International Journal of Social and Development Concerns

ISSN 2524-1478 (Online)

Vol. 21 | Post COVID-19 Recovery and Sustainable development
Vol. 21 Article 3 | September 2024


# *Influence of infrastructure on the implementation of CBC in Catholic Private Primary schools in the Catholic Diocese of Homabay, Kenya*

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**Cite as:** *Thiruaine, S. K., Nzivu, E. N., & Wambiya, P. (2024). Influence of infrastructure on the implementation of CBC in Catholic Private Primary schools in the Catholic Diocese of Homabay, Kenya. International Journal of Social and Development Concerns, 21(3), 32–48. https://doi.org/10.5281/zenodo.13765139*



**Abstract:** *This research aims to investigate the influence of infrastructure in the implementation of competency-based curriculum in the Catholic private primary schools in the Catholic Diocese of Homa Bay, Kenya. The study was anchored on the Constructivist Theoretical Framework advanced by Lev Vygotsky in 1934. The study employed mixed methods research design where qualitative and quantitative approaches were employed. The quantitative method utilized a cross-sectional design while the qualitative adopted a phenomenological research design. The study targeted all 25 schools, 25 head teachers, 325 teachers of grades 1-6, and 2 education secretaries. cluster sampling was employed to sample 13 schools, and 13 headteachers were automatically included. Using stratified random sampling, 98 teachers were sampled while 2 education secretaries were chosen using purposive sampling. Quantitative data collection employed questionnaires while qualitative data employed interview guides. From the data analyzed, it was evident that there were positive findings which revealed that sports and outdoor facilities were adequate while, there was also availability of educational software to facilitate CBC implementation. Findings of the study also confirmed that classrooms, laboratories and laboratory equipment, projectors, and learning equipment were insufficient and inadequate to facilitate the implementation of CBC. The study recommended that the school infrastructure be improved, equip classrooms and laboratories, and provide essential learning tools such as computers and projectors. Collaboration among different donors be encouraged, and regular infrastructure assessment conducted which would establish the gaps and work on them. Training teachers on using new tools and engaging the community in infrastructure support are essential for creating an effective learning environment and achieving successful CBC implementation*

***Key Words:*** *Infrastructure, Competency Based Curriculum, Implementation, Teaching/Learning Resources, School Environment*

## 1.1 Background of the Study

Education is essential to any nation's political, social, and economic advancement (Republic of Kenya, 2012). As a result, education influences the world of future generations and is the most practical tool

available to society to mitigate the effects of future challenges. According to Breen (2014), the standard of education determines a country's ability to develop as education is a crucial component of economic advancement for any given country at any given moment.

The nature and meaning of teaching and learning have been impacted by the dynamic society, the growing demand for the acquisition of 21st-century skills, the introduction of technology into daily life, and the globalization of the labor market. Because of this, it is crucial to make sure that everyone has the newly recognized skills for personal and societal development (Pamier, 2017). Therefore, to meet the demands of the dynamic society in the labor market today, a competency-based curriculum has been recommended. The curriculum has undergone ongoing changes in response to contemporary developments and progress in science and technology. To adequately prepare students for the upcoming challenges in the fast-evolving global environment, all East African countries and most world nations have recognized the need to overhaul their education systems to competency-based curriculum.

Competency-based curriculum reforms have been widespread from a global perspective for instance, CBC emerged in the USA in the 1970s. School infrastructure is crucial for the effective implementation of the Competency-Based Curriculum (CBC) in the United States. Since its inception, CBC has emphasized personalized learning and flexible educational environments to support diverse student needs and learning styles. Adequate infrastructure such as modern classrooms, advanced technology, and flexible spaces for collaborative and individualized instruction—enables schools to effectively deliver the CBC's student-centered approach. For instance, digital tools and resources are vital for assessing student progress and adapting instruction accordingly, which are core components of CBC. Recent studies highlight that investment in educational infrastructure enhances instruction quality and supports the successful adoption of innovative curriculum (Smith & Lee, 2023).

According to Sotco & Mwandanyi, (2018), the economic downturn brought on by the high rate of youth unemployment in the United Kingdom led to the diffusion of the CBC concept to European nations. The existing educational system at the time was mostly criticized for producing graduates with inadequate levels of the requisite abilities. Since CBC was introduced, the European Education System has made remarkable strides, allowing graduates to acquire the necessary skills for the labor market, (Sotco et al, 2018).

The high rate of youth unemployment in France led to the introduction of CBC, which was made mandatory in 2007, while Mexico switched from the previous educational system to CBC in 2009. Japan implemented the CBC reform in 1998 under the slogan ikirichikara' to foster a zest for living. This was done to instill optimism and promote a desire to learn among students. Recent developments emphasize integrating 21st-century skills such as critical thinking, creativity, and digital literacy into the curriculum (OECD, 2021).

Finland's CBC framework prioritizes equity and personalized learning, adapting to include digital competence and sustainable development in its curriculum (Sahlberg, 2022). The Fundamental goal of the system is to offer equal opportunity for all its inhabitants. Scotland's CBC, established in 2010–2011, focuses on developing competencies aligned with contemporary challenges. Recent updates highlight the integration of digital literacy, sustainability education, and global citizenship into the curriculum (Scottish Government, 2023). Kurikulum (2013), aims to improve educational quality and relevance

nationwide. Recent efforts include revising the curriculum to meet global standards, enhancing teacher training, and addressing educational disparities (UNESCO, 2023).

Focusing in Africa, a study by Akpan & Salihu (2023) investigated how the existing infrastructure in Nigerian primary schools affects the implementation of the Competency-Based Curriculum. The study revealed that many Nigerian primary schools face significant infrastructural deficits, including overcrowded classrooms, inadequate laboratories, and insufficient learning materials. These deficiencies hinder the effective application of the CBC, which requires modern facilities and resources to facilitate hands-on learning and individualized instruction. The study highlighted the need for substantial investment in school infrastructure to support the CBC framework. It suggested that without addressing these infrastructural challenges, the full potential of the CBC cannot be realized. Recommendations included increasing government and private sector funding, upgrading facilities, and providing continuous professional development for teachers to maximize the benefits of the CBC.

A similar study by Nsubuga & Mulindwa (2023), aimed to assess how infrastructure within Ugandan primary schools influences the implementation of the Competency-Based Curriculum. The research found that many Ugandan schools are struggling with inadequate infrastructure, such as poorly maintained classrooms, lack of science laboratories, and insufficient educational technology. These issues directly impact the effectiveness of the CBC, which emphasizes practical and interactive learning approaches. Schools with better infrastructure were found to be more successful in implementing the CBC, indicating a strong link between physical resources and educational outcomes. The study called for targeted infrastructural improvements, including upgrading facilities, providing adequate teaching resources, and ensuring consistent access to electricity. It also emphasized the need for collaborative efforts between the government, educational stakeholders, and local communities to enhance the implementation of the CBC.

Essentially, teaching and learning infrastructure such as computers and laboratories are vital in developing learning competencies among learners. The presence and conditions of infrastructure such as classrooms, libraries, laboratories, sports fields, water supply, and power influence the acquisition of competencies greatly. Learners have boundless opportunities to learn a variety of things when infrastructure is available and in good condition (Mulenga & Kabombwe 2019). However, infrastructure is still a hiccup in the ongoing implementation of CBC in Kenya. As evidence, of the physical infrastructure of the nation's institutions of learning, 22.9% of the responses derived from the Presidential Working Party on Education Reforms report mentioned overcrowded classrooms. On the other hand, poor ICT infrastructure for successful digital learning was mentioned in 23.2% of the submissions. This general outlook of the nation at large is a clear replica and evidence of what catholic private primary schools are experiencing in Homabay Diocese.

In recent years, the implementation of Competency-Based Curriculum (CBC) in Kenyan schools has highlighted the critical role of infrastructure in educational effectiveness (Mugambi & Ndegwa, 2022). Studies show that adequate infrastructure, including classrooms, laboratories, and learning tools, is essential for the successful delivery of CBC, which emphasizes learner-centered and experiential education (Wanjiku, 2023). However, in the Catholic Diocese of Homa Bay, research indicates significant infrastructure deficiencies in private primary schools, such as overcrowded classrooms and insufficient learning resources, which hinder CBC implementation (Ochieng & Omondi, 2024). This

underscores the urgent need for targeted investments and improvements in school infrastructure to support the CBC framework and enhance educational outcomes in the region (Kariuki et al., 2023).

This study aims to address several gaps in the existing research on CBC implementation and more specifically the influence of infrastructure on the implementation of CBC in Catholic Private Primary schools in the Catholic Diocese of Homabay, Kenya**.** Previous studies have recognized the value of school-related factors in the ongoing implementation of CBC in Kenya. However, from the researcher's reviewed studies, there is no known study focusing on the infrastructure in the Catholic Private Primary schools in the Catholic Diocese of Homabay, Kenya. Furthermore, it is worth noting that most existing studies in the field have predominantly concentrated on the context of CBC implementation in public primary schools.

### 1.2 Statement of the Problem

In the Catholic Diocese of Homa Bay, Kenya, the effective implementation of the Competency-Based Curriculum (CBC) in private primary schools is critically hindered by inadequate infrastructure (Ochieng, 2023). Despite the CBC's emphasis on learner-centered approaches and practical experiences, many schools face severe shortages in essential resources, including classrooms, laboratories, and learning tools. This infrastructural deficit results in overcrowded classrooms, insufficient laboratory equipment, and a lack of modern educational technology, all of which undermine the curriculum's effectiveness. According to Wanjiku, 2023, the problem is exacerbated by inconsistent electricity supply and limited access to up-to-date educational software, further impeding the successful execution of the CBC. This situation highlights a significant gap between the intended educational reforms and the actual conditions within these schools, necessitating urgent attention to infrastructure improvements to support the CBC's goals and enhance overall educational outcomes (Kariuki et al., 2024). Understanding how school-related factors interact and influence the implementation of CBC is critical for addressing the challenges and enhancing educational outcomes. However, from the researcher's literature review, there is no known study conducted in Homabay on the problem addressed. Consequently, this void motivated the researcher to conduct the study, which aims to investigate the influence of infrastructure in the implementation of a competency-based curriculum in Catholic private primary schools in the Catholic Diocese of Homa Bay.

### 1.3 Research Question

How does school infrastructure influence the implementation of CBC in Catholic Private Primary schools in the Catholic Diocese of Homabay, Kenya

### 1.4 Theoretical Framework

The idea that knowledge is created in the mind and shared via social interactions is one of the major tenets of educational philosophy. This study was anchored on the constructivism theoretical framework advanced by Lev Vygotsky in 1934. Russian psychologist Lev Vygotsky holds that people actively contribute to the creation of their knowledge, (Abdullahi, 2019). Constructivist theory encourages students to actively interact with complex material and use self-discovery to change it into their understanding. This method places a strong emphasis on student-centred instruction, with teachers acting more as facilitators than as controllers of classroom activities. Eribil (2020) states that the central concept of Vygotsky's theory is that individual cognitive development is based first on social interaction within the environment. Learners internalize and acquire knowledge from the beliefs and attitudes that they

experience around them. Learning therefore should not occur in isolation but rather in an interactive arena. Learners should be encouraged to work in groups and enough learning materials should be made available. In addition, teachers should provide teaching and learning materials to facilitate learner's interactions.

Nkebukwa & Luambano (2018), assert that CBC aims to develop the learner's knowledge, skills, attitudes, values, and competencies to enhance their problem-solving abilities. The theory acknowledges the value of social contact in learning as well since teachers create engaging learning groups and people learn from each other (Abdullahi, 2019). Lev Vygotsky's theory of constructivism, particularly his ideas on social constructivism and the Zone of Proximal Development (ZPD), has significant implications for educational practices and infrastructure. Vygotsky posited that learning is a social process and that cognitive development is deeply influenced by social interactions and cultural tools. This perspective is particularly relevant when examining school infrastructure and the implementation of Competency-Based Curriculum (CBC) in Kenya.

Vygotsky's emphasis on social interaction and culturally relevant tools suggests that the physical and social environment of schools plays a crucial role in effective learning. In the context of Kenyan schools, this means that infrastructure should not only support traditional learning but also facilitate collaborative and interactive learning experiences. Classrooms designed to encourage group work, flexible seating arrangements, and access to digital tools align with Vygotsky's ideas about the social nature of learning. For example, modern school infrastructure that includes interactive whiteboards, computer labs, and spaces for collaborative projects can help create the kind of rich, interactive environment Vygotsky advocated for. Such environments enable teachers to scaffold learning more effectively, supporting students within their ZPD.

The Competency-Based Curriculum (CBC) in Kenya, which emphasizes the development of skills and competencies rather than rote memorization, aligns well with Vygotsky's theories. The CBC focuses on student-centered learning, which mirrors Vygotsky's belief in the importance of interactive and contextualized learning experiences. In practice, CBC requires teachers to provide appropriate scaffolding and support tailored to each student's current level of understanding, aligning with the concept of the ZPD. This approach is enhanced by infrastructure that supports differentiated instruction, such as resource-rich classrooms and access to diverse educational materials. Schools that integrate these features help facilitate the CBC's goals by allowing teachers to offer targeted support and fostering a learning environment where students can engage in meaningful, contextually relevant activities.

On the relevance of the theory, Ndung'u & Nyang'au (2023) conducted a study on Constructivist Approaches and Their Impact on School Infrastructure and Curriculum Implementation in Kenya. Journal of Educational Research and Practice, 13(2), 45-59. This study provides insights into how constructivist principles can be integrated into school infrastructure and curriculum practices, specifically within the Kenyan educational context. According to Ndung'u and Nyang'au (2023), the implementation of constructivist principles, as advocated by Vygotsky, underscores the importance of adapting school infrastructure to support interactive and collaborative learning environments, which is a critical component of effective Competency-Based Curriculum implementation in Kenya. By aligning school infrastructure and curriculum with Vygotsky's constructivist theories, educators can better support student learning and development in a manner that is both culturally and contextually relevant.

## 1.5 Review of Related Literature

### *School Infrastructure and Implementation of Competency-Based Curriculum*

In Switzerland, Lomis et al. (2021) conducted a study using a quantitative approach to assess the relationship between the presence of functional science laboratories and the effectiveness of hands-on learning experiences. The study involved 200 teachers from various schools in Switzerland. Data was collected using structured questionnaires to gather information on the functionality of science laboratories and the quality of hands-on learning experiences. The finding of the study revealed that schools equipped with functional science laboratories were more successful in providing students with hands-on learning experiences, essential for the Competency-Based Curriculum (CBC). These schools were better at developing students' practical skills and critical thinking abilities, both crucial for attaining CBC competencies. The study suggested that schools should invest in maintaining and upgrading science laboratories to ensure they are functional and well-equipped. (Lomis et al., 2021).

The study highlights the positive association between functional science laboratories and CBC implementation outcomes in Switzerland. However, several limitations can be addressed, for example, careful consideration of sample representativeness. Although the study emphasizes teacher perspectives, incorporating viewpoints from students and administrators could offer additional insights into the perceived benefits and challenges associated with utilizing science laboratories for CBC implementation. The current study included stakeholders other than the teachers in the study to enrich the study's findings and provide a more balanced assessment of the role of laboratories in the implementation of competency-based curriculum.

A study by Agnello et al. (2019) ) employed a quantitative, correlational research design to explore how sporting facilities influence student development. Surveys, observations, and interviews were employed for data collection involving 300 students and 50 teachers in Japan. Findings revealed that schools with adequate sporting facilities fostered the development of physical, social, and emotional competencies critical for holistic student growth as per the CBC. In addition, extracurricular activities such as sports promoted teamwork, leadership, and sportsmanship, while also enhancing student engagement and cultivating a positive school ethos that indirectly supported curriculum delivery (Agnello et al., 2019).

The study by Agnello et al. (2019) involved 300 students and 50 teachers, which was a relatively fair sample size. However, it has several limitations: the correlational design cannot establish causation, and cross-sectional data limits understanding of long-term effects. Subjectivity in observations and interviews, along with potential response bias in surveys, may affect reliability. Additionally, the generalizability of findings is restricted to the Japanese context, and there may be limitations in the validity and reliability of the data collection instruments used. The study also lacks the sampling procedures and the recommendations of the study. The current study offers clarity in addressing the sampling methods that were used in the study. The study also used mixed-methods approach combining quantitative and qualitative data while ensuring that data collection instruments were rigorously validated for reliability and validity. The instruments were pilot-tested and refined based on feedback to minimize bias and enhance accuracy.

Necochea et al. (2020), conducted a study employing a cross-sectional survey with 200 participants to explore the impact of computer laboratories on digital skills development in Malawi. It highlighted the significance of well-equipped computer labs in enhancing students' digital literacy and CBC

performance. Findings revealed the importance of well-equipped computer laboratories in nurturing digital skills outlined in the CBC implementation. Schools with limited or outdated computer facilities struggled to foster the required digital literacy and problem-solving abilities, affecting students' overall CBC performance The study recommended investing in computer facilities, providing teacher training, and implementing supportive policies to address the disparities and challenges faced by schools. (Necochea et al., 2020).

While the study provides relevant information on the role of computer laboratories in CBC implementation, other limitations can be identified. For example, the study's sample size and composition of 200 participants, does not give details about the selection criteria for schools and participants, as well as their representativeness across different regions or socio-economic backgrounds in Malawi. The current study provides clear details of the sample size selection to ensure that the findings can be generalized beyond the specific sample.

In a similar vein, Najjuma (2024) conducted a study in Uganda to investigate the influence of swimming pools on the implementation of the CBC. The study employed a qualitative research design and interviewed 35 physical education teachers and 15 school principals. The findings suggested that the availability of swimming pools in schools had a positive impact on the implementation of the CBC (Najjuma, 2024). The study revealed that the inclusion of swimming as a physical activity in the CBC curriculum allowed students to develop various competencies, such as water safety, physical fitness, and teamwork, which were effectively facilitated by the presence of school swimming pools.

The study by Najjuma (2024) provides valuable insights into the role of swimming pools in implementing the Competency-Based Curriculum (CBC) but has limitations including a small, potentially non-representative sample and the subjective nature of qualitative data. The findings may not be generalizable beyond the specific Ugandan context, while lack of quantitative evidence limits the ability to measure the impact statistically. In addition, the study primarily focuses on the role of swimming pools, potentially overlooking other factors influencing CBC implementation. The current research used a mixed-methods approach with a larger, more diverse sample and included quantitative measures to strengthen the findings and enhance generalizability. The study also delved into exploring additional factors such as teacher training, curriculum design, or access to other resources to provide a more comprehensive understanding of CBC implementation.

In another study, Muthuri (2023) investigated the role of school libraries in CBC implementation across 24 secondary schools in Meru County, with 190 teachers and 380 students using a quantitative approach with surveys and library assessments. The findings highlighted that schools with well-equipped and managed libraries provided students access to a vast array of resources, including textbooks, reference materials, and digital content (Muthuri, 2023). The study recommended investing in library resources, providing management training, and conducting regular evaluations.

The study focuses on the role of school libraries in CBC implementation but faces limitations including limited generalizability due to its focus on 24 schools in Meru County, which may not represent other regions. The quantitative approach also may overlook qualitative aspects of library usage, and potential response biases in surveys could affect the accuracy of findings. In addition, the cross-sectional design limits the ability to assess long-term impacts, and the study may lack depth in evaluating the effectiveness

of specific types of resources. Therefore, given this research, the current study has employed a mixed-methods approach to provide a more comprehensive understanding of the study and has also ensured clarity on the sampling methods and sample representativeness of respondents.

**1.6 Methodology**

The study employed mixed methods research design where qualitative and quantitative approaches were employed to establish the influence of school infrastructure in the implementation of Competency-Based Curriculum in Catholic private primary schools in the Catholic Diocese of Homabay, Kenya. Quantitative method utilized a cross-sectional design while qualitative adopted a phenomenological design. The cross-sectional design establishes the who, what, when, where, and how of a research subject at a point in time whereas the phenomenological design to explore the subjective experiences and meanings attributed by participants, Omware, et, al, (2020). The study targeted all the twenty five (25) Catholic private primary schools in the Catholic Diocese of Homabay, all the twenty five (25) head teachers, three hundred and twenty five (325) teachers of grades one to six (1-6), and two (2) education secretaries. Records of Catholic Private Education Institutions Association ( CaPEIA) in the Diocesan Education office shows that here are 25 Catholic private primary schools in the Catholic Diocese of Homa bay in 2024. cluster sampling was employed to sample 13 schools, and 13 headteachers were automatically included. Using stratified random sampling, 98 teachers were sampled while 2 education secretaries were chosen using purposive sampling.

According to Cochran's theorem, a sample size of 50% of the population can provide estimates with acceptable levels of precision, assuming random sampling and other statistical assumptions are met (Cochran, 1977). Moreover, a 50% sample size can still yield statistically significant results if the population exhibits homogeneity or if the variable of interest is evenly distributed within the population. To choose the participating schools, cluster sampling was employed, and each private primary school in the Diocese was listed by county. After that, a simple random sampling procedure was conducted to choose 13 schools from the target population of 25 schools (since 50% of 25 = 12.5, therefore, 12 + 1 = 13). This guaranteed that both counties were included in the research and that every aspect of each county's social dynamics was documented. The 50% selection criterion determined the sample size.

This study utilized a purposive sampling method to choose the two Education Secretaries in the Catholic Diocese of Homabay. This targeted approach maximizes the relevance of the study's findings, as Education Secretaries possess crucial insights into the challenges, strategies, and successes associated with implementing the new curriculum within the Catholic Diocese of Homabay. Using stratified random sampling, 98 teachers, or 30% of the target population of 325 teachers of grades one to six in Catholic Private Primary Schools in the catholic diocese of Homa Bay were chosen. According to Mugenda and Mugenda (2019), a sample size comprising between 10% and 30% of the target population is generally adequate for ensuring representative and reliable results in research studies.

According to Pandey & Pandey, (2021), a questionnaire is a data-collecting instrument consisting of carefully chosen and ordered questions that are designed to elicit the data necessary for addressing research questions or testing hypotheses. Structured questionnaires were used to collect quantitative data from the teachers while, to gather qualitative information from the head teachers and education secretaries, a key informant interview guide was employed. The guide was developed with the study's research questions in mind, to gather detailed data as a follow-up to a quantitative investigation.

According to Cresswell, (2016), data analysis is a process in which the collected information is made meaningful to readers for action. Data obtained from the questionnaires was crosschecked and sorted in line with research questions and entered into a computer with Statistical Package for the Social Sciences (SPSS) software version 25 to generate a data file. Quantitative data was analyzed using simple descriptive statistics such as frequencies, percentages, mean, and standard deviation generated by SPSS version 25 and inferential statistics. regression analysis and correlation, the researcher was able to tackle the relevant study challenges. The researcher used inferential statistics to find out how the variables are related to each other and how well the independent variables may predict the dependent ones. The findings were presented using descriptive and inferential tables.

Qualitative data from head teachers and education secretaries was analyzed by organizing the raw data from the field, reading for overall depth and credibility then organizing it into categories to generate themes. Through this process, the data was transformed into meaningful narratives and verbatim quotes, enabling the generation of well-founded conclusions in response to the research questions. Quantitative data analysis was then combined, and subsequently, checked for coherence through qualitative data analysis. The researcher then interpreted the findings to check whether there was new learning, confirmation, or disconfirmation of previous knowledge.

### 1.7 Findings and Discussion

The study sought to establish the respondents' opinion on School Infrastructure and the Implementation of CBC in Catholic Private Primary Schools in the Catholic Diocese of Homa Bay, Kenya. The results from the analysis of findings are illustrated in Table 1

**Table 1: School Infrastructure and the Implementation of CBC in Catholic Private Primary Schools in the Catholic Diocese of Homa Bay, Kenya**

| Infrastructure and the Implementation of CBC | SD | | D | | N | | A | | SA | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % |
| There are adequate sports and outdoor facilities to facilitate CBC implementation. | 0 | 00 | 22 | 25.9 | 0 | 00 | 63 | 74.1 | 0 | 00 |
| There are adequate classrooms, laboratories, and learning equipment for CBC Implementation. | 63 | 74.1 | 22 | 25.9 | 0 | 00 | 0 | 00 | 0 | 00 |
| There is a constant supply of electricity in the school. | 0 | 00 | 75 | 88.2 | 0 | 00 | 10 | 11.8 | 0 | 00 |
| Educational software | 0 | 00 | 0 | 00 | 0 | 00 | 55 | 64.7 | 30 | 35.3 |
| There are adequate learning tools including projectors, laboratory equipment, and tools | 55 | 64.7 | 30 | 33.3 | 0 | 00 | 0 | 00 | 0 | 00 |

The researcher in this section asked the respondents about their understanding of the availability of the infrastructure in the school for the teaching and learning processes. Findings from Table 1 revealed that 74.1% of the respondents agreed that there are adequate sports and outdoor facilities to facilitate CBC implementation. However, the statement about the sufficiency of classrooms, laboratories, and learning equipment to facilitate CBC was rated low with an equal number of 74.1% of the respondents strongly

disagreeing with the assertion. 88.2% of the respondents also expressed disagreement on the consistency of the provision of power in schools revealing that power connectivity is a challenge but very vital in the implementation of CBC in school. Concerning the availability of educational software, 64.7% of the respondents agreed with its availability while 35.3% Strongly agreed with the statement. The respondents also strongly disagreed with the statement that there are adequate learning tools including projectors, laboratory equipment, and other tools. This means that there were insufficient learning tools to facilitate the implementation of CBC. It is therefore clear that most of the Catholic private primary schools in Homabay still experience a shortage of basic requirements (infrastructure) in the implementation of the CBC curriculum, which calls for the education stakeholders to work jointly towards the goal of the implementation achievement.

Qualitative analysis on the sufficiency of learning tools to facilitate the implementation of CBC was affirmed by respondent 010 who noted that;

> *"The infrastructure is insufficient in implementation of CBC in private primary schools. It is only a few schools which have the required infrastructure to implement CBC" (Respondent 010: Personal Communication, August 2, 2024).*

This implied that Catholic private primary schools in Homa-Bay County did not have sufficient learning resources and infrastructure to ensure that CBC was implemented to the letter. When asked how the availability of critical infrastructure had influenced the implementation of CBC in the said primary schools, respondent 004 observed that;

> *"Insufficient infrastructure had led to overcrowding in classrooms. Some of our schools in the diocese have not been approved for Junior Secondary School due to a lack of adequate infrastructure. Inadequate infrastructure has led to low enrolment of our private primary schools in the dioceses. These schools face continuous financial struggles to purchase critical infrastructure. The struggle therefore continues "(Respondent 004: Personal Communication, 30th July, 2024).*

This implied that the lack of sufficient infrastructure had hindered the progressive implementation of CBC to enable schools to proceed with Junior Secondary School programs in Homa-Bay County. In addition, key informants were asked how the lack of sufficient infrastructure would influence learners, respondent 006 was categorical;

> *"There will be low curriculum delivery. Assignments will be skipped by teachers. Lack of power connections and few laboratories will equally delay learning" (Respondent 006: Personal Communication, July 31st, 2024)*

This showed that lack of sufficient infrastructure would have far-reaching ramifications on the ability of teachers to deliver on the CBC within the mentioned primary Schools in Homa-Bay Diocese.

The study also sought to establish the respondents' opinion on the Implementation of CBC in Catholic Private Primary Schools in the Catholic Diocese of Homa Bay, Kenya. The results from the analysis of findings are illustrated in Table 2

**Table 2: Implementation of CBC in Catholic Private Primary Schools in the Catholic Diocese of Homa Bay, Kenya.**

| | SD | | D | | N | | A | | SA | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % |
| The learners are smoothly adapting to the curriculum | 0 | 00 | 19 | 22.4 | 0 | 00 | 62 | 72.9 | 4 | 4.7 |
| The learners have improved their critical thinking and problem-solving skills | 0 | 00 | 18 | 21.8 | 0 | 00 | 52 | 61.2 | 15 | 17.6 |
| The learners can communicate and collaborate effectively | 2 | 2.4 | 13 | 15.3 | 0 | 00 | 62 | 72.9 | 8 | 9.4 |
| The learners have shown creativity and imagination through the activities they are prompted to undertake in CBC. | 0 | 00 | 0 | 00 | 0 | 00 | 70 | 82.4 | 15 | 17.6 |
| The learners have shown qualities of good citizenship through various responsibilities undertaken in CBC activities | 0 | 00 | 0 | 00 | 0 | 00 | 58 | 68.2 | 27 | 31.8 |
| Learners are willing to learn and accept the new curriculum | 0 | 00 | 0 | 00 | 0 | 00 | 58 | 68.2 | 27 | 31.8 |
| Teachers can determine the learner's interests and skills. | 0 | 00 | 0 | 00 | 0 | 00 | 70 | 82.4 | 15 | 17.6 |

***Source: Field Research Data (2024)***

Findings on the CBC curriculum's implementation are shown in Table 2. It seems like the learners are smoothly adapting to the curriculum. This was represented by a majority of respondents with a record of 72.9%. The respondents also agreed with the assertion that learners had improved their critical thinking and problem-solving abilities, which was demonstrated by 61.2%. The analysis also shows that learners can communicate and collaborate effectively. This agreement was confirmed by 72.9% of the respondents who took part in the study, while the learners have shown creativity and imagination through the activities they are prompted to undertake in CBC. A majority of the respondents 82.4 strongly agreed with the statement.

The results also showed that learners have demonstrated characteristics of good citizenship through the many responsibilities they have taken on in CBC activities, with the majority of the respondents, with an agreement rate of 68.2 percent. Similarly, learners have demonstrated creativity and imagination in the activities they have been asked to do in CBC, with a concurrence rate of 68.2 percent. Those who strongly believed that teachers could determine the interests and capabilities of their students had the highest percentage rate of 82.4 . The findings have revealed that initiatives undertaken in the majority of schools in Homa Bay Diocese in line with the learning programs of CBC impact the lives of the learners

and the school at large. These responses give a guideline that if all the requisite steps and requirements are taken, then the implementation of CBC is likely to be successful.

### 1.8 Regression Analysis

The study sought to ascertain the relationship between school infrastructure and the implementation of competency-based curriculum. The regression model was: Therefore, the research used a range of inferential statistical methods and conducted Multiple regression analyses to address the problems.

**Table 3: Multiple regression**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .723a | .545 | .529 | .68637 |

a. Predictors: (Constant), Monitoring and Supervision, Infrastructure, Learning resources, Teachers Preparedness

The findings shown in Table 3 revealed a significant positive relationship between teacher school infrastructure, and the CBC implementation rate, up to 72.3% or (R= 0.723). The findings indicate that school infrastructure had a significant impact of 54.5% or (R2=0.545 and modified R2 =0.529) towards the successful implementation of CBC. Therefore, the remaining 45.5% of the change may be attributed to additional variables that were not accounted for in the model.

**Table 4: Regression Coefficient**

**Coefficient**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1003 | (Constant) | 5.003 | 1.101 | | 4.544 | .000 |
| | Infrastructure | -.111 | .192 | -.064 | -.579 | .004 |

a. Dependent Variable: Implementation of CBC

*Source: Field Research Data (2024)*

Regression Equation

$Y = \alpha + \beta 1X1$

Where;

Y= Implementation of CBC

X1 = Infrastructure

$\alpha$ = constants term

β1= regression coefficients of X1
ε = error item.
Régression Equation
Y= 0.400X2
The Regression equation shows that the relationship between the independent variable infrastructure, and the dependent variable (Implementation of CBC) was statistically significant with p=0.004<0.05. a unit change in infrastructure leads to a negative change in the implementation of CBC.

**1.9: Discussion of the Findings**

***Influence of Infrastructure on the Implementation of CBC***

The second premise of the study was to find out how private primary schools in the Catholic Diocese of Homabay, Kenya, deal with infrastructure and how it affects the implementation of a Competency-Based Curriculum (CBC). A p-value of 0.004, which is lower than the conventional probability significance level of 0.05, indicates that infrastructure had a statistically significant influence, according to the study findings, with β_3=-111. The study confirms the findings by Ouma (2021) on sporting fields' impact on CBC implementation in Uasin Gishu County where he provides insights on the benefits of well-equipped facilities for physical and social development on the implementation of CBC. This study further confirms the study by (Muthuri, 2023). who focused on the role of school libraries in CBC implementation, emphasizing their importance in providing access to resources.

**1.10 Summary of Major Findings**

The study sought to investigate the influence of the school infrastructure on CBC implementation. Results indicate that there are adequate sports and outdoor facilities to facilitate CBC implementation. This shows that the sector of sports was somehow catered to the participation of learners. However, the majority of the respondents disagreed that there are adequate classrooms, laboratories, and learning equipment to support CBC. It was also concluded that there was no constant supply of electricity in the schools, while regarding education software, the majority of the teachers agreed on the availability of software to facilitate CBC Implementation. The teachers also showed that there are inadequate learning tools including projectors, laboratory equipment, and tools. This means that there were not enough learning tools to facilitate the implementation of CBC hence much is still in demand. Therefore, the majority of the private primary schools in the Homabay diocese might experience a shortage of basic requirements (infrastructure) in the implementation of the CBC curriculum even if not in the entire diocese. This calls for the education stakeholders to work jointly towards the goal of the implementation achievement.

**1.11 Conclusion and Recommendation of the Study**

The study concluded that the school infrastructure plays a pivotal role in the implementation of CBC in the private primary schools in the Catholic Diocese of Homa Bay. The study concluded that infrastructure in the catholic private primary schools was inadequate leading to overcrowded classrooms, lack of laboratories and laboratory equipment, lack of projectors in the computer rooms, and other important tools for effective implementation of CBC. It can also be concluded that most of the schools have adequate sports and outdoor facilities to facilitate CBC implementation. Further, it was revealed that the majority of the schools do not have adequate classrooms, laboratories, and learning equipment to support CBC. It was therefore concluded that for its success, education stakeholders should work jointly towards the goal of the implementation achievement by providing more infrastructure to the schools. To enhance

CBC implementation in private primary schools within the Catholic Diocese of Homa Bay, the study recommends improving school infrastructure by expanding and equipping classrooms and laboratories and providing essential learning tools like projectors and computers. Ensuring a reliable electricity supply and updating educational software are also vital. Collaboration among stakeholders, including NGOs, and donors, as well as regular infrastructure assessments, will help address gaps. Additionally, training teachers on using new tools and engaging the community in infrastructure support are essential for creating an effective learning environment and achieving successful CBC implementation.

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