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**SOCIETY OF
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Responsive Curriculum Development for the 21st Century Education, Innovations and Development in Kenya

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Abstract

The 21st century education triggers the expectation that institutions of learning should teach technical skills with emphasis on life skills, learning new things and the development of the abilities to deal with global changes and challenges emerging from the real situations in the world. In order to cope up with the world in the 21st century, curriculum developers through their collaboration with other stakeholders are required to design and develop a responsive curriculum that focuses on the needs of the learner and the society with clear aim, goals and objectives in education. This paper addresses the need for a responsive curriculum as a projection for the 21st century education for innovation and development in Kenya. This paper employs the exploratory research design to delve into the existing literature to examine the various levels, components, designs, types, curriculum responsiveness, factors prompting/causing responsive curriculum and the process of developing a responsive curriculum. This is in line with the new changes under the Competence Based Curriculum (CBC) and Competency Education (CE) that envision a curriculum that enables every learner to become empowered through excellent teaching, good learning environment and provisions of teaching and learning resources towards effective and efficient education that promotes the achievement of the desired skills, knowledge and values for the 21st Century development agenda.

Key Words: *Responsive Curriculum, Curriculum Design and Development, 21st Century Education, Competency Based Curriculum, Effective and Efficient Education, Innovations and Development.*

1. Responsive Curriculum, Design, Planning and the Process of Development in Kenya

1.1 Introduction

The context of responsive curriculum towards the 21st century education for innovations and development in Kenya is a new concept in curriculum development but it is relevant to the education and curriculum reforms that have resulted into the competency-based curriculum and competency education that is currently implemented within the 7-year time period since 2015-2023. The paper highlights on the background to responsive curriculum, concepts of responsive curriculum and the process of responsive curriculum development. It addresses on critical factors prompting responsive curriculum, characteristics and the need for the adoption of the responsive curriculum, the Kenya curriculum reforms' agenda and the Competency Based Curriculum as a responsive curriculum. The third part of this paper is on responsive curriculum for the 21st century education, curriculum innovations and development, key recommendations and conclusion.

1.2 Background to Responsive Curriculum

Responsive curriculum has its background and meaning as perceived by scholars (Wiles & Bondi, 2011) on the basis of the needs of the learner of the 21st century under the emerging issues in the current age, time and beyond. Curriculum scholarship seems to focus not only to school works but also to matters external to the school curriculum.

Curriculum development must always be responsive to the needs of the learner, changes and emerging issues in the local and international societies. According to Wiles and Bondi (2011), the purpose of a curriculum development effort with element of choice and decision reflects both national and local priorities and values. In 1968 Ralph Tyler



suggested that curriculum should reach out all learners and be responsive to the needs of the disadvantaged learners within and outside the school or no basis of the schoolwork. Ornstein and Horenstein (1999) previously note that Tyler's recognition of the importance of developing curricula that were practical and useful, yet responsive to the needs of both individual students and society. Therefore, responsive curriculum considers both the internal school factors and other elements seen external to the school in the form of sociological, cultural, political and economic factors that are contextually occurring in the communities and families but are also affecting the lives of the learners and their learning.

2. The Concepts of Responsive Curriculum

The concepts of responsive curriculum have been put in various contexts and meaning by curriculum scholars and researchers from institutions of higher learning. Three concepts and models have been derived from South Africa, Ghana and Kenya. Researchers from the three states are arguing on the context, environment and resource prompting responsive curriculum development.

2.1 The Meaning of Responsive Curriculum

Ema (2009:3), cited in Okorafor and Uchechi (2011), defines the responsive curriculum as the curriculum that is relevant to the current and anticipated needs, problems and aspirations of the learners. These authors further say responsive curriculum is the curriculum that equips the learners for development in information, communication and Technology (ICT); local and global challenges of ensuring peace and resolving conflicts, devastating health problems and myriads of social, economic and political demands that stare individuals and societies frontally on daily basis.

Responsive curriculum is the ability of curriculum developers to translate knowledge about new changes and developments into curriculum purpose, objective, content and structure in order to meet those emerging needs of the learner and society. It is a curriculum designed and developed over time based on the interests of the learners at the classroom setting (Felstiner, 1993). Responsive curriculum requires a re-thinking of the nature of the curriculum, particularly of the relationship between the curriculum, everyday life and the world of work (Ameyawa, Turnhout, Artsb & Wals, 2017).

Responsive curriculum may take various dimensions that touches the needs of the learner and the society:

- a) Educational and Curriculum Reforms
- b) Economic and industrial responsive curriculum – responding to development and expansion of industries of a developing society or nation
- c) Technological and Innovative responsive curriculum – responding to the need for technological advancement, research, creativity, inventions and scientific innovations.
- d) Socio-culturally responsive curriculum- responding to the social and cultural diversity of a nation.

According to UNESCO (2017), culturally responsive curriculum is a curriculum that respects and accommodates the learners' cultures, experiences, knowledge and values the legitimacy of different types of ethnic and racial cultures by encouraging intercultural understanding.

2.2 Characteristics and Qualities of a Responsive Curriculum

This paper holds the premise that a responsive curriculum should possess the following qualities:

- a) At the heart of a high-quality curriculum is the premise that all learners are able to learn and are capable of being successful.
- b) It should provide for the integration and inter-disciplinary of subject matter and pedagogy;
- c) A responsive curriculum should be authentic, learner centered and orientation to real life situation;
- d) It should provide a platform for utilizing materials from the learners' culture and environment;
- e) It should provide a basis for assisting the learner to achieve critical thinking and imagination abilities;
- f) The responsive curriculum should be incorporating co-operative learning and the development of self-esteem through the recognition and application of multiple intelligence faculties;
- g) Because the curriculum prepares learners for life in the society, a curriculum obviously should be dynamic and evolve regularly to meet the needs of individual learner as well as the society.
- h) A curriculum should gradually build the learning experience. This means that it should allow for continuity of experiences as the learner progresses and grows.



- i) Because curriculum caters to a wide variety of people, a good curriculum should be developed inclusively. This means that stakeholders representing all cadres and disciplines should be included in order to achieve cohesiveness that targets the success of every child.
- j) Every aspect of the curriculum should have a clear goals or end objectives to achieved.
- k) A good curriculum should not be rigid- it allows room for flexibility, monitoring and evaluation by administration.
- l) It should provide sufficient scope for the cultivation of unique skills, interest, attitudes and appreciations.
- m) According to the Bloom's revised taxonomic levels, a responsive curriculum should allow learners to create their own knowledge through creativity and innovation.
- n) A responsive curriculum should respond to the cultural, societal and technological advancement of the global trends.

2.3 The Needs for the Adoption of the Responsive Curriculum

The global challenges of the 21st Century educators have more than ever before been confronted with the problems of presenting subject matter to students with varied learning styles, background, interest, physical and mental abilities, gender and vocational goals (Ukwungwu, 2009). The world of work in which students live have changed drastically, as such, schools must change their strategies of teaching in order to meet the demands of present time. Workers need the learning capacity to become lifelong learners, updating their knowledge, skills and competencies continually and independently (Iheonunekwu, 2007). People need to know how they use their knowledge and skills by thinking critically and imaginatively, applying knowledge to new situations, analyzing information, comprehending new ideas, communicating, collaborating, solving problems and making decisions. According to Commission on Achieving Necessary Skills (ANS, 1991), these kind of skills as well as the personal qualities of responsibility, self-esteem, sociability, self-management and integrity are what schools should in-cooperate into their standard and assessment.

2.4 Factors Influencing the Adoption of the Responsive Curriculum

The world in which we live is increasingly sophisticated, multifaceted and nuanced, people need high-level learning skills to act, respond, learn and adjust to ever-changing circumstances. As the world grows increasingly complex, success and prosperity will be linked to people's ability to think, act, adapt and communicate effectively. Children of this generation live in a world of almost unlimited streams of trivial and profound information of enormous opportunities and difficult choices, helping students make vital practical, emotional and social connection to skill and content is more important than ever. The following factors are key influencers to the adoption of the responsive curriculum:

- a) *The Learners' Environment*: The content should be made relevant to the learner's life, i.e. relating the content to the actual environment of the life.
- b) *The Needs of Learner/Society*: The objectives selected must address the needs and aspirations of the learner/society.
- c) *Contemporary Life of the Learner*: Taking the learner into the world, that is relating what the learner learns in the classroom to a similar context in the society; to create a link between what the learner is exposed to in the school situation and what operates in the society.
- d) *Techniques and Strategies of Implementation*: Adopting strategies/ techniques that will offer the learner the opportunity to interact with one another, with teachers and with other knowledgeable adults in authentic learning experiences (Iheonunekwu, 2007).
- e) *Relevance of Resources*: The resource materials selected for the implementation of the responsive curriculum should be culturally relevant.
- f) *Evaluation Procedure*: The evaluation procedure should adhere to the criteria of effective evaluation. Now that the school system has adopted the continuous assessment system, teachers should try as much as they can to avoid the abuse of the procedure

2.5 Responsive Curriculum Development Contexts

What is responsive curriculum development? Responsive curriculum development is the ability of curriculum developers to translate knowledge about new developments into curriculum content and structure (Vreuls, Kreunen, Klink, Nieuwenhuis & Boshuizen, 2022). However, the force behind responsive curriculum development is curriculum responsiveness which is the ability of curriculum developers to respond quickly and adequately to changes in the profession. Moreover, curriculum responsiveness is nowadays considered of great importance for educational



development (Nieuwenhuis et al.,2022). Responsive curriculum development and its responsiveness has been practiced through researches conducted in institutions of higher learning, examples noted in South Africa and Ghana.

2.5.1 Responsive Curriculum Development in the Context of South Africa

Responsive curriculum development in the context of South Africa was perceived from two perspectives; Decolonization and the optimization of higher education. According to Fomunyan and Teferra (2017), South African higher education in the past years had seen violent calls for decolonization of the curriculum, as a way of addressing the passive nature of education. To enhance the responsiveness of the curriculum, there was need to involve many voices to articulate issues affecting education as a result of past colonial experiences by creating avenues for a just and caring curriculum. Responsive curriculum was shaped through plurality of voices that provoked the creation of disciplinary and interdisciplinary spaces for curriculum engagement and sustainable education experience for the effectiveness of the decolonization process and the enhancement of curriculum responsiveness.

Mahabeer (2020) observes that the idea of decolonization has taken center stage in higher education concerns, creating the pressure for curriculum transformation. Decolonizing the curriculum manifests itself at all educational levels and prompted teachers especially black women to be cognizant of and responsive to the implications of 'decolonization' on their roles and practices as teachers within their subject disciplines and transformation of South African context by removing from school curriculum the legacy of colonization and apartheid.

Another important component of responsive curriculum in South Africa was the institution of a paradigm shift in the basic and higher learning education from content to outcomes-based education (OBE) to focus on student-centered teaching and learning with the aim of delivering students who, by the time they complete their formal education, were productive, successful, lifelong contributors to society and the world of work (Human-Hendricks & Meier, 2020).

2.5.2 The Process of Responsive Curriculum Development in a University in Ghana

Responsive curriculum development is the ability of curriculum developers to translate knowledge about new developments into curriculum content and structure (Vreuls, J et. al, 2022). A conceptual model of Responsive Curriculum Development (RCD) was designed by Ameyawa, Turnhoutb, Arts and Wals (2017) through a study on responsive curriculum development for a new Masters curriculum based on the natural resource and environmental governance at a university in Ghana. In this conceptual mode, the focus is on the content of the curriculum and not the learning process. This shows that responsive curriculum should be able to prepare learners for future situations even outside the school.

Moreover, responsive curriculum development (RCD) emphasizes different requirements for responding to changing graduate needs, including interdisciplinary curriculum needs to base teaching and learning on problems in the field. In other words, responsive curriculum development considers developing in the learners the competences to perform tasks required of graduates in real-life. A conceptual model designed for a university in Ghana was meant to make the process relevant to responsive curriculum development with the following requirement:

- a) Participation of the relevant stakeholders within and outside the university
- b) Identifying the current needs of the professional fields (interdisciplinary areas)
- c) The centrality of faculty and the need for expert support
- d) Transdisciplinary Curriculum Development Team (Experts drawn from across curriculum areas)
- e) Applying the essential attributes of responsive curriculum development such as the design, implementation and evaluation of the curriculum.

The process of responsive curriculum development has been designed to take the following 5 steps; namely:

- a) Analysis: performing problem, task, context and content analysis
- b) Design: deciding on substantive parts or components of the curriculum, such as aims and objectives, subject matter, learning and instructional strategies, learner tests, timings and locations
- c) Development: creating and revising curriculum prototypes
- d) Implementation: applying the curriculum in practice
- e) Evaluation: testing the quality of the prototypes or final deliverable.



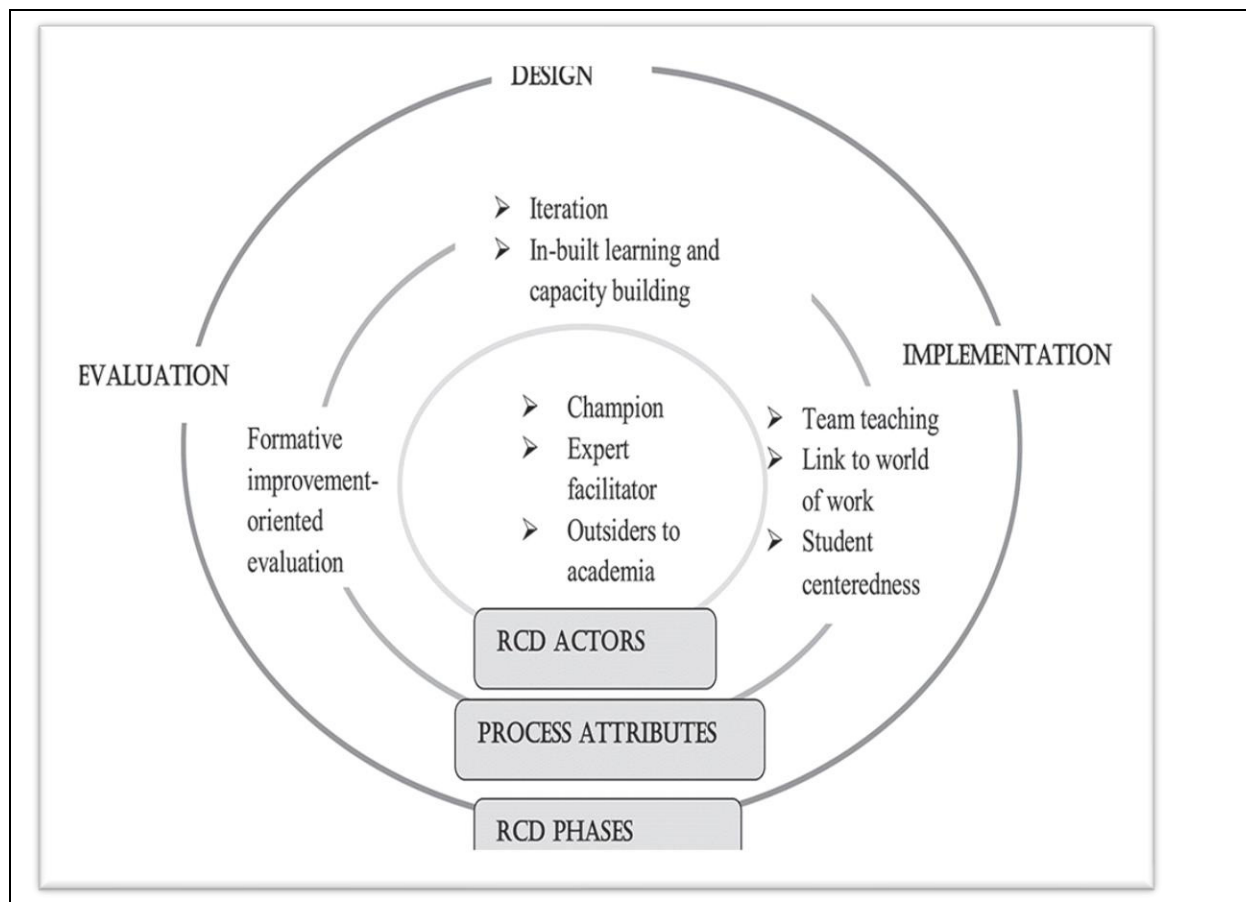


Figure 1: The Process of Responsive Curriculum Development (RCD) adopted from a conceptual model in Ghana (Ameyawa, Turnhoutb, Arts & Wals, 2017)

Figure 1 above show the interactions between the unique attributes identified for responsive curriculum development in a university in Ghana; that's the design, implementation and evaluation with all activities executed by a diverse team involving all the actors deemed relevant for responsive curriculum development including lecturers, champions, expert facilitators and actors outside academia. This process aims at formative improvement-oriented evaluation that ensures continuous and iterative learning, in-built learning and capacity building to bring about innovate teaching such as teaching in teams and using student-centered teaching methods, in order to ensure that the curriculum links to the world of work and build required capabilities.

2.5.3 Responsive Curriculum in the Kenya Context

Kenya education system has undergone curriculum reforms and changes since independence. According to Inyega, Naseem, Mahaya, Elsayed and Mahaya (2021), a critical review of the education system and curriculum reforms in basic education in Kenya from independence in 1963 to date has made important curriculum reforms that are instrumental in improving learning outcomes.

What factors prompting and causing responsive Curriculum development in Kenya? Responsive Curriculum development may be prompted and caused by the following factors:

- a) New Law/Constitution with the National Directives and Policy on Education
- b) National Educational and Curriculum Reforms and Changes
- c) Technological Advancement
- d) Inclusive Education
- e) Child Friendly Environment and Education



- f) Industrial and labor Market demands
- g) International and Regional Declarations and Protocol for Education
- h) Emerging issues in Education such as Globalization, Climate Change, HIV/Aids, Terrorism and Gender Education
- i) Curriculum Harmonization
- j) The 21st Century Education
- k) Competence Based Curriculum (CBC) and Competency Education (CE) as A Responsive Curriculum

2.5.4 The Competency Based Curriculum as a Responsive Curriculum in Kenya

Curriculum reform in education is a worldwide-practiced phenomenon that is involved in striving for the best educational practices, primarily with the demands of the 21st century knowledge economy. African countries immediately after independence had to inherit the colonial education system, which was discriminative and which demanded realignment to societal and cultural demands of the nation. Coincidentally curriculum reforms in most African nations adopted the content or knowledge-based approach. Not long, the Knowledge-based curriculum dissatisfied most countries for its products were too academic, but lacking skills and knowledge in the applicability as required by the demands from the workplace. Kenya and Tanzania adopted curriculum with the philosophy of education for self-reliance, but due to the inadequately trained teachers and insufficient resources, it ended up being too examinable and losing its goal. That led to unemployment, increased vices, and rampant dropouts, among other factors. Currently, due to technological advancement, most countries have opted for a competency-based curriculum (CBC), which appears as worldwide trends in offering skills that match with the requirements of companies' employers (Cheptoo & Ramadas, 2019).

CBC is a curriculum reform that recently has gained popularity in African countries. CBC emphasizes on the paradigm shift of pedagogical practices from teacher-centered approaches to learner-centered approaches. Ideally, regarding objectives one should think of competency, instead of content, more emphasis is on the outcome while employing entirely formative evaluation instead of summative. This demands teachers to change from the traditional way of instruction to the use of the CBC approaches. Hence, the teaching methodology, assessment approaches, instructional materials, classroom organization, etc. majorly shift. Thereof, this raises questions like:

- a) Are the teachers competent to meet the demands of implementation of the CBC?
- b) Do they get the appropriate training on the CBC?
- c) Are there proper structures to support teachers in the implementation of the CBC?
- d) Has the complete infrastructure (both hardware, software and digital) been put in place for the implementation of the CBC?
- e) Has stakeholder sensitization been fully done to enhance support for the implementation of the CBC?

The curriculum reforms in Kenya were based on the following rationale:

- a) 'The Summative Evaluation of the Curriculum' (KIE, 2009), indicated that the curriculum content and its implementation was academic and examination oriented.
- b) Re-alignment of the Education Sector to the Kenya Vision 2030
- c) Re-aligning the education sector to the Constitution of Kenya 2010
- d) The integration of Kenya in the East African Community (EAC) required that all partner states reform their curricula, structure, and examination systems to align them to the EAC Framework (EAC, 2012).
- e) According to UNESCO's International Bureau of Education (IBE-UNESCO) (2015), which is a UNESCO institute that specializes in the policies and processes of curriculum development and implementation, and in learning content and methods, curriculum articulates educational domains (policy-making, educational planning, curriculum development, teacher education, student learning and assessment, etc.) to give effect to lifelong learning, curriculum reforms should be carried out after every five years to keep it in tandem with the societal, cultural, socio-economic and global needs and trends in education.

The crucial Centre point in CBC is the acquisition and application of learned knowledge, skills, attitudes, competencies, and values in real-life situations. Learners are meant to construct knowledge while actively involved in the learning process. The progression of learners is based on the acquisition, development, demonstration, and accomplishment of competency. The role of the teacher turns to the cognitive coach, facilitator, and guider.



The CBC manifests itself with the following features:

- a) CBC learning goes beyond the closed classrooms, teaching and learning instructions aims or life-long skills that help learners solve complex problems in their future profession
- b) Recall of information will transcend to the ability to act and perform to the standards of the expertise.
- c) Learning is more personalized, practical, and requires reflection among teachers and learners to facilitate the appropriate provision of feedback.
- d) CBC focusses on the development of the entire individual competence different from the knowledge-based curriculum; it is designed based on what students can do in performing tasks rather than what they know about the functions.
- e) A student is said to be competent if he/she has specific skill and knowledge required for effectively performing a real-life task, CBC emphasizes the attainment of competencies by learners.
- f) CBC prepares scholars for life and career skills, which addresses leadership, interpersonal, flexibility, adaptability, self-drive initiative, responsibility, productivity, accountability, social, and cross-cultural skills. These attributes are essential in the transition to the job market.
- g) The CBC fosters positive emotions among fellow learners.

CBC Core Competencies in Kenya

The Basic Education Curriculum Framework (KICD 2017) spells out the key competencies that the CBC envisages will lead to a holistic individual development by the end of the learning cycle. There are seven (7) core competencies identified for CBC which are envisioned to have been achieved by the end of learning by every learner as:

- (i) Communication and collaboration;
- (ii) Critical thinking and problem-solving;
- (iii) Imagination and creativity;
- (iv) Citizenship;
- (v) Learning to learn;
- (vi) Self-efficacy; and
- (vii) Digital literacy.

Implementation of Competency-Based Curriculum in Kenya

By the time of presenting this paper, the implementation of the CBC which started in 2017 in Grade One had reached Grade Seven. This means that Kenya had implemented CBC at Early Year Education (PP1, PP2, Lower Primary; Grade 1 – 3) and was implementing Middle School Education (Grade 4 – 6) and rolled out Grade 7, popularly referred to as Junior Secondary School Education.

Sifuna and Obonyo (2019) in their study observed that preliminary studies on the implementation of the CBC in Kenyan schools generally seem to indicate that:

- a) There was inadequate infrastructure due to extremely high enrolment which is straining the existing facilities.
- b) Teachers noted that the government distribution and delivery of textbooks had been an issue with some schools starting the year without the necessary textbooks.
- c) Ondimu (2018) also noted that print and digital materials had not been delivered and distributed to schools.
- d) In-service of Kenyan teacher educators has not been effectively done. This implies that teachers generally have limited knowledge and skills for successful implementation of CBC.
- e) The role of parents in the implementation of CBC had not been brought out very clearly. This led to parents developing a negative attitude towards the CBC. This raises the question of stakeholder preparedness during the roll-out of the CBC.
- f) The implementation of the CBC is more expensive than the content-based since it demands for specialized teaching and learning resources, equipment and infrastructure especially in the vocational and science-based learning areas (Okeyo, D. A. & Kanake, L. K. (2021).

The roll-out of Grade 7 (Junior Secondary School) had more issues amongst them:

- a) Domiciling of the CBC
- b) Staffing of teachers against subject specialization
- c) The teaching and learning of science subjects
- d) The managing of the 14 – subjects' curriculum



3. Curriculum Responsiveness for the 21st Century Education, Innovations and Development

3.1 Responsive Curriculum for the 21st Century Education

What does the 21st Century education is all about? Generally, it is about giving learners the skills they need to succeed in the new world by helping them grow the confidence to practice those skills. According to Vivekananda (2019), to be a successful learner or graduate in today's world requires a shift from the past years of a solid acquisition of the "three Rs" (reading, writing, and arithmetic and mastery in the core academic subjects as a measure of attainment. The world of the 21st century requires a radically different orientation. This author insists that to participate effectively in the increasingly complex societies and globalized economy that characterize today's world, students need to think critically, communicate effectively, collaborate with diverse peers, solve complex problems, adopt a global mindset, and engage with information and communications technologies.

Other additional requirements for the 21st century education is the adoption of sustainable development Goal 4 (Quality Education) and the Education 2030 agenda, including Target 4.7, which commits countries to ensure that learners acquire knowledge and skills in areas such as sustainable development, human rights, gender equality and global citizenship. Partnership for the 21st Century learning has identified four major skills for today's education; creativity, critical thinking and collaboration (Driscoll, 2022). These four skills are the thematic areas for responsive curriculum and they should be overlaid across all curriculum mapping and strategic planning globally.

World nations are responding to the 21st century education at different strategic planning. For example; in Geneva education remains high on the political agenda and secure no disruption in the funding of its activities. All educational activities are organized to include the following: Promotion of the values of sports through their introduction in the teacher training curricula of physical and sports education. -Integration of sustainable development, climate change, and water-related issues into curricula through the promotion of green and blue curricula and integration of health, well-being and nutrition into curricula (UNESCO-IBE, 2023).

3.2 The Background to Responsive Curriculum for Innovations and Development in Kenya

What is innovation and Development in the Kenyan context? These two concepts are operational through the growth and expansion of the education system.

3.2.1 How Kenya Invests in Education

Kenya invests in the education sector and the share has been between 28-32% of the total budget from 2005-2011 budgets and currently at Ksh.544B (30%) in 2022/2023 budget allocations. Education sector grew by 6.2% in the first quarter of 2022. This represented a slowdown in the growth rate compared to the corresponding quarter in 2021. That quarter, the value added by education to the country's Gross Domestic Product (GDP) expanded by 11.5% in 2022 (Kamer, 2022).

But according to Kenya Bureau of Statistics (2023), the economy of Kenya advanced by 4.7% year-on-year in the third quarter of 2022, the fifth consecutive quarter of slowing growth and the weakest economic expansion since the first quarter of 2021. Moreover, the economic growth is expected at 5.3% in 2022 and 6% in 2023, according to the finance ministry forecasts. It is noted that Agriculture is the largest sector of the economy and accounts for about 22% of the GDP with Education at about 7% (Kenya Bureau of Statistics, 2023).

This investment to education has seen Kenya education system expanding with skills' projection from 1970 to 2050 as seen in the figure 2 below.



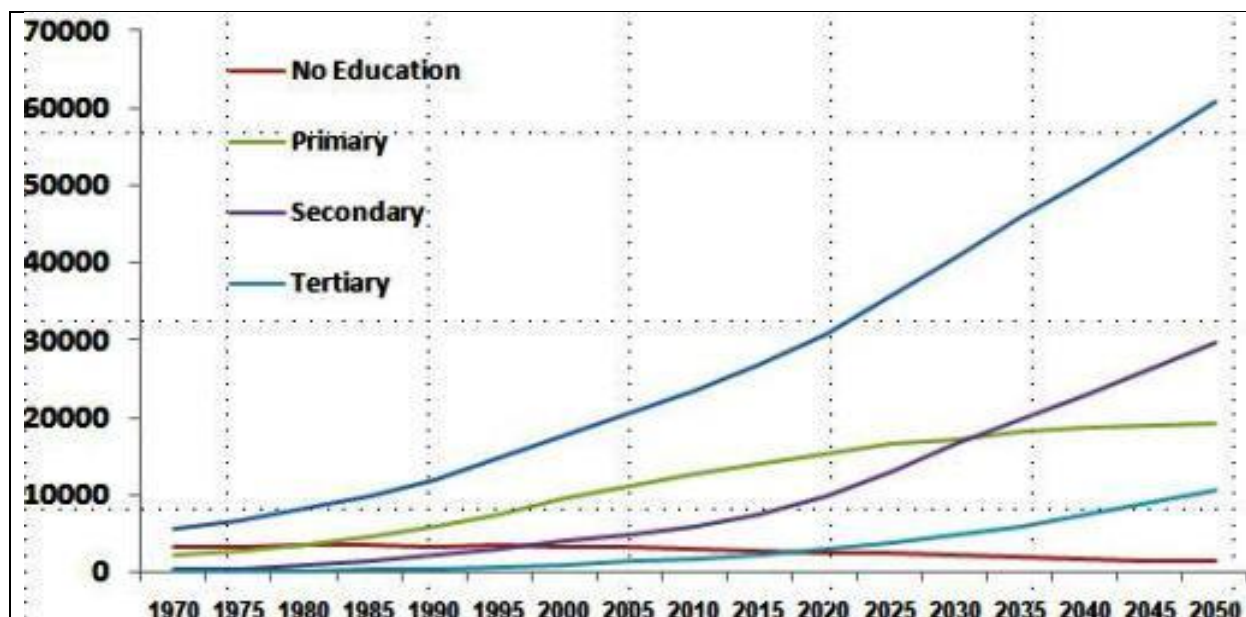


Figure 2: Kenya Education system and economic development trends through tertiary Education (<https://www.bing.com/images/search?view.>)

Figure 2 above shows that there's expansion of tertiary education to over 600,000 skilled man power to contribute into the Kenya economic development. It should produce citizens with skills, knowledge, expertise and personal qualities that are required to support a growing economy for national industrial development.

3.2.2 Curriculum Responsiveness to Development in Kenya

In a study by Omondi (2010), the results show that there exists a favorable and significant connection between real GDP growth and the primary school, secondary school and university enrolments. The co-efficient of regression for primary school, secondary school and university enrolments were 11.851, 1.267, and 1.463 respectively showing that increases in these variables will result into increases in real GDP growth rate. The researcher therefore recommended that more investment should be put in education and that both the national and county governments should focus on the development of education at all levels.

In another study conducted by Sirera (2014), the researcher established the argument that the mismatch between education and economic needs in Kenya have dominated education matters since independence due to an increasing number of unemployed youth, the poverty level and the general poor economic development associated with the whole education system that was lacking harmony between education and economic factors in the country. However, Kenya's curriculum development and reforms have been responsive to the need to develop skills for employable youth towards economic and industrial development (Republic of Kenya 2005).

Curriculum responsiveness to development in Kenya has been associated with the type of education required to drive Kenya's economic and industrial development agenda through Kenya Vision 2030, Economic Stimulus and National Education Sector Strategic Plan 2018-2022. The vision in Kenya's National Education Sector Strategic Plan 2018 - 2022 is for "Quality and inclusive education, training and research for sustainable development", and the mission is "To provide, promote and coordinate competence-based equitable learner centered education, training and research for sustainable development"(Republic of Kenya, 2019).

According to Global Partnership for Education -GPE (2023), in 2008 Kenya became committed to vision 2030 in order to become a newly industrialized nation by 2030. The country has prioritized reforming its education system and acknowledges it as key to achieving this goal. Ideally education is a driver of development, including aspects of economic growth, basic needs and political participation (McCowan, 2019).

3.3.3 Kenya's Innovations for Development through Education

What is innovation? Innovation is the spring bond of development globally. In curriculum term, innovation is an intentional and deliberate process to bring out desired effects and change. It is any improvement that is deliberate, measurable, durable and unlikely to occur frequently. Havelock (1969) identifies three main models of innovation, namely: Research, Development, and Diffusion (RD&D) model (Innovation's findings spread). Social Interaction (SI) model (innovation's findings networked) and Problem-Solving (PS) model (innovations for problem solving). These models are applied in carrying out innovations through skilled based curriculum and education.

According to Kenya Innovation Outlook Study (2022), Kenya has development policy after launching Kenya Vision 2030 in 2008 whose long-term development strategy was to become a globally competitive and prosperous nation by the year 2030. The strategy recognizes the fact that Science, Technology, and Innovation (ST&I) plays a big role in Kenya's modern economy towards the attainment of Sustainable Development Goals (SDGs). Following the launch of Vision 2030, Various policies and acts of parliament have been formulated to back up ST&I strategies. Some of these key policies and instruments are:

- a) The Science, Technology and Innovation (ST&I) Policy and Strategy of 2008
- b) The Science, Technology Innovation Act of 2013
- c) The Big Four (Big4) Agenda and the Kenya National Digital Master Plan 2022-2032, which guides the country's ICT deployment and investments.
- d) The 2013 ST&I act underpinned the creation of a triple helix of ST&I oversight entities
- e) The National Commission for Science Technology and Innovation (NACOSTI) to oversee research and innovations, the regulation of the national ST&I system
- f) the National Research Fund (NRF) to manage research funds;
- g) The Kenya National Innovation Agency (KeNIA) to facilitate the commercialization and uptake of innovations.
- h) The country's Medium-Term Plan (MTP) tracks progress on Vision 2030 through five-year cycles.

Kenya is the seventh largest economy in Africa and it is driven by agriculture, which contributes 33% of the country's Gross Domestic Product (GDP) and tourism contributing by 5.7% of the GDP. However, Kenya's education sector is a key player for innovations for development which is currently contributing by 7% of the GDP according to Kenya Bureau of Statistics (2023). By 2022 The country's literacy rate stood at 81.5%, ranking Kenya among the top 10 countries in Africa. According to the World Bank's assessment of Kenya's economic outlook, the education sector outputs contributed significantly to the increase in the service sector value-added by 9.8% in 2021 (Kenya Innovation Outlook Study, 2022).

Conclusion

A functional education must cater for the needs and aspirations of the nation. In this era of knowledge explosion, diverse needs and interest of the learner and the society, there is a pressing need on the curriculum to meet up the challenge. This can effectively be achieved by designing a responsive curriculum that will take care of these needs areas. It should be constructed in such a way that there must be integrative and interdisciplinary teaching and learning acquired from one area to solve many other problems facing them in life. The skills acquired must have utility value. The learners should acquire skills that will make them useful to themselves and the society.

In order to develop competent skills, attitudes and knowledge base on critical and constructive thinking, the curriculum should be embracing, diversified and responsive to any change. This will enable the learners to adopt and adapt easily to any changing situation. The curriculum should relate to the needs of the society and skills acquisition should be emphasized. The extensive literature also revealed that the CBC is a responsive curriculum in the Kenyan education context, although its implementation may still be experiencing hiccups which requires the support of all stakeholders for it to be beneficially implemented. It is affirmed that the implementation of CBC in Kenyan schools emphasizes the development of competencies and application of knowledge in real life context.

Recommendations

Based on the extensive literature review and analysis on the Responsive Curriculum and on the Competency-based curriculum (CBC) in Africa and around in Kenya, a responsive curriculum is outcome-based instruction that is adaptive to the changing needs of learners, teachers and the society.



- a) The following are recommendations to help curriculum developers, policy makers and educational planners to effectively develop and implement a responsive curriculum, especially the CBC:
- b) Regularly and periodically reform and review the curriculum to make it more responsive to the individual learner and societal needs
- c) The responsive curriculum development process should involve as many stakeholders as necessary
- d) In-service training of teachers should have specific focus on the CBC
- e) KICD should develop comprehensive manuals for teachers and the Curriculum Support Officers
- f) Teachers' pedagogical skills in the implementation of CBC should be enhanced.
- g) The MoE should provide all the infrastructure for smooth and seamless implementation of CBC

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