

Implementing Rwanda's Competency-Based Curriculum in Teacher Training Colleges: A Systematic Review Across Policy, Institutional, and Classroom Levels

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Abstract

This paper examines the implementation of Rwanda's Competence-Based Curriculum (CBC) at the macro and micro levels, as adopted by the Rwanda Basic Education Board. Using PRISMA systematic review guidelines, a total of 56 reports, including the Curriculum Framework for Pre-primary to Upper Secondary and the Summary of the Curriculum Framework for Teacher Training Colleges, were analyzed. Findings indicate that the CBC is underpinned by a robust policy framework aligned with Rwanda's national development goals. The review highlights strong institutional collaboration between the Ministry of Education and the Ministry of Finance and Economic Planning in leveraging ICT for effective school management through systems such as the Integrated Education Management Information System (IEMIS) and the School Data Management System. Teacher Training Colleges are progressively incorporating digital tools to prepare future educators for technology-enhanced classrooms. However, challenges persist, such as inconsistent language policies and inflexible syllabi, that may constrain competent development. Overall, the paper underscores both the promising strides and the practical challenges of CBC implementation, offering valuable insights for policymakers, administrators, and educators in strengthening Rwanda's curriculum reform process.

Keywords: Curriculum, challenges, implementation, process, transverse competences

Introduction

Curriculum implementation is a fundamental aspect of curriculum development. While it is viewed by many as a process transacted mainly by teachers as the key implementers (Katshuna & Shikalepo, 2023), this paper illustrates that implementing a curriculum is initiated from the top level, referred to herein as macro implementation through the middle education managers (meso), down to the classroom level, at the school (micro implementation). The macro level is framed as the policy context that establishes guidelines and directions for a curriculum project (OECD, 2020).

The concept competence-based curriculum is defined variously by several scholars. Competence-based education, competency-based learning, and outcomes-based education are some terms used interchangeably with CBC. Central to the three terms is the focus on the competencies learners need to acquire during the learning process. The concept of competence is the capability to perform to expected standards. Competence refers to an individual's abilities (Serpa & Sá, 2024). Nsengimana et al. (2023) say competence implies a set of skills, knowledge, and behaviors that learners need to arrive at set goals. Mbarushimana & Kuboja (2015) argue that large sets of skills are broken down into competencies that represent the capability to choose and apply an integrated combination of knowledge, skills, and attitudes to realize a task in a certain context, while personal characteristics such as motivation, self-confidence, and willpower are part of that context.

This review was based on Fullan's implementation framework, proposing a systemic transformation that blends top-down and bottom-up initiatives (Okyere, Michael, 2025). These work together to create a cohesive, coordinated "system" for improvement. The view is that real work of change happens during implementation and monitoring, not just in the initial planning stages. It is therefore imperative that a successful system builds capacity for continuous improvement rather than focusing only on the initial rollout. Outcomes of a competency-based curriculum are therefore premised on multiple philosophical assumptions of behaviorist, functionalist, constructivist, and social constructivist theories. In behaviorists' framing, demonstration of mastery, outcome-based learning, and performance-based learning are considered critical to competencies achievement (Ndungu, 2021). On the contrary, constructivists aver that rather than demonstrating mastery, learners need the competencies to actively construct knowledge while social constructivists recognize the fact that knowledge can only be constructed through one's mind and transferred through social interactions.

Deriving from competence-based education at the heart of a CBC is the concept of competence-based learning. Competence-based learning entails the development of a range of requisite competencies, including core, hard, soft, meta-competencies, and generic competencies (Bezanilla et al., 2019). Generic competencies are tagged as transverse implying instrumental, interpersonal, and systemic competencies integrated along with attitudes and values that are transferable in diverse and complex contexts. Transversal competencies are generic skills such as responsibility, proactivity, autonomy, adaptability, problem-solving, collaboration, resilience, lifelong learning, and transfer that students need to develop to prepare them for higher education and the world of work. The acquisition of these transversal competencies can facilitate links to core, hard, soft, and other competencies (Tsankov, 2020). Serpa & Sá (2024, p. 6) say:

For Higher Education Institutions (HEI) to promote, develop, and equip their students with transversal competencies, change is required at their macro, meso, and micro levels. This involves a large set of variables, namely expectations, regulations, formal, non-formal, and informal learning. There is a need for a definition of transversal competences and the curriculum and its implementation, the academic and teacher culture, the institution's relationship with the stakeholders, a teaching process that ascribes the student to a more active role, and the use of new technologies and forms of assessment.

Thus, implementing CBC in TTCs involves multiple levels of analysis, ranging from macro-level policy frameworks to Meso-level institutional structures and micro-level classroom practices (Kizito et al., 2020). At the macro level, policymakers develop strategic plans, curriculum guidelines, and regulatory frameworks to guide the integration of CBC into teacher education programs.

In the context of this review, the visionaries behind the political and administrative policies and funding schemes for teacher education and school curriculum include the Ministry of Primary and Secondary Education (MINEDUC) under which all TTCs are administered, the Ministry of State for Education, and the Rwanda Basic Education Board (REB) represent the macro level (Dufitumukiza et al., 2021). The meso frame is a transformative stage that gives life to the policies initiated at the macro level. At this level, policy "...is negotiated into a program with specific deliverables" (Kaseorg & Uibu, 2017). The examination boards (e.g. National Examination and School Inspection Authority), curriculum and materials development units (e.g. Teacher Development and Management Unit), some education-related Non-Governmental Organizations, and the District Education Inspectorate facilitate curriculum implementation in the schools and create the requisite linkages with the macro frame to ensure implementation fidelity.

In the aftermath of the Rwandan genocide in 1994, which resulted in the loss of an estimated 800,000 lives and left the country devastated socially, politically, and economically, Rwanda embarked on a comprehensive journey of rebuilding and reconstruction (Kizito et al., 2020). Recognizing education as a fundamental pillar for national development and reconciliation, the Rwandan government prioritized reforming its education system to meet the challenges of a rapidly changing global landscape while fostering national unity and sustainable development (Hagenimana et al., 2023). One critical aspect of this educational reform was the transformation of teacher training colleges (TTCs) to equip educators with the skills and knowledge necessary to deliver quality education aligned with Rwanda's development goals (Rwanda Basic Education Board, 2020). To achieve this, the government initiated the implementation of a competence-based curriculum (CBC) in TTCs launched in 2015, aiming to modernize teaching methodologies, enhance pedagogical practices, and produce highly competent teachers capable of addressing the evolving needs of Rwandan society.

The view by Ngendahayo and Askill-Williams (2016) is that efforts were aimed at aligning teacher training with national educational objectives, including the promotion of critical thinking, problem-solving skills, and ICT

literacy among educators. Despite the ambitious goals and efforts invested in implementing CBC in TTCs, challenges and complexities emerged at each level of analysis. These challenges included resource constraints, resistance to change, capacity gaps among educators, cultural factors, and the need for ongoing policy adjustments to address emerging issues and ensure sustainability (Dzavo et al., 2024; Makonye & Dzavo, 2025). As such, a systematic review of the macro, meso, and micro analytics of the CBC implementation process in Rwandan TTCs is essential to identify best practices, lessons learned, and areas for improvement, thereby informing future policy decisions and interventions to enhance teacher education and educational quality in Rwanda. There seems to be a variation in the implementation of a competency-based curriculum in Rwandan Teacher Training Colleges from the expected competencies in the curriculum framework. The development of the critical skills and abilities recommended by the curriculum framework is not adequately assessed in the NESA examinations (Sibomana et al., 2021). According to Kizito et al. (2019), having a well-designed Curriculum Framework and taking a different approach in implementing the CBC is a major setback to the education system. It is in this context that this study sought to establish the efficacy of implementing the CBC at the macro, meso, and micro levels in TTCs in Rwanda.

Thus, the study sought to: 1. Examine Policy Frameworks guiding the implementation of the Rwandan Competence-based Curriculum. Policy frameworks on CBC need to be examined to determine what needs to be prioritized, resourced, measured, and sustained. It also provides the necessary guidance on pedagogical and assessment methodologies, 2. Analyze how middle-level institutions facilitate school/classroom-level implementation of curriculum at the TTCs. This is where policy is translated into actionable practice through the provision of resources, professional development, monitoring, and evaluation to ensure quality and solve operational bottlenecks, and 3. Evaluate institutional practices and the classroom-level application (micro level) of the competence-based curriculum. Micro-level evaluation brings us closer to realities that are necessary for systems to adjust. Without this, policy may stay idealistic, yet it's vital for identifying gaps on the ground and refining teacher support and professional development.

Methodology

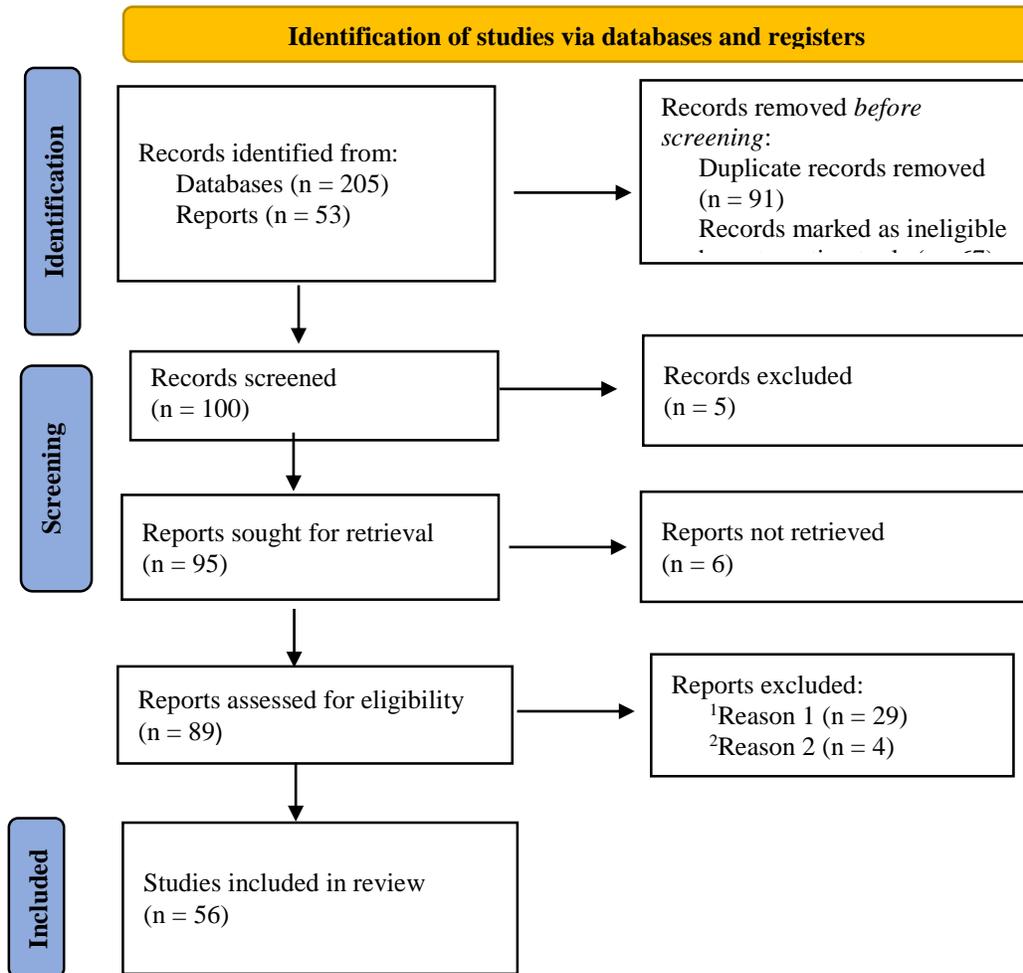
The PRISMA guidelines for conducting a systematic review were used to direct the methodology. The guideline identifies eligibility criteria, information sources, search strategies, selection process, and synthesis methods as important aspects to consider (Page et al., 2021).

Eligibility criteria were established for both studies and documents. Selected studies could be either empirical or non-empirical. These included scholarly works that were peer-reviewed and published from 2005 to 2024. The documents reviewed focused on the Rwanda education system and consisted of national reports, policy statements, magazines, and other relevant online materials in English. A total of 205 studies and 53 documents were examined, including the Curriculum Framework for Pre-primary to Upper Secondary and a Summary of the Curriculum Framework for Teacher Training Colleges. The search utilized a combination of physical and online data sources. Documents such as reports, policy statements, and training materials were searched both physically and electronically through Google and the REB e-learning management system. The initial search terms included: curriculum implementation, competences, competency-based education, transversal competencies, hard competences, and CBC in Rwanda. Boolean operators were used to refine the search, with Carcassi & Sbardolini (2022) describing Boolean operators as conjunctive words and symbols used to combine or exclude keywords in a search.

Google Scholar and CrossRef were the two databases used for empirical and non-empirical studies. Duplicate literature was removed immediately, and 89 articles were included in the initial screening stage. Google Scholar offered open and restricted access to articles. Restricted-access documents and Wikipedia reports were excluded, and the topic, abstract, keywords, summary paragraphs, and major subheadings of all the open-access articles were assessed for relevance. A total of 56 reports were finally considered for synthesis. Figure 1 shows the report's selection process.

Figure 1

PRISMA flow diagram (Adapted from: Page et al., 2021)



Notes. The blue boxes denote the stages of the reports' selection process (i.e., identification, screening, and inclusion). The brown box represents the records (under the two columns) of the identified or screened studies.

Specific Notes.

¹Restricted access documents

²Wikipedia reports

The completeness and quality of selected studies were assessed for precision, directness, and applicability. Fariani et al. (2022) questions for establishing study quality were adopted as follows: (i) Did the study maintain fidelity to its chosen methodological approach? (ii) Does the article clearly describe the research objectives? (iii) Does the article include a literature review, background, and research context? (iv) Does the article display related work from previous research to show the main contribution of the research? (v) Were interventions (where applicable) assessed using valid and reliable measures? In getting to the recommended conclusions, descriptive and thematic analysis methods were used to analyze the articles and documents. Thematic analysis was used on the sets of data generated from the synthesis process. Thematic analysis is a way of making sense of and establishing relationships among data sets. The analysis gave rise to codes that were organized into templates. The templates were refined with the progression of the analysis that followed Clarke and Braum' (2024) recursive six-phase process for thematic analysis: familiarizing oneself with the data; generating initial codes, segmenting and tagging the codes; collate the data in search for themes; apply potential themes to the dataset; define and name themes; and weave together the analytic narratives to produce a report. The conclusion of the thematic analysis is the identification of a saturated set of themes and other compilations of findings that document the structure of codes and themes (McLeod, 2024).

Findings and discussion

It was established that the implementation of the Competence-Based Curriculum (CBC) in Rwanda was carried out in 2015, under a set of policy frameworks aimed at a total reformation of the education sector, aligning it with national needs and goals for modern, knowledge-based economies. These include Rwanda Vision 2020, National Strategy for Transformation (NST1), Education Sector Strategic Plan (ESSP), Rwanda Education Policy (REP), Teacher Development and Management Policy (TDMP), ICT in Education Policy, Gender Policy in Education, Special Needs, Inclusive Education Policy and Curriculum Framework for Pre-primary to Upper Secondary and most importantly Summary of Curriculum Framework for Teacher Training Colleges. Under the decentralized strategy, the responsibility of policy formulation and national planning for education, setting standards and norms, monitoring and evaluation, curriculum development, and approval of educational materials are placed under the central government, while the responsibility for execution of policy, planning, and general administration of schools shifts to provincial/district and schools as appropriate (Dufitumukiza et al., 2021).

The implementation of the Rwandan Competence-Based Curriculum is supported by a robust set of policy frameworks that are closely aligned with the country's broader development goals. A few examples given below are cited in a (University of Rwanda, 2023) Document: Ministerial Instructions No 002/MINEDUC/2022 of 13/08/2022 Determining Modalities for Expansion of Pre-primary Education in Rwanda, instructions were issued to define the modalities and procedures for nominating members and specify the functions of committees responsible for selecting school heads or principals and deputy heads. The shifting towards a competence-based curriculum brought new instructions and guidelines, such as rules for student promotion, repetition, dismissal, and transfer (Ministerial Instructions N° 001/MINEDUC/2020). There were efforts to improve Teacher Training Centers (TTCs) so that they increase enrollment through the provision of new incentives and subsidized tuition fees. Following the rationalization of ICT structures, Ministerial Instructions No 02 of 2020 addressed the placement of IT staff in schools and other public institutions. Online standardized English proficiency tests were introduced for all teachers from upper primary to higher education. It has become mandatory for upper secondary students to gain entry into higher educational institutions.

Articles 4, 5, 8, and 9 of the Ministerial Order N°001/MIGEPROF/2020 of 03/06/2020 specify the general requirements for ECD service providers, registration of ECD activities, requirements for accreditation to provide model ECD center, ECD center, and community-based ECD center services, and particular requirements for accreditation to provide model ECD center and ECD center services, respectively (Government of Rwanda, 2020). The same document provides further guidance on the centers' expected activities as follows: early learning and stimulation, child health services, child growth monitoring, child's registration control in the civil status, providing meals and other nutritional services to the child, parent education program, sensitization on hygiene and sanitation, child protection services, and the referral for children with special needs.

The re-organization of the financing of Teacher Training to strengthen the support given to primary teacher training, lower and upper secondary teacher training, including other MINEDUC institutions, is provided through a new regulatory framework of the Teacher Development and Management (TDM) policy (Government of Rwanda, 2023). The policy closely aligns teacher development with the national goal of developing a knowledge-based, technology-led economy, with an overarching objective of strengthening institutional and structural capacities to improve teacher quality in primary and secondary schools. Furthermore, the Government of Rwanda (2023) states that the policy recognizes teaching as a distinct and valued profession within the public service, governed by its code of professional ethics, and having clear pathways for professional and personal development. The TDM policy aims to provide sufficiently trained and competent teachers to translate theoretical knowledge into employable skills. It emphasizes the quality and utility value of education, which it sees as dependent on the quality and competence of the teaching staff (Mubarok, 2024). The Teachers Service Commission (promulgated under TDM), with its four constituent modules: Teacher Development and Training, School Management and Leadership, Teacher Management and Placement, and Teacher Socio-economic Welfare and Development, also contributes more to the institutionalization of the teaching profession and the upgrading of the teachers' teaching competences for a CBC curriculum (Ruth & Ramadas, 2019).

The TTC Curriculum Framework is the nation's guiding curriculum policy document for Teacher Education, indicating how the TTC curriculum vision is translated into practice at the TTCs and reflected in learning experiences, assessment, and monitoring and evaluation. It is consistent with the Rwanda Curriculum and Assessment Policy (Rwanda Basic Education Board, 2020). The national priorities in Rwanda's education system are to ensure that the quality of education continues to improve through closer integration of curriculum development, quality assurance, and assessment; improved supply of learning materials, particularly textbooks; and improved teaching and learning strategies. The aim is to ensure that a knowledge-based economy is built, one that is responsive to the expectations of

relevant stakeholders such as learners, society, and the labour market; hence, the launch of the Competence-based curriculum in 2015. The slow acceptance and use of the prescribed language of instruction, accompanied by the application of knowledge-based assessment programmes, continue to be the major stumbling blocks to the effective implementation of the Competence-based curriculum in Rwandan TTCs (Sibomana, 2018).

Teacher Training Colleges (TTCs) play a crucial role in transforming Rwanda's education system. These institutions are responsible for training the future educators who will implement the CBC at the primary and secondary levels; hence, institutional practices in TTCs are key to understanding the progress and challenges of CBC implementation (REB, 2020). They are under the leadership of a principal who reports directly to the Sector Education Officer (SEO) and the District Education Officer (DEO). These form a management team that operates under the stewardship of statutory bodies such as REB and the National Examinations and Schools Inspection Authority (NESA) to coordinate and operationalize policy and curriculum decisions that are framed by the central government.

The primary function of NESA is to ensure the quality of education in basic education, the TTCs, and Technical and Vocational Education and Training (TVET) from level one (1) to five (5), and to regulate comprehensive student assessment and national examinations (Government of Rwanda, 2020). Further responsibilities include setting standards for accreditation of private basic education schools and TVET schools, monitoring the implementation of norms and standards, ensuring the quality of education, and preparing, conducting, and marking national examinations (Government Gazette, 2020b). NESA directs that schools adhere to standards that follow Bloom's Taxonomy of educational objectives in learning and assessment, and that assessment is adequately comprehensive to cover CBC's expected range of competences (Nteziyaremye et al., 2024).

The synthesis of the literature also showed that MINEDUC, together with the Ministry of Finance and Economic Planning (MINECOFIN) in Rwanda, endeavors to leverage ICT to ensure effective school management through the Integrated Education Management Information System (IEMIS) and School Data Management System (SDMS). The two E-Systems' overarching goal is to provide harmonized metadata standards that ensure data production and utilization for education stakeholders (UNICEF, 2020). The SDMS integrates components such as the Comprehensive Assessment Management Information System (CAMIS), the Teacher Management Information System (TMIS), Irembo, and financial institutions that are vital to the management of school systems at the meso level (Jean de Dieu et al., 2023). SDMS supports the processing of information and innovations, disseminating information to the external stakeholders or sharing among personnel inside the institution (Hashakimana et al., 2022). For instance, the NESA created CAMIS to link to the SDMS and IEMIS for the easy management of all assessment data from schools, TVETs, and TTCs (Hashakimana et al., 2022). Premised on four strategic goals- (i) a demand for and utilization of quantitative and qualitative education data at national and local levels for the education sector strategic view, (ii) organizational framework that supports data collection, availability, and use, (iii) functional, technical, and operational requirements of the systems that support the technical aspects of education data management, and (iv) data analysis, information accessibility and use- IEMIS becomes a critical tool for providing the education sector with accurate and relevant information to inform its policy decisions and implementation approaches (UNICEF, 2020).

Another observation from the literature was that Rwandan Teacher Training Colleges have reformed their curricula to align with the Competence-Based Curriculum (CBC) being implemented in schools (Government of Rwanda, 2024). There are several pieces of training taking place under the supervision of District Education Officers, Sector Education Officers, and Head Teachers or the Dean of Studies, which emphasize equipping prospective teachers with the skills necessary to implement learner-centered pedagogies and facilitate active, competency-based learning (REB, 2020). NGOs and international financiers such as the World Bank, Voluntary Services Overseas, Root Foundation-Rwanda, Save the Children, VVOB, World Vision, and others are financing teacher training and infrastructure development in TTCs and other schools. Their work focuses on educating individuals with special needs and differently abled individuals, including managing primary schools, conducting adult literacy programs, teacher development in TTCs, and vocational skill-based training (NgoBase, 2023).

In 2018, REB, in conjunction with other developmental partners such as the Japan International Development and Cooperation Agency, UNICEF, *Soma umenye*, Rwanda Aid, Educate, and the Peace Corps, organized the third phase of competence-based curriculum training targeting primary, secondary, and TTC teachers (Kizito et al., 2019). Institutions have been conducting follow-up workshops, seminars, and in-service training sessions to build the capacity of teacher educators (instructors) in CBC methods in line with the Teacher Development and Management policy. (Government of Rwanda, 2023). The frequency and quality of these professional development programs are usually inadequate for CBC implementation (Education Commission, 2022). According to Kizito et al. (2019), this compromises the quality of education that trainee teachers receive and, consequently, their ability to deliver. It was also noted that there are limited follow-up and support after training, which hinders the long-term impact of these capacity-building initiatives.

Analysis of the literature on the CBC shows both positive achievements and challenges. Although CBC implementation is a broad area of study, this review identified literature documenting achievements in Rwanda. School education is closely linked with the examination system. Students' performance on the college entrance exam determines their future fate to a certain degree. The Government of Rwanda has made great strides in education, including proclaiming English as the main language of instruction in nursery schools (Rwanda Basic Education Board, 2024). Parents usually associate their children's examination success with early childhood education provided by TTC products. The view by the Rwanda Basic Education Board (2024) is that low English proficiency capabilities being experienced among TTC student teachers may be directly related to the background set in their primary and secondary schools.

To ensure institutionalization, educational authorities should provide teachers and schools with adequate resources for implementing the new curriculum. Supervision of teachers by Education Officers, School Inspectors, School Heads, Heads of Departments, and groups of teachers (peer supervision) also contributes to the institutionalization of the new curriculum. Incentives offered to teachers for implementing curriculum programs effectively by School Heads or School Development Associations/Committees impact on the institutionalization of a curriculum program.

Training offered to teachers at colleges and universities, which is aligned to government programmes, assists in legitimizing new programs such as this Competence-Based Curriculum, which is making them more accepted by people using them (Robin, 2018). Teachers in TTCs are expected to move from traditional teacher-centered methodologies to student-centered approaches that encourage active learning, problem-solving, and critical thinking. Pre-service teachers must come out equipped with competencies to facilitate this kind of learning environment in schools. However, success at this level is often dependent on teachers' readiness, their understanding of the CBC, and the support they receive from both the institution and broader educational systems. TTCs must align their programs and operations with the national CBC objectives, adjusting their teaching methods and materials to focus more on practical skills development.

Teacher trainers need to be equipped with the skills to deliver a competency-based curriculum, and they play a crucial role in supporting pre-service teachers. However, most of the institutions have constraints, such as infrastructure and access to quality teaching materials, which hinder effective implementation. Furthermore, there seems to be a big gap between theory and practice. According to Nsengimana et al. (2024), many TTC graduates are observed to be heavily underprepared for real classroom teaching, especially in adapting to English as the language of instruction and many other diverse teaching and learning requirements. These include ensuring equity and equality in line with the Special Needs and Inclusive Education policy (MINEDUC, 2018) and considering gender disparities (Republic of Rwanda, Ministry of Gender and Family Promotion, 2021).

Teacher Training Colleges and other educational institutions are incorporating digital tools and resources in their programs to help future teachers learn how to use ICT in the classroom. However, TTCs, particularly in remote areas, have limited ICT infrastructure and access to digital resources, and some teacher educators are not proficient in operating digital tools (Zulu et al., 2025). This limits their ability to effectively impart ICT skills to teacher trainees. The inability to apply ICT in learning school subjects by providing relevant tools is one of the problems militating against the effective implementation of the curriculum in Rwanda.

Concerning assessment, Kachope et al. (2025) contend that schools still conduct traditional assessments such as written tests and exams without moving towards competence-based assessments, which are more complex and time-consuming to administer. This practice is exacerbated by the lack of assessment tools and guidelines well-designed to meet CBC requirements. While TTCs as institutions have adopted practices and reforms outlined in the Summary of Curriculum Framework for TTCs (Rwanda Basic Education Board, 2020), there remains a gap in capacity development and the use of learner-centred pedagogies due to resource shortages and overcrowded classes. There should be targeted investment in teacher capacity development, infrastructure development, and teacher support to ensure that TTCs produce competent teachers for CBC implementation in Rwanda.

Table 1

Competency-based curriculum policy versus practice.

Curriculum goals	Observed gaps
Production of problem-solvers and graduates who are ready for the job by shifting from knowledge-based to competence-based learning.	Training and confidence gaps lead teachers to revert to familiar knowledge-based teaching methods.
Adequate educational materials, including laboratories and ICT tools.	Rural schools experience serious shortages of teaching and learning materials, including infrastructure.
Use of learner-centered methods that promote critical thinking, innovation, and teamwork.	Classrooms have remained teacher-centered, with learners having limited opportunities to actively participate.
Assessment focuses on skills, application, and performance, thereby measuring the actual abilities of the learner.	Emphasis is still on memorization and written exams rather than practical execution of concepts.
Production of graduates who are innovative, competent, and lifelong learners.	Employers often report that graduates lack the practical and problem-solving skills required in the workplace.
Improved access to quality education across the whole country.	The gap between urban and rural schools seems to be widening as rural schools face more challenges.

Notes. The table shows the researchers' analysis of the curriculum practices currently obtaining versus policy expectations, highlighting the gaps that authorities may need to address.

Fullan's systemic approach to change (Okyere, 2025) emphasizes that for educational reforms to succeed, there is a need for alignment of policies, leadership, teacher capacity, and resources. This directly links to Rwanda's curriculum implementation process, as it shifts from a knowledge-based to a competence-based curriculum, requiring coordinated efforts across government, schools, and communities. However, challenges existing in the form of shortages in teaching materials and teacher preparedness highlight the importance of Fullan's principle that change must not be fragmented and reactive but systemic. In Rwanda, successful curriculum implementation depends on building teacher professionalism, ensuring stakeholder collaboration, and providing adequate resources in line with Fullan's framework.

To ensure the fidelity of implementation, there is a need for feasibility assessments. Feasibility refers to the likelihood that a project, program, or intervention can be successfully implemented in a school or other institution (Ndalaha, 2020). Many new efforts fail at an early stage because their sponsoring organizations either cannot or choose not to provide the structure, commitment, and resources necessary to ensure the feasibility of implementation. When a new curriculum is proposed, it is important to consider two questions: whether it will offer significant benefits and whether it can be implemented successfully. In answering these questions, educational authorities should consider the critical factor of how different it is from the existing curriculum with which teachers are familiar (Wyk, 2020). In many unsuccessful curriculum changes, the key factor is the level of difficulty they pose for teachers. (Addai-Mununkum & Setordzi, 2023) identified and came up with a list of vital factors affecting the feasibility of curriculum implementation, albeit in several different contexts, such as materials, commitment from stakeholders, knowledge and skills of both teachers and students, including their readiness to change, and available or needed transition elements. Spotting feasibility problems from the very beginning can result in better implementation and more efficient and effective launch. Using a rubric and associated rubric-based tool as a program, intervention, or project is being planned or just getting started seems to make the most sense. It can ensure focus on what the "it" is from the onset (Addai-Mununkum & Setordzi, 2023)

The implementation of Rwanda's competency-based curriculum (CBC) in Teacher Training Colleges can be understood through three analytical levels: macro, meso, and micro. Each of these plays a critical role in shaping how the curriculum is adopted and adapted within the country's educational system.

At the macro level, policy decisions regarding resource allocation can affect the availability and quality of resources needed to support teaching and learning activities. Overall, the synthesis of the literature in this present review showed a "leaking pipe" scenario. This is a scenario in which pronouncements and curriculum ideas, as represented in policy frameworks promulgated by the central government, and the intended curriculum planned by national curriculum development units, get diluted as they filter down to the end users. The end user is herein defined

as the final unit of operation (the grassroots level, represented by schools, TTCs, and TVET institutions) in a top-down curriculum implementation model.

The review found that implementing the Rwandan Competence-Based Curriculum is supported by a robust set of policy frameworks closely aligned with the country's broader macro-level development goals. In the same vein, the literature by Nsengimana et al. (2024) showed almost equal enthusiasm by middle management at the meso level to ensure the fidelity of implementation of the national guidelines. Such efforts of coordinated strategic approaches in organizing middle-level structures were made apparent in the literature. For instance, the seminal works of Kizito et al. (2019, p. 27), demonstrate that pieces of training at the meso level were conducted by non-governmental organizations, such as Inspire, Educate, and Empower Rwanda, that support educational activities. The authors say:

SEOs and school HTs were requested to select 10 competent teachers, 2 deputies of study, 4 secondary teachers, 3 primary teachers, and 1 nursery teacher in a sector to attend the training. These teachers, after the training, were qualified to be sector-based trainers expected to train their fellow teachers in their sectors or school-based workshops. This training was facilitated by national trainers from IEE.

Extensive consultations must be conducted before any curriculum change process is initiated (Okyere, 2025). According to the Systemic approach, it ensures that the relevant stakeholders participate and contribute their minds to the new curriculum. For instance, as part of the Innovative Pedagogies Project (IPP), important education decision-makers and stakeholders in Rwanda gathered on July 5-6 for a first policy dialogue at Nobleza Hotel in Kicukiro, Kigali to assess the use of inclusive and learner-centered teaching approaches across the country and also identify areas of strengths, and discuss hindrances, to inform the creation of a high-level action and engagement plan. However, this highly commendable government policy agenda requires, according to Kachope et al. (2025), considerable implementation and monitoring capacity at central, district, school, and teacher levels to optimize expected results.

At the meso level, TTCs serve as the bridge between national policy and classroom practice. Institutions must adapt their structures, programs, and teaching methodologies to embody CBC principles. Despite the collaboration amongst the district education officers, the school leaders, and the teachers, challenges such as budget for organizing the pieces of training, teachers who resisted the CBC approaches, and inadequate training for English proficiency hampered effective implementation efforts (Kachope et al., 2025). Thus, District Directors of Education are expected to ensure the effective implementation of the programs at the school level. While these policies offer strong guidance and alignment with national aspirations, their successful implementation depends heavily on addressing practical challenges, including teacher training, resource allocation, and infrastructure development, especially in rural areas (Nteziyaremye et al., 2024). As demonstrated in the literature, the situation regarding the efficacy of curriculum implementation got worse at the school and TTC levels (Bavugempore & Ngabonziza, 2024).

At the micro level, the successful implementation of the competence-based curriculum depends on tutors and student-teachers' engagement with the curriculum during the teaching and learning process. According to Marlina and Mardiana (2023), tutors must shift from traditional lecture-based approaches to learner-centered strategies with emphasis on active participation, problem-solving, and practical application of knowledge. Student-teachers are expected to develop competencies, not mere content mastery, but communication, collaboration, and the ability to adapt. At the classroom level, challenges including large classes, limited teaching aids, and varying student abilities can hinder effective CBC practice (Kizito et al., 2020). Nonetheless, when tutors model competency-based teaching and provide continuous feedback, student-teachers are better prepared to replicate these methods in primary and secondary schools, ensuring that the CBC goals are achieved from the grassroots level.

As the sector begins to address emerging challenges, appropriate measures and attention are needed to ensure adequate capacity and quality education. The test of success should be a leap in quality in the day-to-day learning experiences of our children (Jean de Dieu et al., 2022). Defining specific competencies using SMART criteria sets the benchmark for evaluating failure or success. It helps in developing assessment tools aligned with competencies, such as a rubric and self-assessment. The purpose of monitoring and evaluating curriculum implementation activities serves to illuminate the extent to which curriculum outputs align with intended plans (Marlina & Mardiana, 2023). Continuous data collection helps identify system, teacher, and student strengths and weaknesses, leading to data-driven adjustments. Involve all the relevant stakeholders in the evaluation process.

Conclusions and recommendations

The Competency-Based Curriculum (CBC) in Rwandan Teacher Training Colleges has made significant progress and identified areas for continued improvement across the macro, meso, and micro levels of analysis. Rwanda's commitment to educational reforms, through the introduction of CBC, shows a broader national strategy with the aim

of improving the quality of education and creating a more skilled labour force. The legal framework supporting the CBC is crafted in line with international standards, focusing on critical thinking, problem-solving, and learner-centered teaching methods as outputs. However, the review indicates that further investments in infrastructure and teacher professional development are critical to ensure long-term sustainability. Policy must ensure that it reduces disparities between rural and urban colleges in terms of access to resources and opportunities for both Tutors and students. While the TTCs have embraced the curriculum, challenges still exist in aligning institutional culture with the new pedagogical requirements. Leadership in colleges plays a crucial role in translating policy into practice. Accordingly, this review highlights gaps in coordination and communication between policymakers and college leadership. Organized continuous teacher professional development and mentorship programs must be reinforced and well monitored to empower educators to switch to new teaching methodologies. This review suggests that teachers are slowly shifting from traditional methods to competency-based teaching. However, a significant percentage still require more support in using learner-centered approaches, continuous assessment techniques, and the integration of ICT into teaching. Monitoring and evaluation mechanisms need to be strengthened to sustain the successes already achieved and ensure ongoing improvements align with national education goals. A holistic and adaptive approach, addressing macro, meso, and micro factors, will ensure the successful, long-term implementation of the CBC in Rwanda's teacher training institutions. Further research can examine how educational policy directives, such as the CBC, are communicated, interpreted, and implemented at the institutional and classroom levels. Longitudinal studies can also be conducted on teaching practices and student outcomes under CBC in teacher training colleges (TTC).

Conflict of interest

The authors declare no conflict of interest.

Author contribution

Washington Chari-Original draft preparation, conceptualization, and investigation. Christopher Mutseekwa-Methodology, Validation, and Reviewing. Joseph Dzavo-Supervision and editing

Data availability statement

Data for this systematic review is drawn entirely from published sources identified through the search process. All data is available within the included studies and accompanying supplementary materials.

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