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Original Article

The Integration of ICT for Effective Implementation of the Competence-Based Curriculum among Secondary Schools in Kyaka II Refugee Settlement, Uganda

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Keywords:

Competency-Based Curriculum (CBC),
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Integration,
Refugee Education,
Teacher Training.

This study examined the role of Information and Communication Technologies (ICTs) in the implementation of the Competence-Based Curriculum (CBC) in secondary schools within Kyaka II Refugee Settlement, Uganda. Despite the potential of ICTs to enhance learning experiences, their usage remains limited. Employing a mixed-methods approach, data were collected from 102 respondents through surveys, interviews, and classroom observations. The findings reveal that while teachers adhere to CBC guidelines, the integration of ICTs into teaching practices is inconsistent. ICTs were utilized in less than 40% of observed lessons, and despite teachers receiving training from the project, only 25% felt confident in using ICT tools effectively. However, when ICTs were employed, there was a strong moderate positive correlation ($r = 0.67$) between ICT use and student engagement and motivation. Approximately 76% of students preferred ICT-enhanced lessons over traditional methods. Challenges such as limited ICT resources, including inadequate equipment, limited internet connectivity, negative attitudes, the digital divide, overcrowded classrooms, and insufficient access to up-to-date instructional technology, continue to hinder effective implementation. The study recommends increased investment in ICT infrastructure, comprehensive teacher training, and targeted student orientation to optimize CBC delivery. Addressing these issues is crucial for leveraging ICT's full potential to improve educational outcomes in refugee settings.

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INTRODUCTION

Learners in the 21st Century need to acquire new skills and knowledge of the latest technologies, which requires serious curriculum reform to fit the current demand in the world market and life skills for a proper and sustaining economy. The school curriculum must reflect these changes and thus, prepare the children for the challenges (Hassan & Shkak, 2020). Competency-based education is a system that focuses on the development of practical skills and knowledge required for students to succeed in the workplace (UNESCO, 2022). The emphasis on competency-based education is due to the growing recognition of the need for direct development of capabilities and not just at acquiring qualifications, as capabilities are perceived as a prerequisite for employability and a link between education and the labor market. Competency-based education programs are now popular in both the developed world, for example, United Kingdom, France, Germany, and Netherlands and the developing world including South Africa, Mozambique, Ethiopia, Tanzania, and Uganda among others (Charles et al., 2022).

Many countries have adopted the CBC or similar approaches to curriculum design. For example, in Australia, the Australian Curriculum was developed using a competence-based approach, with a focus on developing general capabilities such as critical thinking, creativity, and ethical understanding (MacGill, 2022). Similarly, in Kenya, the CBC was introduced in 2017 as part of a broader education reform program aimed at improving the quality and relevance of education (KICD, 2019). When educators equip learners

with critical thinking and problem-solving skills, students develop a deeper understanding of the content and will acquire the competencies needed to compete in the dynamic 21st century and to be responsible citizens (Katiba & Ji, 2017). Critical thinking, problem solving, and creativity are key components of competency-based curricula (Charles, et al., 2023; Kimario, & Otieno, 2022)

Education is a fundamental human right, yet for many refugees, accessing quality education remains a significant challenge (UNHCR, 2019). In refugee settings like Kyaka II in western Uganda, the Competence-Based Curriculum is being implemented with hardship, as it is for many other refugee settlements countrywide. The level of ICT usage is low, coupled with inadequate teacher training and low career guidance orientation of learners (Windle International, 2022), thus the need for this study. ICT enables learners to develop insights into their study content, enhance their creativity, create unique learning materials through game-based activities, and gain access to their study materials through television or CDs (Lidia et al., 2018). It is clearly acknowledged that the integration of ICT in the instructional process motivates teachers and learners alike and helps them to clarify abstract concepts, save time, actively engage the learners, and simplify the teacher's work (Najjuma, 2024).

Kyaka II refugee settlement, established in 2003, hosts over 100,000 refugees from the Democratic Republic of Congo, Burundi, Rwanda, and South Sudan. Despite Uganda's progressive refugee policies, there's a significant gap in providing ICT skills necessary for implementing the

Competence-Based Curriculum (CBC). The Third National Development Plan (NDPIII) acknowledges Uganda's global recognition for refugee policy but highlights resource challenges amid increasing refugee numbers (Republic of Uganda, 2020; UNHCR, 2022). Refugee children's extended stays necessitate long-term educational planning, as globally, refugees spend an average of 17 years away from home countries (British Council, 2018; Kiiria et al., 2024). UNHCR advocates integrating refugees into Uganda's national education system, requiring CBC training with ICT integration to align educational practices (UNHCR, 2022).

It is evident that pedagogical ICT training sessions for teachers in secondary schools to equip them with the digital competencies demanded by the competence-based curriculum are lacking among refugee secondary schools (Tulibaleka et al. 2022; Opol, 2023). This study therefore investigated the integration of ICT into the Competence-Based Curriculum to for effective quality education to refugees in Kyaka II. Similar settlements may copy from the recommendations of this study to provide a holistic approach that integrates ICT effectively using strategic policy frameworks, enhanced teacher training, and collaborative partnerships to overcome challenges and provide quality education that equips refugee learners with essential skills for their future.

Problem statement

The integration of Information and Communication Technologies (ICT) into secondary schools implementing the Competence-Based Curriculum (CBC) within Kyaka II Refugee Settlement presents a transformative opportunity to significantly enhance learning outcomes and equip students with essential 21st-century skills (Ochoa, 2023; FCA, 2023). However, the current state of secondary schools like Bukere and Bujibuli within Kyaka II Refugee Settlement paints a starkly different picture. These schools grapple with critical challenges, characterized by under-resourced facilities, inadequate classrooms, limited teaching materials, and a scarcity of

qualified teachers (Ochoa, 2023). Moreover, the disruptive impact of ongoing conflicts has exacerbated the situation, leading to significant education disruptions for many refugee children, thereby impeding the effective implementation of the CBC (Sekaggya-Bagarukayo & Oddy, 2022; Abu-Ghaida, & Silva, 2021).

Despite commendable efforts by stakeholders such as the United Nations High Commissioner for Refugees (UNHCR), the FCA, and the Office of the Prime Minister, interventions aimed at addressing these challenges have fallen short (Diez, 2023; FCA, 2023). The persisting concerns primarily stem from the ineffective implementation of the CBC, attributed to ongoing challenges related to under-resourcing, inadequate teaching materials, deficient teacher training, and a lack of defined career orientation for learners within refugee schools (Cox, 2023). Therefore, the central concern lies in bridging this gap between the ideal scenario, where ICT integration enhances learning outcomes and fosters 21st-century skills development (Kalyani, 2024), and the current reality characterized by challenges hindering effective CBC implementation. This study investigated the impact of incorporating Information and Communication Technologies (ICTs) on the effectiveness of implementing CBC in refugee schools within Kyaka II Refugee Settlement.

Literature Review

Context of the Competency-Based Curriculum

Curriculum serves as a vehicle through which a country equips its citizens with the necessary skills, attitudes, knowledge, and values to prosper socially and economically (Conrad et al., 2023). A competency-based curriculum (CBC) emphasizes what learners are expected to do rather than what they are expected to know, making it learner-centered and adaptive to changing needs (Kembabazi, 2023). The CBC focuses on what learners acquire rather than the time spent in the classroom, making education affordable, engaging, purpose-driven, and flexible (Preeti, 2021). This approach supports career

development by allowing learners to progress at their own pace and demonstrate their competencies through practical application.

The integration of Information and Communication Technology (ICT) is a crucial element of CBC, aimed at developing competencies relevant to the 21st-century job market (Sabiti, 2023). Mokoro (2020) reported that CBC is directed at developing knowledge, understanding, abilities, values, attitudes, and interests to ensure learners can perform tasks accurately and responsibly. Continuous formative assessments, rather than high-stakes summative exams, are used to evaluate learners' competencies (Imana, 2020). Previous studies have shown that CBC improves problem-solving, critical thinking, and lifelong learning skills, enhances self-efficacy, and increases engagement with peers and material understanding (Choi & Woo, 2020; Koo, 2020; Kwak, 2019). For instance, the implementation of CBC in Kenyan primary and secondary schools has successfully enhanced critical thinking, problem-solving abilities, and entrepreneurial skills (Odundo & Otunga, 2019; Njoroge & Kariuki, 2021).

Despite the benefits, challenges exist in the implementation of ICT in CBC. The new curriculum demands high levels of ICT literacy, which is lacking among many teachers and learners (Conrad et al 2023). A study by Kembabazi (2023) in Tororo municipality revealed that while CBC is accepted and implemented, it is demanding in terms of time and resources. Additionally, there is a need for more computer skills among teachers. Murtonen et al. (2017) identified three assessment modes in CBC: diagnostic, formative, and summative. Diagnostic assessments pinpoint needs before lessons, formative assessments measure progress during lessons, and summative assessments evaluate whether learning outcomes are met. These assessments help teachers create further learning activities to bridge gaps until learners become proficient.

Challenges met in using ICT in Education

Curriculum implementation is faced with teacher challenges that are administrative, school-based, teacher-based, community based as well as policy based (Charity 2016; Ebaid, 2023). Some of the challenges of integrating ICT in education in Uganda include limited access to technology and the internet, inadequate teacher training, and limited digital literacy skills among learners and teachers (Wasswa, 2018; Kakaire et al., 2019). Despite these challenges, there are opportunities for the effective integration of ICT in the CBC in Ugandan secondary schools. These opportunities include the potential to enhance the quality and relevance of education, increase learner engagement, and promote innovation and creativity among learners (Mugagga et al., 2018). Sabiti, (2023) reports a general challenge was scarcity and expense of ICTs, which made them inaccessible to many schools and students. The high cost associated with buying some of these ICTs such as computers and projectors created a barrier to their effective integration into lessons, since most teachers shared some ICTs as a department. Muhwezi, (2023) investigated teacher challenges that affect Business Subjects teachers' preparedness in the implementation of the new Business Subjects curriculum in selected secondary schools of Kabale District, Uganda using a pragmatist perspective with data being collected from 50 participants through semi-structured interview schedules and questionnaires. Findings indicate that teacher challenges that affected the implementation of the new Business subject's curriculum included lack of adequate teacher in-service training, limited competent human resources.

Charles et al. (2022) conducting a systematic literature review to identify and synthesize the factors affecting the implementation of competency-based curricula (CBC) in secondary schools in Uganda considering relevant studies published between 2013 and 2022. 27 studies revealed that challenges affecting the implementation of Competency Based curriculum include limited training for teachers, inadequate

resources (textbooks), inadequate funding, very high teacher-student ratios (1:70), limited stakeholder support, and non-adherence to national policies and priorities, lack of stakeholders' involvement, inadequate monitoring and supervision, inadequate infrastructure, and resistance to change were identified. The review also identified the importance of effective leadership, teacher motivation, and student-centered learning in facilitating successful implementation (Namubiru, et al., 2024). The review highlights the need for continued efforts to support CBC implementation in Uganda, particularly through targeted training and support for teachers and stakeholders, and increased investment in ICT resources and infrastructure. This study therefore investigated the role played by teacher training and the integration of ICTs in the implementation of the CBC in a refugee setting.

The Role of ICTs in Education

Technology today is appreciated as a drive to transformation, and the revised curricula emphasize the integration of ICT in all aspects of teaching and learning (Mukhula et al., 2021). Sabiti (2023) examined how ICTs can be used to help students learn within the context of a competence-based History and Political Education curriculum using a qualitative approach. This study utilized a multi-case study design, collecting data from history teachers of eight secondary schools using in-depth interviews and observation, with data being thematically analyzed. The study revealed that the use of ICTs in teaching makes lessons lively, more interesting, and promotes active participation and engagement among students. The findings further suggest that the use of ICTs in teaching is not a one-size-fits-all solution, and that teachers should adopt different approaches to utilizing ICTs in their history classes.

Hanaysha et al. (2023) investigated the impact of ICT resources and university facilities on academic performance and student engagement at higher education institutions (HEIs). A survey tool was used to gather data from 314 students in

the United Arab Emirates. The results supported the notion that teacher competency and ICT resources have positive effects on both academic performance and student engagement. Timotheou et al. (2023) found that ICT integration in schools not only impacts students' performance but also affects several other school-related aspects and stakeholders. Similarly, Kibirige and Katabazi (2020) postulate that ICT integration enhances the effectiveness of the CBC in developing students' competencies. However, various challenges hinder the effective integration of ICT in the CBC, such as inadequate infrastructure, lack of ICT skills among teachers, and limited access to ICT resources (Manyasa, 2022). For successful implementation of the CBC, it is necessary to engage all stakeholders, including policymakers, teachers, parents, and students. Involving stakeholders in the curriculum development process can enhance the relevance and effectiveness of the CBC. Similarly, engaging parents in the implementation process can improve their support and participation in their children's education (Atuhaire et al., 2024; Gizaw & Sota, 2023).

According to Conrad et al. (2023), up-to-date technology and its accessories should be working, available, and accessible to facilitate CBC in secondary schools. Learners are more active when they use the internet and discover a lot on their own during and after the lesson, which is the core of CBC. It is important to integrate ICTs in the CBC implementation process as it harnesses teaching and learning for teachers and learners. Open Education Resources (OERs) frequently provide strong source material for the content of ICT-led education programs for refugees, but should be adapted to context in line with the principles outlined above. From a pedagogic perspective, there is frequently a need to improve educational structuring within digital OER, and to improve instructional design in accordance with pedagogic principles (UNESCO, 2018). In addition to providing learning, ICTs can also provide systemic support to education in refugee settings, offering a means to train teachers, share materials and advice, assess and document

learning, and certify educational achievement (von Lautz-Cauzanet, 2018).

Methodology

The methodology for this study adopted a meticulous approach to ensure representation and diversity. Two secondary schools within Kyaka II Refugee Settlement were selected based on their size, geographical distribution, and the status of Competence-Based Curriculum (CBC) implementation. The study's sample size consists of 102 respondents, including 13 administrators and 89 teachers, all of whom were purposively selected. Inclusion criteria involved active involvement in CBC and ICT integration, while exclusion criteria excluded individuals not directly engaged in these processes, such as uninvolved parents and NGO staff.

Data collection tools encompassed a quantitative survey and qualitative interviews, designed according to Kumar et al. (2022), to gather comprehensive information on ICT integration and CBC implementation. The structured survey included questions on ICT usage patterns, perceptions of CBC effectiveness, challenges faced, and overall learning experiences. Semi-structured interviews were conducted with key educational stakeholders, including administrators and teachers, to explore ICT integration, CBC strategies, and the impact of ICT on teaching and learning. Ethical considerations were paramount throughout the study to ensure participants' rights and confidentiality. Informed consent was secured from all participants, emphasizing their right to withdraw at any stage without consequences. Confidentiality and anonymity were maintained during data collection, analysis, and reporting processes.

Findings of the Study

Status of CBC Implementation

The study conducted a thorough examination of the intricate landscape surrounding the implementation of the Competence-Based Curriculum (CBC) in a select group of secondary schools, offering an expansive exploration of the

myriad challenges, triumphs, and gaps encountered within this educational framework. It was discernible that schools situated within the confines of Kyaka II refugee settlements demonstrated a steadfast dedication to upholding the CBC implementation guidelines stipulated by the National Curriculum Development Center (NCDC), a commitment underscored by their proactive efforts to align educational methodologies with established national standards. This commitment aligns with the learner-centered and adaptable nature of CBC highlighted in table 1 below as well as in the literature (Conrad et al., 2023). However, despite this earnest commitment, a palpable disjunction emerged between the fervent adherence to CBC principles and the perceptibly limited integration of Information and Communication Technologies (ICTs) into pedagogical practices, thus illuminating a significant incongruity within the educational landscape.

The structural composition of the curriculum within these educational institutions mirrored the prescribed guidelines delineated by the NCDC, offering a diverse spectrum of subjects at the lower secondary level, complemented by elective options designed to afford students a degree of academic autonomy and versatility in their educational pursuits. Nevertheless, the comprehensive analysis conducted during the study brought to light persistent challenges pertaining to resource scarcity, particularly the glaring absence of fundamental materials such as textbooks, computing devices, and supplementary reading resources, which posed formidable barriers to the effective dissemination of the curriculum. These challenges resonate with findings from previous studies citing limited resources as barriers to effective CBC implementation (Charles et al., 2022).

While educators received requisite support in the form of curriculum materials, the dearth of essential resources, notably at the senior levels, underscored the urgent necessity for augmented resource allocation to facilitate the seamless implementation of the CBC and foster enhanced

educational outcomes as shown in table 1 below. Indeed, 72% (24+40) respondents disagreed when asked if the school had adequate ICT resources to enhance the implementation of the CBC. Thus, despite the commitment to CBC principles

observed in Kyaka II refugee settlements, the challenges related to resource scarcity highlight the need for comprehensive interventions to address systemic barriers and support CBC implementation efforts effectively.

Table 1: Responses of teachers

Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean	SD*
The Competence-Based Curriculum (CBC) has improved students' critical thinking skills.	1	2	1	26	59	4.57	0.74
I feel adequately trained to implement the Competence-Based Curriculum (CBC) effectively.	34	25	1	16	13	2.43	1.51
The availability of resources (e.g., textbooks, teaching aids) supports the implementation of the CBC in my classroom.	1	4	1	10	73	4.69	0.81
My school has adequate instructional materials to enhance the implementation of the CBC.	24	40	4	2	19	2.46	1.46
The Competence-Based Curriculum (CBC) encourages student-centered learning approaches.	0	1	2	2	84	4.90	0.45
I believe the CBC aligns well with the current needs of our society and economy.	3	9	16	38	23	3.78	1.05
The CBC has positively impacted students' problem-solving abilities.	5	14	20	31	19	3.51	1.16
Collaboration among teachers has enhanced the implementation of the CBC in our school.	10	17	8	34	20	3.42	1.33
I have noticed an improvement in students' practical skills since the adoption of the CBC.	3	10	6	14	56	4.24	1.19
The CBC has increased student engagement in learning activities.	10	18	4	36	21	3.45	1.35
Professional development opportunities related to the CBC have been beneficial for me.	2	5	0	36	46	4.34	0.92
Challenges such as limited resources have hindered the effective implementation of the CBC.	0	0	1	60	28	4.30	0.49
The CBC has led to a better integration of real-world applications in our lessons.	2	9	12	45	21	3.83	0.98
Continuous support from school administrators has facilitated the implementation of the CBC.	24	45	10	6	4	2.11	1.03
The CBC has helped in fostering students' self-confidence and self-esteem.	9	16	7	36	21	3.49	1.31
Collaboration with parents and community leaders would improve the implementation of the CBC in our school.	0	0	0	49	40	4.45	0.50
I believe that the CBC adequately prepares students for future career opportunities.	1	3	2	52	31	4.22	0.75
Additional training and workshops are needed to address challenges in implementing the CBC.	0	0	0	13	76	4.85	0.36
The CBC has improved the overall quality of education in our school.	0	2	17	43	27	4.07	0.77
Regular feedback from students helps in refining our approach to implementing the CBC.	1	4	1	56	27	4.17	0.76
I am optimistic about the long-term benefits of the Competence-Based Curriculum (CBC) for students.	3	11	36	21	18	3.45	1.06

Legend: SD = Strongly, D = Disagree, N = Not Sure, A = Agree, SA = Strongly Agree SD* = Standard Deviation

Challenges Faced by Educators

The findings of this study reveal a myriad of challenges faced by educators in refugee schools implementing the CBC, impacting the quality and effectiveness of education delivery. One significant challenge is the high student-to-teacher ratio, with classrooms accommodating an overwhelming number of students, leading to overcrowded learning environments. One of the respondents indicated revealed thus,

The S1 class has a total of more than 500 students. It becomes a big challenge to give each student the attention they deserve when there are over 130 students in a single stream (K6, 2024).

Indeed, a school having more than 130 students in a single class exacerbates the difficulties in providing personalized attention and support to each student which is in line with findings by (Charles et al., 2022) who assert that big classes pose a hindrance to effective instruction.

This study also found out that educators encounter substantial hurdles related to the integration of Information and Communication Technologies (ICTs) into teaching and learning processes. The respondents had this to tell;

The school is just trying to put things together. We do not have any computers. We are just building a computer lab (K3, 2024)

We have five laptops to be used by all the teachers in the school. They are surely not enough. On the side of students, we have 43 iPads. We even fear using iPads because learners feel entitled to them and would steal them given an opportunity (K5, 2024).

The study highlights a lack of adequate ICT infrastructure, including limited access to computers, tablets, and internet connectivity (Sabiti, 2023). This scarcity of resources hampers the effective utilization of ICTs as instructional tools, hindering innovative teaching methods and digital learning experiences (Mugagga et al., 2018).

Additionally, educators expressed concerns about the insufficient training and skills development opportunities in ICT utilization. One of the respondents revealed thus,

The school has iPads but teachers have not received any training on how to incorporate them in the teaching (K4, 2024).

Many teachers lack the necessary competencies to leverage ICTs effectively in their teaching practices, leading to underutilization and suboptimal integration of technology in the classroom (Kakaire et al., 2019). The study underscores the importance of comprehensive and ongoing teacher training programs focused on enhancing ICT literacy and pedagogical skills (Muhwezi, 2023).

Furthermore, poor internet connectivity emerges as a significant challenge, impeding access to online resources, digital content, and interactive learning platforms. Limited connectivity disrupts ICT-enabled lessons, inhibits real-time collaboration, and restricts students' access to digital learning materials (Timotheou et al., 2023).

We have one router supplying us with wifi. It is placed near the library. For all those trying to access it from other places, the internet is very slow (K8, 2024).

Security concerns surrounding ICT equipment also pose challenges in refugee school settings. The study notes instances where refugees feel entitled to the limited ICT resources available, leading to theft and damage to essential technology tools (Sabiti, 2023).

The other day, seven of our ipads were stolen. The school incurred a cost to place them. This time round, we prefer keeping them with a librarian. The other place to keep them would have been the computer lab, yet, the ministry requires that the windows of classrooms must have no buglers and so we are always threatened that the Ipads might be stolen by students (K11, 2024).

Thus, insecurity of ICT gadgets jeopardizes the sustainability and effectiveness of ICT integration initiatives, necessitating robust measures to safeguard ICT infrastructure (Muhwezi, 2023).

ICTs and CBC Implementation

The integration of Information and Communication Technologies (ICTs) plays a pivotal role in enhancing the implementation of the Competence-Based Curriculum (CBC) in secondary schools within refugee settlements. Several studies (Sabit, 2023; Mukhula et al., 2021) emphasize the significance of ICTs in modern educational practices, particularly in facilitating learner-centered approaches, promoting active engagement, and improving the quality of teaching and learning processes.

Whenever I use powerpoint to teach, learners become more attentive and involved (K10, 2024).

Research findings (Timotheou et al., 2023; Kibirige and Katabazi, 2020) highlight that ICTs contribute significantly to content retention and coverage, enabling students to understand concepts better through interactive digital resources and multimedia content. Learners' motivation and participation increase notably when ICTs are incorporated into lessons, fostering collaborative learning, communication skills, and problem-solving abilities (Hanaysha et al., 2023).

Using iPads excites learners and increases their interest in school and class activities. They also help learners to work in groups (K7, 2024).

Moreover, the utilization of ICTs such as computers, tablets, and digital learning platforms aligns with the principles of the CBC, which emphasize self-directed learning, inquiry-based approaches, and real-world applications of knowledge (Conrad et al., 2023). By leveraging ICT tools, teachers can create dynamic and interactive learning experiences, cater to diverse learning styles, and promote critical thinking and creativity among students (Mukhula et al., 2021).

One notable initiative mentioned in the findings is the dotShule arrangement adopted by one school to manage core operational areas effectively (Charles et al., 2022). dotShule encompasses various functions such as information management, academic planning, attendance tracking, and communication with stakeholders, demonstrating the potential of ICTs to streamline administrative processes and enhance school management practices.

Our school uses the dotshule system, which is helping to transform school operations. Administrative processes are more efficient with that system. It has also enhanced School management (K4, 2024).

Furthermore, the study (Sabit, 2023) underscores the importance of robust ICT infrastructure and accessibility to ensure the successful integration of technology in CBC implementation. Challenges such as limited access to ICT devices, poor internet connectivity, and inadequate ICT skills among educators highlight the need for comprehensive capacity-building initiatives and resource allocation (Kakaire et al., 2019; Muhwezi, 2023).

We surely need ICT infrastructure because limited access to devices and the internet hinders ICT implementation. Teachers also need better ICT skills training for better classroom delivery (K3, 2024).

The effectiveness of teaching is greatly improved by ICTs. In our community, student engagement and personalized learning go high with ICT integration (K6, 2024).

The correlation coefficient ($r=0.67$) observed in this study indicates a strong moderate positive relationship between the use of Information and Communication Technologies (ICTs) and increased student engagement and motivation. This finding is consistent with the literature on the impact of ICT in education, which highlights the potential of technology to enhance learning experiences by making lessons more interactive and engaging. For example, research by Sabit (2023) and Hanaysha et al. (2023) supports the

notion that effective ICT integration can significantly boost student involvement and academic performance. The strong moderate correlation ($r = 0.67$) aligns with findings from studies such as those by Choi & Woo (2020) and Koo (2020), which report similar positive effects of ICT on student engagement and motivation. Despite these positive correlations, the study also identifies ongoing challenges, including inadequate ICT resources and limited teacher training, which hinder the effective implementation of ICT in the Competence-Based Curriculum (CBC). This reflects broader challenges reported in the literature, such as the scarcity and expense of ICT resources and the need for improved teacher training (Conrad et al., 2023; Sabiti, 2023). Addressing these challenges is essential for maximizing ICT's benefits in educational settings.

Overall, ICTs play a critical role in supporting the implementation of the Competence-Based Curriculum (CBC) by enhancing teaching effectiveness, fostering student engagement, and enabling personalized learning experiences. However, addressing challenges related to ICT infrastructure, teacher training, and digital literacy is crucial to maximize the benefits of ICT integration in refugee schools (Kibirige and Katabazi, 2020; Timotheou et al., 2023).

Discussion of Findings

The findings of this study offer a detailed analysis of the implementation of the Competence-Based Curriculum (CBC) in secondary schools within Kyaka II refugee settlement, revealing a complex interplay of commitment, challenges, and opportunities. The study highlights a strong dedication among schools in Kyaka II refugee settlements to adhere to CBC guidelines as prescribed by the National Curriculum Development Center (NCDC). This commitment is evident in the schools' efforts to align educational practices with national standards, reflecting the learner-centered and adaptable nature of CBC as emphasized in recent literature (Conrad et al., 2023). However, despite this commitment, a significant gap remains in the

effective integration of Information and Communication Technologies (ICTs) into teaching practices, highlighting a crucial area for improvement.

The correlation coefficient ($r = 0.67$) observed in this study underscores a significant positive relationship between ICT use and student engagement and motivation. This finding aligns with existing research highlighting the benefits of integrating technology into education. Studies by Sabiti (2023) and Hanaysha et al. (2023) reveal that ICT can enhance educational experiences by increasing student interaction and enthusiasm. This result supports the broader literature on ICT's role in enhancing the CBC, emphasizing learner-centered and flexible education (Kembabazi, 2023; Preeti, 2021). Despite these promising results, the study highlights challenges such as inadequate ICT resources and insufficient teacher training, which impede effective implementation (Charity, 2016; Sabiti, 2023). Addressing these barriers through increased investment in ICT infrastructure and comprehensive teacher training is crucial for realizing ICT's full potential in improving educational outcomes within refugee settings.

Resource scarcity emerges as a major barrier to the effective implementation of CBC. The study found that schools faced considerable challenges due to the lack of essential materials, such as textbooks, computing devices, and supplementary reading resources. This shortage of resources poses significant obstacles to the curriculum's effective delivery and aligns with previous findings that cite limited resources as a hindrance to CBC implementation (Charles et al., 2022). The lack of these fundamental resources, particularly at the senior levels, underscores the urgent need for enhanced resource allocation to support CBC efforts and improve educational outcomes.

In addition to resource limitations, the study identifies several challenges faced by educators in refugee schools. Overcrowded classrooms and high student-to-teacher ratios were highlighted as major issues, making it difficult to provide personalized attention and support to students.

These challenges are consistent with previous research that indicates large class sizes impede effective instruction (Charles et al., 2022). Furthermore, the integration of ICTs into teaching is hindered by inadequate infrastructure, including limited access to computers and poor internet connectivity. This issue is compounded by insufficient training in ICT utilization, which restricts educators' ability to effectively incorporate technology into their teaching practices (Kakaire et al., 2019; Muhwezi, 2023).

Despite recognizing the potential benefits of ICTs, such as increased student engagement and improved teaching effectiveness, many schools face challenges related to infrastructure and security. Limited access to ICT resources and concerns about theft undermine the effective use of technology in classrooms (Sabiti, 2023). Nevertheless, some schools have implemented innovative solutions, such as the dotShule system, which has improved administrative processes and school management (Charles et al., 2022). This initiative highlights the potential of ICTs to enhance various aspects of educational practice, even in challenging environments.

The study underscores the critical role of ICTs in supporting the implementation of CBC. ICTs facilitate learner-centered approaches, promote active engagement, and improve the quality of teaching and learning processes (Sabiti, 2023; Mukhula et al., 2021). The alignment of ICT tools with the principles of CBC—emphasizing self-directed learning and real-world applications—demonstrates the potential for technology to enrich educational experiences (Conrad et al., 2023). However, addressing issues related to ICT infrastructure, teacher training, and digital literacy is essential for fully realizing the benefits of technology integration (Timotheou et al., 2023; Kibirige and Katabazi, 2020).

Moreover, the adaptation of CBC within refugee settlements must consider the unique educational contexts and socio-economic challenges faced by these communities. The study reveals that while the theoretical framework of CBC supports personalized and learner-centered education, its

practical application is often constrained by external factors such as displacement, poverty, and cultural barriers. Effective implementation requires a nuanced approach that integrates local contexts and addresses specific needs of refugee students and educators (Conrad et al., 2023). The need for tailored support mechanisms and contextualized training programs becomes evident, emphasizing that a one-size-fits-all approach may not be sufficient to overcome the diverse challenges faced in these settings.

Furthermore, the study's findings highlight the importance of fostering collaborative efforts between stakeholders, including government agencies, non-governmental organizations, and community leaders. By leveraging collective resources and expertise, it is possible to address the systemic issues affecting CBC implementation. Partnerships that focus on providing resources, training, and infrastructural support can create a more conducive learning environment and enhance the overall effectiveness of CBC in refugee schools (Charles et al., 2022; Timotheou et al., 2023). Engaging with local communities to understand their specific needs and incorporating their input into educational strategies can also help in developing more sustainable and impactful solutions.

Practically, the study's findings highlight the urgent need for targeted interventions to address the significant resource gaps and enhance ICT infrastructure within refugee settlement schools. Policymakers and educational stakeholders should prioritize the allocation of necessary resources, such as textbooks, computing devices, and supplementary reading materials, which are crucial for effective CBC implementation (Charles et al., 2022). Additionally, investing in comprehensive ICT training programs for educators is essential to overcome the current limitations in technology integration. This includes not only providing basic ICT skills but also advanced training in using technology to facilitate learner-centered approaches and enhance teaching effectiveness (Kakaire et al., 2019).

Furthermore, implementing robust measures to safeguard ICT equipment against theft and damage is critical. Ensuring secure storage and management of ICT resources will help mitigate challenges related to technology integration and maximize the benefits of digital tools in the classroom (Sabiti, 2023). Theoretical implications suggest that while the CBC framework holds substantial promise for improving educational outcomes, its success in refugee settlements is heavily dependent on adequate resource availability and effective integration of technology. The alignment of ICT tools with CBC principles—such as promoting self-directed learning and real-world applications—demonstrates the potential for technology to significantly enrich educational experiences. However, without addressing the underlying issues of resource scarcity and technology infrastructure, the full potential of the CBC framework may remain unrealized (Conrad et al., 2023; Timotheou et al., 2023).

The limitations of this study include its focus on a specific group of schools within Kyaka II refugee settlements, which may not fully represent the broader context of CBC implementation across different regions or refugee settings. Additionally, the reliance on self-reported data from educators introduces potential biases and inaccuracies. The rapidly evolving nature of ICT and educational technologies also means that findings related to technology integration may become outdated quickly, limiting the long-term applicability of the study's conclusions. However, to validate the findings, the study deliberately focused on schools with similar socio-economic and infrastructural conditions within the settlement, ensuring internal consistency. In addition, data triangulation was employed by gathering insights from both educators and students to reduce the impact of self-report bias. The study also adhered to a time-bound analysis of technological use, focusing specifically on tools and technologies available during the period of research, allowing for a snapshot of current integration practices.

The study contributes to the theoretical understanding of curriculum implementation in challenging environments, emphasizing the need for strategic resource allocation and technological support. Future research could build on these findings by exploring the impact of targeted interventions on student learning outcomes and broader educational practices within refugee settings.

Recommendations

Based on the study's findings, several recommendations are proposed to enhance the implementation of the Competence-Based Curriculum (CBC) in Kyaka II Refugee Settlement schools, particularly regarding ICTs and teacher training. The "dotShule" initiative and support from organizations like Finn Church Aid address ICT challenges and align with prior recommendations (Kibirige & Katabazi, 2020; Ongowo & Indoshi, 2020) for capacity building and infrastructure improvement.

- Implement structured and ongoing teacher training programs focused on ICT integration, covering technical skills and pedagogical strategies for effective ICT use in teaching and learning.
- Invest in improving ICT infrastructure in schools, providing adequate computers, tablets, internet connectivity, and digital learning resources. Collaborate with stakeholders to secure funding and resources.
- Advocate for policy adjustments at local and national levels to support ICT integration in education, including frameworks prioritizing ICT investment, teacher capacity building, and curriculum alignment with digital resources.
- Develop initiatives for both teachers and learners on ICT use in schools under refugee arrangements, including training workshops, seminars, and hands-on sessions to empower educators and students with digital literacy and skills.

- Foster partnerships and collaboration between educational institutions, NGOs, government agencies, and private sector entities to leverage expertise, resources, and support for CBC implementation, promoting ICT utilization, teacher training, and infrastructure development.

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