Availability of Instructional Materials and Its Influence on the Implementation of Competence-Based Curriculum (CBC) in Secondary Schools in Hai district, Kilimanjaro, Tanzania.

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ABSTRACT

This study examined the availability of instructional materials and their influence on the implementation of the Competence-Based Curriculum (CBC) in secondary schools in Hai District. The study was guided by four objectives: to assess the availability of instructional materials, identify types used, examine their utilization, and determine their influence on CBC implementation. A mixed-methods approach using a convergent design was employed. Data were collected from teachers, students, and school heads using questionnaires, interviews, and observation, with a sample size of 138 respondents. Quantitative data were analyzed using SPSS, while qualitative data were analyzed thematically. Findings revealed that instructional materials were generally inadequate, with ICT tools and laboratory equipment being the most limited. Textbooks were the most commonly used materials, while ICT integration remained low. Teachers demonstrated moderate utilization of instructional materials due to limited skills and inadequate institutional support. Correlation analysis showed a strong positive relationship between instructional materials and CBC implementation ($r = 0.68$, $p < 0.05$), confirmed that schools with better instructional resources implemented CBC more effectively. This indicates that instructional materials are a key determinant of curriculum success. The study concludes that instructional materials are critical for successful CBC implementation. It recommends increased investment in teaching and learning resources, teacher training on instructional material utilization, and improved school resource management.

Keywords: Instructional materials, CompetenceBased Curriculum, Implementation

INTRODUCTION

From a global perspective, education systems has increasingly transitioned toward competence-based approaches that emphasized the development of 21st-century skills such as critical thinking, creativity, collaboration, and problem-solving, reflecting a major shift from traditional content-based instruction to learner-centered pedagogies (Marope, Griffin, & Gallagher, 2021). This global transformation has been driven by the need to prepare learners for dynamic labour markets and complex real-life challenges, where knowledge application rather than rote memorization became essential. Within Africa, this transformation was evident as many countries had undertaken curriculum reforms aimed at aligning education systems with socio-economic development goals. However, the successful implementation of these reforms remained uneven across the continent due to persistent challenges, particularly the shortage, poor distribution, and inadequate quality of instructional materials required supporting active and competency-based learning. These constraints had continued to limit the effectiveness of learner-centered approaches in many African education systems. In East Africa, countries such as Kenya, Uganda, and Tanzania had adopted Competency-Based Curricula (CBC) reforms; however, significant implementation gaps had continued to emerge. These gaps were largely attributed to inadequate teaching and learning resources, insufficient teacher preparedness, and infrastructural constraints such as poorly equipped classrooms and limited access to ICT facilities. As a result, the intended outcomes of CBC reforms had not been fully realized in many schools across the region. In Tanzania, the

adoption of the Competence-Based Curriculum was intended to improve the quality of education and produce graduates equipped with practical, employable, and problem-solving competencies (UNESCO, 2022). However, the effective implementation of CBC had been highly dependent on the availability, adequacy, and proper utilization of instructional materials such as textbooks, science laboratory equipment, teaching aids, and ICT tools (Kafyulilo, 2021). Despite government efforts to strengthen curriculum delivery, many secondary schools across the country had continued to experience acute shortages of these materials. This situation had constrained the use of learner-centered teaching strategies and ultimately undermined students' acquisition of relevant competencies (Komba & Mwandanji, 2020). At the regional level, similar challenges had been reported in Kilimanjaro Region, where public secondary schools had faced persistent limitations in instructional resources despite ongoing educational reforms (BEST, 2022). These shortages had affected the quality of teaching and learning processes and had reduced the effectiveness of CBC implementation across the region.More specifically, in Hai District, secondary schools had continued to experience shortages of essential instructional materials such as updated textbooks, functional science laboratories, and adequate ICT facilities. These deficiencies had constrained teachers' ability to effectively implement CBC and to engage learners in practical, interactive, and competency-based learning activities. As a result, the fidelity of CBC implementation and learner achievement outcomes had been negatively affected. Although national and regional reports had acknowledged the general problem of inadequate instructional resources, there had been limited localized empirical evidence examining how the availability and utilization of instructional materials influenced the implementation of CBC specifically in Hai District. This lack of context-specific evidence had created a significant knowledge gap, thereby necessitating a focused investigation into the relationship between instructional materials and CBC implementation in secondary schools within the district. This study had therefore been significant as it provided empirical evidence on how instructional materials influenced the implementation of the Competence-Based Curriculum in Hai District. The findings had been expected to inform teachers on effective utilization of instructional resources to enhance competency-based learning. School administrators had been expected to benefit by identifying resource gaps and improving allocation and management strategies. Policymakers in Tanzania had been expected to use the findings to guide educational planning, budgeting, and investment in instructional materials. Additionally, the study had contributed to the existing body of academic literature by addressing a critical research gap at the district level and providing a basis for future studies on CBC implementation. The study had aimed to comprehensively examine the influence of instructional materials on the implementation of the Competence-Based Curriculum (CBC), with particular emphasis on how the availability, adequacy, quality, and effective utilization of such materials had shaped teaching and learning processes, supported the development of learners' competencies, and enhanced overall curriculum delivery outcomes in secondary education institutions.

LITERATURE REVIEW

Globally, education systems have increasingly shifted toward Competence-Based Curricula (CBC) in response to rapid socio-economic changes and the growing demand for 21st-century skills such as critical thinking, creativity, collaboration, communication, and problem-solving (Marope, Griffin, & Gallagher, 2021; UNESCO, 2023). CBC represents a paradigm shift from traditional content-based education to learner-centered pedagogies that emphasize the application of knowledge in real-life contexts rather than rote memorization. This shift is largely grounded in Constructivist Learning Theory, which posits that learners actively construct knowledge through interaction with their environment rather than passively receiving information (Piaget, 1972; Vygotsky, 1978). In this regard, instructional materials become critical mediating tools that support cognitive development by enabling learners to engage in exploration, experimentation, and problem-solving.

However, despite its global acceptance, the implementation of CBC has remained uneven across countries. One key limitation is the persistent mismatch between curriculum expectations and classroom realities, particularly in relation to the availability of instructional resources. Many education systems have adopted CBC reforms without ensuring adequate investment in teaching and learning materials, resulting in a gap between policy intentions and classroom practices (OECD, 2020).

In Africa, CBC reforms have been widely adopted as part of broader educational restructuring aimed at aligning schooling with socio-economic development goals. However, the implementation process has been constrained by structural challenges, including inadequate infrastructure, insufficient funding, and shortages of

instructional materials (World Bank, 2021; UNESCO, 2022). From a critical perspective, this situation reflects what Fullan (2007) describes as "implementation failure in educational reform," where reforms are introduced at policy level but lack the systemic support required for classroom enactment. As a result, many African education systems struggle to translate curriculum reforms into meaningful learning outcomes.

In East Africa, countries such as Kenya, Uganda, and Tanzania have adopted CBC frameworks, yet implementation outcomes vary significantly. These variations are largely explained by differences in teacher preparedness, resource availability, and institutional support systems. While some schools demonstrate improved learner engagement, others continue to rely on traditional teaching methods due to inadequate instructional materials, thereby undermining the intended outcomes of competency-based learning.

In Tanzania, CBC was introduced to enhance learner-centered pedagogy and improve the quality of education by equipping learners with practical, employable competencies (URT, 2021). Instructional materials such as textbooks, laboratory equipment, manipulatives, and ICT tools are central to this transformation, as they enable experiential learning and facilitate competency acquisition (Kafyulilo, 2021). However, empirical evidence shows that many secondary schools continue to experience shortages of these materials, limiting the effective implementation of participatory teaching methods (Komba & Mwandanji, 2020). This creates a contradiction between curriculum expectations and classroom realities, where teachers are expected to implement CBC without adequate instructional support.

At the regional level, disparities in resource allocation remain a significant challenge, particularly in Kilimanjaro Region. Schools differ widely in terms of access to instructional materials, which directly affects the quality of CBC implementation. In Hai District, secondary schools have been reported to face shortages of textbooks, science laboratories, and ICT facilities (BEST, 2022). These constraints force teachers to rely heavily on lecture-based methods, which contradict the learner-centered philosophy of CBC and limit opportunities for hands-on learning and skill development.

The literature further emphasizes that the mere availability of instructional materials is not sufficient to guarantee effective CBC implementation. Teacher utilization capacity plays a critical mediating role. Factors such as teacher training, pedagogical beliefs, workload, and school leadership support significantly influence how instructional materials are used in classrooms (Tilya, 2021; OECD, 2020). From a theoretical standpoint, this aligns with the Theory of Planned Behavior (Ajzen, 1991), which suggests that individual behavior (such as using instructional materials) is shaped by attitudes, perceived control, and subjective norms. Thus, even when resources are available, teachers may underutilize them if they lack confidence, training, or institutional encouragement.

Empirical studies consistently demonstrate that instructional materials significantly influence teaching effectiveness and learner achievement. In Tanzania, inadequate instructional resources have been directly linked to weak CBC implementation outcomes (Komba & Mwandanji, 2020). Similar findings across Africa indicate that resource shortages hinder competency development and reduce the effectiveness of curriculum reforms (Orodho, 2020; Ssekamwa, 2022). Globally, countries that invest substantially in instructional materials tend to achieve better learning outcomes and more successful curriculum reforms, reinforcing the importance of resource availability in education quality improvement (UNESCO, 2023).

Despite this extensive body of literature, a critical gap remains at the micro-level, particularly in district-specific contexts such as Hai District. Most existing studies focus on national or regional analyses, with limited empirical attention to how instructional materials specifically influence CBC implementation at the district level. This lack of localized evidence limits the ability of policymakers and education stakeholders to design context-specific interventions. Therefore, this study addressed this gap by examining the influence of instructional materials on CBC implementation in secondary schools in Hai District, with the aim of generating evidence-based insights for policy, practice, and educational improvement

METHODOLOGY

This chapter outlined the methodological procedures that were used to examine the influence of instructional materials on the implementation of the Competence-Based Curriculum (CBC). The study adopted a **mixed-**

methods research approach, which integrated both quantitative and qualitative data in order to obtain a comprehensive understanding of the research problem (Creswell, 2021). This approach was considered appropriate because it enabled the collection of numerical data alongside in-depth qualitative insights, thereby improving the validity, reliability, and depth of interpretation of the findings. A **convergent mixed-methods design** was employed in which quantitative and qualitative data were collected concurrently, analyzed separately, and then merged during interpretation to provide a holistic explanation of the results (Creswell, 2021). This design allowed the study to compare statistical trends with lived experiences from participants, ensuring triangulation and strengthening the credibility of the findings. The study was conducted in Hai District, an area characterized by both rural and semi-urban secondary schools implementing the Competence-Based Curriculum. The district was considered appropriate for the study because schools in the area had been facing challenges related to instructional resources, which directly affected CBC implementation. The target population comprised teachers, students, and heads of secondary schools, since these groups were directly involved in curriculum delivery, classroom instruction, and school resource management. A sample size was 138 drawn from the target population. The study employed a combination of **stratified sampling, simple random sampling, and purposive sampling techniques** to ensure representativeness across categories and relevance of information (Kothari, 2020). Stratified sampling was used to ensure proportional representation of teachers and students, while simple random sampling reduced selection bias among respondents. Purposive sampling was used to select key informants such as heads of schools due to their administrative and decision-making roles.

Data were collected using **questionnaires, interviews, and observation methods,** which allowed methodological triangulation. Questionnaires were used to collect quantitative data on the availability, types, and utilization of instructional materials. Interviews with heads of schools and selected teachers provided qualitative insights into challenges faced in implementing CBC. Observations were conducted to verify the actual presence and use of instructional materials in classrooms, thereby reducing reliance on self-reported data. Validity of the research instruments was ensured through expert review by academic supervisors and pilot testing in selected schools outside the study area. Reliability of the instruments was assessed using **Cronbach's Alpha coefficient**, where a threshold of 0.7 and above was considered acceptable for internal consistency (Creswell, 2021). This ensured that the instruments measured the intended constructs consistently. Quantitative data were analyzed using the **Statistical Package for Social Sciences (SPSS)** to generate descriptive statistics (frequencies, percentages, means, and standard deviations) as well as inferential statistics such as Pearson correlation analysis. Qualitative data were analyzed thematically following Braun and Clarke (2021), where data were coded, categorized, and interpreted to identify emerging patterns and meanings related to CBC implementation and instructional materials. Ethical considerations were strictly observed throughout the study. Informed consent was obtained from all participants prior to data collection, and confidentiality and anonymity were ensured by avoiding the use of participants' names in reporting findings. Participation was voluntary, and respondents were informed of their right to withdraw from the study at any stage without any negative consequences. These procedures were aligned with established ethical research standards in educational studies (BERA, 2021).

FINDINGS

Here is analysis and interpretation of data on the influence of instructional materials on the implementation of the Competence-Based Curriculum (CBC) in secondary schools. Data were analyzed using SPSS, employing descriptive statistics (frequencies, percentages, means, and standard deviations) and inferential statistics (Pearson correlation). The analysis was guided by the research objectives focusing on availability, types, utilization, and influence of instructional materials on CBC implementation (Creswell, 2021). Out of 150 questionnaires distributed, 138 were returned and correctly filled, representing a response rate of **92%**. According to Mugenda and Mugenda (2021), a response rate above 70% is considered adequate for reliable statistical analysis; hence the data were sufficient for interpretation.

Availability of Instructional Materials

This section presents data on the availability of instructional materials in secondary schools in Hai District. The results are presented using descriptive statistics.

Table 1 Availability of Instructional Materials in Secondary Schools (N = 138)

Instructional material	Available n (%)	Not available n (%)
Textbooks	62 (45%)	76 (55%)
Reference books	55 (40%)	83 (60%)
Charts/maps	48 (35%)	90 (65%)
Laboratory equipment	41 (30%)	97 (70%)
ICT tools	35 (25%)	103 (75%)

Source: Field data, (2026)

The data presented in Table 1 indicated that instructional materials in secondary schools in Hai District were generally inadequate and unevenly distributed across different categories of teaching and learning resources. The results revealed significant shortages in key instructional materials required for effective implementation of the Competence-Based Curriculum (CBC), particularly those supporting practical, experiential, and learner-centered approaches.

Specifically, the data showed that ICT tools were the most critically lacking resources, with **75% of respondents indicating non-availability,** followed by laboratory equipment (70%), charts and maps (65%), and reference books (60%). Although textbooks were relatively more available compared to other resources, they still recorded a high shortage level of 55%, indicating that even fundamental instructional materials were insufficient for effective teaching and learning processes. This situation reflects a systemic resource gap that affects both teaching quality and student learning outcomes.

These data imply that secondary schools in Hai District have limited capacity to fully support CBC pedagogical requirements, which emphasize practical learning, experimentation, collaboration, and the application of knowledge in real-life contexts. The shortage of laboratory equipment significantly restricts the delivery of science-based practical lessons, thereby limiting students' opportunities to develop inquiry, observation, and experimentation skills. Similarly, the limited availability of ICT tools constrains the integration of digital pedagogy, which is increasingly recognized as essential for modern competency-based education systems (OECD, 2020).

From a curriculum implementation perspective, these resource limitations create a mismatch between CBC policy expectations and classroom realities. The CBC framework assumes the availability of adequate instructional materials to facilitate learner-centered pedagogy; however, the empirical evidence from this study suggests that such conditions are not sufficiently met in the study context. As a result, teachers are likely to revert to traditional lecture-based methods, which contradict the core philosophy of CBC and reduce opportunities for active learner engagement.

The findings are consistent with UNESCO (2022), which reported that many education systems in Sub-Saharan Africa continue to face chronic shortages of instructional resources, thereby weakening the implementation of curriculum reforms. Similarly, Komba and Mwandanji (2020) observed that Tanzanian secondary schools, particularly in rural areas, experience persistent shortages of essential teaching and learning materials, which negatively affect instructional effectiveness and learner achievement. These studies collectively emphasize that resource inadequacy remains a structural challenge in education systems undergoing competency-based reforms.

Furthermore, the findings align with the **Resource Dependence Theory,** which posits that organizational effectiveness is heavily influenced by access to critical external resources. In the context of schools, instructional materials represent essential inputs that determine the quality of instructional processes. When such resources are inadequate, schools become constrained in their ability to implement curriculum innovations effectively, leading to reduced educational outcomes.

Overall, the results confirm that inadequate availability of instructional materials remains a major barrier to effective CBC implementation in secondary schools in Hai District. This challenge not only limits pedagogical

innovation but also undermines students' ability to acquire practical competencies required for 21st-century learning.

Types of Instructional Materials Used

This section presents data on the types of instructional materials used in secondary schools in Hai District. The results are presented using descriptive statistics.

Table 2 Types of Instructional Materials Used in Secondary Schools (N = 138)

Type of instructional material	Usage n (%)
Textbooks	117 (85%)
Charts/diagrams	83 (60%)
Laboratory materials	55 (40%)
ICT tools	28 (20%)

Source: Field data, (2026)

The data presented in Table 4.2 revealed that textbooks were the most frequently used instructional materials in secondary schools in Hai District, with **85% of respondents indicating regular use** in classroom instruction. This was followed by charts and diagrams (60%), laboratory materials (40%), and ICT tools (20%), which were identified as the least utilized instructional resources. These results demonstrate a clear dominance of traditional instructional materials, particularly textbooks, in supporting teaching and learning processes within the study area.

The heavy reliance on textbooks suggests that classroom instruction remains largely content-driven rather than skill-oriented, despite the ongoing implementation of the Competence-Based Curriculum (CBC). While textbooks provide structured content delivery, they often limit opportunities for learners to engage in experiential learning, experimentation, and problem-solving activities that are central to CBC philosophy. The relatively moderate use of charts and diagrams indicates some level of visual and illustrative teaching; however, the use of laboratory materials and ICT tools remains significantly low, limiting practical and technology-enhanced learning experiences.

The very low utilization of ICT tools (20%) is particularly concerning, as digital integration is a key component of modern competency-based education systems. ICT tools are expected to support interactive learning, simulation, research skills development, and access to diverse learning resources. However, the data suggest that schools in Hai District have not fully integrated digital technologies into classroom instruction, thereby restricting the potential of CBC to enhance 21st-century skills development among learners.

These findings are consistent with Kafyulilo (2021), who observed that ICT integration in Tanzanian secondary schools remains limited due to inadequate infrastructure, insufficient availability of digital learning resources, and low teacher competency in using technology-enhanced pedagogies. Similarly, UNESCO (2022) emphasizes that many developing education systems continue to rely heavily on traditional instructional materials despite global educational reforms that promote digital and learner-centered approaches. This reliance on traditional resources reflects systemic challenges in implementing curriculum reforms effectively, particularly in resource-constrained settings.

From a theoretical perspective, the findings can be interpreted using **Constructivist Learning Theory,** which emphasizes that learners construct knowledge more effectively through active engagement, interaction, and hands-on experiences rather than passive reception of information. The limited use of laboratory materials and ICT tools suggests that learners in Hai District may have fewer opportunities to engage in constructivist learning experiences, thereby constraining the full realization of CBC objectives.

Furthermore, the findings suggest that CBC implementation in secondary schools in Hai District remains largely traditional in nature, with limited transformation in pedagogical practices. This limits learners' exposure to critical thinking, creativity, collaboration, and problem-solving activities, which are essential

components of competency-based education. As a result, the intended shift from teacher-centered to learner-centered instruction has not been fully achieved in practice.

Overall, the results indicate that while instructional materials are present in some forms, their distribution and utilization remain uneven, with a strong bias toward traditional resources. This imbalance significantly limits the effectiveness of CBC implementation and highlights the need for increased investment in modern instructional technologies and teacher capacity development.

Utilization of Instructional Materials

This section presents data on the utilization of instructional materials by teachers in secondary schools in Hai District. Data were analyzed using descriptive statistics (mean scores) and interpreted based on a Likert scale where higher mean values indicate stronger agreement and lower values indicate weaker agreement.

Table 3 Teachers' Utilization of Instructional Materials (N = 138)

Statement	Mean (M)	Interpretation
I use instructional materials regularly in teaching	3.2	Moderate
Instructional materials enhance student participation	4.1	High
I have adequate skills to use instructional materials effectively	3.0	Moderate
My school provides adequate instructional support materials	2.8	Low

Source: Field data, (2026)

The data presented in Table 3 indicated that teachers in Hai District moderately utilized instructional materials in their teaching and learning processes within the context of Competence-Based Curriculum (CBC) implementation. The analysis of mean scores revealed both strengths and weaknesses in the extent to which instructional materials were integrated into classroom instruction.

The highest mean score (M = 4.1) showed that teachers strongly agreed that instructional materials enhance student participation in learning activities. This suggests that teachers clearly recognized the pedagogical importance of instructional materials in promoting learner engagement, interaction, and active participation, which are key principles of CBC. This perception reflects an understanding that instructional materials facilitate learner-centered approaches by making abstract concepts more concrete and understandable.

However, other indicators revealed only moderate levels of utilization. The mean score for teachers' ability to use instructional materials effectively (M = 3.0) indicated that many teachers had limited pedagogical skills or confidence in integrating instructional resources into their teaching practices. Similarly, the mean score for the regular use of instructional materials in teaching (M = 3.2) suggested that although instructional materials were occasionally used, their application was not consistent across lessons or subjects. These data imply that utilization was irregular and depended largely on teacher competence, availability of resources, and subject requirements.

The lowest mean score (M = 2.8) indicated that schools provided insufficient instructional support materials. This finding highlights a critical institutional challenge, where inadequate provision of teaching and learning resources constrained effective instructional delivery. The shortage of institutional support suggests that even when teachers are willing to use instructional materials, the limited availability within schools restricts their actual application in classroom settings.

Overall, these findings suggest that while teachers in Hai District were aware of the importance of instructional materials in CBC implementation, their actual utilization was constrained by inadequate institutional support, limited professional development, and insufficient instructional resources. This indicates that the effectiveness of instructional materials in improving teaching and learning outcomes is not determined solely by their availability but also by teachers' capacity, training, and the enabling school environment.

These findings are consistent with Tilya (2021), who found that teacher preparedness significantly influences

the successful implementation of CBC in Tanzania, particularly in relation to the effective use of instructional resources. Similarly, UNESCO (2022) emphasizes that inadequate teacher professional development and weak instructional support systems often result in underutilization of available teaching and learning materials, thereby limiting the effectiveness of curriculum reforms.

From a theoretical standpoint, the findings align with the **Theory of Planned Behavior** (Ajzen, 1991), which explains that behavior is influenced by attitudes, perceived behavioral control, and external support systems. In this context, even though teachers demonstrated positive attitudes toward instructional materials, their limited skills and lack of institutional support reduced their actual utilization behavior.

Overall, the findings suggest that without adequate training, sufficient instructional resources, and strong institutional support systems, teachers are more likely to revert to traditional lecture-based methods rather than adopting learner-centered strategies required under CBC.

Influence of Instructional Materials on CBC Implementation

This section presents findings on the perceived influence of instructional materials on the implementation of the Competence-Based Curriculum (CBC) in secondary schools in Hai District. Data were analyzed using mean scores derived from a Likert scale, and presented in accordance with, which require properly labeled tables, italicized titles, and clearly defined notes for interpretation.

Table 4. Influence of Instructional Materials on CBC Implementation (N = 138)

Statement	Mean (M)	Interpretation
Instructional materials enhance competency development	4.3	Very High
Instructional materials support learner-centred teaching approaches	4.0	High
Lack of instructional materials limits CBC implementation	4.5	Very High

Source: Field data, (2026)

The data presented in Table 4 revealed a strong and consistent perception among respondents that instructional materials played a fundamental role in the successful implementation of the Competence-Based Curriculum (CBC) in secondary schools in Hai District. The results demonstrated that instructional materials were not only supportive tools but also critical determinants of effective curriculum delivery, particularly in facilitating learner-centered and competency-based teaching approaches.

The highest mean score (M = 4.5) indicated that respondents strongly agreed that the lack of instructional materials significantly limited CBC implementation. This finding suggests that resource scarcity was perceived as a major structural barrier affecting the effectiveness of curriculum delivery. In practical terms, the absence of essential teaching and learning resources constrained teachers' ability to conduct interactive lessons, demonstrations, and practical activities that are central to CBC philosophy. This situation often forced teachers to rely on lecture-based approaches, which are inconsistent with competency-based pedagogical requirements.

Similarly, the data revealed that instructional materials were perceived to significantly enhance competency development among learners (M = 4.3). This indicates that respondents recognized the role of instructional materials in facilitating experiential learning, hands-on activities, and real-life application of knowledge. When adequately available and effectively utilized, instructional materials enable learners to develop essential 21st-century skills such as problem-solving, creativity, collaboration, and critical thinking. These competencies are central to the goals of CBC, which emphasizes the application of knowledge in real-world contexts rather than memorization of theoretical content.

Furthermore, the mean score (M = 4.0) showed that respondents agreed that instructional materials support learner-centered teaching approaches. This suggests that instructional resources such as textbooks, laboratory equipment, visual aids, and ICT tools help teachers to shift from teacher-centered instruction to more participatory and interactive learning environments. However, the effectiveness of this shift depends not only on the availability of materials but also on teachers' pedagogical skills and institutional support systems.

Overall, the results demonstrate that instructional materials are a key determinant of CBC implementation effectiveness. Schools that lack adequate instructional resources are less likely to fully implement CBC principles, particularly those related to learner-centered pedagogy, continuous assessment, and competency-based learning activities. This creates a gap between curriculum policy expectations and actual classroom practice, thereby undermining educational quality and learning outcomes.

These data are consistent with OECD (2020), which emphasizes that adequate learning resources are essential for successful curriculum transformation and the development of learner competencies. Similarly, UNESCO (2022) highlights that insufficient instructional materials remain a persistent challenge in many developing education systems, significantly limiting the effectiveness of curriculum reforms and innovation in teaching practices.

From a theoretical perspective, the findings can also be interpreted through **Constructivist Learning Theory,** which emphasizes that learners construct knowledge actively through interaction with learning materials and real-life experiences. The absence of adequate instructional materials therefore limits opportunities for meaningful learning experiences, reducing students' ability to construct knowledge effectively.

In the context of secondary schools in Kilimanjaro Region, the findings suggest that inadequate instructional materials hinder learners' engagement in practical and experiential learning activities, thereby limiting the full realization of CBC objectives. This ultimately affects the quality of education and the development of relevant competencies required in modern socio-economic environments.

Correlation Analysis

This section presents inferential statistical results on the relationship between instructional materials and Competence-Based Curriculum (CBC) implementation in secondary schools in Hai District. Pearson correlation analysis was used to determine the strength and direction of the relationship between the two variables.

Table 5 Correlation between Instructional Materials and CBC Implementation (N = 138)

Variables	**r**	**p-value**
Instructional materials and CBC implementation	0.68	0.001

Note. Correlation is significant at the 0.05 level (2-tailed).

Source: Field data, (2026)

The results presented in Table 5 indicated a strong positive and statistically significant relationship between instructional materials and the implementation of the Competence-Based Curriculum (CBC) in secondary schools in Hai District. The Pearson correlation coefficient ($r = 0.68$, $p = 0.001$) demonstrates that there is a meaningful and substantial association between the availability and effective utilization of instructional materials and the level of CBC implementation in secondary schools within the study area.

The strength of this correlation suggests that instructional materials are a critical determinant of successful CBC implementation. This implies that as the availability and utilization of instructional materials increase, the effectiveness of CBC implementation also improves significantly. In practical terms, schools that are adequately equipped with textbooks, laboratory equipment, ICT tools, and other teaching aids are more likely to implement learner-centered pedagogies, promote active student participation, and support the development of key competencies such as critical thinking, creativity, collaboration, and problem-solving.

Conversely, schools with limited instructional materials tend to face significant challenges in implementing CBC effectively. The shortage of resources restricts teachers from conducting practical lessons, demonstrations, group activities, and ICT-supported learning, all of which are essential components of competency-based education. As a result, teachers are often compelled to rely on lecture-based and theoretical instruction methods, which undermine the core principles of CBC and reduce learners' opportunities for experiential learning and skill development.

From a pedagogical perspective, these findings reinforce the idea that instructional materials function as enabling resources that bridge the gap between curriculum intentions and classroom practices. Without adequate resources, even well-designed curricula may fail to achieve their intended outcomes due to implementation constraints at the classroom level. This aligns with the broader argument that curriculum effectiveness is not only determined by policy design but also by resource availability and classroom conditions.

The findings are consistent with UNESCO (2023), which emphasizes that the availability of adequate learning resources plays a crucial role in improving curriculum implementation outcomes in developing education systems. Similarly, OECD (2020) argues that instructional materials are essential enablers of curriculum reform, particularly in competency-based education systems that depend heavily on practical engagement and experiential learning.

From a theoretical perspective, the findings can also be interpreted using **System Theory in Education,** which posits that educational effectiveness depends on the interaction between inputs (such as instructional materials), processes (teaching and learning activities), and outputs (student competencies). In this case, instructional materials represent a key input that directly influences teaching processes and ultimately determines learning outcomes. When this input is insufficient, the entire educational system becomes less effective in achieving its intended goals.

In the context of secondary schools in Kilimanjaro Region, the results suggest that improving access to instructional materials would significantly enhance the effectiveness of CBC implementation. This improvement would likely lead to better learner engagement, stronger acquisition of practical and cognitive competencies, and overall improved educational outcomes aligned with national curriculum goals.

CONCLUSION

The study concluded that instructional materials play a significant role in the implementation of the Competence-Based Curriculum (CBC) in secondary schools in Hai District. The findings revealed that the availability and utilization of instructional materials were generally inadequate, particularly ICT tools and laboratory equipment, which limited effective learner-centered teaching. A strong positive relationship ($r = 0.68$, $p = 0.001$) confirmed that schools with better instructional resources implemented CBC more effectively. This indicates that instructional materials are a key determinant of curriculum success. The study established that secondary schools relied heavily on textbooks, with minimal use of ICT tools and laboratory materials. Teachers demonstrated moderate utilization of instructional materials due to limited skills and inadequate institutional support. Overall, inadequate resources constrained the full implementation of CBC, particularly in promoting practical learning and competency development. The study recommends that the government and education stakeholders increase investment in instructional materials, especially ICT infrastructure and science laboratories. Schools should strengthen continuous teacher training on the effective use of instructional resources. Additionally, school leadership should improve resource management and ensure equitable distribution of materials to enhance CBC implementation and learner outcomes

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