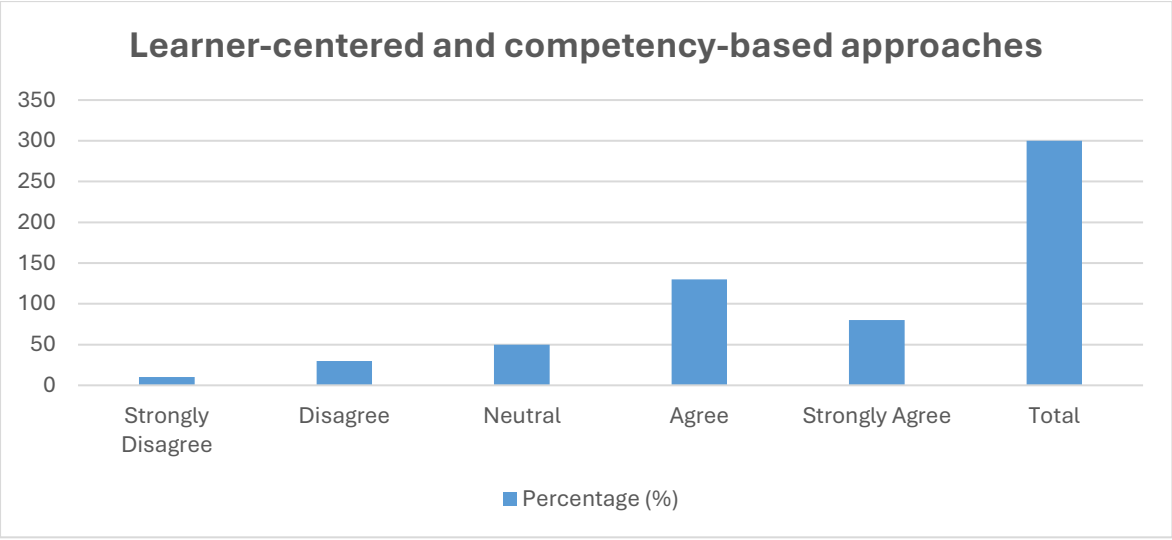
monitoring to ensure consistency and depth in embedding CBC principles across all teacher preparation programs. Further, data from qualitative interviews revealed that stakeholders proposed that teacher education institutions should prioritise *continuous professional development* for both lecturers and trainees to maintain pedagogical currency. Strengthening *industry and community linkages* was viewed as essential for producing teachers with practical, real-world competencies. Respondents recommended *curriculum reviews* to align teacher preparation with emerging global trends such as AI in education, sustainability, and digital citizenship. *Investment in digital infrastructure,* including high-speed internet, virtual learning environments, and smart classrooms, was identified as crucial to future-readiness. Moreover, promoting a *culture of research and innovation* within faculties of education would foster data-driven practices and evidence-based teaching approaches to meet evolving learner needs. The findings with Ong'ondo and Jwan (2020) emphasise that while Kenya's teacher education institutions have begun integrating CBC principles into training programmes, implementation remains uneven due to institutional disparities, limited capacity among educators and the need for continuous curriculum review. Their work reinforces the current study's finding that, although progress has been made, full integration of CBC principles in teacher education requires sustained monitoring, support and alignment across all training levels.

Moreover, the study sought to establish whether the curriculum emphasises learner-centred and competency-based approaches, as shown in Table 11.

**Table 11: The Curriculum Emphasises Learner-Centred and Competency-Based Approaches**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 10 | 3.3 |
| Disagree | 30 | 10.0 |
| Neutral | 50 | 16.7 |
| Agree | 130 | 43.3 |
| Strongly Agree | 80 | 26.7 |
| **Total** | **300** | **100** |

**Figure 3: Learner-Centred and Competency-Based Approaches**




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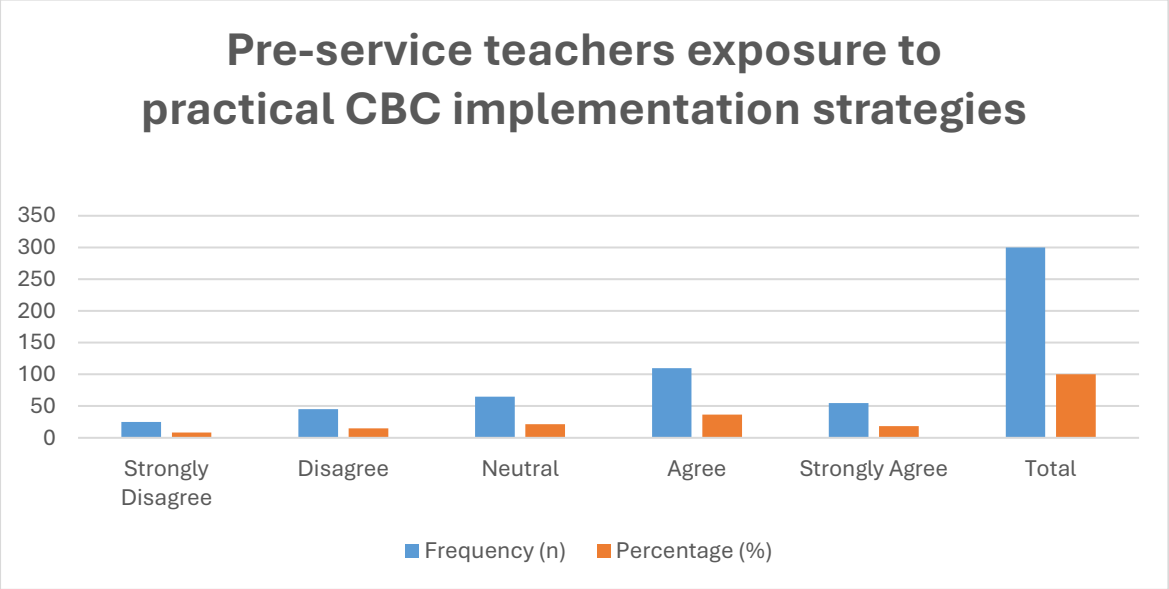
The findings established that out of the 300 respondents, a majority of respondents 43.3% agreed that the teacher education curriculum emphasises learner-centred and competency-based methodologies, 26.7% strongly agreed that the teacher education curriculum emphasises learner-centred and competency-based methodologies. This is a positive reflection of Kenya's shift from content delivery to skill acquisition and participatory learning. The 16.7% who remained neutral, that the teacher education curriculum emphasises learner-centred and competency-based methodologies, and 10% who disagreed that the teacher education curriculum emphasises learner-centred and competency-based methodologies represent institutions, or individuals yet to fully transition to competency-based pedagogy. The findings concluded that strengthening institutional support and professional development can help bridge these gaps and promote active learning methodologies. The study aligns with Talasasa and Wambugu's (2022) study that Kenya's shift to the Competency-Based Curriculum (CBC) has significantly promoted learner-centred and participatory pedagogies within teacher education. However, they also noted that uneven institutional readiness, limited capacity building, and traditional teaching orientations hinder full adoption. This aligns with the present study's findings that, while most stakeholders acknowledge the emphasis on learner-centred methodologies, a notable minority remain constrained by insufficient institutional support and professional development gaps.

In addition, the study sought to establish whether pre-service teachers were exposed to practical CBC implementation strategies, as shown in Table 12.

**Table 12: Pre-Service Teachers' Exposure to Practical CBC Implementation Strategies**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 25 | 8.3 |
| Disagree | 45 | 15.0 |
| Neutral | 65 | 21.7 |
| Agree | 110 | 36.7 |
| Strongly Agree | 55 | 18.3 |
| **Total** | **300** | **100** |

**Figure 4: Pre-Service Teachers' Exposure to Practical CBC Implementation Strategies**




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Further, the study sought to establish whether pre-service teachers were exposed to practical CBC implementation strategies. Out of 300 respondents, 36.7% of stakeholders agreed that pre-service teachers are adequately exposed to CBC implementation strategies, 18.3% strongly agreed that pre-service teachers are adequately exposed to CBC implementation strategies. A notable 21.7% were neutral that pre-service teachers are adequately exposed to CBC implementation strategies, and others in minimal percentages disagreed that pre-service teachers are adequately exposed to CBC implementation strategies. This suggests that although CBC-related content is included in training, opportunities for practical engagement, such as teaching practice, micro-teaching, and classroom simulation, are still limited. The study concluded that expanding experiential learning within teacher training institutions would enhance readiness for classroom implementation.

In addition, data from qualitative data analysed thematically revealed that stakeholders identified several innovative strategies that enhance CBC delivery in teacher education. *Blended learning approaches* combining online and face-to-face modes were widely adopted to promote flexibility and self-directed learning. Some institutions utilise *simulations and virtual laboratories* to facilitate experiential learning in science and technical subjects. *Project-based learning* emerged as a key strategy for fostering creativity, innovation, and problem-solving among trainee teachers. Respondents also reported the growing use of *peer collaboration and reflective practice* in microteaching and practicum, which promote feedback and continuous improvement. The *integration of mobile technologies and e-learning platforms*, such as Google Classroom and Moodle, supports digital engagement, resource sharing, and real-time assessment, aligning with CBC principles of learner-centeredness and competency acquisition. The study aligns with Ng'ang'a and Kathuri (2021), who observed that although teacher training institutions in Kenya have integrated CBC content into their programs, pre-service teachers often lack adequate hands-on experience with implementation strategies such as micro-teaching, classroom simulations, and school-based practicums. Their study underscores the importance of experiential learning and structured practicum opportunities to strengthen teacher readiness, consistent with the present findings showing that limited practical exposure continues to hinder effective CBC implementation.

Additionally, the study sought to establish whether assessment methods in the training mirrored those required by the CBC, as shown in Table 13.

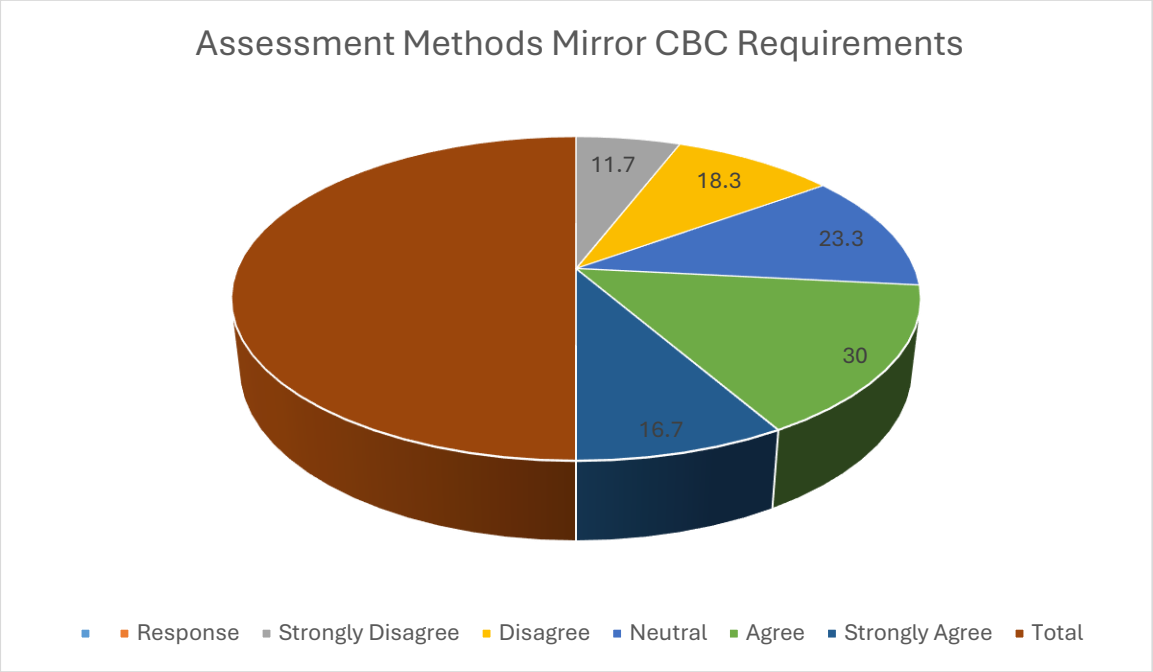
**Table 13: Assessment Methods in Training Mirror Those Required by the CBC**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 35 | 11.7 |
| Disagree | 55 | 18.3 |
| Neutral | 70 | 23.3 |
| Agree | 90 | 30.0 |
| Strongly Agree | 50 | 16.7 |
| **Total** | **300** | **100** |

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**Figure 5: Assessment Methods Mirror CBC Requirements**




Moreover, an item in the questionnaire sought to establish whether assessment methods in the training mirror those required by CBC. Out of the 300 respondents, less than half 30% of respondents agreed that assessment methods in teacher training align with those of the CBC, strongly agreed that assessment methods in teacher training align with those of the CBC whereas 18.3% disagreed that assessment methods in teacher training align with those of the CBC., while 23.3% remained neutral that assessment methods in teacher training align with those of the CBC. The findings established that this pattern implies a lag in reforming assessment practices within teacher education. Traditional examinations still dominate, whereas CBC requires continuous, performance-based, and formative assessments. The study concluded that there was a need for a policy-driven shift toward authentic assessment methods necessary to align training outcomes with classroom realities. The study aligns with Waweru and Njoroge's (2020) study, which established that assessment within most Kenyan teacher education programs continues to rely heavily on summative examinations rather than competency-based, formative, and performance-oriented assessments. Their study emphasised that without transforming assessment systems to reflect authentic, continuous evaluation methods, teacher trainees remain ill-prepared for CBC classrooms. This aligns closely with the present findings that show a gap between policy intentions and actual assessment practices in teacher training institutions.

Furthermore, an item in the questionnaire sought to establish whether the curriculum content addressed 21st-century skills such as critical thinking and creativity, as shown in Table 13.

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**Table 13: Curriculum Content Addresses 21st-Century Skills such as Critical Thinking and Creativity**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 10 | 3.3 |
| Disagree | 25 | 8.3 |
| Neutral | 40 | 13.3 |
| Agree | 130 | 43.3 |
| Strongly Agree | 95 | 31.8 |
| **Total** | **300** | **100** |

In addition, the study sought to establish whether the curriculum content addressed 21st century skills such as critical thinking and creativity. Out of the 300 respondents, the majority of the respondents 43.3% agreed that curriculum content now emphasises 21st-century skills such as critical thinking, creativity, 31.8% strongly agreed that curriculum content now emphasises 21st-century skills such as critical thinking, creativity. This finding demonstrates progress in aligning teacher education to global educational trends and Kenya's Vision 2030 goals. However, 13.3% of the respondents remained neutral that curriculum content now emphasises 21st-century skills such as critical thinking, creativity and others. In minimal percentages disagreed that curriculum content now emphasises 21st-century skills such as critical thinking and creativity. The study concluded that some institutions may still emphasise content memorisation over creativity-based learning and that continuous curriculum review and digital integration were key for maintaining relevance in the modern classroom.

Further, data from qualitative interviews analysed thematically revealed that most stakeholders emphasised that the 21st-century teacher must possess *digital literacy and ICT integration skills* to effectively facilitate learning in the CBC context. Respondents noted that teachers must guide learners in navigating digital platforms and resources to support inquiry-based learning. *Critical thinking and problem-solving* were cited as fundamental for nurturing learners capable of addressing real-world challenges, while *creativity and innovation* were seen as necessary for fostering flexibility in lesson design and delivery. Furthermore, *communication and collaboration* were recognised as central to interdisciplinary learning and teamwork, aligning with the CBC goal of producing competent, adaptive graduates. The emphasis on *lifelong learning and adaptability* reflects the dynamic nature of modern education, where teachers must continuously upgrade their skills to remain relevant. The study aligns with Mulenga and Kabombwe (2019), who argue that integrating 21st-century competencies such as critical thinking, creativity, communication, and collaboration into teacher education is essential for preparing educators to thrive in dynamic, technology-driven learning environments. Their study emphasises that while progress has been made across African education systems, many institutions still focus on rote learning and content mastery rather than innovation-oriented pedagogy. This aligns directly with the present findings, which show that although most Kenyan teacher education curricula now reflect 21st-century skills, inconsistencies remain, highlighting the ongoing need for curriculum renewal and digital capacity enhancement.

The findings indicated that teacher education institutions in Kenya are progressively aligning their curricula with Competency-Based Curriculum (CBC) competencies. While commendable progress has been made in integrating learner-centred approaches and 21st-century skills, gaps remain in practical exposure and authentic assessment practices. Strengthening institutional collaboration, professional development, and curriculum redesign is essential to fully embed the CBC philosophy into teacher

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education for sustainable transformation. These findings align with Darling-Hammond (2017), who emphasises that teacher preparation programs must evolve to develop educators who can design, facilitate, and assess learning that promotes creativity, problem-solving, and lifelong learning in dynamic educational contexts.

**Digital Competencies and Technology Integration**

Moreover**,** the study sought to establish the digital competencies and technologies integration in the preservice teacher preparation as shown in Tables 14, 15, 16 and 17. An item on the questionnaire sought to establish whether stakeholders were trained in ICT integration, as shown in Table 14.

**Table 14: Training in ICT Integration**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 20 | 6.7 |
| Disagree | 40 | 13.3 |
| Neutral | 60 | 20.0 |
| Agree | 110 | 36.7 |
| Strongly Agree | 70 | 23.3 |
| **Total** | **300** | **100** |

The data show that 36.7% of stakeholders agreed that they had received training on ICT integration, 23.3% of stakeholders Strongly Agree that they had received training on ICT integration, indicating growing efforts to enhance digital competency in teacher education; whereas, 20% of the stakeholders remained neutral that they had received training on ICT integration, and 20% of the stakeholders disagreed that they had received training on ICT integration, suggesting unequal access to professional development across institutions. The findings reflect a continuing digital skills gap among educators, particularly in rural or under-resourced colleges. The study concluded that strengthening continuous digital pedagogical training is essential for achieving equitable competency across the teacher education spectrum. The study aligns with Tondeur et al. (2018), who emphasised that while teacher education institutions have made progress in ICT integration, disparities persist in access to digital resources and training opportunities. Their study underscores that structured and continuous professional development in digital pedagogy is essential to bridge the digital divide and ensure equitable technology integration in education.

Further, the study sought to establish whether digital infrastructure was available, as shown in Table 15.

**Table 15: Availability of Digital Infrastructure**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 30 | 10.0 |
| Disagree | 60 | 20.0 |
| Neutral | 70 | 23.3 |
| Agree | 90 | 30.0 |
| Strongly Agree | 50 | 16.7 |
| **Total** | **300** | **100** |

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The findings revealed that out of 300 respondents, only 30% of respondents agreed that their institutions have adequate digital infrastructure such as Wi-Fi, devices and Learning Management Systems (LMS), and 16.7% strongly agreed that their institutions have adequate digital infrastructure such as Wi-Fi, devices and Learning Management Systems (LMS). This limited infrastructure poses a challenge to effective ICT integration and blended learning adoption. The 20% who disagreed that their institutions have adequate digital infrastructure, such as Wi-Fi, devices and Learning Management Systems (LMS), highlight infrastructural inequalities between urban and rural institutions. Based on these findings, the study concluded that addressing this digital divide through targeted investment in ICT infrastructure and maintenance is crucial for the success of digital transformation in teacher education. The study aligns with Kiptalam and Rodrigues (2019), who observed that limited digital infrastructure, such as unreliable internet connectivity, inadequate devices and limited access to learning management systems, significantly hinders ICT integration in Kenyan teacher education institutions. Their research emphasised that sustainable investment in ICT facilities and equitable distribution of resources across rural and urban institutions are critical to narrowing the digital divide and promoting effective blended learning.

In addition, an item in the questionnaire sought to establish whether stakeholders used Digital tools for Learning and Assessment as shown in Table 16.

**Table 16: Use of Digital Tools for Learning and Assessment**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 15 | 5.0 |
| Disagree | 35 | 11.7 |
| Neutral | 65 | 21.6 |
| Agree | 120 | 40.0 |
| Strongly Agree | 65 | 21.7 |
| **Total** | **300** | **100** |

The findings revealed that 40% of the respondents agreed that they were using digital tools to facilitate active learning and assessment, while 21.7% of the respondents strongly agreed that they were using digital tools to facilitate active learning and assessment, reflecting a growing shift toward technology-supported pedagogy. However, the 21.6% of the respondents were neutral in their responses, indicating limited practical exposure or a lack of institutional support for consistent integration. The study concluded that expanding access to digital tools, alongside peer mentorship on technology-enhanced pedagogy, can improve interactive and data-driven learning environments in teacher education. These findings align with Ghomi and Redecker (2019), who established that the effective use of digital tools in learning and assessment depends not only on access to technology but also on educators' digital competence, institutional culture and pedagogical readiness. Their study emphasised that teacher training institutions must move beyond basic ICT skills toward embedding digital pedagogy and assessment innovation to achieve sustainable digital transformation in education.

Moreover, the study sought to establish whether digital Literacy was emphasised as a core competency, as shown in Table 17.

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**Table 17: Emphasis on Digital Literacy as a Core Competency**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 10 | 3.3 |
| Disagree | 25 | 8.3 |
| Neutral | 50 | 16.7 |
| Agree | 130 | 43.3 |
| Strongly Agree | 85 | 28.4 |
| **Total** | **300** | **100** |

The findings revealed that 43.3% of respondents agreed that digital literacy is recognised as a core competency within teacher education, while 28.4% of the respondents strongly agreed that digital literacy is recognised as a core competency within teacher education. This positive trend aligns with global educational reforms emphasising digital skills as fundamental to 21st-century teaching. However, 16.7% of the respondents' neutrality suggests that while policy intentions exist, consistent institutional practice may still be lacking. According to a systematic review of educators' digital competencies, one key result was that while many teachers recognise the importance of digital literacy and tools, there remains a substantial gap in actual pedagogical integration and assessment practices using digital technologies. The study concluded that embedding digital literacy in course outcomes and assessment rubrics could ensure systemic reinforcement of this competency. The findings align with Basilotta-Gómez-Pablos et al. (2022) study, which established that although educators acknowledge digital competence as essential, the translation of that recognition into consistent classroom use and assessment alignment is still inconsistent.

These findings collectively indicate that digital competencies and technology integration are increasingly embedded within Kenya's teacher education system, albeit unevenly across institutions. While digital literacy is recognised as a professional requirement, gaps remain in infrastructure, training and practical utilisation. Addressing these disparities is critical for producing educators capable of navigating and shaping technology-enriched learning environments. According to Tondeur et al. (2017), teacher education programs must integrate ICT not only as a tool but as a pedagogical framework that reshapes instructional design, collaboration and innovation. These findings echo that assertion, emphasising that digital competence is foundational for rethinking teacher preparation in the 21st century.

## INCLUSIVE EDUCATION AND DIVERSITY COMPETENCIES

Further, an item in the questionnaire sought to establish pre-service teachers' preparedness in inclusive education and diverse competencies as discussed in Tables 18, 19, 20, 21 and 22. The study sought to establish pre-service preparation to teach learners with diverse abilities and needs, as shown in Table 18.

**Table 18: Preparation to Teach Learners with Diverse Abilities and Needs**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 15 | 5.0 |
| Disagree | 35 | 11.7 |
| Neutral | 55 | 18.3 |
| Agree | 120 | 40.0 |
| Strongly Agree | 75 | 25.0 |
| **Total** | **300** | **100** |

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Findings revealed that a majority (40%) of stakeholders agreed that teacher education courses prepare them to teach learners with diverse abilities and needs, whereas 25% strongly agreed that teacher education courses prepare them to teach learners with diverse abilities and needs. This demonstrates progress toward inclusivity in pre-service teacher preparation. However, 18.3% remained neutral, while others in minimal percentages disagreed, which suggests uneven implementation across institutions. The study concluded that the variation could be attributed to limited exposure to inclusive pedagogies, inadequate faculty expertise in special needs education or insufficient practical training. Strengthening inclusive pedagogy modules and field experiences can enhance preparedness to teach in diverse classrooms.

Furthermore, an item in the questionnaire sought to establish the ability to adapt the teaching strategies for learners with disabilities, as shown in Table 19.

**Table 19: Ability to Adapt Teaching Strategies for Learners with Disabilities**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 20 | 6.7 |
| Disagree | 40 | 13.3 |
| Neutral | 60 | 20.0 |
| Agree | 115 | 38.3 |
| Strongly Agree | 65 | 21.7 |
| **Total** | **300** | **100** |

The findings revealed that 38.3% of respondents expressed the ability to adapt teaching strategies for learners with disabilities, whereas 20% remained neutral, and others in minimal percentages disagreed about their ability to adapt teaching strategies for learners with disabilities, signalling persistent gaps in practical skill application. This finding indicates that although inclusive education is conceptually taught, pre-service teachers lack adequate exposure to differentiated instruction and assistive technologies. Embedding inclusive teaching practice and mentorship with experienced special needs educators can strengthen competence and confidence in diverse learning environments.

Moreover, the study sought to establish whether the preparation promoted gender equity and cultural inclusivity, as shown in Table 20.

**Table 20: Promotion of Gender Equity and Cultural Inclusivity**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 10 | 3.3 |
| Disagree | 20 | 6.7 |
| Neutral | 50 | 16.7 |
| Agree | 130 | 43.3 |
| Strongly Agree | 90 | 30.0 |
| **Total** | **300** | **100** |

The findings revealed that 43.3% of respondents agreed that the teacher education programme promotes gender equity and cultural inclusivity in classroom practice, and 30% strongly agreed that the teacher education programme promotes gender equity and cultural inclusivity in classroom practice. This finding suggests that

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most institutions have embraced gender-sensitive and culturally responsive pedagogies in line with Kenya's equity and inclusivity policies. Nevertheless, 16.7% neutrality reflects ongoing challenges in embedding gender and culture as cross-cutting themes in every course. The study concluded that enhancing diversity training and policy awareness can further foster equitable classroom environments and teacher attitudes.

In addition, an item in the questionnaire sought to establish whether there was emphasis on Universal Design for Learning, as shown in Table 21.

**Table 21: Emphasis on Universal Design for Learning (UDL)**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 25 | 8.3 |
| Disagree | 55 | 18.3 |
| Neutral | 70 | 23.3 |
| Agree | 95 | 31.7 |
| Strongly Agree | 55 | 18.4 |
| **Total** | **300** | **100** |

The findings revealed that 31.7% of the respondents agreed that UDL principles are emphasised in training, whereas 18.4% of the respondents strongly agreed that UDL principles are emphasised in training. A notable 18.3% disagreed that UDL principles are emphasised in training, and 23.3% remained neutral, suggesting that the integration of UDL into teacher education curricula remains limited. These UDL principles are emphasised in training findings that indicate the need for systematic incorporation of UDL frameworks, which provide flexible pathways to learning and assessment for all learners. The study concluded that embedding UDL concepts in curriculum design courses and practicum activities can improve teacher readiness for diverse classroom realities.

Additionally, an item in the questionnaire sought to establish whether the learning environment supported inclusive practices, as shown in Table 22.

**Table 22: Learning Environment Support for Inclusive Practices**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 15 | 5.0 |
| Disagree | 40 | 13.3 |
| Neutral | 55 | 18.4 |
| Agree | 120 | 40.0 |
| Strongly Agree | 70 | 23.3 |
| **Total** | **300** | **100** |

The findings revealed that 40% of the respondents agreed that their institutional environments support inclusive practices, such as accessible facilities, inclusive policies and supportive peer culture. While 23.3% of the respondents strongly agreed that their institutional environments support inclusive practices such as accessible facilities, inclusive policies and supportive peer culture. However, other respondents in minimal percentages disagreed, implying that infrastructural and attitudinal barriers still exist. The study concluded that strengthening institutional policies, accessibility infrastructure and inclusion awareness among staff and students

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will help sustain inclusive educational ecosystems.

In Conclusion, the findings reveal encouraging progress in embedding inclusive education and diversity competencies within teacher education in Kenya. Most stakeholders acknowledge that training programmes address diversity, gender equity and inclusive strategies. However, gaps persist in the application of Universal Design for Learning and in the consistent use of adaptive instructional practices. To achieve full inclusivity, institutions should invest in faculty development, inclusive infrastructure and experiential learning opportunities that expose pre-service teachers to real-world inclusive classrooms. These findings align with Kimhi and Bar Nir (2024), who pointed out that the primary responsibility for all learners, including those with special needs, rests with the regular teachers, with special education professionals providing support.

In addition, an item in the questionnaire sought to establish whether there was adequacy of opportunities for micro teaching and teaching practice aligned with CBC, as shown in Table 23.

**Table 23: Adequacy of Opportunities for Microteaching and Teaching Practice Aligned with CBC**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 20 | 6.7 |
| Disagree | 40 | 13.3 |
| Neutral | 65 | 21.7 |
| Agree | 110 | 36.7 |
| Strongly Agree | 65 | 21.6 |
| **Total** | **300** | **100** |

The findings revealed that 36.7% of respondents agreed that they had adequate opportunities for microteaching and teaching practice aligned with the Competency-Based Curriculum (CBC), while 21.6% of the respondents strongly agreed that they had adequate opportunities for microteaching and teaching practice aligned with the Competency-Based Curriculum (CBC). However, 21.7% remained neutral, and others in minimal percentages disagreed that they had adequate opportunities for microteaching and teaching practice aligned with the Competency-Based Curriculum (CBC), indicating that while CBC-aligned practicum experiences are being implemented, they are not yet uniformly accessible. Some institutions face logistical challenges such as insufficient partner schools, limited supervision, or inadequate time allocation for practical exposure. The study proposed that ensuring structured and extended practicum sessions can enhance teacher trainees' ability to apply CBC principles effectively in real classrooms. Further, an item in the questionnaire sought to establish whether the focus of practical components on real-world problem-solving and innovation, as shown in Table 24.

**Table 24: Focus of Practical Components on Real-World Problem-Solving and Innovation**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 15 | 5.0 |
| Disagree | 35 | 11.7 |
| Neutral | 60 | 20.0 |
| Agree | 120 | 40.0 |
| Strongly Agree | 70 | 23.3 |
| **Total** | **300** | **100** |

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The findings revealed that most stakeholders, 40% of respondents, agreed that practical components focus on problem-solving and innovation, while 23.3% of the respondents strongly agreed that practical components focus on problem-solving and innovation. This suggests a growing alignment between teacher preparation and 21st-century learning expectations. Nevertheless, 16.7% disagreed/strongly disagreed, indicating gaps in integrating innovation-driven pedagogical models across institutions. The study concluded that the results point to the need for stronger linkages between theory and practice, encouraging experiential learning and project-based teaching that fosters critical thinking and creativity among pre-service teachers. Moreover, an item sought to establish whether there was effectiveness and feedback during the practicum, as shown in Table 25.

**Table 25: Effectiveness of Mentorship and Feedback during Practicum**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 25 | 8.3 |
| Disagree | 45 | 15.0 |
| Neutral | 55 | 18.3 |
| Agree | 110 | 36.7 |
| Strongly Agree | 65 | 21.7 |
| **Total** | **300** | **100** |

The findings revealed the 36.7% of respondents agreed that mentorship and feedback during practicum effectively build teaching competencies, while 21.7% strongly agreed that mentorship and feedback during practicum effectively build teaching competencies. Meanwhile, a minimal percentage disagreed, reflecting inconsistent mentoring support and feedback mechanisms. The study concluded that effective mentorship is critical to linking theoretical understanding to classroom realities, but the results suggest a need for enhanced collaboration between teacher education institutions, cooperating schools and mentor teachers. Establishing clear mentorship frameworks and reflective feedback systems would better support pre-service teacher growth.

Furthermore, the study sought to establish whether there was embedded reflection and peer collaboration in teaching practice, as shown in Table 26.

**Table 26: Embedding Reflection and Peer Collaboration in Teaching Practice**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 1 | 3.3 |
| Disagree | 40 | 13.3 |
| Neutral | 55 | 18.3 |
| Agree | 120 | 40.0 |
| Strongly Agree | 75 | 25.0 |
| **Total** | **300** | **100** |

The findings revealed that 40% of respondents agreed that reflection and peer collaboration are embedded in their teaching practice, while 25% of the respondents strongly agreed that reflection and peer collaboration are embedded in their teaching practice. Reflection is a cornerstone of professional learning, allowing teachers to critically evaluate and refine their teaching

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approaches. However, others in minimal percentages expressed disagreement or showed uncertainty. The study concluded that reflective practice is not systematically structured in all programmes. Incorporating reflective journals, peer observations and collaborative lesson reviews could strengthen professional growth and self-awareness among pre-service teachers. In addition, an item sought to establish whether the pre-service preparation focused on pedagogical strategies on learner engagement, inquiry and creativity as shown in Table 27.

**Table 27: Focus of Pedagogical Strategies on Learner Engagement, Inquiry, and Creativity**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 10 | 3.3 |
| Disagree | 25 | 8.4 |
| Neutral | 45 | 15.0 |
| Agree | 130 | 43.3 |
| Strongly Agree | 90 | 30.0 |
| **Total** | **300** | **100** |

The findings revealed that the majority, 43.3% of respondents, agreed that pedagogical strategies focus on learner engagement, inquiry and creativity, while 30% strongly agreed that pedagogical strategies focus on learner engagement, inquiry and creativity. This shows meaningful progress in transforming teacher education pedagogy from rote instruction to participatory learning. However, minimal percentages of the respondents disagreed, suggesting uneven adoption across programs. The study concluded that strengthening professional learning communities and modelling inquiry-based instruction within training institutions can further cultivate reflective, creative and student-centred teaching approaches.

The overall findings indicate that Kenya's teacher education institutions are making significant strides in embedding pedagogical and practical training experiences that support CBC implementation. Most stakeholders affirm that pre-service teachers are increasingly exposed to experiential, reflective and learner-centred pedagogies. However, challenges remain in ensuring consistent mentorship, adequate practicum exposure and structured reflection opportunities across institutions. Continuous collaboration between training institutions, schools and policymakers will be essential to strengthen practical readiness for 21st-century classrooms. These findings align with Korthagen (2017), who emphasises that effective teacher education must bridge theory and practice through reflective experiences, mentorship and real-world engagement to develop competent, adaptive educators.

## INSTITUTIONAL SUPPORT AND POLICY ENVIRONMENT

Moreover, an item in the questionnaire sought to establish whether there were institutional policies for integrating CBC and digital learning, as shown in Table 28.

**Table 28: Institutional Policy for Integrating CBC and Digital Learning**

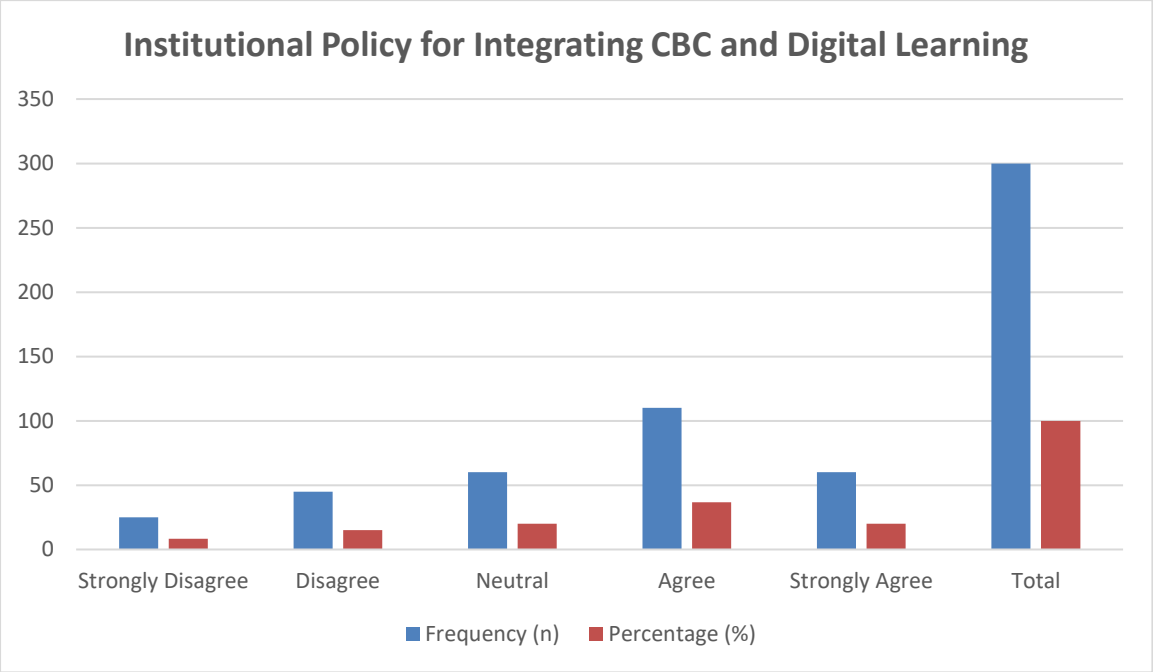
| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 25 | 8.3 |
| Disagree | 45 | 15.0 |
| Neutral | 60 | 20.0 |
| Agree | 110 | 36.7 |

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| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Agree | 60 | 20.0 |
| **Total** | **300** | **100** |

**Figure 6: Institutional Policy for Integrating CBC and Digital Learning**




The findings of the study revealed that 36.7% of respondents agreed that their institutions have a clear policy for integrating CBC and digital learning, whereas 20% of the respondents strongly agreed that their institutions have a clear policy for integrating CBC and digital learning. However, 15% disagreed that their institutions have a clear policy for integrating CBC and digital learning, while 20% remained neutral, indicating partial policy alignment. The study concluded that many institutions have begun aligning their policies with national CBC frameworks and digital transformation initiatives, but institutional-level policy articulation remains uneven. Strengthening institutional governance and digital strategy alignment is vital to achieving a holistic CBC implementation approach.

In addition, the study sought to establish whether the leadership provided resources for innovative pedagogy, as shown in Table 29

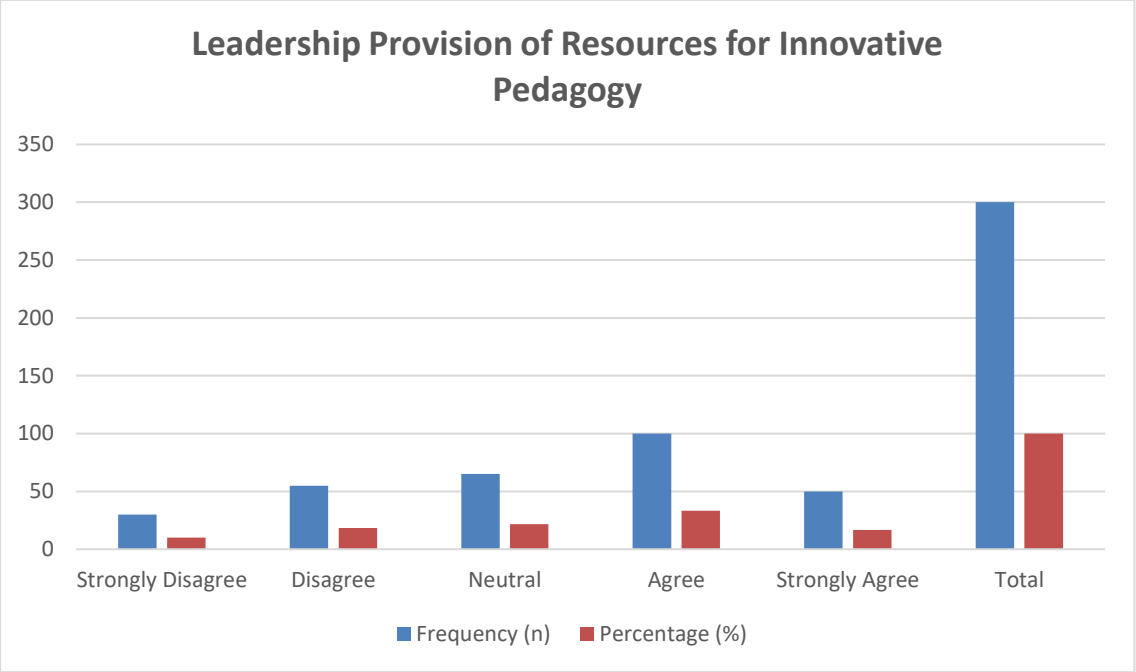
**Table 29: Leadership Provision of Resources for Innovative Pedagogy**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 30 | 10.0 |
| Disagree | 55 | 18.3 |
| Neutral | 65 | 21.7 |
| Agree | 100 | 33.3 |
| Strongly Agree | 50 | 16.7 |
| **Total** | **300** | **100** |

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**Figure 7: Leadership Provision of Resources for Innovative Pedagogy**




The findings revealed that 33.3% of stakeholders agreed that institutional leadership provides adequate resources for implementing innovative pedagogy, whereas 16.7% of the stakeholders strongly agreed that institutional leadership provides adequate resources for implementing innovative pedagogy, and 16.7% of the stakeholders disagreed that institutional leadership provides adequate resources for implementing innovative pedagogy. Based on the findings, the study concluded that resource constraints, especially digital infrastructure, teaching materials and training funds, are hindering innovation. Effective implementation of CBC and technology integration requires strategic investment, budget prioritisation, and leadership commitment to resource mobilisation.

Additionally, the study sought to establish whether institutions have professional learning communities on CBC and digital tools, as shown in Figure 3.

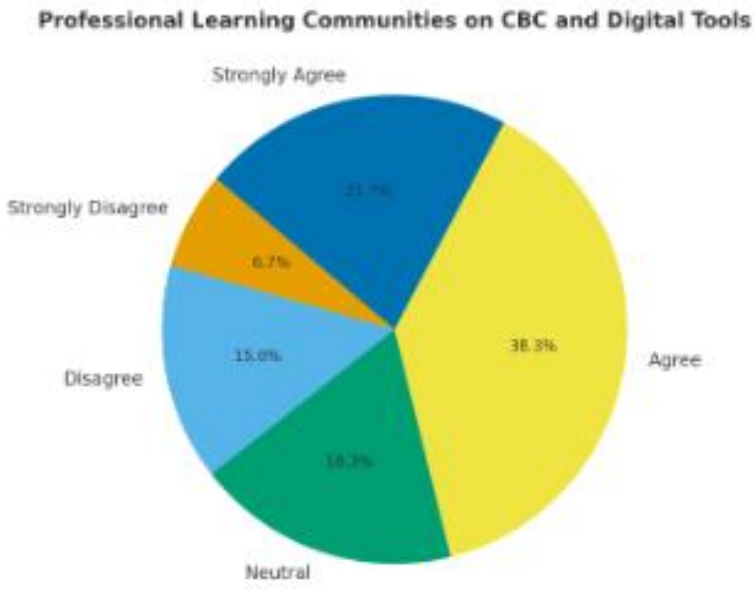
**Table 30: Existence of Professional Learning Communities on CBC and Digital Tools**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 20 | 6.7 |
| Disagree | 45 | 15.0 |
| Neutral | 55 | 18.3 |
| Agree | 115 | 38.3 |
| Strongly Agree | 65 | 21.7 |
| **Total** | **300** | **100** |

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**Figure 8: Professional Learning Communities on CBC and Digital Tools**




The findings revealed that 38% of respondents agreed that professional learning communities (PLCs) exist in their institutions to support CBC and digital learning, while 21.7% of the respondents strongly agreed that professional learning communities (PLCs) exist in their institutions to support CBC and digital learning. These communities are key to peer collaboration, reflective teaching and continuous capacity building. However, 18.3% of respondents were neutral, and others in minimal percentages disagreed, implying that PLCs are not institutionalised across all settings. The study concluded that establishing structured PLC frameworks and incentivising collaborative practice would strengthen teachers' pedagogical and digital competencies.

Further, an item in the questionnaire sought to establish whether institutions had partnerships with THE MoEST/TSC/NGOs, as shown in Table 32.

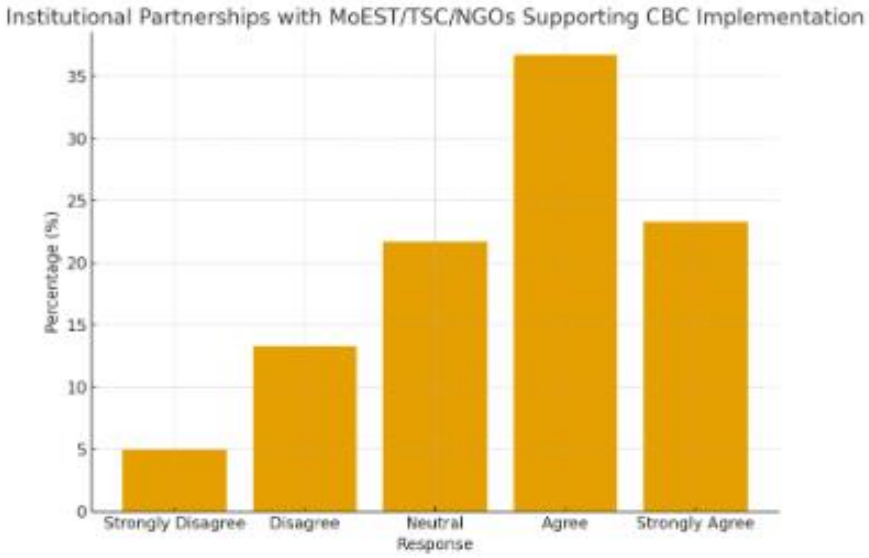
**Table 32: Institutional Partnerships with MoEST/TSC/NGOs Supporting CBC Implementation**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 15 | 5.0 |
| Disagree | 40 | 13.3 |
| Neutral | 65 | 21.7 |
| Agree | 110 | 36.7 |
| Strongly Agree | 70 | 23.3 |
| **Total** | **300** | **100** |

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**Figure 9: Institutional Partnership with MOSET/TSC/NGOs Supporting CBS Implementation**




The findings revealed that 36.7% of stakeholders agreed that institutional partnerships with MoE, TSC and NGOs support CBC implementation, whereas 23.3% strongly agreed that institutional partnerships with MoEST, TSC and NGOs support CBC implementation. These partnerships often provide technical assistance, professional development and resource sharing. However, the other stakeholders in minimal percentages disagreed that institutional partnerships with MoE, TSC and NGOs support CBC implementation, while 21.7% remained neutral. Further, data from qualitative interviews revealed that respondents advocated for *policy harmonisation and coordination* among the Ministry of Education (MoE), Teachers Service Commission (TSC), and universities to ensure consistent CBC implementation standards. Enhanced *funding for research and innovation* was seen as critical for generating locally relevant pedagogical solutions. Stakeholders further emphasised the need for *digital learning policies* that guide ICT integration, especially in public institutions. Establishing *robust monitoring and evaluation frameworks* was suggested to track CBC adoption and assess the impact on teacher competencies. Finally, respondents called for *stronger partnerships and governance structures* between teacher education institutions, government agencies and NGOs to leverage resources and technical expertise in sustaining educational reforms. The findings concluded that the findings reflect inconsistent collaboration patterns, possibly due to limited communication or coordination challenges. Building stronger cross-sectoral partnerships can enhance CBC adoption and sustain reforms at the institutional level.

In addition, the study sought to establish whether continuous professional development (CPD in teacher education policy was prioritised, as shown in Table 33.

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**Table 33: Prioritisation of Continuous Professional Development (CPD) in Teacher Education Policy**

| Response | Frequency (n) | Percentage (%) |
|---|---|---|
| Strongly Disagree | 10 | 3.3 |
| Disagree | 35 | 11.7 |
| Neutral | 50 | 16.7 |
| Agree | 120 | 40.0 |
| Strongly Agree | 85 | 28.3 |
| **Total** | **300** | **100** |

The findings revealed that 40% of respondents agreed that CPD is prioritised in teacher education policy, whereas 28.3% strongly agreed that CPD is prioritised in teacher education policy. This shows strong institutional recognition of lifelong learning as essential to effective CBC implementation. Nevertheless, other respondents in minimal percentages disagreed that CPD is prioritised in teacher education policy, implying that some institutions lack structured or funded CPD frameworks. The study observed that Institutionalizing CPD through mandatory in-service training, mentorship and digital learning platforms would enhance educators' adaptability to evolving curriculum demands.

In conclusion, the results reveal that Kenya's teacher education institutions are progressively developing policy and institutional frameworks to support CBC and digital integration. However, significant disparities remain in policy execution, resource provision and partnership effectiveness. While CPD and professional learning communities are gaining traction, many institutions still face structural and funding challenges that hinder the full realisation of CBC and digital pedagogy. A coherent, policy-driven approach supported by leadership commitment and inter-agency collaboration is critical for sustained progress. These findings align with Fullan (2019), who argues that meaningful educational reform depends on strong institutional leadership, coherent policy environments and collaborative learning systems that empower teachers to innovate and adapt to changing educational paradigms.

## PERCEIVED CHALLENGES IN TEACHER EDUCATION TRANSFORMATION

Furthermore, an item in the questionnaire sought to establish whether there were perceived challenges in teacher education transformation, as shown in Table 34.

**Table 34: Perceived Challenges in Teacher Education Transformation (n = 300)**

| Challenge Area | 1 = Not at all | 2 = Small extent | 3 = Moderate extent | 4 = Great extent | 5 = Very great extent |
|---|---|---|---|---|---|
| **Insufficient digital infrastructure and connectivity** | 8.3% (25) | 10.0% (30) | 21.7% (65) | 30.0% (90) | 30.0% (90) |
| **Limited capacity among educators to deliver CBC content** | 6.7% (20) | 11.6% (35) | 20.0% (60) | 33.3% (100) | 28.3% (85) |
| **Resistance to pedagogical change among teacher trainers** | 10.0% (30) | 16.7% (50) | 23.3% (70) | 26.7% (80) | 23.3% (70) |
| **Limited funding for innovation and research** | 5.0% (15) | 8.3% (25) | 21.7% (65) | 31.7% (95) | 33.3% (100) |
| **Inadequate monitoring and evaluation of CBC integration** | 8.3% (25) | 11.7% (35) | 23.3% (70) | 31.7% (95) | 25.0% (75) |

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The findings revealed several challenges. In terms of Insufficient Digital Infrastructure and Connectivity, 30% of respondents agreed to a great extent, and 30% of respondents agreed to a very great extent, that insufficient digital infrastructure and connectivity is a major barrier. This indicates persistent gaps in ICT resources, particularly in public teacher training institutions where reliable internet access and digital devices remain scarce. The study concluded that such deficits hinder the effective implementation of Competency-Based Curriculum (CBC) and digital pedagogies. In terms of Limited Capacity Among Educators to Deliver CBC Content, the findings revealed 33.3% of stakeholders agreed to a great extent, whereas 28.3% agreed to a very great extent that limited educator capacity affects CBC delivery. This finding points to the need for systematic professional development to enable lecturers and teacher trainers to adopt learner-centred, competency-based teaching methods. Without adequate capacity-building, CBC objectives cannot be fully realised in teacher preparation.

Further, in terms of Resistance to Pedagogical Change Among Teacher Trainers, the study revealed that 26.7% of respondents reported that resistance to pedagogical innovation was a challenge to a great extent, whereas 23.3% agreed that resistance to pedagogical innovation was a challenge to a very great extent. This suggests that cultural inertia within institutions and reliance on traditional content-delivery models still constrain transformation. The study concluded that change management strategies and motivational incentives were needed to promote pedagogical innovation. Furthermore, in terms of Limited Funding for Innovation and Research, the findings revealed that 33.3% of participants viewed limited funding as a significant challenge. The lack of financial support restricts research in new teaching approaches, technology integration and curriculum development. The study concluded that this issue reflects broader systemic underfunding of higher education and teacher education programs in Kenya, limiting their responsiveness to national and global demands. In terms of Inadequate Monitoring and Evaluation of CBC Integration, the study revealed that 25% of respondents cited weak monitoring and evaluation mechanisms as a hindrance. The study concluded that there was a need for institutional frameworks to systematically track progress, gather evidence and refine CBC implementation strategies. Effective M&E is crucial for ensuring accountability and continuous improvement. In addition, data from qualitative data revealed that Respondents highlighted *inadequate ICT infrastructure and unreliable connectivity* as the most critical barrier. Many training institutions lack sufficient devices, computer labs and stable internet access, limiting practical use of digital tools. Additionally, *limited digital skills among teacher educators* constrain effective technology integration. The absence of *assistive technologies* for learners with special needs was cited as a challenge to inclusive pedagogy. *Resistance to pedagogical change,* especially among older faculty accustomed to traditional methods, was noted as a hindrance to innovation. Finally, respondents lamented *insufficient institutional support* in the form of training opportunities, technical assistance and funding for technology adoption. These barriers collectively slow the transformation toward fully digital and inclusive teaching models envisioned in the CBC.

Overall, from the findings, the data highlight that while Kenya's teacher education system is progressively adopting CBC principles, substantial structural and operational barriers remain. Digital infrastructure, funding and educator preparedness are the most critical impediments. For transformation to be sustainable, institutions require robust investment in ICT, professional development and continuous monitoring mechanisms aligned with the national education reform agenda. These findings align with Orodho (2023), who emphasised that successful CBC implementation in Kenya depends heavily on institutional readiness, adequate resourcing and capacity building for educators. He notes that without digital infrastructure and consistent policy support,

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transformative pedagogical change remains constrained.

## CONCLUSION

In conclusion, the study underscores that rethinking teacher education in Kenya within the framework of the Competency-Based Curriculum (CBC) requires a multi-dimensional transformation anchored in *digital competence, inclusive pedagogy, institutional innovation and policy alignment*. The findings reveal that while substantial progress has been made in integrating CBC principles, learner-centred methodologies and 21st-century skills into teacher education, challenges persist in areas such as digital infrastructure, practical exposure and institutional capacity. Stakeholders emphasised the importance of strengthening experiential learning, continuous professional development and research-driven pedagogical innovation to prepare future teachers for dynamic, technology-rich classrooms. Moreover, sustained collaboration among the Ministry of Education, Teachers Service Commission and higher education institutions is critical to ensuring consistency, accountability and scalability of CBC reforms. Ultimately, achieving transformative teacher education for a changing world calls for a forward-looking approach that fuses *competence, creativity and contextual relevance* to produce educators capable of nurturing globally competitive, adaptive and socially responsible learners in Kenya's evolving educational landscape.

### Recommendations of the Study

- Strengthen Curriculum Alignment with CBC Competencies, whereby teacher education institutions should continuously review and update their curricula to fully embed *Competency-Based Curriculum (CBC)* principles. Courses should explicitly emphasise problem-solving, creativity, collaboration and digital literacy to ensure graduates are adequately equipped for 21st-century classrooms.
- Enhance Practical and Experiential Learning Opportunities whereby institutions should expand *microteaching, practicum, mentorship and simulation-based learning* to ensure pre-service teachers gain practical experience in CBC implementation. Collaboration with schools should be strengthened to create authentic teaching environments for practice-based learning.
- Invest in Digital Infrastructure and ICT Capacity Building. That is, the government and institutions should invest in *reliable internet connectivity, modern devices, and learning management systems (LMS)* to support blended and digital learning. Continuous ICT training for both pre-service and in-service educators should be institutionalised to bridge the digital divide.
- Promote Inclusive Education and Diversity Competencies. That is, teacher education programmes should integrate *inclusive pedagogy, Universal Design for Learning (UDL)*, and culturally responsive teaching to prepare educators for diverse learning environments. Partnerships with special needs institutions can enhance exposure and competence in inclusive teaching.
- Institutionalise Continuous Professional Development (CPD) through regular *capacity-building workshops and professional learning communities (PLCs)* should be established to support educators in adopting CBC methodologies, digital tools and innovative assessment strategies. The Teachers Service Commission (TSC) and the Ministry of Education (MoE) should coordinate structured CPD frameworks.
- Foster Leadership and Policy Support for Teacher Education Reform, whereby institutional leaders should develop clear policies and allocate adequate resources for CBC integration, digital transformation and research innovation. Leadership commitment is crucial in fostering a culture of pedagogical renewal and technological adaptation.
- Encourage Research, Monitoring, and Evaluation. That is, a robust *monitoring and*

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*evaluation (M&E)* mechanism should be established to track CBC implementation in teacher education. Research on pedagogical innovations, digital integration and inclusivity should guide policy and practice across teacher training institutions.

- Strengthen Collaboration and Partnerships. Enhanced collaboration between *MoE, KICD, TSC, NGOs, and Higher Education Institutions (HEIs)* is essential to harmonise CBC implementation efforts. Joint initiatives can promote resource sharing, standardisation of training and best practices dissemination.
- Increase Funding for Innovation and Pedagogical Reform. That is, the government and development partners should allocate targeted funding to support innovation in teacher education—particularly in *e-learning platforms, inclusive teaching materials* and *green or climate-smart classrooms*—to ensure sustainability and scalability of reforms.
- Foster a Culture of Reflective and Lifelong Learning. That is, teacher educators and pre-service teachers should be encouraged to adopt *reflective teaching practices* and lifelong learning mindsets to remain adaptable to emerging educational challenges and global trends in pedagogy and technology.

**Policy Implications of the Study**

The findings of this study carry significant policy implications for strengthening Kenya's teacher education system within the framework of *Vision 2030*, the *Kenya Education Sector Strategic Plan (ESSP 2023–2027)*, and the ongoing reforms under the *Competency-Based Curriculum (CBC)*. Firstly, there is a clear need for the Ministry of Education (MoE), the Teachers Service Commission (TSC), and the Kenya Institute of Curriculum Development (KICD) to institutionalise a harmonised national framework for Competency-Based Teacher Education (CBTE). This framework should guide curriculum design, assessment and accreditation standards across universities and teacher training colleges.

Secondly, policies must prioritise digital transformation in teacher education, ensuring equitable access to ICT infrastructure, e-learning platforms and professional development in digital pedagogy. This aligns with the government's *Digital Superhighway and Creative Economy* pillar under the Bottom-Up Economic Transformation Agenda (BETA), which seeks to enhance digital inclusion and innovation in education.

Thirdly, inclusive education policies should be reinforced to mandate integration of Universal Design for Learning (UDL) principles and gender-responsive pedagogies within teacher preparation programmes. This would ensure equity and inclusivity for learners with diverse abilities, cultural backgrounds and socio-economic contexts.

Furthermore, the policy environment should incentivise research, innovation and partnerships among teacher education institutions, development agencies and industry stakeholders to promote context-relevant CBC implementation. Establishing dedicated funding streams for pedagogical research and innovation hubs within teacher education institutions can accelerate reform uptake.

Finally, capacity building and continuous professional development (CPD) should be enshrined as a policy requirement for all teacher educators and mentors. A national CPD framework anchored in CBC principles will ensure that teacher educators remain responsive to evolving pedagogical and technological demands. Collectively, these policy measures will advance the goal of producing adaptive, competent and future-ready teachers capable of transforming Kenya's education system in line with national and global development aspirations.

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