

IMPLEMENTATION OF COMPETENCY BASED EDUCATION (CBC) IN KENYA: CHALLENGES AND OPPORTUNITIES

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Abstract

Given the challenges associated with the 8:4:4 system of education CBC that is skill-based has been deemed appropriate to replace it. The first cohort students of CBC are currently in grade 8-junior secondary school that has been domiciled in primary schools. However, the implementation seems to be bedeviled by multiple challenges. It is against this backdrop that this paper purposes to look at implementation of CBC in Kenya: Challenges and opportunities. Objectives of the study were: to determine the human resource challenges facing implementation of CBC; to establish the Schools' infrastructural challenges facing the implementation of CBC; to establish the financial challenges facing the implementation of CBC and to examine the opportunities that can be explored towards realization of the success of the implementation of CBC. The study explored empirical literature and it was underpinned by Provus Educational Evaluation Model (1973). The study established that there are a multiple challenges bedeviling CBC implementation including financial constraints towards funding the students' fees, and for establishing infrastructure. That there is acute shortage of teachers for the CBC and more so the JSS and that even the few teachers employed requires continuous support through professional training and develop to make them competent enough towards effectiveness in the delivery. That there are serious gaps in infrastructure including science and computer laboratories and that there are opportunities available to improve on CBC delivery-including improvement on funding; hiring more teachers and giving them continuous professional development amongst others.

KEYWORDS: *Implementation of competency based curriculum Kenya, challenges, opportunities.*

Introduction

The study purposes to look at implementation of Competency Based Curriculum: Challenges and opportunities. Specifically, the study sought to establish: human resources challenges facing implementation of CBC; to establish schools' infrastructural challenges facing implementation of CBC; to establish financial challenges facing implementation of CBC and to examine opportunities that can be explored towards realization of implementation of CBC.

Competency Based Curriculum (CBC) is new educational innovation geared towards making learners acquire the desired 21st Century skills consisting of Communication, collaboration, critical Thinking and Creativity (the 4Cs) and the Digital Literacy skills (Mmbonga, 2021; Nyaboke et.al, 2021; Mogere and Mbatanu, 2023). The CBC is

gradually replacing the 8:4:4 System of Education in whose initial Aim of producing learners who would be self-reliant, however it slowly rolled into being too academic and examination oriented leading to cut-throat competition amongst the students, the issues that formed the epicenter of its replacement with the current education system of 2:6:3:3:3 system of education.

Educational innovations are inevitable in any dynamic and well-meaning society and hence an educational dispensation, that is likely to elevate society in terms of development in the caliber of CBC are likely to be considered for operationalization.

Background Literature

Nyaboke et.al (2021) in their study entitled 'CBC Implementation in Kenya and the Challenge of Vision 2030 adopted a descriptive survey study design literary criticism and literary appreciation in their quest toward meeting the objectives of their study. The scholars acknowledge the fact that CBC is meant towards acquisition of the 4Cs of Communication, collaboration, critical Thinking and Creativity skills towards quality of education attainment as envisioned in Sustainable Development Goal Number 4 on quality education, forming a critical pillar in the Kenya Vision 2030. Their study establishes serious gaps in the CBC implementation process that would certainly bottleneck the goal toward achievement of quality education.

Mogere and Mbatanu (2023) on determinants of CBC Implementation in selected Public Primary Schools in Nairobi City County, Kenya adopted descriptive survey study design in which 35 public primary schools in the aforementioned County of Kenya were studied. The study established that implementation of CBC is impacted by teacher training and schools' leadership style and that better communication and collaboration practices bear on its effective operationalization.

Masika (2020) on CBC implementation: Assessing Kenya's Readiness adopts literature review design in the study. The researcher is cognizant of the fact that demographic factors of swelling class enrollment and a gap in teaching force and pedagogical gaps on the practicing teachers.

Munyao et.al (2023) on teacher instructional preparedness on implementation of CBC in public primary schools in Lamu West Sub-County, Kenya adopted survey study design in which 211 teachers, 19 Public primary schools, 19 head teachers and 6 education officers participated in the study all of which were selected through relevant sampling procedures. The study established the practicing teachers in the public primary schools surveyed lacked requisite ICT skills towards implementation of the CBC digital skills. The exhibited gap in knowledge, skills and attitudes was an impediment towards achievement of all important required educational skill in the 21st century community.

Momanyi and Rop (2020) on teacher preparedness for the instruction of CBC in Kenya: A survey of early grade primary schools in Bomet East, Kenya are cognizant of the fact that the roll out of the CBC was done in a hurry oblivious of teacher preparedness nor was there sufficient infrastructure nor were there logistics of availability of curricula

materials. However, CBC is gradually replacing the exam oriented 8:4:4 system of education that came into effect in the year 1985.

Okeyo and Mokuia (2023) on preparedness of teachers for implementation of CBC in Public Secondary schools in Public secondary schools in Nyamira Sub-County, Kenya adopted a descriptive survey design on which 483 respondents participated in the study. The key finding was that teachers were ill-prepared in terms of pedagogical knowledge, skills and attitudes towards implementation of CBC and hence hindrance of effectiveness in the implementation of the CBC.

A study by Mwang'ombe (2021) on CBC in Kenya: Teachers' understanding and skills reality on the ground, success, challenges and recommendations on the implementation of CBC that is skill-based. CBC emphasizes the 4Cs and the digital literacy skills.

Orina (2022) on teachers' preparedness in the implementation of CBC in Science Learning in Public Primary Schools in Nairobi County, Kenya was underpinned Theory of Change by Weiss. The study adopted descriptive survey design in which 1710 Public primary schools' grades 1 to 4 teachers out of which 324 teachers were selected for the study, 20 head teachers and 10 Curriculum Support Officers (CSOs) participated in the study.

Hussein (2023) on the challenges that face the implementation of CBC in Northern Kenya adopted survey study design through which 45 Public Primary school teachers and 15 head teachers were sampled for the study. The study establishes gaps in teacher preparedness, curricular materials, infrastructure all of which constraining the effectiveness in operationalization of the noble CBC.

Kuria (2022) on relationship between schools' preparedness and effective implementation of CBC: A study of teacher knowledge in Nairobi County, Kenya adopted a survey study design in which 80 questionnaires were administered to the respondents with a return rate of 65 (81%) these were from amongst the 10 schools that were actually surveyed. The study established gaps in practicing teachers' pedagogical preparedness, numbers of teachers towards operationalization of the CBC programs. These findings have implications for effective stakeholder engagement towards ensuring sufficient infrastructure, adequate teacher training towards CBC, employment of more teachers towards effectiveness of the CBC, amongst others.

Ojung'a (2023) on influence of teacher preparedness on the implementation of CBC in Public Primary Schools in Kikuyu Sub-County, Kenya used survey study design in which 132 grade 6 teachers were selected to participate in the study drawn from 28 public primary schools in the aforementioned Sub-county of Kenya. Questionnaires and interview schedules were administered to collect the data for the study. Quantitative data collected were analyzed with assistance of SPSS computer software programme version 25 and qualitative data collected through interviews were analyzed qualitatively and reported thematically on the basis of study objectives that also fashioned the nature of questions so addressed by the study.

Materials and Methods

The success of any meaningful empirical study must usually be based on a methodology and or study design whose intent and purpose is to address the study questions in accordance to the research traditions. Therefore, this study is based on meta-analysis of empirical studies that are subjected to screening within the realm of the current study and hence the Ferrer's (1998) theoretical underpin. The current study therefore reviews relevant studies that address the problem in question to make it an interwoven empirical finding and write up hence adding to body of knowledge by filling knowledge gaps imminent in the previous studies.

The studies reviewed herein have utilized varied methodologies ranging from survey, mixed, triangulation, longitudinal, correlation of which the relevant theoretical underpinnings form the basis of the study.

On the Question Regarding Challenges of Human Resources on implementation of CBC in Kenya

Kubai (2023) on A Critical Review of the Challenges Facing implementation of CBC in Nairobi City, Kenya adopted survey design targeted grade 1 teachers and a sample of 120 learners selected for the study. The study established that there was transition uncertainty after grade 6. That lack of clear policy guidelines in regard to CBC implementation have bottlenecked it effective operationalization. That gaps in infrastructure for example ICT infrastructure leaves a lot to be desired. The findings have implications for policy makers on education to re-examine the policy framework towards smoothening CBC operationalization in regard to materials, human resources and infrastructure.

Gichuru and Wandabwa (2021) on Education curriculum transition in Kenya: An account and progress to CBC Education policy adopted literature review design to collect and analyze data. Informed by factors that influence change at varied phases, such as Christian missionary work, colonization, social and economic development imperatives. The essential knowledge, skills and attitudes cannot be overlooked as they would not only contributory towards curriculum implementation but too to the socio-economic development. That the transitional process from 8:4:4 to 2:6:3: 3:3 system of education. The transitional factor also points to global influenced scheme to destabilize internal mechanism of school system and motivating education stakeholders to innovative foundations curriculum evolvement and change strategies alongside policy framework as witnessed in the curriculum changes in Kenya over the years.

Sikolia (2024) on critical success factors to the implementation of CBC in Kiminini Sub-County, Kenya adopted critical literature design in the study and acknowledges the fundamental educational reforms that comes with the CBC as there is transition from 8:4:4 to CBC that the great aspect of it lies in the emphasis on 21st century skills that emphasizes learning by doing and stakeholder engagement as opposed to 8:4:4 that was largely content and academic oriented with social life skills being give raw deal, situation which CBC seeks to bridge. That apart from the communication, collaboration, critical thinking

and creativity skills CBC too seeks to make learners acquire digital literacy skills and make them global citizens of the 21st century by the manner of education.

Kuria (2022) on relationship between schools' preparedness and effective implementation of CBC: A study of Teachers knowledge in City County, Kenya adopted survey study design, while cognizance of the fact that CBC was rolled out in 2017 at the time that Kenya was working towards Vision 2030 when viewed within the lens of Goal Number 4 on quality Education. The study was underpinned by human capital Theory. The percipients included 6 teachers, one education manager, ten schools were surveyed. Findings showed that inadequate training for teachers for CBC implementation, gaps in physical infrastructure amongst others have negatively impacted CBC.

Wambiya and Ogula (2023) on the effectiveness of CBC adoption and implementation in Primary schools in East African Community Countries was underpinned by grounded theory design and document analysis technique of data collection utilized. The study established that CBC is an appropriate education system for East African Community member states. That teachers had too much work load occasioned by understaffing amidst swollen classes. Teachers have huge workload and this is made worse by understaffing. Teachers have negative attitude towards CBC. These findings have implications for the governments to hire more teachers, establish more infrastructure and prioritization of refresher courses and Teachers' professional development (TPD) and continuous support.

Ajuoga and Keta (2021) on CBC for Kenyan primary schools: Implementation challenges among stakeholders in Kenya adopted descriptive survey design. The study established acute teachers' shortage, inadequate training orientation for practicing teachers towards CBC implementation. Gap in curricular materials, infrastructure and insufficient government funding are some of the multiple challenges bedeviling CBC implementation process in Kenyan Primary schools.

Akhwesa (2023) on preparedness of facilitators in the implementation of CBC in pre-schools of Kayole Ward, Kenya adopted a survey design while addressing the question to what level are the facilitators prepared toward efficient implementation of CBC in pre-schools in Kayole Ward, Kenya? The study was anchored on socio-cognitive theory and mixed methods applied. The percipients consisted of heads of pre-school, pre-school teachers, all the 5 public-pre-schools and 90 registered private pre-schools in the named area of Kenya.

Nkya et.al (2021) on implementation of CBC in Tanzania: Perceptions, Challenges and Prospects: A Case of Secondary school teachers in Arusha Region, Tanzania adopted a mixed study approach and cross-sectional survey involving 233 teachers, 10 heads of secondary schools drawn from Arusha Region, and 5 District Education Officers. Data were collected through questionnaire and interview schedules. Both quantitative and qualitative data were collected and analyzed in accordance to relevant techniques of research. The study established the participant teachers reporting their incapacity pedagogically to effectively implement CBC due to deficient refresher course orientation

towards dispensation of the CBC. Teachers reported inadequate curricula materials towards CBC implementation. These findings have implications for teachers' continuous professional development, the ministries of education to improve on the funding for CBC towards infrastructural development, recruitment of more teachers to bridge manpower gaps towards curriculum implementation effectiveness and regular and continuous support for teachers, planning for and constructing infrastructure towards diffusing the swollen classrooms.

Issa et.al (2024) on Competency based curriculum in practice: implementation prospects and challenges in Mtama District secondary schools, Tanzania adopted complementary study design integrating both quantitative and qualitative techniques. Questionnaires and interview schedules were used to gather data. Finding highlights both teachers and students acknowledging the fact that CBC is emphatic of skill development as opposed to knowledge /content based educational system that has been the case prior to the introduction of the CBC. The study underscores the need for comprehensive integrated training for practicing teachers toward orientating them for the CBC. That serious gaps in curricula materials were reported by the respondents in the study and that there were also gaps in manpower towards effective operationalization of the skill-based CBC

Owuondo (2023) on disrupting Kenya's Education system :Advancing towards a learner centered paradigm from traditional time-based structures adopted a multi-faceted approach to produce transformation work including literary criticism and literary appreciation and this context acknowledge as to the great change that CBC is bringing on the table as compared to the gradually being phased out 8:4:4 system of education that was more of exam and knowledge oriented and not skill-focused to the magnitude of the CBC. The work examines a wide scale stakeholder engagement in the CBC with an inclination toward useful 21st century skill acquisition among the students, despite the plethora of challenges that bedevil its implementation including teacher shortages, practicing teachers' pedagogical knowledge gaps including in the operationalizing the 21st century skills amongst the CBC learners, infrastructural gaps including ICT gadgets, making it challenging towards digital literacy, coupled with the fact that even the teachers to implement the digital literacy are also largely themselves digitally illiterate, worse still lack of digital laboratories hence the bottleneck towards attainment of the noble skills. The implementation of learning areas in Junior Secondary schools like Integrated Science not only lacks the laboratories and their essential ingredients but too lack specialized teaching manpower in the area, showing gaps in the manner of implementation of the CBC.

Okal (2022) on teaching and assessment of Kenya's indigenous languages in the CBC :Challenges and the way forward .The study surveyed sampled educational commissions of Kenya adopted a literary meta-analytical approach with a sample of education commissions in Kenya that recommended teaching and learning of indigenous languages in Kenya and if clear policy framework exists towards its operationalization .With the adoption of CBC, indigenous languages are supposed to be taught from primary to

secondary schools. However, there exist challenges toward its implementation including: inadequate curricula materials, inadequately skilled teachers, inadequate infrastructure and poor delivery techniques. The findings have implications for stakeholders including policy makers, teacher trainers toward administering appropriate training to prepare teachers for the teaching, Ministry of Education to give sufficient funding for the schools' infrastructure towards effective operationalization of the programs.

Simon (2021) on Curriculum reform and innovation: Experiences from Kenya's CBC adopts literature review design and is cognizant that in 2015 Kenya began transition process in education from 8:4:4 which was content and exam oriented system of education to CBC which is basically skill oriented system of education, with the first cohort of the system now being in grade VIII. The new educational dispensation operationalization which is still in process of transition seems to be having teething troubles that has been characteristic of any new educational system in Kenya like gap in infrastructure, inadequately pedagogically prepared teachers whose role are central in the implementation process, inadequate curricular materials like published books, ICT infrastructure, amongst others these bring hiccups to the realization of the goals of the CBC system of education.

Omariba (2022) on Challenges faced by parents on implementation of CBC in Primary schools in Kenya adopts literary criticism and literary appreciation on the subject and is cognizant of the fact that success to implementation of any educational innovation lies on stakeholder engagement and so too parental engagement in CBC operationalization. That this is critical as an essential requirement of the curriculum. The study was underpinned by Epstein's overlapping spheres of influence Theory. The study established that there are problems to the implementation of CBC in Kenya including inadequate curricula materials, inadequately trained practicing teachers towards curriculum implementation effectiveness, infrastructural gaps both physical, software, ICT gadgets amongst others and this may go along negatively impact goals of CBC.

Rupai (2022) on Teacher roles in learning materials management in implementation of CBC adopted literature review design and is cognizant of the fulcrum role of teacher in operationalization of the CBC including learner motivation, evoking previous knowledge, provoking critical thought and creativity, communication, collaboration, interactive skills, while catering for individual differences and schools' inclusivity of learners for diverse backgrounds, employment of varied learning techniques while using multimedia approach towards learner centered approaches that guarantees maximized learning.

Limbo et.al (2023) on effects of instructional supervision on use of teaching and learning resources for implementation of CBC in Pre-primary classrooms in Webuye East Sub-County, Kenya adopts descriptive study design in which 316 respondents were targeted out of whom 157 pre-primary teachers were sampled, 1 Curriculum Support Officer and 1 Quality Assurance Officer were sampled for the study. Data were collected through interview schedules and questionnaire. Findings showed that supervision had strong positive relationship with utilization of teaching/learning resources amongst pre-

school teachers in schools in Ndivisi, Mihiu and Merdha Wards of Webuye East Sub-County, Kenya.

Mucheni (2021) on teacher's perspectives on the implementation of CBC in Kenya adopted mixed methods toward exploring teachers' views toward CBC implementation in Kenya. Fifty-three teachers were sampled for the study and a five-level Likert Scale questionnaire was formulated and used to collect the data. Data so collected were thematically analyzed. Deductive and inductive coding processes were used. The teachers reported that professional development program on which they were taken through sufficiently prepared them for CBC implementation in classroom environments. Teachers were tested objectively and majority of them fell short of satisfaction of the minimum quality of standards. The findings showed that while adequate published curricula materials were available to facilitate teaching and learning, the quality of the text books were wanting. The study established inadequate physical and ICT infrastructure and laboratories to support teaching and learning activities were wanting. The few number of teachers meant huge workloads for them with implications on service dispensation. Parental support was also wanting. However, teachers reported satisfaction with collegial support. But support from the Teachers Service Commission and teacher's union were deficient. These finding have implications for all stakeholder engagement towards improvement of CBC implementation and Ministry of Education and parastatals therein attached should develop and distribute relevant published curricula materials and organize teacher refresher programs and continuous teacher professional development support towards improving curriculum theory and practice.

Amukowa (2020) on CBC in Primary Schools in Kenya: Opportunities and Challenges on implementation utilized descriptive survey design in which 200 primary schools and 200 head teachers and 4 KMTTC teachers participated in the study. Data were collected through the use of questionnaires, interviews and observations. The study established that CBC was hurriedly implemented before putting all the prerequisite logistical measures and it was systematically planned and implemented with minimal training for the practicing teachers on pedagogy and hence the gap in their knowledge, skills and attitudes that have bottlenecked the effectiveness in the implementation process. That gaps in infrastructure including ICT, Physical like classroom, computer laboratories and ICT gadgets amongst others are a hindrance towards effectiveness in the CBC implementation in Kenya.

Issa et.al (2024) on competency based curriculum in practice: implementation challenges in Mtama District Secondary Schools, Tanzania highlights the inherent challenges in implementation of CBC in the stated category of schools in the named district of Tanzania as reported by students' and teachers' participants in the study. The CBC is hailed for emphasizing skill acquisition in the learners. The study established curricula materials shortage in schools that bottlenecks curriculum implementation effectiveness. That political temperatures in the country also constrain CBC implementation in schools.

Nsengimana (2020) on implementation of CBC in Rwanda: Challenges and Opportunities adopted a survey design and is of cognizance that by 2015, Rwanda

transited from knowledge based educational system to skill-based CBC. Data were collected through focused group discussions, surveys and school visits. Findings indicated that the CBC was acknowledged as a new educational dispensation. However, the new system of education faces multiple challenges during its implementation including inadequate teaching/learning materials, inadequate teaching staff, swollen classrooms, inadequate physical and ICT infrastructure, lack of science laboratories. That prospects include hiring more teachers, constructing more classroom, teachers' continuous professional development towards alignment with the CBC pedagogical demands, ministries of education to provide curricular materials towards effectiveness of operationalization of the CBC

Munyasia and Maureen (2021) on Kenya's Vision 2030 and the Efficacy of CBC in Primary and secondary Schools in Siaya County, Kenya. CBC is attributed to sustainable of key education resources that calls for equally well trained teachers, without which the implementation of CBC towards attainment of quality educations towards Goal number 4 in the Sustainable Development goals would be jeopardized. The inadequate number of teachers amidst soaring students' enrolment has implications on quality of curriculum implementation. The study adopted projection model into the future and the findings were as follows: The projection of teacher recruitment in Siaya County is at 9.81 between 2024 and 2030. That teacher establishment at JSS will increase by 33.44% between 2021-2030. While teacher requirement are expected to increase by 29.63% between 2026-2030.

Opondo et.al (2023) on the Challenges facing implementation of CBC in Kenyan Primary Schools in Kajiado County adopted descriptive survey study design in which focused on challenges facing on implementation of CBC in Kajiado Central and Kajiado North Sub-County in which 10 schools were selected as the units of analysis. Three teachers were selected from each of the 10 selected schools totaling to 30 teacher participants in the study. The study established that teachers interviewed were sufficiently trained to teach and assess and implement CBC in primary schools in Kajiado Central and North. However, there were few teachers resulting into huge work -loads for them with implications on service delivery. The enrollment of learners was huge. There were gaps in parental support. However, teachers required continuous professional development and continuous support towards ensuring effectiveness in their pedagogical dispensation.

Mulangi (2024) on Financial administration challenges on the implementation of CBC in Public Primary Schools in Taita Taveta County, Kenya adopted descriptive survey design in which a target population of 1764 consisting of head teachers, deputy head teachers and Board of Management Chairpersons. Primary data were collected through the questionnaires and Nassiuma's Formula was used to get a sample of 95 respondents out of the total of 1964. Findings showed positive relationship between delayed CBC Fund Disbursement on implementation of CBC amongst Public schools in Taita Taveta County ($r=0.741, p=0.027$). The findings also showed strong positive relationship between financial accountability and implementation of CBC in Public Primary Schools in Taita Taveta County, Kenya ($r=0.619, p=0.023$). Recommendations for adequate relevant training for

teachers toward orientating them for CBC implementation. Timely disbursement of CBC funds and prudent management and use of CBC Funds towards efficiency in the implementation of CBC in Public Schools in Taita Taveta County, Kenya

One the question as to the Infrastructural Challenges Facing implementation of CBC

Javinaitwe and Reddy (2022) on perceptions towards implementation of CBC among secondary school teachers in Uganda is cognizant that CBC is a skill-based educational approach that in its entirety learner centered where learning is by action/doing hence distinguishing it from the previous knowledge/content based system of education. The respondents perceived CBC to implementation process to be facing hurdles of infrastructural gaps including physical infrastructure like classrooms, science laboratories, CT laboratories and other ICT infrastructure including lack of Wi Fi and or internet connections, lack of electricity in many schools, swollen classrooms that poses a challenge toward effective classroom management and assessment, amidst understaffing.

Nthiga et.al (2022) on effective decision making on implementation of CBC in Kenya, adopted survey design on contributions of effective decision making on management of education in the CBC era in Kiambu County, Kenya. The study was carried out focusing 43 public primary schools in Kiambu County. The study established that effective decision making leads to a more integrative and focused approach to ensuring that infrastructural gaps, curricula material gaps, financial management gaps and human resources gaps would prudently be addressed with view to ensuring effective CBC programmes implementation, with adequate operational results measurement framework to determine the achievements in curriculum dispensation process.

Makunga (2016) on challenges facing teachers in implementation of CBC in Tanzania: The Case of Community Secondary schools in Tanzania adopted survey study design in which participants had a sample of 102 teachers, 6 head teachers and 6 academic directors. Findings indicated that teachers face multiple challenges in their implementation of CBC in schools including; inadequate parental engagement, exclusion of teachers on the curriculum design development. The finding has implications for the ministry of education to meaningfully engage teachers in curriculum design development towards meaningful implementation of CBC.

Nazimana (2021) on challenges facing teachers on implementation of CBC in Ugandan Secondary schools adopted a descriptive survey design in which participants consisted of 50 teachers, 4 head teachers and 4 education Officers in Gulu City, Uganda. Findings of the study showed that teachers in their quest for implementation of CBC in secondary schools in Uganda faced a number problems including acute infrastructural gaps that is physical ones like classrooms, laboratories for sciences, computer labs, Theatre rooms, CT infrastructure amongst others. Teachers were also deficient in numbers and also in pedagogical knowledge, skills and attitudes that is handy towards realization of the programs in question. That there is also lack of sufficient parental engagement, gap in curriculum materials, gap in government's funding of the programs and very limited

funding towards effectiveness in the program operationalization. These findings have implications for serious stakeholder engagements into the programs, towards funding, training of teachers through teachers' professional development and continuous support that are necessary towards smoothness in the implementation of the CBC curricula.

Mpate (2023) on Biology teachers' implementation of CBC in Tanzania: Challenges and Opportunities is cognizant of the fact that the implementation of the named programs has been going on for nearly two decades and yet teachers are still grappling with the implementation process. The study adopted a survey design that witnessed 32 participants being selected for the study constituting of heads of school, heads of Biology departments, Biology teachers and students. Data were collected through interviews and observations with thematic analysis for qualitative information. The study established that the Biology teachers were grappling with a multiple operationalization challenges including gaps in pedagogical matters, inadequate manpower, swollen classrooms, inadequate curricula materials, inadequate infrastructure amongst other teething issues.

Kamario and Otieno (2022) on effects of CBC on students' academic achievement :A study of schools in Arusha city Council,Tanzania.The study was underpinned by social constructivism theory and used convergent and mixed methods design in which there were 142 respondents consisting of 30 teachers,90 learners,10 heads of schools,10 quality assurance and standards officers,1 WEO and 1 DEO.The study established a strong significant positive relationship between the CBC and students' academic achievement.

Katam (2020) on dynamics of in the implementation of CBC in lower primary schools and implications on learning in Kenya adopted literature review and is cognizant that CBC as compared to the 8:4:4 systems that is gradually being phased out has been hailed as being skill-based which entails learning by doing and that it develops all round persons, while giving one room to excel in an area of interest towards choosing career pathways. That save for the teething challenges of gaps in infrastructure, manpower, finances, curricula materials, CBC would by far achieve the long desired educational goals towards 21st century global citizenry.

Lorris and Mejicano (2021) on the critical role of infrastructure and organizational culture in the implementation of CBC an individualized pathways in undergraduate medical education adopted secondary data and delved on competency based medical education (CBME) that is an outcome based developmental approach to ensuring trainees' readiness to advance through stages of training and continuing to grow in unsupervised practice of implementation of the program .That CBME is complicated and challenging endeavor calling for a fundamental shift on organizational culture and investment on appropriate infrastructure. This is all about how the American Medical Association accelerated and implemented CBME.

Ng'eno et.al (2021) on availability of physical infrastructure on the implementation of CBC in Public Primary Schools in Kericho County, Kenya adopted a descriptive survey design in which participants consisted of 6 Curriculum Support Officers (CSOs),52 head teachers, and 61 grade 1 teachers. Data were collected through interview schedules,

questionnaires, and observation schedule. Findings indicated that infrastructure had had positive influence on CBC implementation with a correlation of 0.336 and calculated value of 0.029 for the head teachers and 0.285 with calculated value of 0.03 for grade 1 teachers. Shortage of physical infrastructure like nutritional and music rooms had a mean of 2.18 and 1.88. Grade 1 teachers' response rate was 1.39 and 1.35 for nutrition and music lab respectively. Findings for head teachers on teacher preparation had moderate positive influence on CBC with correlation of 0.494 that calculated value of 0.00. The grade 1 teachers had a correlation of 0.369 with calculated value of 0.005 and were significant to the study.

Subery (2022) on the influence of school based factors on the implementation of CBC in Public Primary Schools in Kajiado North Sub-County, Kenya adopted a survey design and focused onto 63 public primary schools, 63 primary school head teachers, 516 teachers and 3402 Grades 4 and 5 students. Findings indicated that school based factors included head teachers' leadership styles, Availability of infrastructure, management of governments' disbursed funds towards CBC operationalization.

On the question of Financial Challenges Facing implementation of CBC

Mackatiani and Fierer (2023) on implementation of CBC in Junior Secondary Schools in Kenya are clear of the challenges that bedevil CBC implementation in JSS in Kenya including inadequate government funding for CBC and delayed disbursement of the same little fund to the JSS. There is also hardly any funding towards infrastructural development amidst acute infrastructural gaps, over enrollment in JSS classrooms, lack of science and ICT laboratories. Gap in curricula materials is the order of the day in the government sponsored JSS in the Public schools. There are also manpower gaps and also lack of the requisite knowledge, skills and attitudes necessary for effective dispensation of JSS curricula

Gapfizi et.al (2017) on Challenges by physics teachers during the implementation of CBC in Rwanda adopted a survey study design in which 25 physics teachers from Ngoma District participated in the study. The study established that the above named category of teachers is faced by a plethora of challenges during their implementation of physics curriculum in the CBC dispensation. That the challenges include lack of physics laboratories and equipment, lack of pedagogical orientation through teachers' professional development towards CBC Physics curricula dispensation. Swollen classrooms, understaffing amongst others.

Kinyuny (2020) on CBC implementation in selected secondary schools in Mufundi District, Tanzania adopted a survey study design in which 30 teachers participated in the study, assessed the process of CBC implementation and the hurdles that teachers faced in the process. Questionnaires and interview schedules were used to collect data. Findings showed teachers being well versed in the philosophy of competency based teaching, including understanding learners' socio-economic and cultural orientations which will go along influencing their way of learning and the value systems. Teacher participants

reported about challenges that they face in CBC implementation including inability to improve students' confidence and positive self-esteem, encouraging creativity and innovation amongst learners as being part of the wide scheme concerns of achieving the 21st century skills amongst the learners. That there are also infrastructural and financial inadequacies towards successful operationalization of the CBC.

Kamario and Otieno (2022) on effects of CBC on students' Educational Achievement: A study of schools in Arusha City Council, Tanzania was underpinned by social constructivism Theory and convergent mixed methods design. Data were collected through questionnaire and interview schedules, with a sample size of 142 respondents consisting of 30 teachers, 90 students, 10 heads of school, 10 Quality Assurance and Standards Officers (QUASOs) one WEO and QT $\tau = 0.82$. Findings indicated that use of teacher and learner centered, distributions and exhibitions and practical activities and projects were encouraged. Moreover, CBC implementation is essential for students' future career development through self-employment, creativity/innovation, talent exploration and expansion of multiple competencies necessary for sustainable development. Study findings records indicate that CBC should be effectively implemented in all secondary schools for student to develop necessary skills needed for personal transformation.

Wafubwa (2021) on Challenges of teaching and assessing the 21st Century competencies in Africa: A focus on the Kenyan new Curriculum of Basic Education adopts literature review and is cognizant of the fact that the demands of the contemporary society has necessitated educational reorientation towards the achievement of the 21st century skills in which Kenya should not be left behind and hence the implementation of the CBC which in essence is emphatic of these necessary skills expected of the 21st century global citizenry. The study established that the mode of assessment put forward by the CBC is quite sketchy and cannot give clear guidelines to the teachers and this pokes a hole into the CBC operationalization. That even the funding towards the CBC whether through tuition fees towards free basic education is not only too little but too delays in disbursement will tell the tale as to what bedevils the CBC implementation. especially at the Junior Secondary School level. Teachers also report having gaps in manpower and also serious pedagogical challenges as to the effectiveness in operationalization of the CBC curricula. That these serious gaps in the implementation process is a true reflection on curriculum theory and practice in Kenya that has been characteristically wanting due to rapid political push has a radical approach to implementation instead of gradualist model and hence the gaps witnessed.

Nyoni (2018) on challenges facing teachers in Tanzania: The implementation of the paradigm shifts towards a CBC in ordinary secondary schools in Iringa Municipality, Tanzania adopted survey and case study design in which public secondary schools were the focus with 39 respondents consisting of 24 students, 3 school heads, and 12 teachers. Data were collected through focused group discussions and interviews and were analyzed. Findings reported respondents being alive to the fact that there was a paradigm shift in education towards CBC. However challenges bedevil the implementation process including

lack of pedagogical training for teachers towards CBC operationalization and hence the practicing teachers still used the traditional teaching practices that were largely teacher centered. That teachers were also ICT illiterate and gaps in infrastructure physical and ICT were reported by the respondents. The funding towards CBC by the government is wanting with serious gaps and delayed disbursement hence the bottleneck towards effectiveness in CBC implementation.

Okutu (2021) how head teachers as street level bureaucrats influence implementation of CBC in Kenya delved on policy matters regarding curriculum reforms that usually take effect in the light of new knowledge of a better curricula as compared to the previous and in that regard, 8:4:4 system of education is being replaced by the CBC 2:6:3:3:3 system of education that is basically learner centered and entailing learning by doing as opposed to the system current being replaced that has been largely content oriented and exam oriented causing cut-throat competition resulting into exam malpractice and devoid of essential life skills expected of a 21st century graduates. The study established that head teachers in their CBC implementation quest are grappling with policy issues of supervision, amidst inadequate manpower, a gap in curricula materials serious underfunding by the government through the Ministry of Education, Science and Technology, a gap in infrastructure all of which are indeed teething thereby bringing a discrepant curriculum practice between actual practice of curriculum implementation process as compared to expected level of practice. Amidst these challenge head teachers have adopt coping strategies which are not sufficient given the scenario of gap in the essential curriculum implementation resources ranging from physical, financial and human resources that not only requires adequacy in terms of numbers but too requires continuous professional development through refresher courses toward achievement of teachers' professional development towards making them acquire tight attitudes, knowledge and skills towards effectiveness in the dispensation of the CBC programs.

Chacha et.al (2021) on challenges faced by teachers on the implementation of CBC in Public secondary schools in Nyamagana District, Tanzania adopted mixed methods and convergent parallel design with a sample of 133 participants. Data were collected through questionnaires and interview schedules. Findings showed that the district lacked enough qualified teachers, gap in infrastructure amidst swelling students' enrollment. Gap in curricula materials were reported amongst the respondents. That dwindling finances towards the CBC by the government is the order of the day.

Kuria (2022) on the relationship between schools' preparedness and effective implementation of CBC: A study of teachers' knowledge in Nairobi County, Kenya used human capital theory and used survey study design in which teachers, head teachers and education managers were targeted. Findings revealed that teething problems were in the finances in terms adequacy, frequency of disbursement and how the little fund is managed at the school level. Infrastructural gaps, gaps in manpower both in numbers and in pedagogical knowledge, skills and attitudes towards effectiveness in discharge of the teaching functions.

One the question as to the opportunities available for exploration towards successful implementation of CBC

Matere (2024) on from 8:4:4 to CBC: Emerging issues on transition in education in Kenya adopted literature review and is cognizance of the significant role played by key stakeholders in the CBC curriculum implementation including teachers, learners, head teachers, Curriculum support officers. Gaps have been reported in the process of implementation including lack of enough teachers and gaps in teachers' pedagogical knowledge, skills and attitudes. Gap in infrastructure and finances and curricula materials. That therefore way forward toward these include properly designed refresher courses for the practicing teachers and teachers' continuous professional development. Government should hire more teachers towards alleviating gap imminent in the teaching force. That the government should allocate adequate funding towards CBC and give timely disbursement of the fund to schools, while closely supervising the schools' management of funds prudently in a manner that best fits the interest of the programs. That the government should provide sufficient curricula materials while taking into consideration of the Curriculum reforms therein, whatever the extent. That the government should allocate more funds channeled towards infrastructural development whether physical and or ICT requirements. Adequate and meaning engagement of all stakeholders including Education Officers, heads of schools, teachers, students, parents, sponsors including the church and other religious organizations well-wishers, development partners including Public-Private –Partnerships on development matters pertaining the school.

Ongowo (2020) on Towards CBC: Pedagogic Perspective adopts literature review with emphasis on key stakeholder engagement on a pedagogical scheme for teachers through the ministry and other role players towards refresher orientation for the practicing teachers towards effectiveness of CBC Operationalization.

Ng'eno and Mwoma (2021) on teachers' attitudes towards implementation of CBC in primary schools in Kenya adopted a survey design with participants consisting of 24 CSOs and 52 head teacher. The findings revealed that teachers had positive attitudes towards CBC. However they reported gaps in infrastructure, number of teachers, ICT infrastructure, government's funding amongst others. That a way forward would include sufficient and regular refreshers courses for practicing teachers towards CBC implementation. More funding by the government towards infrastructural development and for hiring more teachers in the public schools to bridge the manpower gaps.

Mombo (2022) on CBC in teachers' Colleges; the challenges adopted secondary data and is cognizant of the fact that many teachers training colleges have not had their course aligned towards CBC and hence a huge challenge towards their preparation for the same. The tutors too also have knowledge gaps towards CBC consequently making their knowledge dispensation to the teacher trainees towards CBC a nightmare. This calls for refresher training for the tutors prior to training of their trainees and continuous professional development for them through facilitation by educational experts organized by the ministry of education.

Namubiru et.al (2024) on perceptions of teachers on the implementation of CBC in secondary schools in Bundibugyo, and Ntoroke Districts of Uganda adopted mixed methods with a total of 397 participants drawn for 32 selected secondary schools from the two districts. The findings showed diverse perspectives amongst teacher participants most commonly featuring perceptions indicated gaps in curricula materials, teachers' pedagogical knowledge, number of teachers, low government funding, poor infrastructure and inadequate parental/guardians' engagement. These calls for more vigilant government funding towards CBC; hiring of more teachers and giving them refresher courses and continuous professional development for teachers. More funding towards schools' infrastructure, monitoring and evaluation of the completion of the projects. More engagement of key stakeholders in the CBC programs in schools.

Muriuki (2022) on factors affecting the execution of CBC in Primary schools in North Eastern Kenya adopted a survey study design in which participants consisted of 14 head teachers, 100 teachers and 2 QASOs. Findings indicated that 65% of practicing teachers who participated in the study reported having been taken through refresher courses towards CBC implementation but however they maintained that more training programmes for the practicing teachers needed to be organized and on a continuous basis in the light of new knowledge. There are also infrastructural gaps that bottleneck the effective implementation of CBC. A few number of teachers is another headache. Inadequate parental engagement and frequent absenteeism of learners. These issues may be addressed through more training programs for practicing teachers towards CBC. That more funding by the government towards infrastructure and hiring of more teachers would become handy towards realization of CBC implementation.

Summary of the main Findings

Competency based curriculum is an educational system that incline the graduates towards the 21st century skills of collaboration, communication, creativity and critical thinking skills inculcated into the students. In addition, the students are expected to acquire digital skills which are essential for survival and business transactions on digital platform that characterize the 21st century globe. In Kenya CBC is gradually replacing the 8:4:4 System of Education whose gaps witnessed necessitated the adoption of the CBC or 2:6:3:3:3 system of Education in the context of Kenya. CBC was rolled in Kenya in early 2017 with the first cohort currently in grade eight of the Junior Secondary school level. CBC implementation in Kenya is bedeviled by multiple challenges including initially continuous review or renewal in the light of new knowledge a situation that requires raft measures that at times renders some of the already published curricular materials for the programs obsolete.

Serious challenges are reported deficiency of in regard to numbers and pedagogical competencies towards effective implementation of CBC. Findings show gaps of the CBC programs in school level. There are also acute infrastructural gaps that is physical and ICT. In some instances reports have been on inadequate curricula materials. Gaps in policy

framework for discharge of certain CBC programs at school level. Despite being a comprehensive learner centered curriculum, implementation of CBC especially at Junior School level is indeed facing teething issues that are bottleneck towards curriculum effectiveness. That way forward towards these challenges include sufficient refresher courses for the practicing teachers and hiring more teachers towards bridging the teaching force gaps. Government should increase more funding towards CBC implementation in regard to tuition fees, infrastructural development, developing and provision of curricula materials. Sufficient engagement of all stakeholders towards successful operationalization of CBC.

Implications of the Study findings

The finding has implications for meaningful engagement of key stakeholders in the curriculum implementation process. Gap in infrastructure can be bridged by increase in funding towards the same by the government and also engagement of development partners on matters pertaining to infrastructure. Implications for the Ministry of Education and the associated stakeholders to work hand-in-hand to ensure teachers are adequately trained toward CBC implementation. Implications for the government to hire more teachers towards effective operationalization of the CBC programs.

Conclusions

Based on the study findings it is worth concluding that CBC is a new curriculum dispensation in Kenya that is anchored on the 21st century skills the 4Cs, which are basically learner centered and that orientate them towards global citizenry. That the challenges that characterize CBC implementation including gap in infrastructure, gaps in teachers' numbers and competencies and limited funding toward the programs by the government. That re-examining the policy framework towards CBC implementation with focus towards achieving goals of education.

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