Competency-Based Curriculum Implementation in Building Technology and Design in Zimbabwe's Secondary Teachers' Training Colleges: Stakeholders' Perceptions

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DOI: https://dx.doi.org/10.47772/IJRISS.2024.803233S

Received: 11 July 2024; Revised: 29 July 2024; Accepted: 02 August 2024; Published: 04 September 2024

ABSTRACT

The study evaluated the implementation of the Competency-Based Curriculum (CBC) in Building Technology and Design (BTD) in secondary teachers' colleges which is expected to play a significant role in BTD in producing graduate teachers who can apply proficiency and expertise to the real world of work. The research was motivated by research that revealed mixed feelings about CBC implementation in teachers' colleges. The objectives focused on the challenges faced regarding implementing CBC in BTD, and strategies in the progressing curriculum to improve its implementation process. The study was based on the CIPP (Context, Input, Process, and Product) evaluation model. A qualitative case study approach was used to gather the stakeholders' perceptions. Research participants were selected using purposive sampling. Interview schedules and focus groups were used in collecting data. The most significant finding of this study is that CBC was partially implemented in teachers' colleges. However, several impediments were discovered to beset the CBC implementation processes emanating from institutional, infrastructural, and policy issues, and other associated barriers. Based on these findings, the study recommends the harmonisation of college and secondary school curricula, conducting staff retraining workshops, the introduction of an internship programme for both lecturers and student teachers to construction companies, and the provision of adequate resources for CBC implementation. Additional policy and practice recommendations are also proposed as possible corrective measures.

Keywords: Competence-Based Curriculum, Building Technology and Design, Internship, Harmonised curriculum

INTRODUCTION

The competency-based curriculum (CBC) being used in Zimbabwean teachers' colleges plays a vital role in technical and vocational education to get the best knowledge and skills that could be applied in real practical scenarios which suit the country's economic development. Building Technology and Design (BTD) as a technical subject in teachers' colleges seeks to provide skills in education and produce competent graduate teachers who can apply competencies and expertise obtained from college to the real world of work and impart knowledge to learners. The curriculum implementation commenced in secondary schools in 2017 (Marume, 2016). Several innovations were introduced in the new curriculum with broad implications for stakeholders at all levels. While teachers needed to adjust their mindsets to align with the demands of the revised curriculum, teacher training colleges had to equip student teachers with competencies that would

enable them to effectively handle challenges associated with the implementation of a CBC in secondary schools (Tarmo & Karimo, 2021). As a result, a lot of changes have been made to the Ordinary level BTD syllabus in which graduate teachers from colleges are supposed to teach and produce competent, skilful and innovative individuals to match technological changes in society. As such, this research was carried out to evaluate the implementation of a competency-based curriculum in Building Technology and Design in Technical Teachers' Colleges.

Curriculum reviews, changes, implementations, and evaluations have always been part of curriculum development processes that take place the world over as part of the dynamic nature of societies which always incorporate new things to move on with time (Rogers, 2021). As such Kafyulilo, Rugambuka and Moses (2013) highlight that teachers' colleges have to produce human resources for schools that are equipped with the necessary competencies and expertise to address skills gaps in the implementation of the competency-based curriculum. Tarmo and Karimo (2021) concur that the introduction of CBC in Tanzania presented new practical challenges for secondary school teachers and teacher training colleges.

To begin with, the Incheon Declaration on Education adopted at the World Education Forum in Korea on 15 May 2015 was a curriculum development process in which members including Zimbabwe endorsed the 2030 Agenda for Sustainable Development. The pledge was to provide quality and inclusive education at all levels including technical and vocational training. Mensah (2009) highlights sustainable development goals with goal number four aimed at improving the quality of education to a standard whereby there will be an increase in the number of youths and adults who have relevant skills, including technical and vocational skills for employment, decent jobs, and entrepreneurship by 2030. With some exceptions, Ruth and Ramadas (2019) observe that few countries outside the United States recognise competency as a subject or skills mastery approach to learning.

Research conducted by Waweru (2018) in Kenya sought to understand how teachers endorsed the old common curriculum and identified what influences decisions for such enactment. The findings indicated that teachers resorted to traditional teaching approaches and the study suggested that adjustment of approaches needs to be done when implementing a new competency-based curriculum to improve students' performance.

Further research was done in Egypt by Ersado and Gignoux (2017) which indicated that the curriculum has changed and developments were done over the years, now they have adopted a new education strategic plan for 2014-2030. In the technical education development programme, there is an initiative of a factory in each school and a school in each factory to prepare learners and workers appropriately to fulfil the requirements of sustainable development. This means students are well-trained and equipped with real skills expected in the industry.

In Tanzania, Tarmo (2014) observed that a curriculum change from the colonial era was branded on the theme of Education for Self-reliance which sought to divorce learners from theoretical and academic learning towards the attainment of skills for survival. In a research done by Kafyulilo, Rugambuka and Moses (2013) about the implementation of competency-based teaching in the Morogoro Teachers' Training College in Tanzania, it was concluded that competency-based teaching approaches were not well implemented in schools and more efforts need to be infused in the training of teachers in teachers' colleges towards competency-based teaching approaches. Results revealed that pre-service teachers perceived their understanding and ability to implement competency-based teaching approaches as high. However, during interviews, it was revealed that they had difficulties in explaining some competency-based concepts.

Findings of research by Mangwiro (2016) on curriculum change which is competency-based indicated that although schools could receive grants from the government for operational costs, books and other

educational materials, the main challenge faced in the initial stages of the implementation of the new curriculum was that the teachers were not sure of how to implement it. This led to low performance of learners in some schools. One of the recommendations was that institutions of higher learning as key partners of educational reform should be engaged to ensure alignment of content and skills to be covered in schools and colleges. It is under such circumstances that the researchers seek to evaluate the implementation of a competency-based curriculum in Building Technology and Design in Secondary Teachers' Colleges in Zimbabwe.

Zimbabwean Situation

After attaining independence, Zimbabwe's education system was overly academic and lacked relevance to the child's development needs. Secondary school teachers' colleges produced graduates who lacked vocational skills that could help them in their world of work (Marume, 2016) which is teaching. The need to overhaul the previously content-based and examination-oriented curriculum prompted the then President of Zimbabwe to appoint a commission of inquiry for curriculum review. The results of the enquiry are contained in the Nziramasanga Commission Report of 1999 which fosters the training of technical and vocational skills.

The Commission of 1999 came up with numerous recommendations, the critical one being the need to rebrand the curriculum across the education system in Zimbabwe. The Commission's recommendation formed the base of subsequent curriculum reforms. The policy on the implementation of Competency-based was then enforced. The thrust of the new competency-based curriculum was to produce industrious individuals. The graduates would be equipped with hands-on, problem-solving, critical thinking, innovation, communication, teamwork and technological skills.

Among the rebranded subjects that implemented competency-based curriculum across secondary schools is a technical learning area known as Building Technology and Design (BTD) referred to as Building Studies in the old curriculum. The new BTD in schools incorporates the following as some of the aims;

- to prepare learners for life and work in the economy and global world.
- to ensure learners acquire and demonstrate literacy and numeracy skills including practical competencies necessary for life.
- to enhance the use of Information and Computer Technology (ICT) in the teaching of Building Technology and Design.

The upgraded Building Technology and Design have a lot of changes incorporated. These include the introduction of ICT for Building drawing and design in the form of AutoCAD drawing, project-based learning, e-learning, case studies, school on the shop floor and calculating quantities with the use of ICT (Building Technology and Design Syllabus, 2015). Learners are now expected to be engaged in community development projects, infrastructure maintenance and attachment to the construction industry to prepare them for future careers and entrepreneurial activities.

The policy that governs the training of student teachers focuses on the implementation of Education 5.0 with five missions which are, teaching, research, community service, innovation and industrialisation (Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development, 2019). As such, the course is designed to produce a creative, innovative and knowledgeable Building Studies teacher adaptable to a variety of teaching and learning situations found in different sociocultural societies.

The Diploma in Education course in Building Technology and Design is designed for school leavers with a minimum of five 'O' level passes including Building Studies. The pre-service Diploma in Education course for Secondary School teaching follows the 3-3-3 model. The 3-3-3 model policy means student teachers

spend the first three terms of learning (training) at college, followed by three terms on teaching practice and the last three terms at college under training. The programme provides a body of relevant theoretical knowledge and general practical skills necessary for the effective teaching of Building Studies in Secondary Schools.

The aims of the syllabus for Building Technology and Design in teachers' colleges are to:

- produce a competent, flexible, innovative and resourceful teacher adaptable to a variety of learning environments;
- equip students with theoretical knowledge and practical skills for teaching Building Studies up to O-Level;
- instil an appreciation and correct attitudes towards Vocational/ Technical Education;
- impart skills for teaching design coursework projects.

The subject (Methods of Teaching) provides a body of relevant theoretical knowledge and general practical skills necessary for the effective teaching of Building Studies now branded Building Technology and Design in Secondary Schools. It is designed to produce creative, innovative and knowledgeable Building Studies teachers adaptable to a variety of teaching and learning situations found in different sociocultural societies.

According to the Department of Teacher Education at the University of Zimbabwe (2010), the Methods of Teaching syllabus aims to;

- equip student teachers with the Building Studies pedagogy up to 'O' level;
- inculcate in the student-teacher an understanding and appreciation of Building Studies at the secondary school level;
- develop in the student teacher the ability to create and use teaching and learning resources that cater for individual learner uniqueness.

While the revised O-Level curriculum was praised as one of the best so far in developing skills it is however faced with a lot of teething problems just as already observed in Tanzania which assumes that Building teachers are not competent enough to implement the new curriculum in Building Technology and Design which is highly a competency-based curriculum. Concerns have been observed over the learners' low performance on introduced topics in the new O-level syllabus and design coursework project for Building Technology and Design. The teachers seem to have challenges in imparting knowledge and skills to learners and this raises eyebrows about their competency and how they were trained.

Given the various changes in the Building Technology and Design syllabus, there have been lots of complaints from various educators regarding its implementation. It is assumed that graduate teachers from colleges are incompetent (Kafyulilo, Rugambuka & Moses, 2013) to impart knowledge and skills to learners as expected in the rebranded Building Technology and Design curriculum. Low performance on newly introduced areas in the Building Technology and Design O-level syllabus was revealed by ZIMSEC reports in 2018. Furthermore, through experience, the researchers observed such learners were not using computer-aided drawing in their coursework (teacher-assisted) design projects. Even though workshops have been conducted to improve the teaching and learning of newly introduced areas, the performance remained low. As such, this research evaluated the implementation of competence-based curricula in secondary teachers' colleges which are the service and manpower providers for teachers who implement the competence-based curriculum in secondary schools. The study was guided by the following research question; '*What are the stakeholders' perceptions regarding implementing the competency-based curriculum in Building Technology and Design?'*

The next section interrogates the literature related to this research.

LITERATURE REVIEW

Competence-Based Curriculum (CBC) essentially focuses on the development of real-life skills and competencies of students so that they can apply such proficiency independently (Nombo, 2022). Teachers' colleges' programmes are designed around the competencies that are needed for a teaching career so that teaching materials and strategies are relevant. As such, the literature review sought to establish what authorities articulate about the implementation of the competency-based curriculum in teachers' colleges which train teachers who in turn implement it in high schools.

The theoretical framework is a structure that guides research by relying on a formal theory (Grant & Osanloo, 2014). This study is guided by the CIPP (Context, Input, Process and Product) evaluation model for curriculum implementation whose proponents are Daniel Stufflebeam and Coryn (2014). The CIPP evaluation model is a framework for guiding evaluations for programs, projects, personnel, products, institutions and evaluation systems.

Context Evaluation

This stage is to give a rational reason why a curriculum has to be implemented. It assists in decision-making related to planning and enables the evaluator to identify the needs and resources to provide programming that will be beneficial. Key stakeholders in evaluation are identified. In this study, the key stakeholders are the educators who include the lecturers, lecturer in charge, mentors in schools and student teachers, all teaching BTD. Both formative and summative measures such as an environmental analysis of existing documents, program filing, case study interviews and stakeholders' interviews are done. In this research data is collected through document analysis (O-level syllabus, College content and methodology syllabi, schemes) and interviews with key stakeholders.

Input evaluation

To complement context evaluation, input evaluation can be completed. According to Stufflebeam and Coryn (2014), input evaluation provides information about the sources that can be used to achieve program objectives. This means in this study data is collected about the bases that could be used to make the CBC goals achieved. It is used to find a problem-solving strategy, planning and designing programs. In learning activities, input evaluation can be done to find sources that can be used in the learning process so that it can serve to establish appropriate learning strategies. In this case, the enrolment of students about their qualifications are evaluated whether their background in BTD or not and the effects. Adequacy and the state of Infrastructure are also evaluated. Qualifications and experience of lecturers and mentors in schools are also considered during the evaluation of input.

Process evaluation

Process evaluation according to Stufflebeam and Coryn (2014), investigates the quality and programs' implementation. In this study process evaluation is there to examine the quality implementation of CBC. As such in this study, the teaching methodologies being used need to be examined if they are in line with the curriculum. Since CBC is learner-centred and adaptive to the changing needs of students it implies that learning activities and environments are chosen so that learners can acquire and apply the knowledge, skills and attitudes to situations they encounter in everyday life.

Product evaluation

The final component of CIPP is product evaluation which assesses the positive and negative effect the program had on its target audience assessing both the intended and unintended outcomes (Stufflebeam &

Coryn, 2014). This means product evaluation measures and interprets the achievement or failures of objectives, measuring the impact of the expected and unexpected. During this stage, the judgement of stakeholders and relevant experts is analysed, viewing outcomes that impact the group, subgroups and individuals. Evaluation is conducted during and after the program. This study was conducted during the implementation of CBC to examine the successes and failures such that an improvement on the curriculum can be done. Judgement of lecturers, lecturer in charge, school mentors and student teachers are analysed to improve the curriculum. Applying a combination of methodological techniques assures all outcomes are noted and assists in verifying evaluation findings (Stufflebeam in Mertens & Wilson, 2012). Graduate teachers from such teachers' colleges are then expected to be competent and be able to implement the competency-based curriculum which they were taught.

The concept of a competency-based curriculum

Competency-based curriculum (CBC) is a curriculum that emphasises what learners are anticipated to do rather than mainly what they are expected to know (Isaboke, Mweru & Wambiri, 2021; Craig, 2010). John (2005) concurs and defines a competency-based curriculum as compatible with the learning of higher-level skills, acquisition of generalised knowledge and understanding and development of broad-based courses. This implies that a competency-based curriculum is a learner-centred model which arranges learning and teaching around the actual competencies that a practitioner needs to function effectively in the real world. In this study competency-based curriculum allows student teachers in colleges to grasp concepts and skills and apply them in practical situations. The student teacher and graduate teacher from such colleges then apply competency-based approaches to high school learners. The learner can acquire and apply knowledge, and personal, social and methodological skills in the workplace or during learning as well as for his or her personal and professional development.

Mkonongwa (2018) observes that competency-based teaching and learning can be pursued through various teaching approaches which are evidence-based and outcome-focused. Such teaching methods used in CBC include field trips, gallery walks, demonstrations, experimentation, individual and group work, project work, discussions, seminars, resource persons, micro-teaching, tests and exercises, research studies, and case studies (Wongnaa & Boachie, 2018). Such teaching strategies need to be matched to their learning domain which is psychomotor, cognitive and affective developing skills and promoting critical thinking.

Perceptions of Positive Prospects of CBC Implementation

Zimbabwe is Britain's former colony; hence the educational system including the newly introduced competency-based curriculum is adopted from the British style of education. This means the way CBC is done in Zimbabwe has some resemblance to Britain's. In Britain, CBE is primarily considered a niche (Ford, 2014) approach targeting vocational education and the adult learning segment of the higher education system. This means it is measured as crucial in the training of students in higher learning who are about to join the working environment.

Competency-based learning has been advocated as an effective option to develop transferable skills (Ford, 2014) enabling teachers to implement cross-curriculum learning, especially in technical and vocational education which is conceptualized from a labour market perspective. Students are prepared for a world of work to fill in gaps of skills shortages in sectors such as engineering and technology. In this approach, according to Ford (2014), in Britain, students work at their own pace to achieve outcomes.

In developed countries like Britain CBC is labelled effective and successful because of the availability of adequate funding for learning facilities, resources and infrastructure (College and Career Readiness and Success Center, 2017). Ford (2014) supports that as he further reveals that students make use of technology such as computers and iPads to access the content they need to support their learning on the internet. This

means the teacher's or lecturer's role is to harness the interests and needs of individual students, guiding them towards achieving those pre-determined goals. Attributes such as critical thinking, problem-solving, communication and collaboration are developed which are prerequisites for employment. Apart from teachers facilitating learning, the College and Career Readiness and Success Center (2017) highlights that expert tutors on the Internet can develop creativity, critical thinking and communication skills in students through one learning environment. This means students learn further in the absence of a classroom lecturer.

Mkonongwa (2018) articulates that competency-based teaching and learning can be pursued through teaching approaches which are evidence-based and outcome-focused. Such teaching methods used in CBC include field trips, gallery walks, demonstrations, experimentations, project work, micro-teaching, research studies, and case studies (Wongnaa & Boachie, 2018) which need to be matched to their learning domain which may be psychomotor, cognitive and affective developing skills and promoting critical thinking.

Perceptions on negative prospects of CBC implementation

Research on perceptions by various stakeholders on the implementation of CBC has been conducted and findings reveal that CBC in Tanzanian colleges is not being effectively implemented because student teachers on teaching practice fail to impart some competency-based concepts and skills (Kafyulilo, Rugambuka & Moses, 2013).

A study on CBC in Zambia has been done by Nambela (2016) on perceptions by stakeholders on the effectiveness of CBC in improving education, indicating that the implementation of CBC was not properly done since it was not adequately prepared for.

Findings revealed that teachers and even lecturers were not involved in the development process as such teachers encountered challenges in implementing the developed curriculum. This implies that teachers and lecturers were not aware of what exactly to teach on the new aspects introduced in the curriculum. Mulenga and Kabombwe (2019) suggest that for effective implementation of CBC, there is a need to allocate sufficient financial resources for the up-skilling of teachers and teacher educators. This means when teachers' colleges are funded for short retraining courses graduate teachers produced will be competent enough to implement the CBC in question.

A study by Abu and Abdulraheem (2022) on competency-based curriculum implementation in Nigeria indicated that schools receive grants from the government for operational costs, books and other educational materials.

Additionally, Likisa (2018) highlights that in some environments CBC does not work well due to the location and capability of institutions in terms of finance. Gudyanga and Mukutyu (2019) further elaborate that a competence-based curriculum is expensive to implement since each learner requires material resources which may be different from the other. In Zimbabwe, some schools in rural areas cannot afford material resources for such a curriculum. This means that even if teachers are well-trained to implement CBC, a shortage of resources, facilities and infrastructure may negatively influence the implementation. On the other hand, if colleges are not fully equipped and lack adequate training materials then implementation of CBC in such colleges becomes difficult resulting in producing half-baked teachers who may not be competent enough to impart skills to secondary school learners.

RESEARCH METHODOLOGY

The interpretive paradigm was adopted for this study. Its view as explained by Kivunja and Kuyini (2017) is that reality is socially constructed and the central endeavour is therefore to understand the subjective world of human experience. The paradigm's main goal is to understand the world from the individual's point of

view (Creswell & Plano-Clark, 2007; Creswell, 2013). This means researchers are attached to the subject they are studying. In this study, the researchers were not detached from the implementation of competency-based curricula in teachers' colleges.

The use of structured and open-ended descriptive as well as non-directional interview questions for interviews and focus groups assisted in how CBC is implemented in teachers' colleges. The data-gathering techniques of the interpretive paradigm also assisted in analysing the perceptions, competencies of lecturers and strategies that could be used to improve CBC implementation.

A qualitative approach was adopted as a way of understanding a social or human problem based on building a complex, holistic picture, formed with words, reporting detailed views of informants and conducted in natural settings (Kivunja & Kuyini, 2017). The researchers examined why events occur, what happens, and what those events meant to the participants studied. The qualitative approach was considered appropriate because the researchers wanted to achieve a deep understanding of how people thought about the implementation of CBC in the teaching of BTD in secondary teachers'

colleges and to describe in detail the viewpoint of the research participants.

The case study design adopted in this research enabled the researchers to explore adequately the implementation of CBC in the teaching of BTD and to gain an understanding of the study. A case study was also considered ideal as it assisted in bringing perspectives from educators as the aim was to understand how CBC was implemented in teachers' colleges.

Population and Study Sample

The population of this study had a total of sixty mentors for student teachers on Teaching Practice (TP), five lecturers-in-charge, ten lecturers, sixty student teachers on TP and seventy final-year student teachers (refer to Table 1). The purposive sample drawn from one teachers' college comprised one lecturer-in-charge, five lecturers, eight final-year student teachers, five student teachers on TP majoring in BTD, and five mentors in selected secondary schools as summarised in Table 1.

Table 1: Summary of data collection instruments, Population and Sample size

Target Participants	**Code *(Pseudonym)***	**Population**	**Sample**	**Research Instrument**
Mentors	M	60	5	interview-
Lecturers	L	10	5	interview
Lecturer in Charge	LIC	5	1	interview
Student Teachers on TP	S	60	5	interview
Final Year Student Teachers	FGS	70	**8**	focus group

As shown in Table 1, the focus group for final year students comprised 8 participants which is in line with recommendations of 6-9 participants by Krueger (2000); Baumgartner, Strong & Hensley (2002) and Johnson & Christensen (2004). This sample, according to these authors, had several benefits including a collection of more focused and relevant data with greater closeness to educational processes and learning contexts (Sharma, 2017). However, its limitation derives from its predominantly local and small-scale nature, raising problems of limited transferability of findings and vulnerability to selective and preferential interpretation (Taylor et al., 2015).

Data Analysis

Directed content analysis was used to make sense of the collected data. Data were analysed qualitatively using qualitative thematic analysis. The analysis followed a six-phase sequence which was performed in several iterations (Braun & Clarke, 2006). The phases consisted of (1) listening to the recordings, transcribing, and reading the transcripts to become acquainted with the material, followed by (2) a first impression coding. From these codes, (3) themes were identified and (4) further reworked and refined. Phases 2-4 were repeated several times both inductively and deductively (Wong, 2008). The researchers took cognisance of key ethical principles that were outlined by Goodwin, Mays and Pope (2020) which included voluntary participation, informed consent, privacy, anonymity and confidentiality. All the necessary approvals were granted by the respective authorities before data collection.

FINDINGS AND DISCUSSION

This section presents, discusses and analyses the findings of the study that sought to evaluate the implementation of a CBC in Building Technology and Design (BTD) in secondary teachers' colleges. Data collected revealed six themes, namely Good aspects of CBC implementation in BTD students can learn from college; Hands-on skills; Problem-solving skills, critical thinking and innovativeness; Entrepreneurship skills; and Negative opinions about CBC

Perceptions of educators regarding implementation of CBC in Building Technology and Design

Good aspects of CBC students can learn from college

The research objective sought to analyse the perceptions of educators regarding the implementation of a Competency-Based Curriculum in Building Technology and Design. As such the question was asked to find out how educators appreciated CBC in the teaching and learning of BTD so that they could implement it effectively. The question was posed to the lecturers, mentors, student teachers and Lecturer-in-Charge (LIC). L1 who was a lecturer at the institution explained that the CBC in Building Technology and Design equip students with hands-on skills, problem-solving and creativity.

Sharing similar sentiments L2, L3 and L5 added that Competence Based Curriculum in Building Technology and Design equip students with critical thinking, self-reliance and entrepreneurship skills. The LIC confirmed this assertion and L4 revealed that:

Good aspects of CBC in BTD are pragmatic aspects which are hands-on skills taught to students. They learn by doing thereby grasping more skills.

The following excerpts emerged from the Focus Group discussion:

FDGs 2: CBC helps in shaping the future workforce of the country. Learners benefit from confidence, innovativeness, and creativeness and shape their lives.

FDGs 1: *Upon completion of the CBC course some learners could form their companies, become entrepreneurs and earn a living.*

When asked about their opinion regarding the inclusion of a CBC in the teaching and learning of Building Technology and Design, all mentors agreed that it was the best for any Technical and Vocational Subject. An examination of all interview reports and FGD transcripts revealed a consensus that a CBC responds to the needs of learners coming from different socio-economic and academic backgrounds who are being prepared for gainful employment and sustainable livelihoods as shown by their extracts below.

M2: a *learner is prepared for industry through learning updated activities in industry rather than theory*

M3: *Mmm…CBC facilitates the improvement of existing buildings as learners become innovative and creative. Learners learn how to design buildings and apply the aspect of designing in renovating and adding aesthetic value to the existing structures.*

The LIC also confirmed the above sentiments:

…CBC enables students to understand business ethics, employment demands, and responsibilities and creates opportunities for work attitudes for example self-confidence and self-reliance. Matching local environment and communities with expected activities, hands-on, entrepreneurship skills, creating jobs, and development of the nation at large.

The above excerpts indicate that the majority of the participants rated highly the adoption of a CBC as the best training approach for student teachers in BLD. During our discussion on the possible benefits of the CBC in their specialist area, the trainee's facial expressions appeared to be happy, excited and satisfied. It is clear from the responses given, that good aspects of CBC include equipping students with; hands-on skills, problem-solving skills, critical thinking, self-sustainable and innovativeness thus matching the local environment and communities with expected activities and entrepreneurship skills.

Hands-on skills

Participants revealed that it is through the implementation of CBC that students acquire hands-on experience and refine their skills which they would use in future when they get ready for the industry of teaching. In line with that, Mangwiro (2016) explained that CBC gave learners who were not academically gifted chances to explore their talents through hands-on. This means that if the competence-based curriculum was well implemented all students whether gifted or not would be catered for and acquire skills. From the results and literature, the researchers concluded that students learn better by doing therefore if lecturers used teaching approaches which promoted the acquiring of hands-on skills CBC implementation would become successful.

Problem-solving skills, critical thinking and innovativeness

The majority of participants mentioned that CBC allows learners to apply practical solutions, and assesses the competency or skill levels of the learner. In addition, participants revealed that through individual learning learners improve on creativity and critical thinking solving problems as they come their way. Potvin, Genesse, Dumont and Riopel (2012) support the fact that CBC facilitates the improvement of problem-solving competency. Dam and Volman (2005) concur and add that CBC facilitates an individual to acquire competency in thinking critically and participating in communities and social practices.

Apart from teachers facilitating learning, the College and Career Readiness and Success Center (2017) highlights that expert tutors on the Internet can develop creativity, critical thinking and communication skills in students through one learning environment. From the findings, one could conclude that if CBC is effectively implemented, individuals who are critical thinkers and problem solvers could be produced. Even if the lecturers fail to effectively impart skills internet tutors could develop skills in students.

Entrepreneurship skills

Still, on good aspects of CBC, the majority of participants mentioned that CBC instils entrepreneurship skills in learners. This is supported by Shane (2017) who articulates that people who have received entrepreneurship training through CBC and acquired skills are in a position to start up a company and become better entrepreneurs. Aliata, Patrick and Baba (2013) concur and add that competency-based

entrepreneurial education gives self-confidence and optimism to start a business thereby creating jobs and employment. Judging from the findings reflected by the participants it could be concluded that CBC was considered important by lecturers, mentors and lecturers in charge. This could have a positive bearing on the quality of training which they would offer to student teachers. If CBC was correctly implemented, there would be an increase in the number of students acquiring skills.

Negative opinions about CBC

The study also sought to find out negative perceptions of CBC in BTD. The question was posed to the lecturers and mentors to find out whether they were consulted before the introduction of CBC for their input and the effects of such on the implementation of CBC. In response, the lecturers generally agreed that they had no input in the CBC document being used and generally there was a consensus among the lecturers interviewed that engaging key stakeholders was crucial in drafting such critical documents. Whilst on the same issue one lecturer (L5) had this to say:

I have a negative attitude towards CBC implementation since I am not fully aware of which exact knowledge and skills to impart that benefit student teachers such that they become fit for purpose in high schools.

It is clear from the responses that lecturers were not willing to implement CBC since they did not make any contribution to the re-branding of the curriculum. Mutch (2020) articulates that lecturers' main reason for resisting change in CBC is a lack of ownership of the curriculum. In this case, lecturers felt the ideas were coming from the Ministry of Primary and Secondary Education and they were never consulted before CBC implementation.

Gross in Ondimu (2018) explains that the implementation of any educational programme should be constructed on the clarity and awareness of what needs to be implemented by the implementer. Research on CBC in higher education done by Barman and Konwar (2015) concur that a lack of knowledge and clear understanding of CBC makes educators develop a negative attitude and resist change thereby resorting to the old curriculum. From the findings above one could conclude that lecturers and mentors had accustomed to and had internalized the old curriculum such that they were not willing to change and implement CBC.

The researchers concluded that CBC was not fully implemented since the majority of participants indicated that they were not clear about what was supposed to be implemented. Mentors' as cited in the following excerpts confirmed these assertions:

M1: *Basically, I was not consulted and up to now am not aware of what exactly to implement and how best I can do that.*

M3 went on to say

Some of the teachers were consulted but they could not give feedback to us on how to implement CBC and how to tackle some of the new concepts in the re-branded BTD.

M4 added that

We do not have a sense of belonging to CBC since our input was not considered; we do not have an interest in something we did not contribute to.

This is supported by Kyfyulilo, Rugambuka and Moses (2013) who postulate that mentors who were not consulted by the government before the introduction of the new curriculum have a negative attitude towards its implementation. A report from MoPSE (2017) admits that teachers were not oriented on how to

implement continuous assessment which is part of a competency-based curriculum instead of training the Ministry claims that it developed an assessment framework that provides clear guidelines on continuous assessment. What the Ministry claimed to be clear might not be for every teacher. From such findings, literature and reports one would wonder how mentors were assisting student teachers in CBC if they did not get proper training on CBC implementation and had a negative attitude towards the re-branded curriculum.

The motivation of mentors in guiding student teachers in the implementation of CBC

The question on motivation was posed to mentors so that they would clarify negative opinions which could negatively affect the implementation of CBC. Four out of five lecturers revealed that they were not motivated to guide student teachers as they teach during teaching practice. Their explanations are as follows;

M1 responded by giving the reason for lack of motivation as;

We are not incentivized to guide and train student teachers for quality teaching and implementation of CBC.

On the same question, M4 went on to reflect that;

We go the extra mile in training student teachers how to implement CBC but still earn less money which does not tally with the services we provide.

In line with that Onjoro (2015) posits the issuing of incentives as one of the motivational strategies which guarantee quality assurance in the educational system. Anghelcev and Eighmey (2013) concur and add that mentors' intrinsic motivation to assist and train student teachers was replaced by the desire for monetary gain. From the above findings and literature, one could conclude that the implementation of CBC was not successful because mentors had negative attitudes towards it since they were not given incentives.

Negative aspects towards CBC implementation

In response to the lecturers on the drawbacks of the implementation of CBC;

L4 revealed that,

There is too much workload in CBC considering the size of classes which is far above the expected which is 1:16, lecturer-student ratio.

In research about curriculum change and teacher resistance, Harvey (2014) concurs and revealed that lecturers repelled change as a way of resisting more work since in CBC there are additional responsibilities which permanently overburden them. From the above results, one can conclude that lecturers were not willing to effectively implement CBC since it involves a lot of work.

When mentors were asked, which syllabus are you using between content-based and competency-based syllabi? Give reasons for your answer. The response from M1, M3 and M5 was;

we use the new CBC syllabus since it is the one recommended by the ministry so it is going to be used when setting public examinations so it is wise to use it.

M2 and M4 said

we use the old one BTD is the same yesterday today and forever, changes are minor.'

The responses by mentors indicated a silent and personal resistance or non-conformity of the mentors to new

changes being proffered by curriculum planners. One wonders how such mentors can train student teachers to implement CBC since they are still using old content-based curriculum syllabi.

Mismatching of BTD at teachers' college and O-level school syllabi

When lecturers were asked, 'Which year was the CBC syllabus being used in teachers' colleges published? They all (L1, L2, L3, L4 and L5) revealed that they were using *the BTD* Content and Methodology syllabus which was established in 2015 which is 2 years before the implementation of CBC in secondary schools which was done in 2017.

When student teachers were asked 'whether the O-level BTD syllabus aligns with that being used at college? If no, which areas or topics are found in the O-level syllabus and not in college syllabi?'

S1., S4 and S5 said

the college syllabi are not aligned with the O-level syllabus and the topics which are in the O-level syllabus and not in the content syllabus include; Building as an enterprise, details of CAD, landscaping and renewable energy.

When the syllabi were analysed through document analysis, it was revealed that the college content syllabus lacked some topics and concepts which are in O-level CBC in the BTD syllabus. Document analysis established new objectives which were included in CBC which were not in the college content syllabus as well as the O-level Building Studies syllabus included;

- to prepare students for life and work in an indigence economy and global world,
- to ensure that students acquire and demonstrate literacy and numeracy skills including practical competencies necessary for life,
- to enhance the use of Information and Computer Technology (ICT) in teaching Building Technology and Design (O-level BTD syllabus, 2017).

This means some of the new topics which were included in the CBC syllabi in secondary schools were not part of the teachers' colleges syllabi since it was published before the one being used in secondary schools as such this caused a mismatch of topics and concepts in CBC at college and the one in schools. As such the implementation of CBC in teachers' colleges was partial.

When a question was posed to student teachers who completed teaching practice on focus group; 'what are your comments on the alignment of concepts and topics covered at college with those in the O-level BTD syllabus?' FGS3's response was shared

There are topics that we found in the secondary school syllabus in BTD which were not in teachers' college content and methodology syllabi.

Nombo (2022) points out that the mismatch of teachers' college and school curricula includes different expectations between the two institutions. This should be implemented since teachers and colleges are teaching manpower service providers for secondary schools to align expectations in content and skills to be acquired. From the findings, we conclude that other concepts were not covered at college simply because they were not in their syllabi and not motivated to go the extra mile of teaching what was not in the syllabi. Concepts not fully covered at college would not be fully covered in secondary schools hence, negatively affecting the pass rate.

What are the perceptions of the educators regarding the implementation of the competency-based curriculum in Building Technology and Design?

It emerged from the study that CBC was important in improving the skills development of students. All participants valued the curriculum and revealed several good aspects of CBC in BTD which include equipping students with hands-on skills, self-reliance, entrepreneurship, problem-solving skills, critical thinking, innovativeness and independent thinking. CBC uses a pragmatic approach where students learn by doing, refining their skills such that they would use them even in future when teaching. In addition, CBC facilitates the improvement of problem-solving and critical thinking competencies to participate in communities and social practices. After receiving entrepreneurship training through CBC and acquired skills student teachers would be able to start up a company and become better entrepreneurs, employ others and earn a living.

On the other hand, findings revealed that lecturers and mentors were accustomed to and had internalised the old curriculum such that they were not willing to change and implement CBC. This resistance to change mantra has negatively affected the implementation of CBC in teachers' colleges.

Findings also revealed that CBC was not implemented effectively in the manner it deserved. When CBC was introduced in secondary schools, lecturers who trained teachers to implement it were not consulted, and nor were they informed of concepts and topics fused in such that they could align their syllabi with the Ministry of Primary and Secondary Education (MoPSE) one.

RECOMMENDATIONS

In consideration of the information obtained through the literature review and findings of this research drawn above, some recommendations are presented as possible ways to improve the implementation of CBC in teachers' colleges and other teacher education institutions. Curriculum for secondary schools and teachers' colleges should be harmonized so that there is alignment of concepts and skills such that graduate teachers from such colleges can fully implement CBC. Administering workshops and in-service training should be done for both lecturers and mentors about CBC so that clarification and understanding of new concepts and skills are done. Attachment of lecturers to construction companies so that they familiarise themselves with new trends in the industry, and internship of student teachers to construction companies to refine their skills and become competent in teaching skills they had practised. Further studies could be conducted on the implementation of CBC in other contexts using larger populations and research methods for results to be generalisable.

CONCLUSIONS

From the findings, it is concluded that in as much as educators valued and cited good aspects of CBC colleges, several factors have hindered its success and effective implementation. Positive aspects revealed by findings included equipping students with hands-on skills, self-reliance, entrepreneurship, problem-solving skills, critical thinking, innovativeness, and independent thinking. Upon completing the CBC course, some students could become innovative, form their own companies, become entrepreneurs and earn a living. CBC facilitates learning by doing thereby students grasping more skills. Although some positive aspects of CBC were revealed, some aspects are fully implemented. The study points to the need for the engagement of all stakeholders in curriculum changes for the implementation of a programme like CBC to be successful. The study also provides insights on how lecturers can restructure the curriculum so that it adds value to the whole learning process of student teachers who then could teach learners in secondary schools.

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