

Teachers' Perceptions of Competency-Based Curriculum Implementation, and Government Support: A Mixed Methods Study on Grade 1-5 Teachers in Homabay County, Kenya

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Abstract

Education reform is necessary as it allows a country to periodically review, revise, and evaluate its education systems and programs. Kenya recently adopted a competency-based education system, known as competency-Based Curriculum(CBC). This approach allows students work at their own pace to demonstrate mastery of the competencies required for their chosen field of study. However, previous studies on the implementation stages of CBC, particularly in elementary teacher preparedness, have indicated that teachers' knowledge of CBC is inadequate, they are ill-prepared, and thus they are unable to effectively teach and evaluate the new curriculum. Therefore, this study aims to investigate teacher perceptions, self-efficacy on digital technology use, and government support in the implementation of CBC, to identify the challenges teachers are facing and the support needed to effectively implement the curriculum. The study used a mixed-method convergent research design to answer the research questions. The participants were grade 1-5 teachers drawn from Homa Bay county. The study findings revealed that CBC teachers have conflicting views about CBC. Among all survey constructs, the government resource support had the highest mean, while the need for training on information and communication technology and the provision of digital technology materials to schools were mostly unfavorable. Survey respondents indicated moderate agreement with the relevant assertions. The study recommends the use of perception theory instead of self-efficacy theory to investigate teachers' opinions on the implementation of CBC. This approach can help create links between the identified issues and outcomes. Further research is necessary to examine how parents perceive the implementation of CBC and how their involvement can aid in learners' acquisition of the necessary competencies and skills.

Keywords: Teachers' perceptions, Competency-based curriculum, Government support, Digital technology

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1. Background

Since the United States developed the competency-based curriculum in the early 1970s, it has garnered significant research interest (Winterton, 2017). The distal educational objectives of a Competency-Based Curriculum (CBC) focus on accurately assessing students' descriptive abilities, attitudes, and knowledge; with measurable goals to be achieved at each stage of the learning process. The proximal goal of CBC lies in its practical approach to an educational system, emphasizing the acquisition and assessment of life skills essential for individuals to be purposeful in their respective societies (Winterton, 2017). The U.S. Department of Education (2021) describes Competency-Based Education as a shift away from seat time, fostering flexibility and enabling students to progress as they demonstrate mastery of academic content, irrespective of time, place, or pace of learning. Competency-based strategies offer adaptable methods for earning or awarding credit to facilitate personalized learning opportunities for students. In essence, students advance in CBE upon mastering the competencies associated with a course, regardless of the time required for mastery, while institutions design competencies, content, and support structures to ensure students' success. Several studies agree that CBE is a preferred solution in the current and complex economy, which necessitates individuals to possess the essential skills for productivity in today's world (Kapombwe, 2019; Curry & Docherty, 2017; Pluff & Weiss 2022)

Competency-based Education (CBE) aims to enhance workplace performance by equipping graduates with relevant outcome competencies. To achieve this goal, the pedagogical enterprise must develop a knowledge and skill set that is not typically part of faculty or administrative preparation in higher education (Curry & Docherty, 2017). The implementation of CBE will significantly disrupt current educational programs, affecting faculty, site personnel, learners, assessors, and administrators. Therefore, apprehension towards this radical shift from existing practices must be acknowledged and addressed before an authentic competency-based paradigm can be realized. This transformation requires a focus on refining self-awareness, personal goal-setting, and self-appraisal techniques for teachers, learners, and administrators in the context of the local CBE structure. Consequently, institutions must evaluate the specific rationales for implementing CBE programs and determine how CBE aligns with their overall strategic plans and missions. Conversely, while CBE programs provide institutions with numerous opportunities, they also pose certain challenges. For instance, as new roles emerge, faculty members may find themselves increasingly engaged in areas where they lack direct experience and feel inadequately prepared (Kellogg, 2018).

Recently, Pluff and Weiss (2022) examined the nature of competency-based education and how offering traditional educational credentials and degrees through non-traditional, non-term programs can better engage students and foster their success in the evolving educational market. Among their recommendations, they emphasize the need to assess an organization's readiness to adopt a CBE program by posing critical questions such as whether the institution supports a culture of innovation, commitment, and flexibility. Key steps for successful CBE implementation include aligning the program and process with the institution's mission, vision, and strategic plan to create buy-in and unified goals. Additionally, promoting ongoing collaboration and working groups among key individuals and departments, understanding the importance of assessing and reassessing program and student success, and determining whether new degree programs will be required is essential. Establishing mechanisms during the implementation phase to ensure continued growth and creating methods to collect data that demonstrate program success for students, staff, and leadership are also vital. Other important factors for CBE implementation include hiring the right individuals for the appropriate roles before the program launch, conducting regular meetings with critical stakeholders during the initial and early phases of the process, and managing expectations, as a new CBE program may not yield immediate success or a quick return on investment. Lastly, identifying and providing specific training, support, and resources for faculty and staff is crucial for successful CBE adoption (Pluff & Weiss 2022, pp. 212).

Curry and Docherty (2017) assert that the implementation and success of a CBE program require proactivity, open collaboration, data-sharing, negotiations, and adjustments among faculty, administrators, and learners. A sustained effort from all parties is essential for fostering this collaboration. The institutional culture must be supportive of proactive and innovative approaches to address the unique challenges associated with CBE. A competency-based curriculum (CBC) is grounded in the principle of students learning at their own speed while demonstrating mastery of the skills required for their chosen field of study (Gruber, 2018). Students must demonstrate their ability to apply knowledge, generate new insights, and develop essential abilities and attitudes (Jallow, 2011; Frost et al., 2015). A CBC includes explicit outcome statements that indicate the skills to be acquired (Moshia, 2012), and students are informed about the expected behaviors or tasks, execution requirements, and acceptable standards.

In 2010, Kenya enacted a new constitution and formed a task force to align the education sector with the new constitution and vision for 2030. Among its recommendations, the task force report proposed changing the structure of education in Kenya from 8-4-4 to 2-6-6-3, offering learners a broader array of pathways and tracks in senior secondary school. Additionally, the report advised the Kenya Institute of Curriculum Development (KICD) to create and implement a CBC design (UNESCO, 2020).

Kenya's first, second, and third educational reforms are the 7-4-2-3 (seven years of primary school, four years of secondary school, two years of high school, and three years of university education) and 8-4-4 (8 years of primary school, four years of secondary school, and four years of university) systems of education, as well as the CBC. Under the CBC system, students spend two years at the pre-primary level, advance to primary school for grades one through six, and then transition to secondary school for six years. Secondary school is divided into junior secondary school (three years) and senior secondary school (three years), followed by three years of university studies as the final level.

According to the design of the competency-based curriculum, learners should attain proficiency in the following seven core competency areas by the end of the learning period: communication and collaboration, critical thinking and problem-solving, imagination and creativity, citizenship, learning to learn, self-efficacy, and digital literacy (KICD, 2017). Therefore, there is a need for teacher training to enhance self-efficacy in applying the CBC. The requirements highlight that learners should progress from the beginner level to the proficient level, and ultimately to the expert level. Moreover, there should be criteria or guidelines for assessing and achieving skills at each stage or level of development, including clear expectations upon the completion of each level (KICD).

2. Literature Review

2.1. Development of CBC in Kenya

The CBC (2-6-3-3 system) in Kenya is in its initial years of implementation, replacing the content-based (8-4-4) system. Major criticisms of the 8-4-4 system included its content and exam-oriented nature, which favored learners who scored high grades at the final secondary level. These students would typically proceed to higher education at universities and colleges, eventually securing white-collar jobs. Therefore, this system overlooked many children whose aptitudes, interests, and abilities were geared toward vocational education, arts, and sports (Kabita & Ji, 2017). Launched in 2017, the CBC (2-6-3-3-3 system) was designed to encompass two years of preprimary education, six years of primary education, three years of junior secondary education, three years of senior secondary education, and three years at the university level, as recommended by the Kenya Institute for Curriculum Development (KICD).

According to KICD (2017), Early Childhood Education Development (ECED) was incorporated into Basic Education, which included pre-primary one (PP1) and pre-primary two (PP2). The learning areas in pre-primary consist of religious education, psychological and creative activity/outdoor activity, environmental activity, Kenya sign language activity, and pre-braille activity, as well as math activity, amounting to a total of 25 lessons per week. In contrast, primary learning areas encompass hygiene and nutrition, creative movement activity, religious activities, hygiene and nutrition, indigenous language activity, braille Activity, Kiswahili language activity, Kenyan sign language activity, English activity, and math activity. This results in a total of 35 lessons per week.

Implementing a CBC necessitates a participatory approach in selecting the competencies for the curriculum. CBC requires interaction and collaboration among subject matter experts, learners, and community members. According to Akala (2021), the role of each participant are as follows: employers and other community members identify the desired abilities of the children; subject matter experts or curriculum developers determine which competencies can be achieved within the content constraints; and teachers need to understand how to teach the content in a way that that enables the attainment of these competencies. Consequently, all these roles are geared towards addressing the major concerns of CBC implementation, which focus on learning outcomes defined by specific, measurable knowledge, skills, and learner behavior.

2.1.1 Teachers' self-efficacy

Self-efficacy refers to an individual's belief or confidence in their ability to perform the behaviors necessary to achieve specific performance outcomes (Bandura, 1986). In the context of teaching, self-efficacy is defined as "a teacher's belief in their ability to organize and implement the action plans necessary to accomplish a particular instructional task in a particular context" (Schwab et al., 2017, pp. 206). Researchers (Schwab et al., 2017) found that teachers with higher self-efficacy employed a greater variety of teaching methods and techniques compared to those with lower self-efficacy.

Moreover, teachers with high perceived self-efficacy adjust their actions and thought processes to avoid emotional exhaustion (Ali et al., 2017). In contrast, teachers with low perceived self-efficacy have low emotional intelligence, which may leave them feeling powerless and unable to identify or assist struggling students (Rodriguez & Armellini, 2017). Perera et al. (2019) found that novice teachers' self-efficacy was lower than that of experienced teachers, impacting student achievement and instructional approaches. Various instructional approaches, such as the flipped classroom (Dickenson, 2016), the massive open online course (Armellini & Rodriguez, 2017), and the digital library instruction, combine different teaching models and strategies that can affect instructors' self-efficacy in multiple ways. For example, the flipped classroom approach was found to enhance teachers' self-efficacy by employing diverse teaching strategies and fostering students' creativity (Dickenson, 2016).

Bandura (2006) asserted that mastery experiences greatly contribute to positive self-efficacy. He further argued that if an individual completes a task and has a positive experience, they will perceive future similar tasks as achievable and feel confident in their ability to succeed, leading to a heightened sense of self-efficacy. Armellini and Rodriguez (2017) found that instructors and students who used massive open online courses to improve their study skills and self-efficacy experienced success, emerged with increased self-efficacy, and established new goals for higher achievement. As a result, researchers continuously explore and develop new strategies to assist instructors in building their skills and self-efficacy.

Kundu (2020) examined university instructors teaching in Asian countries and found that instructor presence, engagement, and self-efficacy might also be related to years of teaching experience. Similarly, high teacher self-efficacy is related to a teacher's desire to explore new teaching methods, pay closer attention to struggling students, and be reluctant to refer students to specialized educational environments. Therefore, enhancing teachers' self-efficacy can only be achieved through continuous training on current issues and curriculum changes.

2.1.2 Evaluation of CBC

Irvine and Kevan (2017) argued that competency-based programs are flexible because their structure depends on

the individual learner. Students direct their learning and determine when and where they complete projects and assessments. CBC also offers flexibility by allowing students to enter a program at any level, crediting them for their previous experience. Furthermore, CBC focuses on the outcome rather than the journey, making it self-paced. This approach enables students to control their pacing, as they are not confined by a set learning process. As soon as a student feels ready to demonstrate mastery, they can take an assessment, receive credit, and begin the next material. By progressing at their desired pace (Irvine & Kevan, 2017), students can complete a degree when they are ready, which is a significant advantage for independent and adult learners who may be pursuing a degree around other commitments.

Irvine and Kevan (2017) further assert that one of the most significant outcomes of competency-based education is the increase in student engagement. Students are more likely to engage with the material because they have ownership over their learning. They feel empowered, having control over when, where, and how they learn. This approach promotes individualized learning and accommodates various learning styles, resulting in a genuinely personalized experience. Ultimately, this experience increases engagement because the content is tailored to each student and becomes more relevant.

In CBC, programs are designed around competencies required for specific careers, ensuring that the material is relevant (Gitahi, 2019). As a result, one of the key benefits of CBC is that learning centers on real-world skills and competency development. Consequently, students become workplace-ready with expertise in their chosen field, making CBC a direct path to a successful career for many students.

According to the KICD report, a major challenge facing CBC implementation in Kenya was the lack of teaching and learning resources. Most public schools, particularly those in rural settings, experienced significant resource shortages, whereas some private schools possessed the necessary resources, leading to an imbalance in curriculum implementation. In addition, there were challenges regarding teachers' understanding of CBC pedagogy. It became evident that only a few teachers grasped the CBC concept, with most struggling and lacking the capacity required for the program.

The successful implementation of CBC (Gitahi, 2019) relies not only on teachers, who act as facilitators in the learning process but also on parental involvement, as the program's requirements extend beyond school boundaries. Parents play a crucial role in the implementation of CBC, as they are expected to contribute to their children's educational success by providing a conducive learning environment, motivating learners to reach their potential, supervising and guiding children with homework, and supplying necessary materials for activities and practice. Additionally, parents are responsible for collecting and submitting evidence of the child completing tasks assigned by the teacher.

Parents are also expected to ensure that their children's biodata is accurately captured in the Kenya Early Years Assessment Database (KEYAD), highlighting the need for digital literacy among both parents and teachers. However, this continues to be a significant challenge for parents and teachers, particularly in rural areas where electricity and digital facilities are scarce. Moreover, many parents in rural settings are illiterate, meaning that even if electricity were available, they might struggle with digital technologies. This demonstrates that nurturing and building the competencies central to CBC cannot be left solely to teachers. Therefore, teachers and parents must work collaboratively as co-educators to enhance the acquisition of appropriate competencies and skills among learners. Their involvement is expected to result in positive learning outcomes for learners and influence other aspects of their behavior (Gitahi, 2019).

2.1.3 Teacher Career development

A study examining the impact of teacher preparation on the implementation of a competency-based curriculum found that teachers were unprepared for CBC implementation. Specifically, 98.8% of teachers reported not being ready to implement CBC, particularly in regard to new subjects, and 95% believed that preparing lesson plans for all lessons was unsustainable (Waweru, 2018). Conversely, the research also showed that over 50% of teachers needed help in cultivating their creativity and imagination, as well as designing rubrics that align with learners' abilities to discern in practice and perform specific tasks.

A separate study by Paulo (2014) examining pre-service teacher's preparedness to implement the Competency-Based Curriculum in secondary schools in Tanzania revealed that, since the introduction of the competence-based curriculum in secondary schools in 2005, there was no evidence that the teacher education curriculum at the University of Dar es Salaam -- where secondary school teachers are trained -- had been updated to address the new demands arising from the implementation of the competence-based curriculum in secondary schools.

Koellner and Jacobs (2015) argue that faculty development practices must exist on a continuum. Steinert (2014) emphasizes that teacher development is about capacity building and self-determination, rather than identifying these aspects of teaching in isolation. The various suggestions for faculty development, supported by responses, also reflect the findings of Stes et al. (2009), which assert that faculty development should align with teaching practice and institutional priorities.

Moreover, a study by Crawford et al. (2020) indicated that faculty members were concerned about the

reluctance of residents to actively participate in CBE, while residents hesitated to assume such a role due to a lack of familiarity and perceived benefit. This discrepancy highlights the need to focus on (a) institutional administrative/educational supports, (b) faculty development around feedback/assessment, and (c) resident development to foster ownership of their learning and familiarity with CBE. Teachers need structured training to understand the elements of CBE in terms of its capacity to demonstrate mastery of competencies through multiple methods. Demonstrating mastery may include a pre-assessment to gauge prior knowledge for mastery, potentially allowing learners to skip large portions of content, or it may dictate which content needs to be completed if the pre-assessment was not passed.

2.1.4 Effective implementation of CBC

A study by Kapombwe (2017) recommends that for effective implementation of CBC in high schools in Zimbabwe, the Ministry of Education, Science, and Technology should collaborate with program experts and developers to organize pedagogical training sessions for secondary school teachers in the Meru district. This will equip them with the methodological skills necessary to employ various teaching methods required by competency-based curricula. Additionally, the study suggests that the Meru District Council should work in partnership with the Ministry of Education, Science, and Technology to establish an ongoing program to update teachers on the skills required for appropriate instruction within the context of competency-based programs.

On the other hand, other stakeholders in the education sector should collaborate with governments to promote education services, including improving teacher pedagogy. Local governments should develop a plan, through the District Council, to provide further training for teachers to effectively implement CBC. The best approach is to empower school principals to organize formal school-based professional development programs, such as in-service CBC training programs for teachers' induction (Kapombwe, 2019).

Similarly, Kosgei and Chepchumba's (2020) study on teacher competency as a cornerstone of the implementation of the core curriculum in Kenya found that effective training of facilitators and trainers was required, followed by consistent training sessions and retraining on the implementation of the curriculum for efficient work. They also recommended that educational stakeholders establish an appropriate curriculum framework to prepare teachers for the transition from teaching to learning.

The defining strength of CBE is effective implementation, which focuses on outcome competencies. From those product competencies, a full range of supporting learning goals must be articulated, ordered, and located within educational programs, individual courses, and sequences of a learning experience. Commitment to CBE, therefore, means examining in detail how we design, teach, assess, and learn within structured educational programs. A thorough, systematic, sustained, and integrated approach is required to improve learner outcomes by streamlining all pedagogical components within courses and programs toward goals defined by demands of the next placement, linkage to workplace opportunities, and requirements for good citizenship (Kellogg, 2018).

2.2 Aim of the Study

To determine how the Kenyan government can better assist CBC teachers in implementing the new curriculum, this study aims to investigate the perceptions of teachers who teach students in grades 1 through 5 about CBC. Education reform is essential for a nation to systematically analyze, amend, and assess its educational policies and programs, and Kenya recently adopted a competency-based education system (CBC) based on that premise. However, earlier studies on the stages of CBC implementation, particularly in lower grade education and teacher preparedness, indicate that teachers' knowledge of CBC is hazy, they are underprepared, and as a result, they are unable to effectively teach and evaluate the new curriculum (Bunyi, 2013). Therefore, this study aims to identify the challenges teachers are facing and the support needed to effectively implement the curriculum by investigating teacher perceptions, self-efficacy in digital technology use, and government support in implementing CBC.

This study is significant as it explores the perceptions of teachers who are mandated by the government and are actively involved in the implementation of the new curriculum. The findings have important implications for education stakeholders, particularly the government, to find ways to better support CBC teachers' participation in the new curriculum and overall effectiveness. Government investment in education justifies their belief in its importance as a public good, and improving funding for schools to have adequate learning and teaching resources, including building physical infrastructure such as computer labs, is essential for successful CBC implementation, as observed in the findings of the present study. Administrators will also benefit from the knowledge of the need to effectively implement cross-border cooperation by providing teaching/learning materials and training teachers on current pedagogical trends. School leaders will know what teachers are doing to meet teacher needs, understand the vision of the new curriculum, and understand specific guidelines for providing resources (Hays, 2006). Ultimately, administrators are responsible for implementing and evaluating the new curriculum in their schools, and their attitudes towards implementation positively or negatively affect teachers based on their interests.

2.3 Conceptual Framework

The conceptual model, presented in Figure 1, illustrates the associations between the construct-specific predictor variables and the outcome variables. The effective implementation of CBC is dependent on several factors including teachers' perceptions and self-efficacy, government support, digital technology use. The left-hand side of the conceptual framework depicts the predictor variables, with the perceptions of teachers measured through learners' focus and teaching tenets, self-efficacy measured through teacher/learner interaction and teaching abilities, government support measured through training and resource support, and digital technology measured through the availability of technologies and literacy. The right-hand side of the framework represents the criterion variable, which is dependent on the predictor variables for the effective implementation of CBC.

3. Methods

3.1. Research design

This study used a mixed-method convergent research design (Creswell & Plano, 2018) to address the following research questions: (1) What are the perceptions of grade 1-5 teachers regarding the competency-based curriculum? (2) How do grade 1-5 teachers implementing CBC rate their self-efficacy? (3) How can the government better support grade 1-5 teachers in implementing CBC? and (4) How does the qualitative interview data on teachers' perception, self-efficacy, government support, and digital technology use further explain survey quantitative data as a measure of the effective implementation of CBC in Kenya? This design aims to provide a more comprehensive understanding by comparing both the quantitative and qualitative data (Creswell & Plano, 2018). The study instruments were adopted from Prokes et al., (2021), with minimal modifications, to conform to the current study's convergent design. Despite not having been field-tested, the reliability of the instruments was evaluated using Cronbach's alpha (41 items: $\alpha = .97$). By utilizing both quantitative and qualitative methods, this approach will produce complimentary results about different aspects of a competency-based curriculum.

3.1.1 Research Procedure

Before conducting the main research study, a pilot study was conducted with a total of 21 grade 1-5 teachers from 71 elementary schools in a sub-county. Their responses were discussed with the lead investigator and experts in the competency-based curricula to determine the reliability and validity of the study. Once the pilot study was completed, the actual study aimed for a sample size of 213 grade 1-5 CBC teachers. This constituted a purposive sample of the study as three teachers were purposefully selected from the 71 elementary schools. Qualitative data were collected from a subset of the sample, with at least one 5th-grade teacher from 20 elementary schools purposefully selected for an interview. The researchers conducted the interviews through direct phone calls and audio-recorded processes, while data collection through survey questionnaires was done online. The response rate for the online survey was 78%. Descriptive statistics from the analysis of survey data using SPSS are presented in the findings section below. Table 1 shows the Phase I interview questions and Table 2 shows the Phase II survey questions.

4. Results

This study used the convergent mixed research methodology (Creswell & Plano, 2018) where CBC teachers were surveyed and interviewed. To protect the identities of the participants, neither real names nor pseudonyms were utilized in the study; instead, the term "respondent" was employed.

4.1 Interview results

Guided interviews were used to access teachers' perceptions of the implementation of CBC, self-efficacy, and digital technologies literacy in order to determine how the Kenyan government can better support grade 1-5 teachers. Table 3 presents a summary of the qualitative interview results.

4.1.1 Interview results focusing on teachers' perceptions of CBC

In regard to teachers' perceptions of CBC implementation, four themes emerged from the interview responses. When asked if they were prepared to teach CBC classes, the responses revealed that most teachers were not prepared beforehand, which negatively impacted their competency in content delivery and overall interaction with learners in CBC classes.

"When we first began teaching CBC classes, we knew it was a new system, but we were not prepared because the piloting and the implementation were taking place barely at the same time. We didn't know what it was until the training happened." (Respondent, June 2022).

On the other hand, when asked why they began teaching CBC classes, they indicated that it was a directive from the Ministry of Education and therefore, they had no alternative but to implement the new curriculum. Questions about their opinions on the curriculum yielded mixed results. While some teachers were persuaded to like CBC, most teachers viewed it as learner-centered, as shared by one of the interviewees.

"I like CBC because it nurtures all learners' potential differences, it caters to learners with different

cognitive experiences and individual abilities, it is child-centered, and learning revolves around the learner, unlike the old system where everything was centered on the teacher” (Respondent, June 2022).

On the contrary, some teachers disliked CBC, stating that the inclusion of additional subjects like Music, Home Science, Art, and Craft and Computer Studies has resulted in more workload, as pointed out by one of the respondents.

“Initially, in the older 8-4-4 curriculum, we had only five subjects to teach, but in the new CBC curriculum, additional five subjects are added, for example, Music, Home Science, Art, and Craft and Computer Studies. However, with this additional workload, the number of teachers has remained constant in every school” (Respondent, June 2022).

4.1.2 Interview results focusing on self-efficacy

The second set of interview questions focused on self-efficacy, and teachers were asked about their satisfaction and confidence in different aspects of teaching including interaction and teaching abilities. Most teachers felt satisfied with interacting with learners in CBC classes. However, some teachers felt unsatisfied, particularly with the provision of intervention support, as the curriculum was new to them and they had inadequate preparations. This was a response from one of the teachers.

“I am satisfied interacting with the learners in the CBC classes because they are the same learners with whom I was interacting earlier, however, I am not satisfied with the provision of intervention support to the learners because this system is still new to us” (Respondent, June 2022).

The second theme focused on teaching abilities, where teachers were asked about their confidence to teach CBC classes. Some teachers asserted that they are confident in content delivery, stating that they have undergone organized training on CBC and the government has provided adequate textbooks for learners in a one-to-one ratio. On the contrary, other teachers felt they are not confident enough in content delivery, and the assessment of CBC learners is tedious as it follows rigorous paperwork. Similarly, the lack of resources, particularly for technical subjects and ICT, made the implementation difficult. This cohort of teachers felt that the training is inadequate, as it takes only one week during school holidays, and class enrollments are larger due to the influence of the 100% transition policy by the government and the Free Primary Education (FPE). One respondent divulged that:

“It is across the board in most subjects let me take, for example, one subject like Music, we are required as teachers to browse using the internet and download relevant materials, then project the materials for the learners, first, we don’t have access to the internet in our school, second, we cannot do the projection using our smartphones for learners to watch the demonstrations since we don’t have projectors and other ICT materials” (Respondent, June 2022).

4.1.3 Interview results focused on government support interventions

A series of questions were asked of teachers on government support for CBC implementation, and two themes emerged. Firstly, regarding training given to teachers, most teachers mentioned that even though the government has organized some training on CBC, the training was inadequate. Furthermore, the timing of the training sessions was also insensitive as they were only conducted during school holidays when most teachers were equally committed to family issues. As a result, they only attend because it was a mandatory program, and most of them were not motivated during the training sessions.

The second theme was on resource support, and there was a consistent agreement that the government provided adequate textbooks in the ratio of one learner to one book. However, most teachers felt that the government’s initiative was meager in terms of providing other learning resources, particularly in technical subjects such as Music, Home Science, Art and Crafts, and Computer Studies.

“The Kenyan government should implement some of these findings of such studies so that they can make this education better, in the former system, children only needed books, mathematical sets, and such things to learn, today they need quite a lot that the government is not providing, they train us to dialogue with parents who are already strained by the high cost of living.” (Respondent, June 2022).

Many teachers reported that the government should introduce the CBC curriculum at the teachers’ training colleges and universities so that novice teachers are better equipped with appropriate pedagogical skills and current trends in teaching CBC.

“I think the training should be taught in colleges, as teachers are being trained, CBC is infused into their curriculum so that as they get to the field, they do graduate with adequate skills and knowledge enough to handle the learners” (Respondent, June 2022).

Another question asked about interventions that the government could adopt to improve the implementation of CBC, and two major interventions came up. First, the government needs to collaborate closely with teachers through THE evaluation of the implementation process and increased remuneration based on increased workload, as pointed out by most teachers. A respondent pointed out:

“I think the monitoring team from the ministry should intensify their visits to schools and then get time with the teachers and find the challenges that they are facing and try to solve these challenges so that at least as we

move forward, the teachers become more conversant with this curriculum and should feel more motivated as compared to what is happening now” (Respondent, June 2022).

Second, most teachers recommended the need for proper collaboration among the government, teachers, and parents in acquiring the right competencies and skills among learners in CBC classes.

4.1.4 Interview results focused on digital technology use

Teachers were asked a series of questions on the availability and use of digital technology in their schools. It was found that digital technologies played a crucial role in CBC implementation, as many teachers expressed the need for training on ICT and the provision of digital materials to schools. Some teachers reported that their schools had only one or two laptops for the entire student body, while many schools lacked any digital equipment altogether, likely due to a lack of electricity. Although some teachers used their smartphones for browsing, they had to rely on cyber cafes for printing and photocopying. Additionally, many teachers lacked proficiency in using digital technologies even if they had access to them. One respondent emphasized this point by stating:

“That’s a real challenge because in some schools that lack electricity, using these digital technologies would be a problem, we also have some teachers who are not compliant with computer knowledge thus using the gadgets would be another added problem” (Respondent, June 2022)..

4.2 Survey results

Out of the 165 CBC teachers who participated in the survey, 48.5% ($n = 80$) had been teaching CBC courses for five years. Additionally, 24.8% ($n = 41$) had between five and 10 years of experience teaching general primary education, while 21.2% ($n = 35$) had over 20 years of experience. The survey had almost an equal number of female teachers ($n = 95$) and male teachers ($n = 75$). Surprisingly, most teachers ($n = 124$) had previous training experience before teaching CBC lessons. The descriptive statistics for the constructs and sub-constructs are presented in Table 4. The mean of all the measures was greater than 3.00, except for items under the general tenets of teaching, interaction, and the availability of digital technologies indicating disagreement on those items. The standard deviations ranged from 1.11 to 1.48.

Overall, teachers’ perceptions of CBC were positive, with a mean score of 3.69, falling between, neutral/no option and agree. The construct with the highest mean score was learners’ focus (3.93), while, the lowest mean score was for general teaching tenets (3.45).

The next section of the survey focused on instructors’ self-efficacy, which was aligned with the second research question. The mean score for this section was 3.77, falling between neutral/no option and agree. The construct with the highest mean score was learners’ interaction (3.72), while the lowest mean score was for teaching ability (3.82).

The results of the third question, which asked about how the government’s support for the implementation of CBC, were generally positive, with an average rating between neutral and agree (3.86). The construct with the lowest mean score was training (3.70), while resource support had the highest mean score (4.01).

Lastly, the findings related to digital literacy were mostly unfavorable, with an average rating between disagreeing and neutral/no option (2.81). The construct with the lowest mean score was digital availability (2.12), while the construct with the highest mean score was digital technology use (3.49). This component had the lowest overall mean score out of all the survey sections.

5. Discussion

The competency-based curriculum includes explicit outcome statements that outline the competencies to be acquired, projected actions or activities, requirements for their completion, and acceptance criteria that are communicated to students (Mosha, 2012). This study examined teachers’ views on CBC, their self-efficacy, usage of digital tools, and government assistance, from which the government and practitioners can learn from the five main findings.

First, CBC teachers had conflicting views on CBC, with positive feedback emphasizing flexibility and a learner-centered approach. Government resource support had the highest mean score, mainly due to the provision of textbooks in a one-to-one ratio. However,, the support for human resources was minimal, as reported by a respondent who testified that there were not enough personnel due to the government’s lack of employment of teachers. This lack of personnel has increased the workload, especially with additional subjects to be taught. This finding is consistent with Kellogg, (2018), who found that faculty are increasingly involved in areas they may not have direct experience in, leading to feelings of being unprepared.

This finding challenges the claim by Prokes et al. (2021) that competency-based education (CBE) fosters more employment prospects, leading to workplace empowerment for re-entering the workforce or advancing within an enterprise. However, some teachers reported positive attitudes towards CBC, citing its learner-centered approach, nurturing of individual differences and cognitive experience, and catering to different abilities. This is congruent with Abdullahi, (2019) findings, whereby 57% of pre-primary teachers had a positive attittowardards

CBC implementation in Kenya.

Negative teacher opinions of CBC focused on added workload, insufficient resources, and poor training. All teachers reported being involved in teaching CBC due to work pressure. Interview participants mentioned the employer's mandate, and survey respondents indicated moderate agreement ($M = 3.69$) with this assertion. This result supports Prokes et al.'s (2021) findings, which showed reasonable agreement ($M = 3.10$) among faculty that their involvement in CBC came about due to demand, both through the assignment and personal feelings to be active.

Secondly, teachers perceived CBC to be highly involved, as it requires a lot of assessments and paperwork, as noted by one interviewee who mentioned that the new curriculum includes additional subjects such as Music, Arts and crafts, Computer studies, and Home-Science. In addition, the 100% transition policy by the government and the Free Primary Education (FPE) has increased class enrollments, creating a major challenge. This finding is consistent with Prokes et al.'s (2021) research, where interview respondents Karen and Cheryl expressed concerns over class sizes and a lack of consideration for the target audience Five Rivers markets CBE.

The third finding of this study relates to the teachers' self-efficacy and confidence in handling CBC classes. Results from the interviews show that half of the teachers were confident with the new curriculum, attributing their confidence to the training they received. However, the other half felt they were not confident due to inadequate training and resources, especially in technical subjects such as Music, Home-Science, Arts and crafts, and Computer studies. The overall mean score for self-efficacy was in the agreement (3.77), with the highest mean score for abstract teaching ability (3.82). This result is consistent with Abdullahi's (2019) findings, which showed that the implementation of CBC is significantly hampered by a lack of adequate learning facilities, inadequate teacher training on how to implement the curriculum, large class sizes, a shortage of teachers, inadequate teaching-learning materials, ignorance, and a lack of parental cooperation.

The fourth finding of this study pertains to government support. The overall outcome, with an average rating between neutral and agree, was relatively favorable ($M = 3.86$). By construct, training had the lowest mean score (3.70), and resource support had the highest mean score (4.01). This variation in the means of the constructs surveyed were attributed to different factors revealed in the interviews. Resource support was attributed to the fact that the government concentrated more on the provision of textbooks but neglected other resources. A respondent noted that the ratio of students to book ownership was one-to-one. However, the mean of construct training was attributed to inadequate training opportunities and the nature of the training, which was organized as accelerated programs. Finally, teachers felt that much time needed to be allocated for the training to make them effective. This finding is consistent with Kapombwe's (2019) postulation that for effective implementation of CBC in high schools in Zimbabwe, the Ministry of Education, Science, and Technology, in collaboration with program experts/developers, should organize pedagogical training sessions for secondary school teachers in Meru district to equip them with the methodological skills necessary to use the different teaching methods required by competency-based curricula.

The final findings of this study concern the role of digital technology in CBC implementations. Most teachers interviewed recommended the need for training on ICT and the provision of digital technology materials to schools, as digital technologies turned out to be fundamental in CBC implementations. However, some teachers stated that they had one or two laptops serving the entire school, while many schools lacked any digital technology equipment, which was attributed to the lack of electricity in such schools. Teachers use their smartphones to browse but do printing and photocopying at nearby cyber cafes. Similarly, most teachers are not competent in using digital technologies even if they could be provided. The total poll result was mostly unfavorable, with an average rating between disagreeing and neutral ($M = 2.81$). This result is consistent with that of Calkins et al. (2019), who found that teachers who received ICT training had increased self-efficacy and classroom management. The findings of Ondimu (2018) that 68% of teachers in public pre-primary schools had not participated in specialized training for the implementation of CBC and that instructional resources such as audio-visual and ICT equipment were insufficient, whereas textbooks were adequately available, are also supported by this study.

6. Conclusions and Implications

The results of this study have significant implications for the successful implementation of CBC in Kenya. The Kenyan government can use this information to project the future progress of the CBC, including the employment of more human resources to fill the gap of additional CBC-taught subjects and the provision of adequate resources for technical subjects and practical areas, such as swimming pools and well-equipped ICT departments. Overall, teachers' perceptions of CBC are balanced between learner-centered and teacher workload concerns. This study provides valuable insights into suggestions made by teachers for how to implement CBC more effectively. For instance, since CBC is learner-centered, requires the use of additional learning resources, especially for technical subjects. The lack of these resources hampers teachers' confidence in content delivery and the provision of appropriate interventions.

Education reform is crucial because it allows a nation to regularly review, amend, and assess its educational systems and initiatives. The present study has significant implications for education stakeholders, particularly the government, to identify ways to better support CBC teachers' participation in the new curriculum and overall effectiveness. Government investment in education justifies their belief in its importance as a public good. The fundamental pillar for a successful CBC implementation, as evidenced in the findings of the current study, is improved funding for schools to have adequate learning and teaching materials, while also ensuring that physical infrastructure, such as computer laboratories, is developed to enhance the usage of technologies.

Administrators can benefit from understanding the importance of supporting the provision of teaching and learning materials and educating teachers on contemporary pedagogical trends to facilitate successful cross-border collaboration. School leaders can learn about the implementation of CBC to meet teacher needs, comprehend the vision of the new curriculum, and follow specific guidelines for providing resources (Hays, 2006). Ultimately, they are responsible for implementing and evaluating the new curriculum in their schools, and their attitudes toward implementation can positively or negatively affect teachers based on their interests.

7. Limitations and Recommendations

This study employed a mixed-method convergent design to address the research topics and involved elementary teachers teaching CBC to students in grades 1–5 in the Homa-bay sub-county. The study had a small sample size of 21 participants in the qualitative strand, while the quantitative strand had 213 participants who completed a survey. While recognizing the cooperative ties within the larger social structure of the school and the impact of various variables on parental involvement in CBC implementation, this study was limited to examining the perspectives of teachers. The government and teachers were the primary subjects of this study, which did not explore parent engagement in Kenya's widespread adoption of CBC.

The present study recommends conducting a replication of the study using advanced quantitative methods. Predictor variables should be correlated to examine if they can predict outcome variables via predictive modeling or latent variable modeling. In addition, the study recommends the use of perception theory, rather than self-efficacy theory, to investigate teachers' opinions of the implementation of CBC. This approach may help create links between the identified issues and outcomes. Further research is also recommended to examine how parents perceive the implementation of CBC and how their involvement can aid learners in acquiring the necessary competencies and skills.

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Table 1. Interview questions (Prokes et al., 2021)

Constructs	Numbers	Item
Teachers' Perceptions	TP1	How long have you been teaching CBC?
	TP2	Why did you begin teaching CBC Classes?
	TP3	What are your impressions of CBC?
	TP4	What do you like or dislike about CBC?
	TP5	Do you think it is a good way for pupils to learn? Can you explain why or why not?
	TP6	Can you describe what you like or dislike about teaching CBC classes?
Self-efficacy	SE1	How satisfied are you with your interaction with learners in CBC classes?
	SE2	How confident are you in your ability to teach CBC Class?
	SE3	How confident are you with providing content instruction?
	SE4	How confident are you with specifically providing support on intervention?
	SE5	What has shaped or influenced your confidence to teach CBC?
Government Support	GS1	How did you learn to teach CBC class?
	GS2	How prepared were you when you first began teaching CBC class?
	GS3	What kind of support do you think teachers new to CBC need to be successful and confident?
	GS4	How can the government improve teachers' views of CBC?

Constructs	Numbers	Item
Digital Technologies in CBC	GS5	What kind of support do you think the government needs to give to novice teachers to be successful and confident in implementing CBC?
	DT1	Does your school have adequate computers? (If yes). How many?
	DT2	Do every CBC teacher in your school assigned to at least one laptop/desktop computer?
	DT3	Do CBC classrooms in your school use smart boards for teaching/learning purposes?
	DT4	How do CBC teachers handle digital technologies like the use of projectors, and smart boards (typing, recording, retrieving data, printing, photocopying), etc. in your school?
	DT5	Do you feel competent with digital learning resources? And are you comfortable using them? Explain further.

Table 2: Phase two survey questions (Prokes et al., 2021)

Constructs	Sub/constructs	Item
Demographics	Basic Information	
	BI1	Gender
	BI2	Approximately how many years have you been involved with CBC?
	BI3	How long have you been in elementary Education?
	BI4	Did you have any CBC training experience before teaching CBC classes?
Teachers Perceptions	Learner Focus	
	LF1	CBC learning is learner-centered
	LF2	Learners in CBC are more engaged
	LF3	CBC activities are more interesting.
	LF4	Class attendance has improved with introduction to CBC.
	LF5	CBC assessment is learner friendly
	General Tenets	
	GT1	I began working with CBC because it is a mandate by my employer.
	GT2	CBC's flexible passing supports the personal situations of learners.
	GT3	The teacher is more of a guide or mentor in CBC class.
GT4	CBC classes are unmanageably compared to the traditional 8-4-4 curriculum classes.	
GT5	Handling CBC learners' issues is easier than handling learners' issues in more traditional class settings.	
Self-Efficacy	Learners' Interaction	
	LI1	I am confident in my ability to interact with CBC learners in general.
	LI2	I reflect on my confidence in terms of interacting with CBC learners each time I teach a CBC class
	LI3	Teacher training or development focused on CBC helped me become confident in interacting with learners.
	LI4	My in-service training in CBC leads to higher confidence in interacting with learners
	LI5	I struggle to provide meaningful interaction with students since CBC learners don't require much interaction.
	Teaching Ability	
	TA1	I am confident in teaching CBC classes
	TA2	I am confident in the content of CBC classes
	TA3	I feel as confident in the content of CBC as I do in the traditional curriculum.
	TA4	I am confident in providing support or intervention for CBC learners
TA5	My confidence with respect to CBC is often driven by learners' performance in class or their feedback	

Constructs	Sub/constructs	Item	
Government Support	Training	T1 I learned to teach CBC through a specific training program, workshop, or seminar.	
		T2 Most of my experience as to teaching of CBC came from self-exploration or being “thrown into the deep end.	
		T3 Trial and error of learners’ performance is the most effective way to learn the specifics of CBC in the content of CBC classes.	
		T4 Teachers new to CBC must have a mentor or coteacher the first time they teach CBC.	
		T5 Teachers should take CBC training before being engaged in teaching	
	Resource Support	RS1 Creating mentorship programs or cohorts to share resources, and concerns would lead to a feeling of support	
		RS2 The government provides most of the CBC learning/teaching resources to the public elementary schools	
		RS3 Supporting teachers means providing required learning/teaching resources as well as providing a conducive environment to work in	
		RS4 To impact or affect teacher’s interest in CBC requires evaluating the infrastructure, compensation, and workload of grade 1-5 teachers	
		RS5 Showcasing learners’ or teachers’ success stories would improve CBC support from other non-educational stakeholders/donors	
	Digital Technology	Availability	A1 The school has adequate computers
			A2 Every CBC teacher is assigned at least one laptop/desktop computer.
			A3 CBC classrooms have smart boards
			A4 The school has at least one computer lab
			A5 The school has a central pool for digital technologies i.e. typing, printing, photocopying
Digital Use		DU1 I understand what digital literacy is	
		DU2 I use computers for CBC learning purposes	
		DU3 I feel competent in using digital learning resources	
		DU4 I feel comfortable using digital technologies	
		DU5 I would enjoy using digital technologies while teaching CBC classes	
		DU6 I feel threatened when others talk about digital technologies.	

Table 3: Summary of qualitative interview results for each construct.

Constructs	Results
Teachers’ Perceptions	<p>Most teachers were not prepared before they started teaching CBC classes.</p> <p>The cohort was teaching because it was a directive from the ministry of education. Some teachers liked the curriculum and most teachers viewed CBC as learner-centered.</p> <p>Most teachers disliked CBC. The inclusion of additional subjects, like Music, Home Science, Art, and Craft and Computer Studies has come up with more workload as pointed out by one of the respondents</p> <p>Some teachers felt that they were not satisfied particularly with the provision of intervention support.</p>
Self-efficacy	<p>Most teachers felt satisfied interacting with learners in CBC classes.</p> <p>Some teachers asserted that they are confident with the content delivery.</p> <p>On the contrary, some teachers felt they are not confident enough in content delivery.</p>
Government Support	<p>CBC training is inadequate. Conversely, the timing of the training sessions is also insensitive.</p>

Constructs	Results
Digital Technologies in CBC	There was a consistent agreement that the government provided adequate textbooks, in the ratio of one to one.
	The government needs to collaborate closely with the teachers.
	Many teachers felt that the government should introduce the CBC curriculum at the teachers' training colleges and universities.
	Most teachers recommended the need for proper collaboration between the government, teachers, and parents.
	Most teachers mentioned the need for training on ICT and the provision of digital technology materials to schools.
	Teachers use their smartphones to browse but, do printing and photocopying at nearby cyber cafes.
	Most teachers are not competent in using digital technologies even if they could be provided.

Table 4: The means and standard Deviations of the items (N = 41)

Construct	Sub-construct	Item	M	SD	
Teachers' perception			3.69	0.88	
	Learner focus		3.93	0.85	
		LF1	4.09	1.23	
		LF2	4.09	1.20	
		LF3	4.01	1.19	
		LF4	3.72	1.21	
	Teaching Tenents	LF5	3.74	1.33	
			3.45	0.85	
		TT1	3.29	1.33	
		TT2	3.80	1.13	
TT3		4.01	1.18		
Self-Efficacy	Teaching Ability	TT4	2.71	1.34	
		TT5	3.42	1.30	
			3.77	0.83	
		Learners' Interaction		3.72	0.95
			LI1	4.05	1.14
	LI2		3.96	1.15	
	LI3		3.91	1.17	
	LI4		3.96	1.21	
	Teaching Ability	LI5	2.71	1.32	
			3.82	1.07	
TA1		3.90	1.20		
TA2		3.86	1.19		
TA3		3.60	1.25		
Government Support	Teaching Ability	TA4	3.90	1.22	
		TA5	3.83	1.19	
			3.86	0.85	
		Training		3.7	0.88
			T1	3.96	1.11
	T2		3.27	1.28	
	T3		3.23	1.31	
	T4		3.87	1.25	
	Resource Support	T5	4.18	1.11	
			4.01	0.99	
RS1		4.05	1.18		
RS2		3.35	1.48		
RS3		4.28	1.11		
	RS4	4.19	1.11		

Construct	Sub-construct	Item	M	SD	
Digital Technology		RS5	4.16	1.11	
			2.81	0.76	
		Availability		2.12	1.08
		A1	2.16	1.12	
		A2	2.06	1.23	
		A3	1.96	1.19	
		A4	2.24	1.38	
		A5	2.19	1.37	
		Digital Use		3.49	0.83
		DU1	4.05	1.06	
		DU2	3.14	1.33	
		DU3	3.61	1.20	
		DU4	3.96	1.16	
		DU5	3.85	1.12	
DU6	2.32	1.31			

Table 5. Teachers Service Commission Homabay County summary of all schools per sub-county

SUB COUNTY	PRIMARY	SECONDARY
NDHIWA	153	52
HOMABAY	71	30
RANGWE	104	39
RACHUONYO EAST	94	47
RACHUONYO NORTH	169	55
RACHUONYO SOUTH	84	35
MBITA	111	36
SUBA	96	36
TOTAL	882	330

Table 6. Teachers Service Commission Homabay County summary of all teachers per sub-county

SUB COUNTY	PRIMARY	SECONDARY
NDHIWA	1201	483
HOMABAY	886	366
RANGWE	851	364
RACHUONYO EAST	775	526
RACHUONYO NORTH	1205	565
RACHUONYO SOUTH	799	435
MBITA	933	396
SUBA	724	340
TOTAL	7,374	3,475

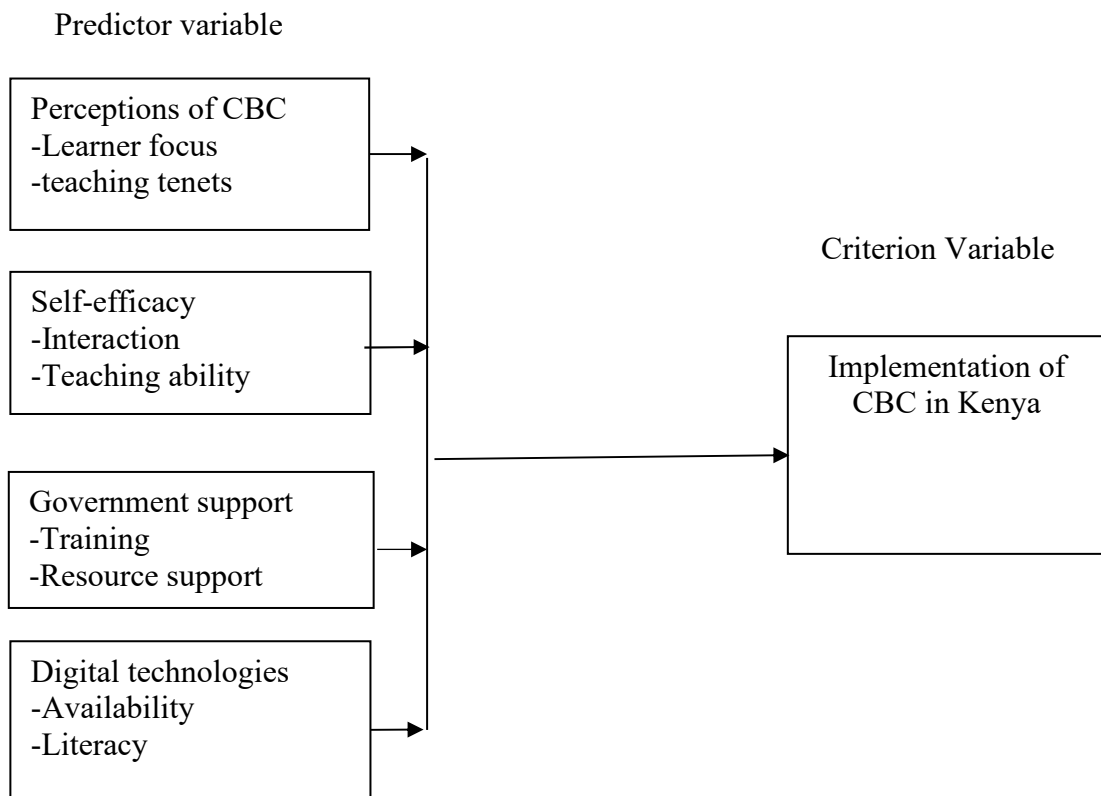


Figure 1. Conceptual Framework