Towards Competency-Based Higher Education for Sustainable Development (HESD) in Public Universities Kenya: A Case of Bomet University College

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ABSTRACT---- *CBC is a new system of education by the Kenya Institute of Curriculum Development (KICD) and launched by the ministry of education in 2017. The universities aim at focusing on the training of a segment of academic staff who will offer training to lecturers on an ongoing and regular basis. The ultimate goal of CBC was to equip the university with what it needs to produce teachers with the requisite skills and competencies relevant under the new curriculum currently being rolled out in the country. The purpose of this research aimed at ascertaining the Preparedness of Institutions of Higher Learning IHE towards Competency Based Education for sustainable Development (HESD). The study was guided by two objectives: To investigate the role of universities in incorporating Sustainable development goals (SDG'S) and to establish if the universities have modified its academic programs to align with CBC. This research employed qualitative study based on hermeneutic, interpretive methodology to explore the interrelations, analysis of documents of Academic Programs and interview of academic Programme owners in Bomet University College in readiness for competency Based Education for sustainable development in Kenya. Bomet University College sixty (60) academic staff constituted the target population for this study. Qualitative Data was collected from the Target Institutional Website and Curricula, similarly primary data was collected using questionnaires and Interviews of the respective heads of the departments and Deans of the Target Institution. The findings were that majority of the responded agree that Bomet University College Curriculum has integrated problem solving skills which is key to success of competence Based Curriculum and therefore Institutions of Higher Learning in Kenya should incorporate integration of problem-solving skills in their curriculum.*

Keywords--- Competence Based, Curriculum, University, IHL

1. BACKGROUND OF THE STUDY

The Competency Based Curriculum (CBC) under the 2-6-3-3 system of education in Kenya was unveiled in 2017 to replace the 8-4-4 system of education which has served Kenya for 32 years. The introduction of 2-6-3-3 has received a lot of attention and provides an opportunity for us to reflect on the end of an Era in Kenya's Education where ranking and cut throat completion has been at the center of the sector. The anxiety that parents experienced in the past as well as the candidates was devastating and affected the country to the extent that parents engaged in cheating such as taking their children to academes but registering them for Kenya Certificate of Primary Education exams in rural public schools in order to secure national school places

The fast and complex changing world coupled with dynamic technological advancements and great need for skilled manpower in the labour market within an ever growing world economy has brought new challenges and new requirements in the education sector (Mulenga & Kabombwe, 2019). The role of education in many countries in Africa after they attained independence was to impart enough knowledge to their citizens to help them take leadership roles and take up positions in various sectors to help in the running of the countries but this is currently not the case as there Competency Based Curriculum (CBC) in 2016 to help her citizens obtain appropriate knowledge, skills, values and attitudes through education with a focus on providing learners with the ability to obtain, improve and use knowledge, values and attitudes which would then lead to the use of skills acquired (Mulenga & Kabombwe, 2019).has been growth in both knowledge and information hence there need in education to provide

the best knowledge which can be used effectively. Because of this Kenya implemented the Grant et al. (as cited by Edwards et. al, 2009) in 1979 defined competence-based education as "a form of education that derives a curriculum from an analysis of a prospective or actual role in modern society and that attempts to certify student progress on the basis of demonstrated performance in some or all aspects of that role", concluding that competence is a broad term, and that the programmes based on competences can be very diverse with respect to their theoretical orientation, their scope, their intentions and their scientific focus (Barman & Konwar, 2014). Teachers' knowledge, attitudes, competencies and skills are most important in the implementation of any curriculum since they are the last group of professionals that work on the final bit of it before it reaches the consumers who are the learners therefore their input cannot be taken for granted.

Woods, (2008); World Bank, (2011). Observed that CBC emphasizes on competence development among learnersrather than the acquisition of content knowledge. The curriculum entailed a change in paradigm from content-based approaches to learner-based approaches. KICD (2017) states that it involves the use of learner-centered teaching methods like role plays, discussion, problem-solving, projects, case study, and study visits. In the use of such methods, the teachers' role change to an expert, facilitator, coach, mentor who guides the learning process.

The learners should engage and interact with the learning content taking responsibility for their learning through direct exploration of knowledge which will result in desired experiences. CBC proponents advocate that this approach enhances the preparation of students for their future careers. The Spanish Education act, as cited by Waweru (2017), observed that CBC incorporates core competencies as unique elements in the curriculum. CBC learners are allowed to learn at their own pace and move to more advanced content demonstrating mastery of desired competences. Redding 2016, cited in Surr and Redding (2017) explains competency as individual capabilities which include skills, attitudes, and knowledge that one has to determine mastery in them.

He argues that competency is roles while mastery is a demonstration of proficiency in that role. These require the itemization of measurable/ observable skills and knowledge. He further pointed out that it will need the aspect of experiences for one to be said he/she is competent or has achieved the competency. This aspect appears technical and might not be achieved in the CBC lower levels classrooms like primary schools. Therefore, competence is defined as the 'ability to apply learning outcomes adequately in a defined context like education, work, personal or professional development (Cedefop, 2014a, p. 47).

2. STATEMENT OF THE PROBLEM

CBC is a new system of education by the Kenya Institute of Curriculum Development (KICD) and launched by the ministry of education in 2017. The universities aim at focusing on the training of a segment of academic staff who will offer training to lecturers on an ongoing and regular basis. The ultimate goal of CBC was to equip the university with what it needs to produce teachers with the requisite skills and competencies relevant under the new curriculum currently being rolled out in the country. The teacher trainers should be competent and universities to move with speed and start redesigning the curriculum. The teachers being trained should be able to understand the new curriculum, therefore their training manuals should be aligned with the CBC. The trainees should be trained on curriculum designs, methodology and continuous assessment, which has been one of the most significant changes in CBC. Under the new system, teachers will be the key assessors as national examinations will be done away with. As universities train teachers, they need to contextualize the importance of the CBC in education by redesigning their curriculum. The trainees should further be equipped with skills on online teaching and curriculum reforms. The CBC is designed to reinforce the capacity of teacher education and institutional management as a way of getting more teachers competent to deliver it. Curriculum reform was a worldwide practice that followed the demands of society. Under the social pillar of the Kenya Vision 2030, education and training is expected to be the principal catalyst in creating a comprehensive, equitable and just society. Technical and vocational education is supposed to play a crucial role in transforming the country to a middle-income economy. CBC is designed to connect with the Kenya Vision 2030 to drive growth. It aims to fix the disconnect between the theory taught in school and real scenario in the world of work. CBC is designed to emphasize the significance of developing skills and knowledge and also applying those competencies to real life situations. CBC has adopted a cumulative approach to assessment where a learner's achievement is measured and the scores stored until they complete their primary education at Grade Six. The national rollout of Competency-Based Curriculum started in January 2019 at Pre-Primary I and II and Grades One, Two and Three in lower primary. The 2-6-3-3-3 curriculum was billed as the ultimate game-changer in the country's education as it seeks to plug gaps noted under the 8-4-4 system of rote learning and cut-throat examinations. The study aims at to explore the readiness of curricula to competency based education for sustainable development in south rift universities

3. OBJECTIVES OF THE STUDY

i.   to ascertain the Preparedness of Institutions of Higher Learning IHE towards Competency Based Education for sustainable Development (HESD).
ii.   To investigate the role of universities in incorporating Sustainable development goals (SDG'S)
iii.   To establish if the universities have modified its academic programs to align with CBC

4. LITERATURE REVIEW

This research was based on the concepts of education for sustainability ESD and competency-based education Theoretical concepts are a major complementary tenet in empirical research, with the latter's purpose being to confirm (or disconfirm) and explain phenomena. Following this line of argument, competence can be conceptualized as a disposition or a skill which enables a person to cope with particular situational demands (e.g. Klieme & Leutner, 2006). Klieme and Hartig (2007, p. 14) in Glaesser (2019) propose that the use of the term competence in the social sciences has three independent origins.

The <u>first</u> is Weber's sociology, the <u>second</u> being Chomsky's linguistic theory while the <u>third</u> is the 'functional-pragmatic tradition' in American psychology which from the late 1950s. In their view, Weber's competence is deemed as legal responsibility with concomitant means of enforcement, whilst for linguistics and psychology competence connotes capability and readiness. Competency-based education (CBE) postulates the theory that the majority of students will attain competence in the specified content area commensurate with the opportunity and freedom accorded to progress at their individualized pace.

Simply put, competence can be defined as what the students will be more capable of doing after completing the learning activity i.e. intended learning outcomes (ILOs). Competences are written as verbs, as the ability to do something. The often-quoted and well-known "four pillars of education for the 21st century" from the UNESCO Report Learning: the Treasure Within (Delors, 1996) – learning to know, learning to do, learning to be and learning to live together – are expressed as competences. A narrow notion of competence related to workplace performance has gained ground since the 1980s driven by the needs of the nation-states to restructure the education and training systems to meet the requirements of the global economy and remain competitive in the global market (Smith, 1996/2005).

As Sleurs (2008, p. 40) puts it succinctly, the competence approach asks "not what should be taught, but what should be learned, what abilities for acting, which concepts and problem-solving strategies people should have acquired as a result of the learning process". Higher education has been bombarded with pressures to adopt competence-based approaches in order to speak to demands of the labour market (van den Bergh et al., 2006)…an important feature of this framework is the integration of both cognitive and non-cognitive elements referred to variously as competency, competencies, key competences or a combination of knowledge, skills, attitudes and values .

According to Rychen and Salganik (2003), the term key competence, in general, denotes competences relevant for every individual, in any setting. The move to embed competencies in higher education is not without critics. Some scholars point out the pitfall of making higher education instrumental, in scenarios where competences are installed with an emphasis on skills, at the expense of a holistic approach of knowledge, skills, attitudes and values (Lambrechts et al., 2013). Indeed. Bernikova. (2017) points out that current educational paradigm features a shift from learning outcomes to practice-oriented competencies, undermining the very essence of university concept that seeks to foster capacity building and critical thinking.

 Recent education reform introduced competence- based approach in secondary schools. This reform is prompted by the need to produce school leavers with capabilities in terms of knowledge, skills and attitudes useful for solving social and economic challenges of present society (Nkwetisama, 2012; Serdenciuc, 2013; Paulo and Tilya, 2014; Makunja, 2015;Nforbiand Siéwoué, 2015;Butova, 2015;Ntongieh, 2016).

Competence-Based Education (CBE) is perceived to be desirable for aligning education provided to the dynamic social and economic demands of the society. It appears to be a panacea to the concerns raised about the capability and employability of the secondary school graduates as it emphasizes on the acquisition of knowledge, skills, attitudes and behaviors essential for effective performance of real world tasks (Maodzwa-taruvinga & Cross, 2012). The introduction of competence-based approach in secondary schools calls for comprehensive change in instructional approach in terms of teaching, learning and as well as resources used (Paulo and Tilya, 2014).

The revision process involves shift in paradigm from content-based to competence-based. The emphasis on competence-based education is due to the growing recognition of the need for development of capabilities and not just certification.

This means that teaching and learning process has to change its orientation from rote memorization of content knowledge to acquisition of skills and competencies useful for solving real life problems (Woods, 2008; World Bank, 2011). CBC buttresses the application of knowledge in real life context as opposed to the content-based emphasizing students to memorize their lesson notes which was deemed crucial for passing examination, which often tests ability to recall memorized facts, knowledge and principles (Osaki, 2004).

CBC is a practical approach to an education system because it highlights the acquisition of life skills and assesses their mastery, which is needed for an individual to be purposeful in a given society (Savage, 1993). According to (Mosha, 2012) the CBC seeks to develop in students' skills of knowing, learning and how to interact in a socially diverse world. Such a change has instructive inferences, as pointed out by (Rutayuga, 2010) that CBC needs a change from evaluating a given set of learning content to examining each outcome of learning.

Likewise, (Wood, 2001) write that the move to acquire skill based learning heavily requires a teaching technique where learners are at the center of learning. Several studies agree that CBC is the preferred solution in the current complex economy which requires that individuals are equipped with necessary skills needed to become productive in this current world (Harris, Guthrie, Hobart and Lundberg, 1995).

5. METHODOLOGY/ DESIGN/APPROACH

This paper employed qualitative study based on hermeneutic, interpretive methodology to explore the interrelations, analysis of documents of Academic Programmes and interview of academic Programme owners in Public Universities in readiness for competency Based Education for sustainable development in Kenya. Bomet University College sixty (60) academic staff constituted the target population for this study.

Qualitative Data was collected from the Target Institutional Website and Curricula, similarly primary data was collected using questionnaires and Interviews of the respective heads of the departments and Deans of the Target Institutions. The survey questions was created to provide insight on the preparedness of Institutions of Higher Education towards implementation of the CUE, HESD guidance and ESD more broadly, and to identify factors that could enhance or undermine adoption and implementation of CBC and IHF

6. FINDINGS AND DISCUSSION

To Investigate the Role Universities have played in Incorporating CBC and Sustainable Development Goals (SDG'S) in the University Curricula.
There is need for Universities in East Africa to start realigning their academic programmes to the requirements of the competency-based curriculum (CBC), being implemented at various levels of the basic education system in the region. The institutions in the region are lagging behind in reviewing their curriculums to reorient them from knowledge-based to competency-based. Majority of the responded agree that BUC Curriculum has integrated problem solving skills which is key to success of competence Based Curriculum

Table 1: BUC Curriculum Integrates Problem Solving Skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	2.5	2.5	2.5
	Disagree	4	10.0	10.0	12.5
	Neutral	5	12.5	12.5	25.0
	Agree	20	50.0	50.0	75.0
	Strongly Agree	10	25.0	25.0	100.0
	Total	40	100.0	100.0	

The reorganization of academic schools, faculties and departments will become necessary, before pupils who are already following the new curriculum enter universities. The same will be necessary for the duration of programmes, based on "conceptualization of desired competencies and expected outcomes.

Universities and academia in the East Africa, have largely acted as spectators in public discourse on the nascent education system, showing little interest or barely participating in the debates about the curriculum, even as Kenya and Rwanda moved to shift their education from the knowledge- to the competency-based approach. The respondents indicated that BUC has engaged in CBC discourse through incorporating CBC and sustainability courses in its curriculum which included Greening for Sustainability (BUN 100).

Implementation of the competency-based system now under way, universities were likely to be caught unawares and unprepared, unless they started acting immediately. "The CBC system of education has taken off. Majority of the respondents agreed that implementation of CBC in the university has encountered challenges that need to be addressed before the prospective learners reach university level. Therefore universities should become part of the conversation rather than being observers.

Table 2: There are Challenges Faced in Incorporating Sustainability in the Curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	2.5	2.5	2.5
	Neutral	9	22.5	22.5	25.0
	Neutral	11	27.5	27.5	52.5
	Agree	13	32.5	32.5	85.0
	Strongly Agree	6	15.0	15.0	100.0
	Total	40	100.0	100.0	

Table 3: University Education Curriculum Reform and Teaching Approaches

	N	Sum	Mean	Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
The School Offers Courses with CBC and Sustainability Concerns	40	124	3.10	.195	1.528	-.285
The Course Integrates CBC and Sustainability Topics	40	133	3.33	.173	1.199	-.452
There are Challenges Faced in Incorporating Sustainability in the Curriculum	40	134	3.35	.170	1.156	-.110
The Programmes are Incorporating Global Sustainable Issues	40	151	3.77	.170	1.153	-1.225
Student are Enrolled in Courses with Sustainable Concerns	40	137	3.43	.160	1.020	-.492
Lecturer Collaborate in Teaching Sustainability Programmes at Faculty Level	40	143	3.58	.196	1.533	-.394

1. **To establish if the universities have modified its academic programs to align with CBC**

Unlike the knowledge-based curriculum, the competency-based curriculum defines learning from the point of view of learner performance therefore universities preparedness is key to success of the curriculum. Majority of the responded indicated that instructors at the University are prepared and have incorporated CBC and Sustainability topics in the teaching programmes. The average mean as shown in Table 4.4 was 3.8 indicating that majority of the respondents agreed that BUC Teaching Approach and Research has incorporated CBC and Sustainability learning. The curriculum is student-focused and makes as clear as possible what should be achieved as well as the standards for measuring the achievement. The responded also indicated that the CBC system is outcomes-based rather than content-based therefore involved in instilling critical thinking skills and informed decisions to the learners this had a mean of 3.85. The focus is not on knowledge for knowledge's sake, but on how that knowledge can be applied.

Table 4: The Course Integrates Competence Based Curriculum and Sustainability Topics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	7.5	7.5	7.5
	Disagree	5	12.5	12.5	20.0
	Neutral	13	32.5	32.5	52.5
	Agree	14	35.0	35.0	87.5
	Strongly Agree	5	12.5	12.5	100.0
	Total	40	100.0	100.0	

In a competency-based system of education, assessment is "criterion-referenced", meaning that students compete against a standard as opposed to competing against each other. Based on the responses given by the target group on Examination and sustainability, majority of the respondents confirmed this assertions. The emergence of new technologies had drastically changed the "landscape of demands of skills" in the production sector, which requires graduates with competencies to match the changing trends of the industry. The respondents agreed to a greater extent that students are enrolled in courses with sustainable concerns.

There are growing concerns about the unemployed graduate youth from universities in the region, the quality of learning, the reputation, the relevance of courses and preparedness of students for the labour market, therefore the need to assess whether programmes offered at the University are competence based and have incorporated sustainability. The finding indicates that majority of respondents agreed that BUC Programmes have integrated competency and sustainability.

Table 5: The BUC Academic Programmes are Incorporating Global Sustainable Issues

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	7.5	7.5	7.5
	Disagree	1	2.5	2.5	10.0
	Neutral	7	17.5	17.5	27.5
	Agree	20	50.0	50.0	77.5
	Strongly Agree	9	22.5	22.5	100.0
	Total	40	100.0	100.0	

The competency-based curriculum development approach called for the reorganization of training in the three areas of higher education, in industries and in incubation centers, therefore the Universities preparedness is key to the success of the programme. Training in industries is linked to employability while training in incubation centers or start-ups is intended to promote self-employment mainly through entrepreneurship. The success of CBC advocates for a paradigm shift in universities, to enable their curriculums to produce skilled graduates for self-job creation, and readily fit into the labour market and in society in general.

In addition, there was also an urgent need for a shift in the delivery of higher education in the EAC to embrace Education 5.0, the new principle which incorporated the "symbiotic relationship" between education, industry and society.

The Education 5.0, sought to expound the three core and traditional functions of universities referred to as Education 3.0, which includes teaching, research and community outreach, but have been expanded to include innovation and industrialization to become Education.

This will require universities to come up with strategies to upgrade the traditional functions to accommodate the expanded mandates of innovation and industrialization as a must. Such a change involves aggressive establishment of partnerships with the productive sector or industry in general," he added. Therefore majority of the respondents indicated that university staff are willing to carry out sustainability Oriented Research.

Table 6: Staff are Willing to Carry Out Sustainability Oriented Research

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	2.5	2.5	2.5
	Neutral	3	7.5	7.5	10.0
	Agree	25	62.5	62.5	72.5
	Strongly Agree	11	27.5	27.5	100.0
	Total	40	100.0	100.0	

Universities, by combining critical thinking, creative thinking, innovativeness and an entrepreneurial mindset, can actualize the new vision, and also by learning from best practices under different initiatives in the region. Knowledge production being the most important mandate of any university, can be achieved only through research and subsequent innovation. There was, therefore, a need to establish research-intensive universities. Majority of the respondents agreed that BUC staff and students are involved in sustainability research

Table 7: The Level of Research Output at the Department Level is High

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	2.5	2.5	2.5
	Disagree	11	27.5	27.5	30.0
	Neutral	9	22.5	22.5	52.5
	Agree	16	40.0	40.0	92.5
	Strongly Agree	3	7.5	7.5	100.0
	Total	40	100.0	100.0	

In addition, universities must pay a lot of attention to monetizing intellectual property and encourage their academics to do so in order to generate much-needed research funds.

There is need for Universities to start thinking of how they can make use of advanced technologies such as artificial intelligence and augmented virtual reality, to create "learning experiences" that cater for the needs and desires of current and future "digitally enlightened" learners. Majority of the respondents indicated that BUC teaching approach has integrated technology and that the university management approved blended learning for the institutions. Therefore technology is embedded in the university learning approaches.

Table 8: University Teaching Approach, Research and Community Engagement

	N Statistic	Sum Statistic	Mean Statistic	Std. Deviation Std. Error	Skewness Statistic	Kurtosis Statistic
Lecturer Collaborate in Teaching Sustainability Programmes at Faculty Level	40	143	3.58	.196	1.533	-.394
Curriculum Integrates Problem Solving Skills	40	154	3.85	.158	1.003	-.975
Staff and Students are Involved in Sustainable Research	40	123	3.08	.173	1.199	-.402
The Schools Address Global and Local Sustainability Issues and Challenges	40	135	3.37	.159	1.010	-.676
There is Collaboration between faculties, Institutions and Stakeholders	40	142	3.55	.138	.767	-.402
You are Involved in Community Engagement	40	150	3.75	.163	1.064	-1.088
The Local Sustainability Issues and Challenges are forming part of the Department's Community Engagement	40	134	3.35	.150	.900	-.777
There is Collaboration with Stakeholders in Addressing Community Sustainability Issues	40	137	3.43	.160	1.020	-.492
There is selection and executing of Community Sustainable Projects	40	135	3.37	.167	1.112	-.274
Sustainability Aspects arebeing Examined During Courses	40	155	3.88	.144	.830	-.599
Sustainability Aspects are Being Assessed During Project	40	149	3.72	.119	.563	-1.023

7. CONCLUSION AND RECOMMENDATION

From the study findings, the following conclusions were drawn:

Firstly, On the Role Universities have played in Incorporating CBC and Sustainable Development Goals (SDG'S) in the University Curricula. It was identified that Universities are facing Challenges in Incorporating SDGs in their Curriculum. Bomet University College Majority of the responded agree that BUC Curriculum has integrated problem solving skills which is key to success of competence Based Curriculum.

Secondly, continuous training and reskilling of lecturers and Administrators is needed through in-service and online training to keep teachers abreast with the new and current teaching strategies and document presentations. Retooling the lecturers in Communication and technology skills due to lack of sufficient ICT exposure in Secondary school needs to be emphasized on by the management in the Universities.

Thirdly, that the main challenges Universities are likely to face in the implementation are; inadequate lecturers trained in teaching pedagogies, learning materials and inadequate human resource. There is reported shortage of lecturers leading to high Lecturer-student ration. The practical orientation of CBC will require reduced ratio to enhance the lecturer-student contact.

Fourthly, there is need for universities, to combine critical thinking, creative thinking, innovativeness and an entrepreneurial mindset, to actualize the new vision, and also by learning from best practices under different initiatives in the region. Knowledge production being the most important mandate of any university, can be achieved only through research and subsequent innovation. There was, therefore, a need to establish research-intensive universities.

8. FURTHER RESEARCH

The following suggestions are made concerning areas that need further focus:
1. Another study on teacher preparedness to implement CBC in Senior Secondary schools.
2. A study on the effectiveness of lecturers in the implementation of CBC in IHL.

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