A Comparative Analysis of the Effectiveness of the Knowledge-Based Curriculum and the Competence-Based Curriculum in Enhancing Student Performance in Lower Secondary Schools in Uganda: A Systematic Review

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***Abstract*: Background: The transition from knowledge-based to competence-based curriculum has become a major educational reform aimed at improving learner outcomes and equipping students with twenty-first-century competencies. In Uganda, the National Curriculum Development Centre introduced the Competence-Based Curriculum (CBC) for lower secondary education in 2020 to replace the Knowledge-Based Curriculum (KBC). However, evidence comparing the effectiveness of the two curriculum and the factors influencing successful implementation remains fragmented. Objective: This systematic review compared the effectiveness of the Knowledge-Based Curriculum and the Competence-Based Curriculum in enhancing learning outcomes in Uganda's lower secondary schools and synthesized evidence on the strengths, implementation challenges, and strategies for strengthening the CBC. Methods: The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines. Electronic searches were conducted in Google Scholar, Scopus, ERIC, Web of Science, ScienceDirect, SpringerLink, Taylor & Francis, Wiley Online Library, and SAGE Journals. Empirical studies published between 2005 and 2026 that examined the KBC, CBC, or lower secondary curriculum reforms in Uganda were eligible for inclusion. Methodological quality was assessed using the Mixed Methods Appraisal Tool (MMAT 2018), and findings were synthesized narratively because of methodological heterogeneity. Results: Twenty-two studies met the inclusion criteria. The evidence indicates that the CBC provides greater potential than the KBC to improve learner outcomes by promoting learner-centred pedagogy, competency development, continuous assessment, critical thinking, creativity, collaboration, communication, and problem-solving skills. Nevertheless, its effectiveness is constrained by inadequate teacher preparedness, limited instructional resources, insufficient assessment literacy, overcrowded classrooms, weak ICT infrastructure, and inconsistent implementation across schools. In contrast, although the KBC effectively supported content mastery and examination performance, it was characterised by teacher-centred instruction and limited opportunities for developing transferable competencies. Conclusion: The review concludes that the Competence-Based Curriculum represents a more effective framework for improving educational quality and learner competencies than the Knowledge-Based Curriculum. However, realizing its full potential requires sustained investment in teacher professional development, instructional resources, assessment systems, implementation fidelity, and institutional support to ensure consistent and equitable curriculum delivery across Uganda.**

***Keywords*: Competence-Based Curriculum; Knowledge-Based Curriculum; Curriculum Reform; Lower Secondary Education; Student Performance; Uganda; PRISMA; Systematic Review.**

1. Introduction

All countries worldwide are competitively striving to achieve Quality Education. However, the difference lies in the fact that some countries are clearly more advanced in this pursuit than others (Wambi et al., 2024b). A well-implemented curriculum is pivotal in shaping educational outcomes and fostering holistic development in students globally. Firstly, it ensures that learning objectives are clear, structured, and aligned with both national standards and global competencies. This alignment helps bridge the gap between educational goals and real-world applications, equipping students with essential skills for the future (Moore et al., 2023; Narvekar et al., 2020). Achieving learning outcomes has long been a challenge for education systems in the developing world, significantly impacting economic development. In 2017, 60 percent of children and adolescents did not meet minimum proficiency levels in reading and mathematics. One major factor is the misalignment between curriculum and the skills needed for academic and real-world success. An outdated or poorly designed curriculum has hindered students' ability to achieve proficiency, and various systemic issues further create barriers to effectively aligning and orienting education systems toward improving learning outcomes (World Bank, 2022).

Despite significant transformations in Sub-Saharan Africa,

numerous sub-regional learning assessments indicate that educational progress has not translated into substantial improvements in the quality of schooling and learning. Learning achievement gaps remain a significant issue across the African continent, with many primary and secondary students failing to attain basic literacy levels. This situation is exacerbated by a lack of coherence between teaching policies and other critical components of the education system, such as infrastructure and facilities, the Curriculum, Instruction and Assessment nexus, availability of teaching and learning resources, school inspection and supervision, and national learning assessments and monitoring mechanisms. These weaknesses continue to impact African education systems significantly (Hassan et al., 2022; Salzano & Labate, 2016). According to the UNESCO Institute of Statistics and UNESCO, Sub-Saharan Africa has the highest rates of out-of-school children globally, with over one in five children aged 6 to 11 and nearly three in five adolescents aged 15 to 17 not attending school (Adjadeh, 2024).

In Uganda, the education system faces numerous challenges that prevent widespread access to quality education. The public education system includes seven years of primary education, four years of lower secondary, two years of upper secondary, and three years of university for undergraduate programs. Although some levels of education are free, tertiary education requires financial investment, leading many parents to prefer private schools over government ones. Uganda's literacy rate is approximately 79%, which is lower than neighboring countries such as Kenya (82%) and Tanzania (80%). This indicates that there are issues within the education system that need addressing to enhance the quality of education in Uganda. The curriculum has long been considered outdated and has faced criticism for being overly theoretical, failing to adequately prepare students with the practical skills needed in the workplace (Nangayi, 2023).

In 2020, the Government of Uganda introduced a new lower secondary school curriculum with the goal of improving learning outcomes and addressing the skills gap in the country's education system. This initiative was designed to modernize the educational framework and better equip students with the necessary skills for the future (Mwesigwa, 2024). However, a report by the Economic Policy Research Centre (EPRC) on teacher training highlighted several significant challenges impeding the curriculum's full implementation. The report pointed out that the curriculum rollout was premature, as many teachers had not received adequate training to effectively deliver the new content and methodologies. Moreover, there was a substantial lack of essential training materials and textbooks, further complicating the transition to the new curriculum. These deficiencies have hindered the intended improvements in educational quality and learning outcomes, highlighting the need for more comprehensive planning and resource allocation to ensure successful curriculum implementation (Mwesigwa, 2024). Currently, there is limited research comparing the effectiveness of the KBC and CBC in enhancing performance in Ugandan lower secondary schools.

To address this gap, this study undertakes a systematic review of empirical literature comparing the effectiveness of the Knowledge-Based Curriculum and the Competence-Based Curriculum in enhancing performance in lower secondary schools, with particular emphasis on evidence relevant to Uganda. Guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) framework, the review synthesizes evidence on curriculum implementation, teaching and learning practices, assessment approaches, competency development, and student performance. The findings are expected to contribute to curriculum policy, implementation strategies, and future research while providing evidence-based recommendations for improving the effectiveness of competence-based education in Uganda.

2. Objectives and Review Questions

The review was guided by an overall objective, specific objectives, and review questions that provide a framework for systematically identifying, appraising, and synthesizing evidence on the comparative effectiveness of the KBC and the CBC in enhancing performance in lower secondary schools.

A. Overall Objective

To compare the effectiveness of the KBC and the CBC in enhancing student performance in lower secondary schools in Uganda.

B. Specific Objectives

The review specifically seeks to:

i. Examine the effectiveness of the Knowledge-Based Curriculum (KBC) in enhancing student performance in lower secondary schools in Uganda.
ii. Assess the effectiveness of the Competence-Based Curriculum (CBC) in enhancing student performance in lower secondary schools in Uganda.
iii. Compare the effectiveness of the Knowledge-Based Curriculum (KBC) and the Competence-Based Curriculum (CBC) in enhancing student performance in lower secondary schools in Uganda.
iv. Identify the strengths and implementation challenges associated with the Competence-Based Curriculum (CBC) in Uganda.
v. Synthesize evidence-based strategies for improving the implementation and effectiveness of the Competence-Based Curriculum (CBC) in Uganda.

C. Review Questions

i. How effective is the Knowledge-Based Curriculum (KBC) in enhancing student performance in lower secondary schools in Uganda?
ii. How effective is the Competence-Based Curriculum

(CBC) in enhancing student performance in lower secondary schools in Uganda?

iii. How does the effectiveness of the Knowledge-Based Curriculum compare with that of the Competence-Based Curriculum in enhancing student performance in lower secondary schools in Uganda?

iv. What strengths and implementation challenges of the Competence-Based Curriculum have been reported in Uganda?

v. What evidence-based strategies have been recommended for improving the implementation and effectiveness of the Competence-Based Curriculum in Uganda?

3. Conception of the Study

This systematic review is grounded in the principles of Constructivist Learning Theory, complemented by Qualitative Comparative Analysis (QCA) as a comparative analytical perspective. Together, these perspectives provide a framework for understanding how different curriculum models influence student performance and competency development in lower secondary education.

A. Theoretical Framework

The study is primarily informed by Constructivist Learning Theory, developed by Jean Piaget (Dewey et al., 1997) and further advanced through Vygotsky's (1978) Social Constructivist Theory (Adams, 2006). Constructivism posits that learning is an active process in which learners construct knowledge through interaction with their environment, experiences, and social engagement rather than passively receiving information from teachers. The theory emphasizes learner-centred instruction, collaborative learning, inquiry, reflection, and the practical application of knowledge to solve authentic problems (Dewey et al., 1997).

The principles of constructivism closely align with the philosophy underpinning the Competence-Based Curriculum (CBC). Unlike the traditional Knowledge-Based Curriculum (KBC), which primarily focuses on content mastery and examination performance, the CBC promotes learner participation, problem-solving, critical thinking, creativity, collaboration, communication, and continuous assessment. These competencies reflect the constructivist view that meaningful learning occurs when learners actively engage in knowledge construction and apply their learning in real-life situations (Mulder, 2016). Consequently, Constructivist Learning Theory provides an appropriate lens for evaluating whether the shift from the Knowledge-Based Curriculum to the Competence-Based Curriculum has enhanced student performance and competency development.

To facilitate comparison between the two curriculum models, the review also draws on the principles of Qualitative Comparative Analysis (QCA) proposed by Ragin (1987). QCA provides a systematic approach for comparing multiple cases by identifying patterns of similarity and difference across studies. Although originally developed as a methodological approach, its comparative logic is valuable for synthesizing evidence on the relative effectiveness of the Knowledge-Based Curriculum and the Competence-Based Curriculum (Ragin & Rihoux, 2004). Within this review, QCA informs the comparative interpretation of findings relating to curriculum content, teaching approaches, assessment practices, learner competencies, and student performance reported across the included studies.

Together, Constructivist Learning Theory and the comparative principles of QCA provide a coherent framework for interpreting how differences in curriculum design and implementation influence educational outcomes in Uganda's lower secondary education system.

4. Methods

A. Study Design

This study employed a systematic review to synthesize and critically compare empirical evidence on the effectiveness of the KBC and the CBC in enhancing student performance in lower secondary schools in Uganda. A systematic review was considered appropriate because it enables the comprehensive identification, critical appraisal, and synthesis of existing research using explicit, transparent, and reproducible procedures while minimizing selection bias (Page et al., 2021). The review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) statement, which provides internationally recognized standards for reporting systematic reviews (Page et al., 2021).

Table 1
PICO Framework

Component	Description
Population (P)	Lower secondary school students, teachers, school leaders and curriculum implementers in Uganda
Intervention (I)	Competence-Based Curriculum (CBC)
Comparison (C)	Knowledge-Based Curriculum (KBC)
Outcome (O)	Student performance, competency acquisition, academic achievement, critical thinking, creativity, learner engagement, communication, collaboration, and problem-solving skills

B. Review Question and PICO Framework

The review was guided by the following primary review question:

How does the effectiveness of the Knowledge-Based

Curriculum compare with that of the Competence-Based Curriculum in enhancing student performance in lower secondary schools in Uganda?

The review question was developed using the PICO framework, which provides a structured approach for defining the review scope and eligibility criteria (McKenzie et al., 2019).

The PICO framework informed the formulation of the search strategy, study selection process, and synthesis of evidence.

C. Search Strategy

A comprehensive literature search was undertaken between July and August 2026 to identify relevant peer-reviewed studies examining curriculum reforms and their influence on student performance. Multiple electronic databases were searched to maximize coverage and minimize publication bias, including Google Scholar, Scopus, Web of Science, ERIC, Education Source, and ScienceDirect. These databases were selected because they index high-quality educational research and provide broad international coverage of curriculum studies. The search strategy combined controlled vocabulary and free-text keywords using Boolean operators ("AND" and "OR"). Search terms included:

- "Knowledge-Based Curriculum" OR "Content-Based Curriculum"
- "Competence-Based Curriculum" OR "Competency-Based Curriculum"
- "Lower Secondary Education"
- Uganda
- Curriculum Reform
- Student Performance
- Learning Outcomes
- Competency Development
- Learner-Centred Pedagogy

An example of the search string applied in Google Scholar was: ("Competence-Based Curriculum" OR "Competency-Based Curriculum") AND ("Knowledge-Based Curriculum") AND (Uganda) AND ("Lower Secondary") AND ("Student Performance" OR "Learning Outcomes"). Reference lists of eligible studies were manually screened to identify additional relevant publications that were not captured during the electronic database search.

D. Eligibility Criteria

Studies were selected according to predefined inclusion and exclusion criteria established before the literature search to ensure transparency and consistency throughout the review process.

E. Inclusion Criteria

Studies were included if they:

- were published in peer-reviewed journals;
- were written in English;
- were published between 2005 and 2026;
- examined the Knowledge-Based Curriculum, Competence-Based Curriculum, or curriculum reforms in lower secondary education;
- investigated student performance, competency development, teaching practices, assessment approaches, or curriculum implementation; and
- employed quantitative, qualitative, or mixed-methods research designs.

F. Exclusion Criteria

Studies were excluded if they:

- focused exclusively on primary, tertiary, or vocational education;
- were editorials, conference abstracts, opinion papers, book reviews, or dissertations without peer review;
- lacked sufficient methodological information;
- did not report outcomes relevant to curriculum effectiveness; or
- were duplicate publications.

G. Study Selection

Study selection followed the PRISMA 2020 process. All records identified through database searching were exported into a reference management database where duplicate records were removed. Titles and abstracts were independently screened against the eligibility criteria, followed by full-text assessment of potentially relevant studies. Reasons for excluding full-text articles were documented to ensure transparency and reproducibility. The study selection process will be summarized using a PRISMA 2020 flow diagram.

H. Quality Appraisal

The methodological quality of included studies was critically assessed before evidence synthesis. Because the review incorporated quantitative, qualitative, and mixed-methods studies, the Mixed Methods Appraisal Tool (MMAT) 2018 was used to evaluate methodological quality across different study designs (Hong et al., 2018). The appraisal focused on the clarity of research questions, appropriateness of study design, sampling procedures, data collection methods, analytical rigor, interpretation of findings, and overall risk of bias. Quality appraisal was not used to exclude studies but rather to inform interpretation of the evidence during synthesis.

I. Data Extraction

A standardized data extraction matrix was developed to ensure consistency during evidence extraction. Information extracted from each study included:

- author(s);
- year of publication;
- country of study;
- study objectives;
- research design;
- sample characteristics;
- curriculum examined;

- outcome measures;
- key findings; and
- major conclusions.

The extracted information formed the basis for comparative analysis across studies.

J. Data Synthesis

Data synthesis was conducted using a combination of meta-analysis and narrative thematic synthesis to comprehensively compare the effectiveness of the KBC and the CBC in enhancing student performance in lower secondary schools in Uganda. Quantitative findings from studies reporting comparable outcome measures were synthesized through meta-analysis. Where studies provided sufficient statistical information, including sample sizes, means and standard deviations, odds ratios, correlation coefficients, or other comparable effect estimates, pooled effect sizes were estimated using a random-effects model to account for anticipated heterogeneity across study populations, educational settings, curriculum implementation approaches, outcome measures, and research designs (Borenstein et al., 2021). Statistical heterogeneity was assessed using Cochran's Q statistic and quantified using the I^2 statistic, with values of approximately 25%, 50%, and 75% indicating low, moderate, and high heterogeneity, respectively (Higgins et al., 2003). Where sufficient studies were available, subgroup and sensitivity analyses were conducted to investigate potential sources of heterogeneity and evaluate the robustness of pooled estimates, while publication bias was assessed using funnel plots and Egger's regression test (Egger et al., 1997).

Given the methodological diversity of curriculum research, which frequently includes qualitative, mixed-methods, and implementation studies with heterogeneous outcome measures, statistical pooling was not feasible for all eligible studies. Consequently, studies that could not be quantitatively synthesized were integrated using narrative thematic synthesis following the approach proposed by Thomas and Harden (2008). The thematic synthesis focused on identifying and comparing recurring patterns relating to curriculum effectiveness, pedagogical practices, learner competencies, assessment approaches, implementation challenges, and strategies for strengthening the Competence-Based Curriculum. Combining meta-analysis with narrative thematic synthesis enabled a comprehensive and methodologically rigorous synthesis of the available evidence while accommodating the diversity of research designs and outcome measures included in the review.

5. Findings

A. Study Selection and Characteristics

The systematic literature search identified records from Google Scholar, ERIC, Scopus, Web of Science, ScienceDirect, SpringerLink, Taylor & Francis, Wiley Online Library, SAGE Journals, and the reference lists of eligible publications. Following duplicate removal and screening of titles, abstracts, and full-text articles in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines, 22 empirical studies met the predefined eligibility criteria and were included in the final review (Figure 1).

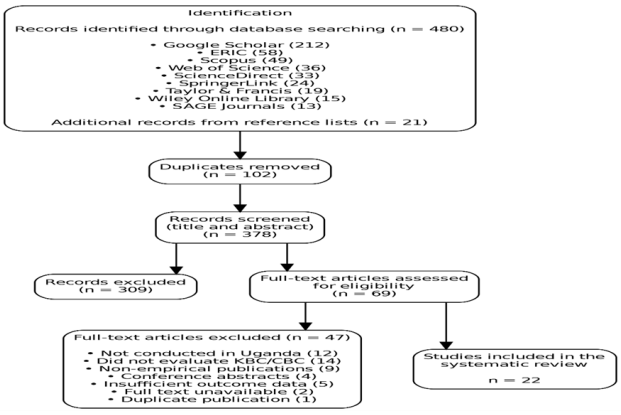


Fig. 1. PRISMA 2020 Flow diagram of the study selection process

The 22 included studies, published between 2013 and 2026, comprised mixed-methods, qualitative, and quantitative cross-sectional designs, with most published after the introduction of Uganda's CBC in 2020. The studies involved diverse participants, including teachers, students, headteachers, curriculum specialists, and education officers, and primarily examined CBC implementation, teacher preparedness, competency-based assessment, instructional practices, implementation fidelity, learning environments, educational resources, and learner competencies. Comparatively fewer studies directly investigated the former Knowledge-Based Curriculum (KBC) or explicitly compared KBC and CBC, highlighting an important evidence gap. Quality appraisal using the Mixed Methods Appraisal Tool (MMAT 2018) indicated satisfactory methodological quality, with eight studies rated as high quality, eight as moderate-to-high quality, and six as moderate quality. All studies were retained for synthesis because each contributed relevant evidence to the review objectives, although findings from lower-quality studies were interpreted cautiously.

B. Effectiveness of the Knowledge-Based Curriculum and Competence-Based Curriculum

The reviewed studies evaluated the effectiveness of the Knowledge-Based Curriculum (KBC) and the Competence-Based Curriculum (CBC) using four broad educational outcomes: teaching and learning approaches, student academic performance, competency development, and assessment practices. Overall, the evidence indicates that although both curricula contribute to learner achievement, they differ substantially in their educational philosophy, instructional approaches, and intended learning outcomes. Whereas the KBC

primarily emphasized content mastery and performance in national examinations, the CBC was designed to develop learners' competencies through learner-centred pedagogy, continuous assessment, and the application of knowledge to real-life situations (NCDC, 2020; Namatende-Sakwa et al., 2025). Across the reviewed studies, the CBC demonstrated greater potential to improve educational outcomes, although its effectiveness was consistently influenced by teacher preparedness, instructional resources, school leadership, and implementation fidelity.

The evidence consistently identified a fundamental shift in classroom pedagogy following the introduction of the CBC. learning, collaborative learning, inquiry-based learning, demonstrations, and experiential learning, all of which are intended to enhance learner participation and meaningful learning (Barasa et al., 2024; Wambi et al., 2024; Namatende-Sakwa et al., 2025). Nevertheless, several studies reported that many teachers continued to rely on instructional practices associated with the KBC because of inadequate professional development, limited instructional materials, overcrowded classrooms, and insufficient pedagogical support, thereby constraining the effective implementation of learner-centred teaching (Kidega et al., 2024; Namubiru et al., 2024; Barasa et al., 2024).

Table 2
Summary characteristics of the included studies

Author(s)	Country	Study Design	Participants	Study Focus
Otaala et al. (2013)	Uganda	Mixed methods	University lecturers, secondary school teachers, and students	Effectiveness of teacher education curriculum and classroom pedagogy under the KBC
Kakongoro (2019)	Uganda	Mixed methods	Secondary school teachers	Teacher-centred instruction and development of higher-order skills
Odit et al. (2023)	Uganda	Mixed methods	Teachers, headteachers and education officials	School external factors, teacher effectiveness and learner achievement
Atibuni et al. (2024)	Uganda	Quantitative cross-sectional	491 Senior Two learners	Competency-based assessment and learner preparedness
Chemutai et al. (2024)	Uganda	Mixed methods	383 secondary school teachers	Implementation of the Competence-Based Curriculum
Kidega et al. (2024)	Uganda	Qualitative case study	Teachers, headteachers and education officers	Teacher preparedness and CBC implementation
Kagambe et al. (2024)	Uganda	Empirical study	Secondary school teachers	ICT integration and CBC implementation in refugee schools
Lamaro and Anena (2024)	Uganda	Mixed methods	375 participants	Teaching strategies and students' academic performance
Lugolole et al. (2024)	Uganda	Quantitative correlational	217 learners	Learning environment, instructional practices and physics achievement
Opio et al. (2024)	Uganda	Quantitative correlational	309 participants	Physical learning environment and academic achievement
Wambi et al. (2024a)	Uganda	Qualitative phenomenological	Teachers, Directors of Studies and Headteachers	Teachers' experiences in implementing the CBC
Ahabwe (2024)	Uganda	Qualitative	Secondary school teachers	Competency-based assessment practices
Barasa et al. (2025)	Uganda	Qualitative	Curriculum implementers	Equity in CBC implementation
Nakawuki et al. (2025a)	Uganda	Qualitative	Teachers, headteachers and curriculum officials	Teachers' knowledge of formative assessment
Nakawuki et al. (2025b)	Uganda	Qualitative	Teachers, headteachers and curriculum officials	Teachers' proficiency in designing formative assessment tools
Namatende-Sakwa et al. (2025)	Uganda	Comparative empirical study	Curriculum stakeholders	Transition from KBC to CBC
Mbabazi et al. (2026)	Uganda	Mixed methods	Teachers, students and key informants	Geography curriculum implementation under the CBC
Muzaale et al. (2026a)	Uganda	Mixed methods	972 teachers	Educational resources and CBC implementation
Muzaale et al. (2026c)	Uganda	Mixed methods	972 teachers and interview participants	School change receptivity and implementation fidelity
Muzaale et al. (2026b)	Uganda	Mixed methods	972 teachers	Educational resources, school receptivity and implementation outcomes

Studies examining instructional practices described the KBC as predominantly teacher-centred, with classroom instruction focusing on syllabus coverage, knowledge transmission, memorisation, and preparation for high-stakes examinations (Otaala et al., 2013; Kakongoro, 2019). While this approach effectively supported subject knowledge acquisition, it provided relatively limited opportunities for learners to develop critical thinking, collaboration, creativity, communication, and problem-solving skills. In contrast, the CBC promotes learner-centred instructional approaches, including project-based

Evidence relating to student academic performance demonstrated that both curricula contribute to learning, although through different mechanisms. Under the KBC, educational success was primarily measured through learners' mastery of subject content and performance in national examinations (Kakongoro, 2019). Conversely, the CBC seeks to improve academic performance while simultaneously developing learners' ability to apply knowledge in authentic contexts. Quantitative studies consistently reported positive associations between learner-centred instructional practices and

academic achievement. Lamaro and Anena (2024) found statistically significant positive relationships between project-based learning (r = 0.391), group discussion (r = 0.336), role play (r = 0.315), storytelling (r = 0.310), and students' academic performance. Similarly, Opio et al. (2024) reported that supportive physical learning environments were positively associated with academic achievement (r = 0.452), while accessibility (r = 0.431) and suitability (r = 0.410) of learning environments also demonstrated significant positive relationships. Lugolole et al. (2024) further observed modest positive relationships between learner aptitude (r = 0.141) and learning environment (r = 0.139) with physics achievement, although teacher instruction showed no statistically significant association with learner performance (r = −0.084). These findings are complemented by Odit et al. (2023), who reported that favourable school environments and teacher effectiveness significantly enhance learners' academic achievement in Ugandan secondary schools. Collectively, the evidence suggests that learner-centred pedagogy, effective teaching practices, and supportive learning environments are critical determinants of improved academic performance under the CBC (Lamaro & Anena, 2024; Lugolole et al., 2024; Odit et al., 2023; Opio et al., 2024). However, differences in study designs, outcome measures, and statistical indicators limited the feasibility of pooling all effect estimates into a single meta-analysis.

The review also found substantial evidence that the CBC is more effective than the KBC in promoting competency development and improving assessment practices. Unlike the KBC, which largely assessed learners' ability to recall and reproduce knowledge, the CBC emphasizes continuous assessment, mastery learning, practical application of knowledge, critical thinking, creativity, communication, collaboration, and problem-solving (NCDC, 2020; Namatende-Sakwa et al., 2025). Studies examining competency-based assessment reported improved learner participation and more comprehensive evaluation of learning outcomes through formative assessment approaches (Ahabwe, 2024; Nakawuki et al., 2025a, 2025b). However, the effectiveness of these assessment practices was frequently undermined by limited teacher assessment literacy, inadequate professional development, and insufficient capacity to design competency-based assessment tools, suggesting that assessment reform remains one of the most significant implementation challenges facing the CBC (Ahabwe, 2024; Nakawuki et al., 2025a, 2025b).

Overall, the reviewed evidence indicates that the KBC was effective in promoting subject knowledge acquisition and preparing learners for national examinations but was comparatively less effective in developing the transferable competencies required for contemporary education and the labour market (Otaala et al., 2013; Kakongoro, 2019). In comparison, the CBC provides a broader educational framework that promotes learner-centred pedagogy, competency development, continuous assessment, and the acquisition of twenty-first-century skills (Atibuni et al., 2024; Namatende-Sakwa et al., 2025; Wambi et al., 2024). However, the review consistently demonstrates that the effectiveness of the CBC depends on adequate teacher preparation, instructional resources, supportive learning environments, effective school leadership, and implementation fidelity (Barasa et al., 2024; Kidega et al., 2024; Muzaale et al., 2026a, 2026b, 2026c). Therefore, while the available evidence supports the superiority of the CBC over the KBC in achieving broader educational outcomes, its full potential can only be realised through sustained investment in teacher capacity, curriculum support, equitable resource allocation, and continuous implementation monitoring.

C. Strengths, Challenges, and Implementation of CBC

The reviewed studies consistently identify the CBC as a significant educational reform that shifts teaching and learning from knowledge acquisition to competency development. Its major strengths include the promotion of learner-centred pedagogy, continuous assessment, and the development of transferable skills such as critical thinking, creativity, communication, collaboration, and problem-solving (Atibuni et al., 2024; Wambi et al., 2024; Namatende-Sakwa et al., 2025). Compared with the former KBC, the CBC encourages active learner participation through project-based learning, inquiry-based instruction, collaborative learning, and the practical application of knowledge, thereby fostering meaningful learning experiences and improving learners' preparedness for further education, employment, and lifelong learning (Barasa et al., 2024; Namatende-Sakwa et al., 2025). These findings demonstrate that the CBC provides a stronger pedagogical foundation for developing competencies required in contemporary education and the world of work.

Despite these strengths, the review identified several challenges that continue to hinder effective implementation of the CBC. Teacher preparedness emerged as the most frequently reported constraint, with many teachers experiencing difficulties in adopting learner-centred pedagogies and competency-based assessment because of inadequate pre-service preparation and limited opportunities for continuous professional development (Barasa et al., 2024; Kidega et al., 2024; Namubiru et al., 2024; Wambi et al., 2024). In addition, shortages of instructional materials, inadequate ICT infrastructure, overcrowded classrooms, and limited financial resources constrained effective curriculum delivery, particularly in resource-limited schools (Kagambe et al., 2024; Muzaale et al., 2026a; Opio et al., 2024). These challenges often resulted in the continued use of teacher-centred instructional approaches inherited from the former curriculum. The evidence further indicates that the effectiveness of the CBC depends not only on the quality of its curriculum framework but also on the broader institutional environment supporting its implementation. Studies consistently highlighted the

importance of sustained teacher capacity building, adequate instructional resources, supportive school leadership, continuous monitoring, and stakeholder engagement in improving implementation fidelity and ensuring equitable curriculum delivery across schools (Barasa et al., 2025; Mbabazi et al., 2026; Muzaale et al., 2026b, 2026c). Consequently, while the CBC offers substantial pedagogical advantages over the KBC, its successful implementation requires coordinated investment in human, financial, and institutional capacity to achieve its intended educational outcomes..

D. Strategies for Strengthening CBC

The reviewed studies consistently identified several strategies for strengthening the implementation and effectiveness of the CBC in Uganda. Foremost among these is the need for continuous teacher professional development to enhance teachers' competencies in learner-centred instruction, competency-based assessment, and classroom management. While initial curriculum orientation programmes have facilitated the transition to the CBC, the evidence suggests that sustained in-service training, mentoring, coaching, and professional learning communities are essential for enabling teachers to implement learner-centred pedagogy effectively and adapt to evolving instructional demands (Barasa et al., 2024; Kidega et al., 2024; Namubiru et al., 2024; Wambi et al., 2024). The reviewed studies also emphasized the need to strengthen pre-service teacher education programmes so that newly qualified teachers graduate with the pedagogical competencies required for effective implementation of the CBC.

The review further highlights the importance of strengthening institutional capacity through increased investment in instructional resources, ICT infrastructure, science laboratories, libraries, and flexible learning spaces that support learner-centred teaching. Several studies also emphasized the need to improve curriculum monitoring and supervision, strengthen school leadership, enhance stakeholder engagement, and ensure adequate financing for curriculum implementation, particularly in resource-constrained schools (Kagambe et al., 2024; Mbabazi et al., 2026; Muzaale et al., 2026a, 2026b). In addition, improving teachers' assessment literacy and standardising competency-based assessment practices were consistently recommended to enhance the reliability and effectiveness of continuous assessment (Ahabwe, 2024; Nakawuki et al., 2025a, 2025b). Collectively, the evidence indicates that successful implementation of the CBC requires coordinated action by the Ministry of Education and Sports, the National Curriculum Development Centre, teacher education institutions, schools, and other education stakeholders to create an enabling environment for sustainable curriculum reform.

6. Conclusions

This systematic review compared the effectiveness of the KBC and the CBC in enhancing learning outcomes in Uganda. The evidence demonstrates that while the KBC was effective in promoting subject knowledge acquisition and examination performance, the CBC offers a more holistic approach to education by emphasizing learner-centred pedagogy, competency development, continuous assessment, and the acquisition of critical twenty-first-century skills. Overall, the reviewed studies indicate that the CBC has greater potential to improve educational quality and learner outcomes than the KBC. However, its effectiveness is highly dependent on implementation conditions, particularly teacher preparedness, assessment literacy, availability of instructional resources, supportive school leadership, and effective curriculum monitoring. Persistent challenges in these areas continue to limit the full realization of the curriculum's intended goals across schools. The review therefore concludes that although Uganda's transition to the CBC represents a progressive shift towards competency-oriented education, sustained investment in teacher capacity, learning resources, institutional support, and implementation fidelity is essential to ensure equitable and effective curriculum delivery and to maximize the long-term benefits of the reform.

7. Recommendations

Based on the evidence synthesized in this systematic review, the following recommendations are proposed to strengthen the implementation and effectiveness of the CBC in Uganda.

First, the Ministry of Education and Sports (MoES) and the National Curriculum Development Centre (NCDC) should institutionalize continuous professional development programmes for teachers to strengthen competencies in learner-centred pedagogy, competency-based assessment, instructional planning, and classroom management. These programmes should extend beyond initial curriculum orientation to include regular in-service training, mentorship, coaching, and school-based professional learning communities to enhance teachers' confidence and capacity to implement the CBC effectively.

Second, government and education stakeholders should increase investment in instructional resources and school infrastructure to support competency-based learning. Priority should be given to improving access to teaching and learning materials, ICT facilities, science laboratories, libraries, and flexible learning spaces, particularly in underserved and rural schools where resource constraints continue to hinder effective curriculum implementation.

Third, schools and education authorities should strengthen curriculum implementation support through regular supervision, monitoring, and quality assurance. School leaders should be equipped to provide instructional leadership, monitor classroom practices, facilitate peer learning among teachers, and ensure that competency-based teaching and assessment are consistently implemented across all learning areas.

Fourth, teacher education institutions should align pre-service teacher education programmes with the principles and

pedagogical requirements of the Competence-Based Curriculum. This will ensure that newly qualified teachers graduate with the knowledge, skills, and practical experience necessary to implement learner-centred instruction and competency-based assessment from the beginning of their professional careers.

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