

## Implementation of Competency-Based Curriculum in Junior Secondary Schools in Kenya

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### Abstract

*Sustainable Development Goal number four (SDG 4) on education seeks to ensure inclusive and equitable quality education and to advance opportunities for lifelong learning for everyone. The goal is essential for Kenya and Sub-Saharan Africa as it ensures that all children complete basic schooling by 2030. It also provides equal access to vocational training and achieves universal quality higher education. Kenya, like every other country in Sub-Saharan Africa, ratified the international document. All incorporated the provision of inclusive and high-quality education. Competency-Based Curriculum (CBC) was therefore adopted in the Kenyan educational system to address the development of competencies. This study surveyed the factors that influence the implementation of the Competency-Based Curriculum (CBC) in Kenya's educational system. The study used a mixed-method approach. Mixed methods research design was used since it is a procedure for collecting, analyzing, and "mixing" both quantitative and qualitative research and methods in a single study to understand a research problem. The approach applied to this study as qualitative and quantitative techniques were used to examine the variables. A sample size of 396 was adopted through the use of the formula. The sample size conformed to a confidence interval of 0.05, a confidence level of 95%, a Z-score of 1.96, and a standard deviation of 0.5. The study findings showed that schools had inadequate physical infrastructure and instructional resources. The study concluded that CBC adoption requires significant expenditures. The study also found that the implementation of CBC is threatened by a lack of adequate in-service training. The study recommended holding regular in-service training sessions for teachers. The study's recommendations emphasized on administration of in-service training to teachers, and adequate teacher staffing in schools. The study also recommended the creation of stakeholders' awareness about infrastructure adequacy. The study's findings would be significant in the development of educational policies and legal frameworks for the effective delivery of high-quality education in Kenya and Sub-Saharan Africa. The study's findings would provide data and would be beneficial to the field of comparative and international education.*

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## 1. Introduction

Developing sustainably, the UN member states are bound by SDG 4 to offer inclusive and high-quality education. Quality education is the modification of learning processes that ensure excellence in the acquisition of competencies by learners [27][28][29]. States that are UN members had to ratify the SDGs agreement requiring the provision of inclusive and high-quality education. Kenya was required to ratify this international agreement just like every other member state. A task force was established by the Kenyan government to realign education to the new Constitution and Vision 2030 [18]. To implement the task force's recommendations, the Kenya Institute of Curriculum Development Act No. 4 of 2013 required to be updated. To address the need for inclusive and high-quality education, the Competency-Based Curriculum (CBC) was implemented in the Kenyan educational system.

CBC ushered in the elimination of the 8-4-4 system. Although the goal of the 8-4-4 system was to produce well-rounded pupils, the emphasis switched to exam passing, leading to situations where students and teachers conspire to cheat on tests and incur exorbitant holiday tuition that is paid for by parents and guardians. The 8-4-4 system received criticism for being very theoretical. The CBC (2-6-6-3) approach could potentially foster originality and talent, hence eliminating the need for memorization. For the CBC to become ingrained the presidential working party on education was established to pave the way for a legal framework for the CBC besides, public participation was conducted and envisages the importance of public participation [19]. Teachers were trained to ease the rolling out of the program. In addition, classrooms were constructed and digital devices were procured for schools. Also purchased were textbooks. The Kenya Institute of Curriculum Development (KICD) developed a new curriculum for CBC. Government efforts were to ensure better delivery and quality of education. KICD developed the curriculum to support learners who are more interested in acquiring skills in a hands-on manner [18]. In addition, the CBC emphasizes the value of knowledge and the implementation of competencies in real-world settings. The Ministry of Education rolled it out in 2017. Through reading, numeracy, life skills, creativity, and values that influence societal development, the abilities attained are actualized. Essential components of CBC include infrastructure creation, instructional support materials production, skill development, and efficient assessment. According to Mackatiani et al. [8], curriculum design depends heavily on the stakeholders' engagement strategy. Yet, there wasn't much involvement when CBC first started.

Thus, CBC needs to have environments that can identify the connections between learning experiences. This is consistent with findings from GOK [18], who found that supportive environments helped people develop the knowledge and attitudes necessary for upholding human rights. Quality education in this aspect refers to student learning successes that come from facilitating its inputs (students, teachers, facilities, and supplies). Therefore, Salem [21] noted that students in some schools perform better than their counterparts in other schools. This implied that learning environments were more conducive in the respective categorized schools. Mackatiani et al., who applauded the role of resources in the implementation of quality education. Therefore, resources are essential for developing abilities [4][11][12][22].

Some of the learner-centered teaching and learning approaches used in CBC include case studies, role-playing, study tours, and problem-solving. According to random researchers several pedagogical models can be applied to suit the requirements of effective teaching and

learning [1][8][22]. After the CBC was adopted, assessment activities took the role of conventional exams. Learner abilities and capacities are assessed via peer and self-assessments, interviews, presentations, projects, observations, and portfolios. The review and change of the teaching and learning processes form the foundation of learning. As a result of the CBC resources' adoption, current methods of teaching, learning, and assessment must change. Several pedagogical models can be applied to suit the requirements of effective teaching and learning. After the CBC was adopted, assessment activities took the role of conventional exams. Learner abilities and capacities are assessed via peer and self-assessments, interviews, presentations, projects, observations, and portfolios. The review and change of the teaching and learning processes form the foundation of learning. In light of this, indicated that in-service courses play an important role in improving teaching pedagogues [12]. A change in the teaching methods is necessary to accommodate the adaptation of the teacher in-service training programs. Both infrastructure and instructional resources must be available to support the shift. Consequently, the goal of the study was to ascertain whether there were sufficient resources for the implementation of CBC in public and private primary schools in Kakamega County.

## **2. Summary of the related literature review**

From the related literature review; scholars, government organizations, and institutions addressed various factors that influenced the implementation of quality education in schools. The reviewed literature revealed that there were factors that influenced the quality of Education schools. The global scholars, however, did not underscore the role of the factors mentioned above. The study therefore established that factors such as school physical facilities, instructional materials, and teachers' preparedness were crucial in the implementation of competency-based curriculum in Junior Secondary schools. In this regard, the variables addressed in the study play a significant role in the implementation of a competency-based curriculum.

According to various studies it was established that physical facilities, instructional materials, and teachers' preparedness influenced the implementation of quality education [2][3][4][5][15][24][29][30]. In this regard, there was a consensus from the reviewed literature conducted that there were factors influencing the implementation of competency based curriculum in junior secondary schools. The studies established that physical facilities, instructional materials, curriculum supervision, and teachers' preparedness influenced the implementation of the competency-based curriculum in Junior Secondary schools.

From the related literature reviewed, the research gap identified was that minimal studies had been conducted on factors influencing the implementation of competency-based curricula in Junior Secondary schools. This study, therefore, sought to investigate the extent to which physical facilities; instructional materials; and teacher preparedness influenced the implementation of the competency-based curriculum in Junior Secondary schools.

## **3. Purpose of the study**

The purpose of this research was to investigate the extent to which CBC is being implemented in junior secondary schools in Kakamega County, Kenya.

### **3.1. Objectives of the study**

The study was guided by the following objectives:

- To survey the availability of CBC infrastructure in primary schools.
- To assess the availability of CBC instructional materials in primary schools.
- To establish teachers' preparedness in the implementation of CBC in primary schools.

### **3.2. Hypothesis**

H<sub>0</sub>: Physical infrastructure, Instructional materials, and teachers' preparedness do not significantly influence the implementation of CBC primary schools.

## **4. Statement of the problem**

In line with Sustainable Development Goal # 4, quality education strives to "provide inclusive and equitable quality education and promote lifelong learning opportunities for all." As a result, the objective guarantees that by 2030, all boys and girls will have received a free education that meets high standards. Kenya domesticated the international legal instrument on quality inclusive education. She had to switch to the CBC educational system from the 8-4-4 system. The government established several structures to carry out the scheme. A presidential working party on education was established to pave the way for a legal framework for CBC. Public participation had to be conducted. Teachers were trained to ease the rolling out of the program. Classrooms were constructed and digital devices were procured for schools. Also, learning materials were purchased. The Kenya Institute of Curriculum Development (KICD) had to develop a new curriculum for CBC. Despite the structures put in place by the government, there is a public outcry on the inadequacy of human resources, physical infrastructure, and learning materials for implementing CBC. The required resources don't seem to be available in schools. Without these resources, the 21<sup>st</sup> century skills won't be actualized. Resource shortage leads to hindering the achievement of SDG 4. This might potentially prevent the fourth sustainable development goal, which calls for high-quality education. It is on this basis that this study investigated the implementation of the Competency-Based Curriculum in Kakamega County.

## **5. Significance of the study**

The study's findings would be significant to policy development and implementation. Policy developers would come up with educational policies and legal frameworks for the effective delivery of high-quality education in Kenya and Sub-Saharan Africa. Policy implementers would ensure adequate resources would be availed for the implementation of quality education. This would help Kenya realize the achievement of Vision 2030. Education stakeholders would also benefit from the study's findings. The stakeholders would appreciate the resources required for putting excellent education into practice. The findings of the study form a body of knowledge. The findings will add to the growth of knowledge. The study's availability of both quantitative and qualitative information on inclusive and high-quality education would be beneficial as the new data might be added to the field of comparative and international education. Researchers would find it as an appropriate area of study.

## 6. Theoretical construct

Implementation theory guided this study. Mitchell [25] advanced the implementation theory. Implementation theory is an area of research in game theory concerned with whether a class of mechanisms (or institutions) can be designed whose equilibrium outcomes implement a given set of normative goals or welfare criteria. The implementation theory is, therefore, a specified set of planned and intentional activities designed to integrate evidence-based practices into real-world settings. Implementation theory offers guidance when implementing and sustaining education evidence-based interventions. The theory is relevant to this study as it focuses on whether institutions can be designed in a manner that their outcomes implement a given set of normative goals. Approaches, practices, and interventions are delivered in real school and classroom settings. Principals and teachers may decide to adapt elements of a program, and barriers in the school system may prevent an approach from being fully realized. Implementation strategies such as training and ongoing teacher support are also, important to consider in efforts to encourage positive student outcomes. This theory, therefore, stresses the interaction between resources and learners.

## 7. Research methodology

The study used a mixed-method approach. Mixed methods research design was used since it is a procedure for collecting, analyzing, and “mixing” both quantitative and qualitative research and methods in a single study to understand a research problem. The approach applied to this study as qualitative and quantitative techniques were used to examine the variables. When qualitative and quantitative research methods are combined and integrated into one study, the process is known as “mixed methods research.” The overarching goal and fundamental tenet of mixed methods research are to use both quantitative and qualitative approaches to yield a more comprehensive grasp of study variables. The target population consisted of 1200 Junior secondary schools. The total number of 1200 schools also represented the target population for head teachers. The target for teachers was 12000 while the target for pupils was 48000. The target population for Curriculum support officers (CSOs) was 12. While the target population for Parents Association members (PAs) was 12000. The total target population was 73212. From the target population, a sample size of 396 was adopted through the use of [9]. There are twelve sub-counties in Kakamega County. Subsequently, the study randomly identified four Junior Secondary Schools in each sub-county. Also, 192 students (2 girls and 2 boys per school) and 96 class teachers (1 male teacher and 1 female teacher) were included in the sample. Besides, 48 head teachers, 48 Parents Association chairmen (PAs), and 12 Curriculum support officers (CSOs) were sampled. The total number of participants was 396. The sample corresponded to a confidence interval of 0.05 and a confidence level of 95%. It corresponded to a Z-score of 1.96 and a standard deviation of 0.5.

### 7.1. Data collection techniques

Data were gathered in educational institutions including schools and offices. The respondents were given the questionnaires by the researchers. Primary data for the study was gathered by having respondents fill out the questionnaires. Researchers' observations and document analysis were used to complement the information acquired. Following the fieldwork, the researchers collected every completed questionnaire for data cleaning, juxtaposition, coding, and ultimately data analysis.

## **7.2. Data analysis**

Data analysis entailed organizing, summarizing, and synthesizing information to offer the information required for description. The data were coded and categorized using thematic analysis based on sub-themes connected to the study's goal. The analysis entailed extracting meaning from qualitative data based on surveys and a review of the literature. The study's qualitative data came from questionnaires. An examination of qualitative data, attitudes, and opinions of respondents was carried out in this case. The analysis was then used to produce descriptive statistics. This resulted in the data being coded. The factors of the study, namely power and authority, school regulations and procedures, and curriculum, were used to categorize qualitative data. The findings were summarized in frequency tables before being collected into a report.

## **7.3. Data and data sources**

The data used were acquired from respondents in schools and education offices on variables that influence the implementation of the competency-based curriculum. The outcomes of CBC implementation have an impact on the quality and inclusive education of kids in public and private primary schools. The statistics were on the inefficiencies that influence CBC implementation in all primary schools.

## **7.4. Data collection instruments**

To assess the implementation of CBC, part of multifactor implementation questionnaires was used. Questionnaires were administered to teachers and students. While interview schedules were administered to CSOs, principals, and PA members. Document analysis assessed studies that were conducted worldwide that examined and checked the validity and reliability of the data. Thus, data-gathering tools have also been used in national and international investigations. The study used a 12-item questionnaire employing a five-point Likert scale to assess the implementation of CBC. The questionnaires were specifically designed to measure aspects of implementation. A set of 12 closed-ended multifactor implementation questionnaire items were developed. This assessment targeted academic staff, parents, and students on the version of the questionnaires that were used. The five-point Likert scale measures behavior or attitude frequency. A score of 1 means "not at all," and 5 means "at most." Several 3 suggest a moderately frequent behavior or attitude, while 1 and 2 show varied degrees of infrequency. According to respondents, a higher mean score indicates very effective implementation, whereas a lower mean score indicates less effective implementation. The study also used Cronbach's alpha to assess the reliability. The result indicated a Cronbach alpha of 0.7 for 12 items of implementation of CBC.

## **7.5. Data collection procedure**

The researchers sought authorization from Sub-County Directors of Education. Further authority was sought from principals in the targeted institutions to distribute the questionnaires to the respondents. The researchers organized interviews with the principals of Junior secondary schools. The researchers further asked the principals for assistance in organizing interviews with the PAs' members CSOs. The principals also helped in getting authority for their children to participate in the study. The researchers collected completed questionnaires from principals, CSOs, PA members, teachers, and students on the designated interview days. The researchers performed all interviews and document assessments with

utmost confidentiality. The researcher acquired qualitative responses from respondents. Additionally, the researcher asked for and carefully examined authorization to access the specified relevant materials to check and investigate input by teachers and students using questionnaires.

**7.6. Data analysis procedures**

Data collection was finalized after the questionnaires were reviewed for accuracy, completeness, and relevance. The researchers then rated, processed, and sorted the qualitative data into thematic categories that made sense in light of the research objectives. Statistical analysis was performed on the coded data using SPSS version 21 on a computer. The quantitative data obtained was analyzed using descriptive statistics, frequency distributions, and percentages. Prescribed interviews yielded qualitative data, which was combined with manually keyed information, organized according to themes derived from the study topic, and presented with descriptive text and in-text citations. Regression analysis was used to test the hypothesis of the study. At a confidence interval of 0.05, a confidence level of 95%, a Z-score of 1.96, and a standard deviation of 0.5 the researchers tested the hypothesis on whether or not physical infrastructure, instructional materials, and teachers' preparedness influenced implementation of Competency-based curriculum. Data analysis was done based on the objectives of the study.

**7.7. Discussions**

This study surveyed the influence of the implementation of CBC in primary schools in Kakamega County. The study was guided by the following objectives: To survey the availability of CBC infrastructure in primary schools; to assess the availability of CBC instructional materials in primary schools; and to establish teachers' preparedness in the implementation of CBC.

The study sought views from the Curriculum Support Officers (CSOs), Principals, and Parents Association chairmen (PAs) relating to the availability of CBC infrastructure. Their perceptions are captured in [Table 1].

Table 1. Perceptions of education officers, Principals, and PAs on the adequacy of infrastructure

Perceptions	Junior Secondary Schools					
	Principals		PAs		CSOs	
	n	%	n	%	n	%
Adequate	10	20.8	10	20.8	0	0
Inadequate	38	79.2	38	79.2	12	100
Total	48	100	48	100	12	100

The aforementioned table shows how CSOs, Principals, and PAs responded to the issue of adequacy of infrastructure in junior secondary schools. According to the respondents, there are issues with the delivery of content due to the unavailability of physical infrastructure in Schools. As illustrated in Table 1, 20.8 percent of head teachers in Junior Secondary schools indicated that schools had adequate infrastructure for CBC Education participation. Besides, 20.8 percent of PAs noted that schools had adequate CBC infrastructure for Education participation. However, none of the CSOs indicated that schools the adequate infrastructure for CBC Education participation.

Further findings evidenced in [Table 1] revealed that 79.2 percent of Principals in Junior Secondary schools indicated that schools had inadequate infrastructure for CBC Education

participation. Also, 79.2 percent of PAs noted that schools had inadequate CBC infrastructure for Education participation. However, 100 percent of the CSOs indicated that schools had inadequate infrastructure for CBC Education participation.

Overall, the respondents noted that Physical infrastructure was inadequate in Junior Secondary Schools. The findings concur with Mackatiani et al., [11] who noted that there were inadequate physical facilities in schools for the implementation of quality education. This implied that the inadequacy of physical infrastructure was a hindrance to the implementation of a Competency-based Curriculum in junior secondary schools.

The second objective of the study was to assess the availability of CBC instructional materials in Junior Secondary Schools. The study, therefore, assessed the adequacy of instructional materials. The instructional materials interrogated were textbooks, writing materials, and teaching learning materials. To determine the adequacy, on a Likert scale of one to five, views were sought from Curriculum Support Offices (CSOs), teachers, and pupils. Their perceptions were captured in [Table 2].

Table 2. Perceptions on the adequacy of instructional materials

Likert scale rating	Junior Secondary schools					
	CSOs		Teachers		Pupils	
	N	%	N	%	N	%
Very high(5)	0	0	0	0	0	0
High(4)	0	0	0	0	0	0
Moderate(3)	3	25	10	10.4	30	15.6
Low(2)	9	75	86	89.6	162	84.4
Very low(1)	0	0	0	0	0	0
Total	12	100	96	100	192	100

After analyzing data on the adequacy of physical infrastructure, the study interrogated CSOs, teachers, and students' views on the availability of instructional materials. Likert scale of 1-5 points was used to measure respondents' attitudes. Scale 1 indicated low availability, while scale 5 indicated a high level of adequacy. The responses of CSOs, teachers, and students about the level of availability for implementation of CBC had issues. The responses of CSOs, teachers, and students about the availability of instructional materials for implementation of CBC had issues.

Considering the respondents' responses in [Table 2], none of the respondents indicated that the adequacy of instructional materials was very high, high, or very low. However, 25 percent of CSOs indicated that the level of instructional materials in Junior Secondary Schools was moderate. While 75 percent of the CSOs noted that the level of instructional materials in primary schools was low, besides. 10.4 percent of teachers in primary schools indicated that the level of instructional materials was moderate. While 89.6 percent of teachers indicated that it was low. Also, 15.6 percent of pupils in primary schools indicated that the level of instructional materials was moderate. While 84.4 percent of the pupils in Junior Secondary Schools noted that the level of instructional materials was low.

Overall, the respondents noted that the level of adequacy of instructional materials was low in Junior Secondary Schools. The findings concur with Mackatiani [2] who noted that there were inadequate instructional materials in schools for implementation of quality education. This implied that a Competency-based Curriculum is not being effectively implemented due to the inadequacy of instructional materials.



The third study objective sought to establish teachers' preparedness in the implementation of CBC. To establish the extent, the study sought views from Principals, teachers, and CSOs their views were captured in [Table 3].

Table 3. Head teachers, teachers and CSOs views on teachers preparedness

Likert scale rating	Junior Secondary Schools					
	Principals		Teachers		CSOs	
	N	%	n	%	N	%
Very high(5)	0	0	0	0	0	0
High(4)	0	0	0	0	0	0
Moderate(3)	20	41.7	30	31.3	12	100
Low(2)	28	58.3	66	68.7	0	0
Very low(1)	0	0	0	0	0	0
Total	48	100	96	100	12	100

After analyzing data on the adequacy of instructional materials, an interrogation of principals, teachers, and CSOs' views on Teachers' preparedness was conducted. Likert scale of 1-5 points was used to measure respondents' attitudes. Scale 1 indicated low preparedness, while scale 5 indicated a high level of preparedness. The responses of CSOs, principals, and teachers about the level of teachers' preparedness for implementation of CBC had issues. Regarding the respondents' responses in [Table 3], 41.7 percent of Principals in Junior Secondary Schools indicated that the level of teachers' preparedness was moderate. While 58.3 percent of the principals noted that the level of teachers' preparedness was low. Also, 31.3 percent of the teachers in Junior Secondary Schools indicated that the level of teacher preparedness was moderate. While 68.7 percent of the teachers noted that the level of teachers' preparedness was low. However, 100 percent of the CSOs indicated that the level of teachers' preparedness in Junior Secondary Schools noted that the level was moderate.

Further findings from data contained in [Table 3], indicated that none of the principals, teachers, and CSOs indicated that the level of teacher preparedness was very high, high, or very low. Also, none of the CSOs indicated that teachers' level of preparedness was low.

Overall, most respondents noted that the level of teachers' preparedness in Junior Secondary schools was wanting. The findings concur with Mackatiani [13] who noted that there were inadequate in-service courses for teachers in both public and private primary schools for the implementation of quality education This implied that CBC is not being effectively implemented due to a lack of teachers' preparedness.

The study further sought to establish the adequacy of teachers in Primary schools. Views were sought from principals, teachers, and CSOs their views were captured in [Table 4].

Table 4. Principals, teachers, and CSOs views on adequacy of teachers

Opinion	Junior Secondary Schools					
	Principals		Teachers		CSOs	
	n	%	n	%	N	%
Adequate	5	10.4	10	5.2	2	16.7
Inadequate	43	89.6	86	94.8	10	83.3
Total	48	100	96	100	12	100

After analyzing data on teachers' preparedness, I moved to assess the adequacy of teachers in junior secondary schools. Adequacy of teachers would impact positively teacher preparedness for the effective implementation of CBC. The responses of CSOs, principals,

and teachers about the adequacy of teachers for implementation of CBC had issues. Considering the respondents' responses in [Table 4], 10.4 percent of Principals in Junior Secondary Schools indicated that the staffing of teachers was adequate in their school. While 89.6 percent of the principals noted that staffing of teachers was inadequate in schools. Also, 5.2 percent of the teachers in primary schools indicated that staffing of teachers was adequate in schools. While 94.8 percent of the teachers noted that the staffing of teachers was inadequate in schools. However, 16.7 percent of the CSOs indicated that the staffing of teachers in schools was adequate. While 83.3 % of the CSOs noted that the staffing of teachers in schools was inadequate.

Overall, the respondents noted that the staffing of teachers in primary schools was inadequate. The findings concur with Mackatiani [12] who noted that inadequate teaching staff leads to the usage of teacher-centered approaches that don't promote learning achievement. This implied that CBC cannot, therefore, be effectively implemented due to the inadequacy of teachers.

The study further sought to establish whether stakeholders were involved in the discussion on the introduction of CBC. Views were sought from principals, teachers, and PAs. Their views were captured in [Table 5].

Table 5. Principals, teachers and PA's views on participation

Views	Junior Secondary schools					
	Principals		PAs		CSOs	
	n	%	n	%	N	%
Involved	24	50	0	0	6	50
Not involved	24	50	12	100	6	50
Total	48	100	12	100	12	100

After analyzing data on the adequacy of teachers, the study assessed Principals, CSOs, and PA's views on public participation before the launching of CBC in junior secondary schools. Public participation impact positively effective implementation of CBC. The responses of CSOs, principals, and PAs about public participation before the inception implementation of CBC had issues. Regarding the respondents' responses in Table 5, 50 percent of the principals indicated that education stakeholders were sensitized to CBC before the inauguration. Besides, 50 percent of CSOs indicated that education stakeholders were involved in public participation before the inauguration of CBC. Also, 100 percent of the PAs noted that there was no participation.

Further findings from [Table 5] revealed that 50 percent of the principals indicated that education stakeholders were not sensitized to CBC before the inauguration. Besides, 50 percent of CSOs indicated that education stakeholders were not involved in public participation before the inauguration of CBC. Also, none of the PAs noted that there was public participation before the implementation of CBC.

Overall, all respondents in primary schools indicated that there was minimal public participation before the inauguration of CBC. This implied that stakeholders were not involved in the inaugural process of CBC. Hence failure to sensitize the public to the importance of CBC impacted negatively on the implementation process. This is in concurrence which envisages the importance of public participation [19].

To determine the influence of physical infrastructure, instructional materials, and teacher preparedness on the implementation of quality education in junior secondary schools, the hypothesis was tested. The hypothesis stated that;  $H_0$ : Physical infrastructure, Instructional materials, and teachers' preparedness do not significantly influence the implementation of

CBC primary schools. The results of the Regression analysis done to test the hypothesis are indicated in [Table 6].

Table 6. Regression model of Influence physical facilities, instructional materials, and teacher preparedness

				Change statistic				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.591 <sup>a</sup>	.349	-.140	.509	.349	.714	9	12	.689

a. Predictors: (Constant), wall charts, teaching aids, textbooks, teachers' reference books, writing materials, classrooms, workshops, latrines, administration blocks, in-service courses, staffing, approaches

b. Dependent Variable: Competency-based curriculum

Concerning the data contained in [Table 6], the significance level is at 0.05 ( $p= 0.05$ ). P refers to the significant value. Therefore,  $P=0$  means no significance, while  $P>0$  implies negative significance and  $P<0$ , refers to positive significance. The F statistic of 0.689 was not significant at  $p< 0.05$ . The relationship  $F(9, 12) = 0.714$ .  $p>0.05$ ,  $R=.349$  reflects 34.9 percent. Since the F-test was greater than the p-value, then the null hypothesis should be rejected. The null hypothesis was therefore rejected, and the variables predicted the implementation of CBC. The rejection of the hypothesis implied that X (instructional materials, physical infrastructure, and teachers' preparedness) predicted implementation of the competency-based curriculum by 34.9 percent. The remaining 65.1% can be attributed to unexplained variables which were not covered by the study. The unexplained variability includes factors like learners' characteristics, parental characteristics, and home-based factors. The study, therefore established that physical infrastructure, instructional materials, and teachers' preparedness predicted implementation of Competency-based Curriculum in primary schools by 34.9 percent. The findings are consistent with those of UNESCO, which revealed that conducive environments contributed to the acquisition of skills and attitudes [29].

## 8. Major findings

The study findings revealed that there was no adequate physical infrastructure in schools for the implementation of a Competency-based Curriculum. Physical infrastructure is crucial for learning achievement. Therefore, the lack of physical infrastructure was a hindrance to the attainment of competencies. This implies that the lack of physical infrastructure is an obstacle to the implementation of a Competency-based Curriculum.

Further study findings noted that the level of adequacy of instructional materials was low in junior secondary schools. Instructional materials promote the acquisition of competencies. Lack of instructional materials hinders learning achievement that implied that instructional materials for the implementation of a Competency-based Curriculum were insufficient in junior secondary schools.

It was also revealed that there was a lack of sufficient teacher preparedness. This implied that there were inadequate in-service courses for teachers for proper implementation of CBC. Subsequently, the lack of sufficient in-service courses poses a threat to the implementation of a Competency-based Curriculum.

Besides, the study findings revealed that the staffing of teachers in Junior Secondary Schools was inadequate. This implied that CBC cannot be effectively implemented due to the inadequacy of teachers.

The study findings further revealed that stakeholders had not been adequately sensitized on the provision of infrastructure and instructional materials.

Finally, the study revealed that instructional materials, physical infrastructure, and teachers' preparedness predicted the implementation of a competency-based curriculum by 34.9 percent. This implies that there is a statistical significance between resources and the implementation of CBC.

## **9. Conclusions**

The study concluded Kenya has migrated from the 8-4-4 system of Education to the Competency-based curriculum system. The Competency-based curriculum system was rolled out in 2017. However, the CBC system has been faced with some challenges. The inadequacy of physical infrastructure has hurt the implementation of CBC in Junior secondary schools. Besides, the availability and usage of instructional materials in Junior secondary schools is wanting. Teachers' preparedness influences the implementation of CBC. In-service courses for pedagogical approaches were not administered to teachers. Lack of in-service courses had a negative influence on the achievement of CBC competencies in junior secondary schools.

Also, public participation was minimal at the initiation stage of CBC. Minimal public participation negatively affected the provision of physical infrastructure and learning resources to schools. The physical infrastructure, instructional materials, and teacher preparedness predicted the implementation of CBC in primary schools by 34.9 percent. This implied that besides the variables under investigation, other factors influence the implementation of CBC. Physical infrastructure, instructional materials, and teachers' in-service courses, therefore, contribute to the effective implementation of CBC in junior secondary schools.

However, physical infrastructure, instructional materials, and teachers' in-service courses were inadequate. Subsequently, the inadequacy negatively affected the implementation of CBC in junior secondary schools. In summary, the study concluded that inadequacy of physical infrastructure, instructional materials, and lack of teachers' preparedness had a diverse effect on the implementation of Competency-based Curriculum in schools.

## **10. Recommendations**

The study recommended that a legal framework be developed to enable the National Treasury to provide adequate capitation to schools for procurement of physical infrastructure, instructional materials, and teacher preparedness services. Also, the study recommended that stakeholders be sensitized to supplement in provision of adequate infrastructure and instructional materials. The initiatives will positively impact the implementation of CBC. The study further suggested mounting in-service courses for teachers every quarter. The in-service courses should be specifically for teaching-learning methods for the promotion of learning achievement. The courses should be organized by the Ministry of Education.

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## Conflict of interest

In this study, the Authors declare that they do not have any conflict of interest.

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