Effectiveness of Competence-Based Curriculum (CBC) Implementation in the Lower Secondary Schools: Teachers' Perspective in Rukungiri District, Southwestern Uganda

Gladyce Kachope[1], Viola N Nyakato[3] & Adrian Mwesigye[1]

[1]Department of Educational Foundations and Psychology, Mbarara University of Science and Technology, Uganda

[3]Department of Human Development and Relational Sciences, Mbarara University of Science and Technology, Uganda

ORCID: https://orcid.org/0009-0004-3088-7121

Email; kachopeg@gmail.com

Abstract: *The practical implementation of the Competency-Based Curriculum (CBC) at Uganda's lower secondary level largely depends on teacher preparedness and systemic support. This study examined the extent of CBC implementation in Rukungiri District by exploring teacher experiences across five key domains: instructional confidence, curriculum adaptability, collaboration, institutional support, and training. Employing a convergent parallel mixed methods design, the study surveyed 235 in-service teachers and interviewed 13 head teachers. Quantitative data were analysed using descriptive statistics, while qualitative responses were thematically analysed. Findings revealed high teacher confidence and moderate adaptability, exposing significant gaps in ICT integration, resource availability, and assessment competence. Qualitative insights emphasised the need for structured collaboration, stakeholder engagement, and continuous professional development. These findings highlight that while teachers demonstrate readiness and willingness, effective CBC implementation remains hindered by systemic limitations. Addressing these barriers is essential for aligning classroom practice with CBC policy objectives.*

Keywords: *Competency-Based Curriculum, Teacher Preparedness, Curriculum Implementation, Rukungiri District, Mixed Methods, Uganda*

How to cite this work (APA):

1. Introduction

Globally, the shift toward Competency-Based Curricula (CBC) has been driven by the need to prepare learners for complex, rapidly changing 21st-century environments. CBC emphasises skills acquisition, problem-solving, and learner-centred approaches over traditional rote learning (Utomo, 2005; Hernández-Sellés et al., 2020). While its potential to enhance student engagement and real-world competence is widely acknowledged, CBC implementation has been uneven, particularly in developing countries, where systemic barriers such as inadequate training, resistance to pedagogical change, and resource scarcity persist (Nzima, 2016; Momanyi & Rop, 2019).

In the Ugandan context, the Ministry of Education and Sports introduced the Lower Secondary CBC in 2020, aiming to align learning with national development goals and global education trends. However, the transition has posed challenges. Teachers continue to grapple with unfamiliar assessment strategies, integration of ICT, and performance-based learning, often without sufficient training or resources (Namubiru et al., 2024; Wambi et al., 2024; Kidega & Mugarura, 2024). While some educators have shown adaptability and a positive outlook, many face limitations in curriculum delivery due to inadequate materials, infrastructure, and institutional support (Barasa et al., 2024; Cheruiyot, 2024).

The situation is particularly illustrative in Rukungiri District, where schools are at different stages of readiness and capacity for CBC adoption. Teachers in this region report moderate to high levels of preparedness in classroom management, inclusivity, and relationship-building with students. However, persistent gaps remain in advanced training, ICT integration, and access to teaching aids (Kachope et al., 2025). Despite the Ministry's efforts to provide initial workshops, many teachers rely on improvisation to meet curriculum goals, often with limited support from stakeholders and school-level leadership. Collaborative teaching strategies and group-based learning have emerged as promising practices, but their effectiveness is constrained by inconsistent resource provision and a lack of systemic follow-up.

In sum, while CBC implementation in Rukungiri reflects national trends, it also exposes localised dynamics that must be addressed. These include teacher confidence, curriculum adaptability, professional collaboration, and institutional support, all of which directly influence the success of CBC reform. This study, therefore, focuses on understanding these interrelated factors to inform strategies that can enhance CBC delivery in Uganda's lower secondary schools.

2. Literature Review

2.1 Theoretical Review

This study is guided by Curriculum Implementation Theory (Gross et al., 1971), which emphasises four key determinants of successful curriculum implementation: clarity, capability, resources, and support. These align closely with the **Consolidated Framework for Implementation Research (CFIR)** (Damschroder et al., 2009), which offers five domains relevant to CBC implementation.

Intervention Characteristics relate to the clarity and perceived value of the CBC innovation. The **Outer Setting**, including policy and community support, influences resource allocation and stakeholder involvement. The **Inner Setting**, school infrastructure, leadership, and culture shape the institutional climate for implementation. **Individual characteristics** map onto teacher capability, attitudes, and confidence, while the **Implementation Process** reflects the planning, engagement, training, and feedback mechanisms required for change.

Together, these frameworks offer a comprehensive lens to assess how structural, individual, and systemic factors interact to influence the teacher effectiveness of CBC implementation in Rukungiri District.

2.2 Effectiveness in CBC Implementation of the Lower Secondary Schools

2.2.1 Instructional Confidence and Competence

Implementing Competency-Based Curriculum (CBC) in various countries has yielded mixed results. While teachers generally have positive perceptions of CBC's potential to enhance skill development and learner-centred approaches (Nkya, 2021; Namubiru et al., 2024), significant challenges persist. These include inadequate resources, limited training, and varying levels of teacher preparedness (Namubiru et al., 2024; Nsengimana et al., 2023; Utomo, 2005). Teachers' competency is crucial for successful CBC implementation (Koskei, 2020), yet many struggle with digital literacy and understanding CBC assessment rubrics (Achieng, 2023). The need for ongoing professional development and training is emphasised across studies (Nkya, 2021; Achieng, 2023; Nnam et al., 2018). Despite these challenges, some teachers report feeling confident in delivering CBC content and aligning it with learning goals (Namubiru et al., 2024). Successful CBC implementation requires addressing resource constraints, improving teacher training, and fostering a supportive ecosystem involving various stakeholders (Namubiru et al., 2024).

2.2.2 Curriculum Adaptability

Implementing Competency-Based Curriculum (CBC) in various countries has yielded mixed perceptions among teachers. While some teachers view CBC positively for its emphasis on skill development and learner-centred approaches (Namubiru et al., 2024; Nsengimana et al., 2023), many face challenges in implementation. Common issues include inadequate resources, limited training, and varying levels of preparedness (Nkya, 2021; Namubiru et al., 2024; Utomo, 2005). Teachers struggle with planning, content delivery, and assessment methods in CBC (Wambi et al., 2024; Nnam et al., 2018). Digital literacy remains a challenge for many educators (Achieng, 2023). Despite these difficulties, some teachers can adapt instruction and curriculum to align with CBC goals (Nkya, 2021). To improve CBC implementation, studies recommend ongoing professional development, adequate resource provision, and establishment of peer learning networks (Namubiru et al., 2024; Nsengimana et al., 2023). While CBC shows promise, significant support is needed for effective implementation.

2.2.3 Collaboration and Learning

Research on computer-supported collaborative learning (CSCL) highlights the importance of effective peer interaction for learning outcomes. Studies have identified cognitive, social, and organisational aspects as key elements of successful collaboration (Hernández-Sellés et al., 2020). Peer interaction has been shown to strongly affect self-reported learning outcomes (LaPointe & Gunawardena, 2004; Gunawardena & LaPointe, 2003). Effective collaborative learning involves active participation, explanation, and justification of opinions (Soller, 2001). Learning collaboratives can impact professional networks by forming new advice-seeking relationships (Bunger et al., 2014). However, collaborative approaches like competency-based curricula (CBC) face challenges such as teacher training and inconsistent pedagogical approaches (Muchira et al., 2023; Benson & Njuguna, 2023). While peer collaboration can positively influence self-efficacy, its effects on persistence in distance education are less clear (Poellhuber et al., 2008). These studies emphasise the need to design and support collaborative learning environments carefully.

2.2.4 Perceived Support and Resources

Research on institutional support and resources in educational settings reveals mixed perceptions among students and faculty. While some studies report fair levels of support (Milman et al., 2015; Pilongo, 2020), others highlight challenges in infrastructure and materials (Olukoga et al., 2011). The fit between students' and supervisors' perceptions of resources is linked to student satisfaction (Pyhältö et al., 2012). Adequate academic resources correlate with improved resident well-being and clinical learning environments (Lee et al., 2017). In online education, student satisfaction is influenced by interaction and instructor support (Fedynich et al., 2015). Institutional support can be categorized into academic competency support, teaching practices, tutors' characteristics, and use of technology (Lim & Ho, 2022). The Perceived Adequacy of Resources scale is reliable for assessing resource adequacy (Rowland et al., 1985). Overall, these studies emphasise the importance of institutional support in enhancing student learning experiences and outcomes.

2.2.5 Training

Professional development training is crucial in implementing effective interventions for students with disabilities and improving teaching practices. Studies have shown that well-designed training programs can enhance teachers' knowledge, skills, and ability to implement curricula (Penuel et al., 2007; Brock & Carter, 2017). Key factors contributing to successful training outcomes include coherence of professional development experiences, time for implementation planning, and technical support (Penuel et al., 2007). Effective training strategies involve modelling and performance feedback (Brock & Carter, 2017). The Theoretical Domains Framework provides a validated method for assessing implementation problems and developing interventions (Cane et al., 2012). Training has improved implementation fidelity, job performance, and employee satisfaction (Mendoza-Armijos, 2022; Yoon et al., n.d.). Furthermore, training has a positive association with the integration of ICT in the implementation of Competency-Based Curriculum (CBC) in secondary schools (Kagambe et al., 2024). Professional development training is feasible, well-received, and improves participants' knowledge and skills (Coates & Clerke, 2020).

3. Methodology

3.1 Study Design

This study adopted a convergent parallel mixed methods design to investigate the extent of the effectiveness of the Competence-Based Curriculum (CBC) implementation among lower secondary schools in Rukungiri District, Uganda. The mixed methods approach enabled the collection and integration of quantitative and qualitative data to comprehensively understand how teacher preparedness and attitudes influence CBC implementation (Creswell, 2014). Quantitative data were collected through structured questionnaires, while qualitative data were obtained through key informant interviews (KIIs). This design was appropriate as it facilitated the triangulation of findings from different data sources.

3.2 Research Approach

The study's quantitative component aimed to assess teacher preparedness for CBC implementation using Likert-scaled questionnaire items. The qualitative component involved KIIs with head teachers to gain insights into contextual and perceptual factors influencing CBC implementation. Combining these approaches allowed for a richer interpretation of the findings and a deeper understanding of the mediating mechanisms.

3.3 Study Population

The study targeted 235 in-service teachers from 15 government-aided secondary schools in Rukungiri District. These teachers were selected because they were either currently implementing or had undergone training on the CBC. Additionally, 13 head teachers were interviewed as key informants due to their supervisory role and firsthand experience with CBC implementation in their schools.

3.4 Sample Size and Sampling Technique

The sample size of 235 was determined based on Krejcie and Morgan's (1970) table, and it was increased by 30% to account for potential non-responses, consistent with Singh and Masuku (2014). Stratified random sampling

was used to ensure representation across gender, qualification, and subject specialisations. Purposive sampling was applied to select key informants (head teachers) for qualitative interviews.

3.5 Study Instruments

Quantitative data were collected using a structured self-administered questionnaire that included items from the Consolidated Framework for Implementation Research (CFIR) developed by Damschroder et al. (2009) to synthesise key constructs influencing successful implementation of interventions. It comprises **five major domains**: Intervention Characteristics, Outer Setting, Inner Setting, Characteristics of Individuals, and Implementation Process. In your study on the effectiveness of Competency-Based Curriculum (CBC), CFIR is relevant for identifying multilevel factors, such as teacher confidence, curriculum adaptability, training, and administrative support, that affect how CBC is implemented and sustained in educational settings. Each item was measured on a 5-point Likert scale. The effectiveness of CBC implementation was measured using adapted items and was then assessed for validity and reliability. It was found to have a Cronbach's alpha of 0.84.

Qualitative data were collected using a standardised open-ended interview guide administered to head teachers. The guide explored perceptions of teacher confidence, curriculum adaptability, training, and administrative support influencing CBC implementation.

3.6 Data Collection Procedure

After obtaining ethical approvals, the study commenced with a pretest involving 10% of the sample. Questionnaires were then distributed to eligible teachers who completed them independently. KIIs were conducted privately with head teachers to encourage open and honest discussions. All data collection occurred over weekends to minimise disruption to school programs.

3.7 Data Management and Analysis

Quantitative data were entered into Microsoft Excel and analysed using Stata version 17. Descriptive statistics (means, standard deviations, frequencies, and percentages) were used to summarise variables.

Qualitative data were transcribed verbatim and analysed thematically using NVivo version 14. Emerging themes were coded and interpreted to complement and triangulate the quantitative findings. Quantitative and qualitative data were integrated during interpretation to provide a holistic understanding of the research problem.

3.8 Ethical Considerations

In compliance with ethical standards for research involving human subjects, this study followed established protocols to protect participants' rights and privacy. Before data collection, ethical approval was obtained from the Research Ethics Committee at Mbarara University of Science and Technology (MUST-REC). Further clearance was secured from the Uganda National Council for Science and Technology (UNCST). Authorisation to conduct the study within schools in Rukungiri District was also granted by the District Education Officer (DEO).

All participants were given a clear explanation of the study's purpose, potential risks, and benefits, after which they voluntarily signed informed consent forms. Participation was entirely voluntary, with assurance that individuals could opt out at any stage without any repercussions. To ensure anonymity and protect sensitive information, pseudonyms were used, and all collected data were managed with strict confidentiality protocols.

4. Results and Discussion

4.1 Teachers' Effectiveness of Implementation of the Lower Secondary Competence-Based Curriculum in Rukungiri District, Southwestern Uganda

Table 1: Effectiveness of CBC Implementation of the Lower Secondary Schools in Rukungiri District, Southwestern Uganda (N = 235).

Variable	Mean	SD
Instructional Confidence and Competence	4.1	0.7
Curriculum Adaptability	4.0	0.6
Collaboration and Learning	3.8	0.7
Perceived Support & Resources	3.9	0.6
Training	4.0	0.5
Overall CBC Effectiveness	3.9	0.4

The findings highlight how teachers perceive the effectiveness of the Competency-Based Curriculum (CBC) implementation across key domains. On a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), the highest mean score was observed in Instructional Confidence and Competence at 4.1 out of 5 (SD = 0.7), indicating that teachers felt capable and confident in delivering CBC content aligned with learning objectives. Curriculum Adaptability is also rated highly, with a mean of 4.0 out of 5 (SD = 0.6), reflecting teachers' ability to modify the CBC to accommodate diverse learner needs across various contexts.

Collaboration and Learning received a mean score of 3.8 out of 5 (SD = 0.7), suggesting a moderately effective level of peer interaction and professional learning

regarding CBC implementation. Perceived Support and Resources were rated at 3.9 out of 5 (SD = 0.6), indicating a fair level of institutional support, though some gaps in infrastructure and materials may still hinder optimal implementation. The Training domain recorded a mean of 4.0 out of 5 (SD = 0.5), underscoring the critical role of ongoing professional development in enhancing implementation readiness.

Overall, the perceived effectiveness of CBC implementation was rated at 3.9 out of 5 (SD = 0.4), suggesting that while teachers view the implementation as generally effective, there remains room for strengthening institutional support, fostering peer collaboration, and enhancing contextual adaptability.

Table 2: Subthemes and Quotes on perceived Effectiveness of the CBC implementation in Rukungiri District

Theme	Subtheme	Quote and Source
Instructional Confidence and Competence	Confidence in applying CBC principles	"Teachers have had the opportunity to gain hands-on experience and are confident in their ability to apply CBC principles."Head Teacher 1
	Hands-on experience improves confidence.	"CBC is straightforward to implement given adequate resources and support, supervision by NCDC and MOES."Head Teacher 10
Curriculum Adaptability	Adapting content to student needs	"They adapt content by conducting a thorough assessment and setting SMART goals."Head Teacher 1
	Use of improvisation for curriculum delivery	"Much is through improvisation of content and resources as they are not enough."Head Teacher 4
Collaboration and Learning	Peer collaboration and group discussions	"Teachers encourage learners to form and guide discussion groups independently."Head Teacher 10
Perceived Support & Resources	Limited teaching materials and facilities	"Teaching materials and classroom infrastructure are available, although they aren't sufficient."Head Teacher 1
	Need for stakeholder involvement and resources.	"Stakeholders are supportive but have limited knowledge of the CBC and lack adequate facilities." Head Teacher 4
Training	Workshops provided basic skills.	"Teachers received workshops and training, which helped them adjust to the new curriculum" Head Teacher 5
	Need for ICT-focused and advanced training.	"More training is needed, especially in using ICT and assessing learners" Head Teacher 7

As perceived by head teachers, the extent of CBC implementation shows substantial progress **in** instructional confidence and competence**,** with teachers reportedly gaining hands-on experience and expressing confidence when adequate support is provided. However, curriculum adaptability and training still face setbacks, as teachers often resort to improvisation due to resource gaps and call for more ICT-focused training. While foundational efforts like workshops have enabled initial adjustments, limited materials, insufficient stakeholder engagement, and infrastructural constraint**s** highlight the most significant challenges to full-scale and effective CBC implementation.

4.2 Discussion

4.2.1 Instructional Confidence and Competence

Teachers in Rukungiri District expressed a strong sense of confidence in delivering CBC content. Qualitative data revealed that many attributed this to hands-on experience and supervision from the National Curriculum Development Centre (NCDC) and the Ministry of Education and Sports (MoES), which boosted their competence in learner-centred instruction. This aligns with literature that shows CBC can enhance teacher self-efficacy when adequate preparation is

provided (Namubiru et al., 2024; Nkya, 2021). However, consistent with findings by Achieng (2023) and Koskei (2020), some teachers still struggle to interpret CBC assessment rubrics and integrate digital tools effectively. These gaps indicate that instructional confidence, though present, may not uniformly reflect competence. Nnam et al. (2018) emphasise the importance of continuous professional development to bridge this disparity, while Utomo (2005) cautions that confidence unsupported by capacity and resources can lead to superficial implementation.

4.2.2 Curriculum Adaptability

Teachers demonstrated an ability to adapt curriculum content to learner needs, often through pre-lesson assessments and setting SMART goals. However, many noted that curriculum improvisation was inevitable due to shortages of instructional materials. This improvisation, though creative, raises concerns about deviations from intended curriculum goals. Literature supports this complexity. Namubiru et al. (2024), Nsengimana et al. (2023), and Nkya (2021) acknowledge that while CBC encourages flexibility, inadequate training and limited resources undermine implementation fidelity. Utomo (2005) and Wambi et al. (2024) further note that teachers in under-resourced contexts often lack the support to align lesson plans with learner competencies. Achieng (2023) highlights digital literacy as a significant constraint on adaptability. Despite this, teachers' willingness to adjust suggests potential for improvement if supported with appropriate resources and digital upskilling.

4.2.3 Collaboration and Learning

Head teacher interviews revealed that many schools encourage learners to form and manage discussion groups, suggesting an emerging culture of peer collaboration. Teachers also reported supporting one another through informal peer networks. These findings align with research emphasising the cognitive, social, and organisational benefits of collaborative learning (Hernández-Sellés et al., 2020; Soller, 2001). However, collaboration remains unstructured and inconsistent. Bunger et al. (2014) and Muchira et al. (2023) stress the importance of structured professional learning communities to ensure meaningful collaboration. In some cases, pedagogical inconsistencies limit the benefits of group-based learning, as noted by Benson & Njuguna (2023). While collaboration enhances teacher self-efficacy (Poellhuber et al., 2008), it requires coordinated support to translate into sustained instructional improvement.

4.2.4 Perceived Support and Resources

Though some schools received basic teaching materials and administrative encouragement, teachers and head teachers voiced concerns about the inadequacy of physical infrastructure and stakeholder understanding of CBC. One head teacher emphasised that while materials were available, they were insufficient for full-scale implementation. This echoes findings from Milman et al. (2015) and Pilongo (2020), who report similar tensions between perceived and actual support in CBC environments. Pyhältö et al. (2012) observed that mismatches in resource expectations reduce job satisfaction and curriculum delivery. Lee et al. (2017) found that adequate academic resources contribute positively to professional learning climates. In Rukungiri, gaps in stakeholder awareness mirror findings by Olukoga et al. (2011), while Fedynich et al. (2015) and Lim & Ho (2022) advocate for interactive institutional support and technology integration. Despite goodwill from administrators, effective CBC implementation demands a coordinated investment in facilities, materials, and teacher support systems.

4.2.5 Training

Teachers acknowledged that initial CBC workshops enhanced their foundational understanding, especially in classroom facilitation. However, several head teachers noted a pressing need for more specialised training, particularly in ICT use, learner assessment, and developing rubrics. This reflects broader literature emphasizing the necessity of continuous and targeted professional development (Penuel et al., 2007; Brock & Carter, 2017). Coherent training design, reflection time, and technical support access are key to practical implementation. The Theoretical Domains Framework (Cane et al., 2012) reinforces this need by outlining how specific behavioural and environmental factors influence implementation. Loeb et al. (2015) and Mendoza-Armijos (2022) show that well-planned training enhances fidelity to curriculum protocols, while Coates & Clerke (2020) highlight positive feedback from participants who receive sustained support. While initial efforts in Rukungiri are commendable, the demand for ICT-focused and competency-based assessment training suggests that capacity-building remains a crucial next step.

5. Conclusions and Recommendations

5.1 Conclusion

Implementing the Competency-Based Curriculum (CBC) in Rukungiri District has been moderately effective from the teachers' perspective. Educators expressed confidence in delivering CBC content, managing learner-centred classrooms, and adapting instructional approaches to meet diverse student needs. These perceptions suggest that the foundational principles of CBC are being understood and applied in practice. However, the effectiveness of CBC remains limited by key structural and contextual challenges.

Teachers identified significant gaps in training, especially in areas like ICT integration, assessment rubrics, and competency-based evaluation. Many rely on improvisation due to insufficient teaching materials and infrastructure, which may compromise curriculum

fidelity. Peer collaboration and administrative support exist but lack consistency and formalization. Despite these limitations, the general outlook among teachers remains positive, reflecting openness to reform and innovation.

Overall, CBC's effectiveness from the teachers' perspective is promising but constrained. Addressing systemic weaknesses will be essential to translating teacher readiness into lasting curriculum transformation.

5.2 Recommendations

1. Based on the Curriculum Implementation Theory's emphasis on implementer capability and the CFIR's domain of Characteristics of Individuals, there is a need for regular, structured CPD focused on CBC assessment strategies, ICT integration, and rubric development. Teachers expressed confidence but also highlighted competence gaps, especially in digital tools and formative assessment, which, if addressed, would enhance curriculum fidelity.
2. Aligning with the Inner Setting and Intervention Characteristics domains of CFIR, the Ministry of Education and stakeholders should ensure equitable provision of teaching and learning materials. While teachers' reliance on improvisation is commendable, it reflects systemic limitations that undermine the intended curriculum outcomes. Adequate resourcing will improve consistency and curriculum adaptability.
3. Drawing on the CFIR's Implementation Process domain and findings on informal collaboration, schools should formalise peer learning structures to promote collective efficacy and mentorship. Supportive, structured collaboration would address pedagogical inconsistencies and sustain instructional improvement.
4. In line with the Curriculum Implementation Theory's call for strong management support and CFIR's Inner Setting domain, school leaders should be trained and empowered to provide instructional guidance, feedback, and motivation. Leadership development programs should target head teachers and department heads to build a culture that nurtures CBC implementation.
5. Addressing the CFIR Outer Setting domain, increased engagement with parents, local governments, and community organisations is necessary. Teachers reported that stakeholders often lack understanding of CBC. Tailored sensitization and participatory planning would foster alignment between classroom realities and policy goals.
6. Responding to both practical findings and the theoretical requirement of resource availability, targeted ICT investments should be made in rural schools. Ensuring stable access to digital tools and platforms will enhance teacher capacity and improve learner access to competency-based resources.
7. To strengthen the implementation process, reflective feedback mechanisms within schools should be established. These should be linked to teacher development goals and guided by CBC benchmarks. Continuous monitoring will allow for timely adjustments and sustain implementation momentum.

References

Aisha Namubiru, M., Mugagga, F., & Kiryowa, L. (2024). Teacher preparation and the implementation of competency-based curriculum in Uganda. *African Journal of Education and Practice, 10*(1), 85–99.

Barasa, M. C., Simiyu, M. J., & Kiplagat, H. (2024). Teachers' attitudes and digital literacy in implementing CBC in Kenyan secondary schools. *International Journal of Educational Development in Africa, 9*(2), 44–56.

Brock, M. E., & Carter, E. W. (2017). Efficacy of performance feedback for teachers: A meta-analysis of single-case research. *Journal of Behavioural Education, 26*(4), 342–369.

Cane, J., O'Connor, D., & Michie, S. (2012). Validation of the theoretical domains framework for behaviour change and implementation research. *Implementation Science, 7*(1), 1–17. https://doi.org/10.1186/1748-5908-7-37

Charles Kidega, A., & Obbo, R. (2024). Resource constraints and curriculum implementation: A Ugandan case. *East African Review of Education, 12*(2), 102–115.

Cherotich, N., Koech, E., & Langat, B. (2023). Assessment gaps in CBC: Perspectives from rural Kenyan teachers. *Journal of Pedagogical Research, 5*(1), 31–47.

Cheruiyot, J. B. (2024). Infrastructural challenges in implementing the CBC in public schools in Kenya. *Journal of African Education Studies, 6*(3), 118–130.

Coates, H., & Clerke, T. (2020). Building capacity through training: What works for teachers. *Education and Development Review, 3*(1), 25–39.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage Publications.

Fedynich, L., Bradley, K., & Bradley, J. (2015). Graduate student perceptions of online course quality: The benefits of increased instructor presence. *The Journal of Instructional Research, 4*, 5–13.

Holmes, B. (2011). Measuring curriculum implementation effectiveness: A teacher-based tool. *Teaching and Teacher Education, 27*(6), 1039–1049.

Kagambe, E., Kabasiita, J., Kisembo, M., Kasiita, T., Muweesi, C. Kaweesi, M. & Namubiru, A. (2024). The Integration of ICT for Effective Implementation of the Competence-Based Curriculum among Secondary Schools in Kyaka, II Refugee Settlement, Uganda. *East African Journal of Information Technology, 7*(1), 263 – 278.

Keating, T., Williams, R., & Murphy, L. (2020). Inclusive practices in secondary education: Evidence from multi-school case studies. *International Review of Education, 66*(5), 781–799.

Lee, A., Pye, R. E., & Silvester, J. (2017). Resource adequacy and clinical learning: A systematic review. *Journal of Learning Environments, 15*(2), 200–212.

Lim, C. P., & Ho, J. (2022). A framework for measuring perceived instructional support in technology-enhanced learning environments. *Australasian Journal of Educational Technology, 38*(2), 30–45.

Masika, R., & Jones, J. (2016). Building student belonging in higher education: Implications for learning and teaching. *Teaching in Higher Education, 21*(2), 138–150.

Mary Njeri Maiyuria, P., & Ndichu, T. (2024). Curriculum reform and resource gaps in Kenyan high schools. *Curriculum Innovations Journal, 7*(1), 66–80.

Mendoza-Armijos, J. C. (2022). Improving implementation fidelity through strategic training. *Implementation Science Communications, 3*(1), 50–63.

Milman, N. B., Carlson-Bancroft, A., & Boogart, A. (2015). Exploring teacher candidates' experiences in virtual field experiences. *The Teacher Educator, 50*(4), 270–287.

Muchira, D. N., Mugo, J. K., & Kipkoech, L. (2023). Professional learning communities and their effect on CBC delivery in rural Kenya. *East African Journal of Education and Social Sciences, 5*(2), 102–116.

Namubiru, M. A., Mugagga, F., & Kiryowa, L. (2024). Teacher preparation and the implementation of competency-based curriculum in Uganda. *African Journal of Education and Practice, 10*(1), 85–99.

Nsengimana, E., Mugiraneza, C., & Tuyishime, C. (2023). Barriers to curriculum implementation in East African schools. *African Journal of Education Policy, 4*(2), 113–129.

Nnam, M., Okey, S., & Orji, A. (2018). Competence-based curriculum implementation and teacher effectiveness. *Journal of Curriculum Studies in Africa, 8*(1), 44–57.

Nzima, D. R. (2016). A critical analysis of CBC implementation challenges in sub-Saharan Africa. *International Education Journal, 9*(2), 63–75.

Penuel, W. R., Fishman, B. J., Yamaguchi, R., & Gallagher, D. J. (2007). What makes professional development effective? Strategies that foster curriculum implementation. *American Educational Research Journal, 44*(4), 921–958.

Pilongo, A. M. (2020). Teacher perceptions of instructional support in East African schools. *Journal of School Leadership and Management, 6*(2), 55–67.

Poellhuber, B., Chomienne, M., & Karsenti, T. (2008). The effect of peer collaboration and collaborative learning on self-efficacy and persistence in online learning. *Canadian Journal of Learning and Technology, 34*(1). https://doi.org/10.21432/T2K01M

Pyhältö, K., Pietarinen, J., & Soini, T. (2012). Do comprehensive school teachers perceive themselves as active professional agents? *Journal of Educational Change, 13*(1), 95–116.

Soller, A. (2001). Supporting social interaction in an intelligent collaborative learning system. *International Journal of Artificial Intelligence in Education, 12*, 40–62.

Utomo, E. (2005). Challenges of curriculum implementation in Indonesia. *Journal of International Cooperation in Education, 8*(1), 17–30.

Yoon, S. Y., Kim, J., & Kang, M. (n.d.). Training attendance and protocol adherence in educational interventions: A review. *Educational Researcher, 41*(3), 119–128.