

# Redesigning university Education in Kenya: The what, Why and How?

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## Abstract

**Background:** New economic, social and globalization trends have necessitated countries to redefine their education to align with the 21st Century skills. Globally, universities play a critical role in preparing human resource for sustainable development of nations. The education goals of the 2030 vision are to provide globally competitive quality education, training and research for development by increasing access to education, improving transition rate and raising the quality and relevance of education and training institutions. Kenyan universities urgently need to align their education to societal realities and global trends in education.

**Methods:** The paper is based on textual analysis, to interpret the significant changes in the national curriculum and further discusses aspects to be addressed in the reform process. Systematic steps in designing of competence based curriculum for universities and models that are applicable based on literature and research on curriculum have been analyzed.

**Findings:** There is urgent need for university education in Kenya to correspond to the international trends on core competencies and new developments in education circle. The government of Kenya through the national Center for curriculum development (Kenya Institute of Curriculum Development) has reformed school and teacher education curriculum to meet the demand for 21st century skills.

**Conclusion:** For universities to remain relevant and meaningful there is need for: Learning and research; building of job-relevant competencies where universities work with employers to determine a set of required competencies, and work experience to offer opportunities for active engagement. At the same time, regular reflection opportunities are necessary for students to deepen their learning and to communicate their strengths and abilities. Employer and alumni engagement together with dialogue-based learning help to create interactions to stimulate exchange of ideas. Any education or training programme works best when inquiry teaching model is adopted to fill the needs and challenges of education in the 21st century.

**Key words:** Globalization, University Education, Curriculum, Designing, Quality education, Competency based education, Sustainable development, Knowledge economy.

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## I. INTRODUCTION

Quality education is an essential tool for achieving a more sustainable world. With the adoption of the SDGs, including SDG 4 (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all) in 2015, the international community ushered in a new era where learning came to the forefront of the global education agenda. Education for sustainable development (ESD) promotes the development of knowledge, skills, understanding, values and actions required for creating a sustainable world, which ensures environmental protection and conservation, promotes social equity and encourages economic sustainability. Sustainable socioeconomic development of the societies requires sustainable education systems. It is necessary to build the educational edifice that focuses on: Human capital and human development; economic growth as well as equity and reduction of poverty; global concerns and secular human values. Only strong and vibrant education systems, based on sound assumptions and approaches, can play the constitutive and instrumental roles for development. Higher education is an essential tool for achieving a sustainable future (Aarts et al, 2020).

Until the dawn of the 21st century, education systems across the world focused on preparing their learners to accumulate content and knowledge. As a result, schools focused on providing literacy and numeracy skills, as these skills were perceived necessary to gain content and knowledge (OECD, 2016). The education goals of the 2030 vision are to provide globally competitive quality education, training and research for development by increasing access to education, improving the transition rate from primary to secondary schools, raising the quality and relevance of education and training institutions. With new economic, and globalization

trends, countries have moved on to transform their education with focus on knowledge economy to align with the 21st Century skills. Universities are one of the major contributors of scientific research leading to invention and innovation in the world. Universities not only prepare the labour force, they create the much needed skilled human resource.

The Education sector in Kenya is committed to the provision of quality education, training, science and technology to all Kenyans. This is aimed at contributing to the building of a just and cohesive society that enjoys inclusive and equitable social development. Its Vision is: to have a globally competitive education, training and research for Kenya's sustainable development. Its Mission is: to provide, promote, coordinate the provision of quality education, training and research for the empowerment of individuals to become responsible and competent citizens who value education as a lifelong process. The vision and mission are guided by the understanding that quality education and training contribute significantly to economic growth, better employment opportunities and expansion of income generating activities. Education is viewed as an enabler in the achievement of the Big Four Agenda in Kenya (Food Security, Affordable Healthcare, Affordable Housing and, Manufacturing). Quality education is also one of the goals of the Sustainable Development Goals. It is also a contributor to other core SDG goals, including gender equality, poverty eradication, good health and well-being, decent work and economic growth (Republic of Kenya, 2017).

Higher education has a catalyst role vis-à-vis education for sustainable development and the building of a learning Society. It has a special responsibility to conduct the scholarship and scientific research necessary to generate the new knowledge needed and train the leaders and workers of tomorrow, as well as communicate this knowledge to decision makers and the public-at-large. The ultimate goal of education for sustainable development is to develop the knowledge, values, attitudes and skills needed to empower people to bring about the changes required to achieve sustainability. Quality education for sustainable development needs to be based on state of the art knowledge and on continuous review and update of curricula and teaching materials. It needs to serve teachers, other professionals and all citizens as life-long learners to respond to society's challenges and opportunities, so that people everywhere can live in freedom from want and fear, and to make their unique contribution to a sustainable future.

The Lüneburg Declaration (2001) called on higher education institutions, NGOs and other stakeholders to:

- i. Ensure that the re-orientation of education towards sustainable development continues to be given priority as a key component of higher education;
- ii. Ensure the continual review and updating of learning materials to reflect the latest scientific understanding of sustainability;
- iii. Encourage all educational institutions to include in their activities a strong component of reflection on values and norms with respect to sustainable development;
- iv. Raise awareness and increase understanding of the importance and relevance of technology assessments and risk assessment;
- v. Promote the creative development and implementation of comprehensive sustainability projects in higher education, at all other levels and forms of education;
- vi. Increase attention to the international dimension and provide more opportunities for intercultural exchange in the learning environment;
- vii. Increase a focus on capacity development and intensify networking among institutions of education; and
- viii. Promote stronger integration.

### **What should universities focus on?**

The globalization of the economy and its demands on the workforce requires adaptive education that enhances the ability of learners to access, assess, adopt, and apply knowledge, to think independently, to exercise appropriate judgment and to collaborate with others to make sense of new situations. There is need for educational innovations in light of changing contexts and emerging new circumstances globally. Globalization is a growing challenge to higher education institutions worldwide since it brings not only opportunities but also concerns to these institutions. With globalization; the future of workforce continues to face an ever-changing environment. According to Jan and Hanne (2021), several higher education areas urgently need addressing:

- 1) **Curricula**- working with business and relevant stakeholders to prioritize vocational and higher education curricula that are 'just in time' rather than 'just in case'.
- 2) **Pedagogy**- to focus on active learning to promote conceptual learning.
- 3) **Technology**- scaling up the provision of self-directed learning and nano-degrees for lifelong learning (A nano-degree is a certified online educational programme that helps students develop specialized skills in areas related to computer science, for example, data science, programming, artificial intelligence, etc. Nano-degrees target professionals who want to learn new advanced skills or develop their current abilities, which will allow them to work with the latest technological developments).
- 4) **Community linkage**-through service learning to promote application of learning.

- 5) **Credentialing-** develop and adopt at scale a much more joined-up taxonomy and recognition system for skills and credentials across countries, education systems and industries.
- 6) **Education providers-** embrace the future of work as a source of redesigning to normalize lifelong learning for all online open courses and other forms of online learning, in addition to the direct human-to-human connection of traditional learning.
- 7) **Learner assessment-** moving away from traditional assessment delivery methods to more engaging and effective assessment to measure developed competencies.

### **Education and globalization**

Global education should help to build participatory and realistic visions of diverse future in a world in which diversity and plurality can be celebrated with confidence and enthusiasm. Global education should support the development of negotiated common road maps where different communities set their specific objectives to reach the SDG's common goals as defined in the Agenda 2030. Globalization and internationalization are seen as key drivers of change within the economy and labour markets at global, national, and regional levels. The rapid development of technology and its impact on life, work and learning has implications to education. Most specifically, ICT is seen as driving a shift from an industrialized society towards information or knowledge-driven society. Preckler (2018) posits that various countries have been documented to having shifted to vocationalism to achieve the labour demands of the economy. Beyond economic and workforce considerations, there is also an increasing recognition that the globalized world in which we live, with its unprecedented levels of mobility and migration, civil and political unrest and environmental degradation, mandates that young people must also possess civic-mindedness and a sense of citizenship (both local and global), environmental awareness and personal and social responsibility. In response to the challenges of globalization and local development, educational reforms are inevitably becoming one of the major trends worldwide. Globally education reforms need to take into consideration the 21st century skills which comprise of skills, abilities, and learning dispositions that have been identified by educators, business leaders, academics, and governmental agencies as necessary for success in 21st century society and workplaces. Chalkiadaki (2018) defines 21st Century Skills as encompassing a broad range of skill sets and professional attributes, including: creativity, divergent thinking, critical thinking, team working, work autonomy, developed cognitive and interpersonal skills, social and civic competences, responsible national and global citizenship, consciousness of interdependence, acceptance and understanding of diversity, recognition and development of personal attributes, interactive use of tools, communication in mother tongue and foreign languages, mathematical and science competence, digital competence, sense of initiative and entrepreneurship, accountability, leadership, cultural awareness and expression, and physical well-being. Scott (2015) defines '21st Century Skills' as 'the knowledge, skills and attitudes necessary to be competitive in the twenty-first century workforce, participate appropriately in an increasingly diverse society, use new technologies and cope with rapidly changing workplaces'. According to Binkley et al (2012), twenty-first-century skills are abilities and attributes that can be taught or learned in order to enhance ways of thinking, learning, working and living in the world. The skills include creativity and innovation, critical thinking/problem solving/decision making, learning to learn/metacognition, communication, collaboration (teamwork), information literacy, ICT literacy, citizenship (local and global), life and career skills, and personal and social responsibility (including cultural awareness and competence).

More than 250 researchers across 60 institutions worldwide have categorized 21st-century skills internationally into four broad categories:

**Ways of thinking-** creativity, critical thinking, problem-solving, decision-making and learning.

**Ways of working-** communication and collaboration (the more interdependent the world becomes, the more important the capacity of individuals to collaborate and orchestrate becomes).

**Tools for working-** Information and Communications Technology (ICT) and information literacy.

**Skills for living in the world-** citizenship, life and career, personal and social responsibilities.

Twenty-first-century skills (21CS), also referred to variously as "non-cognitive," "soft," "whole child development," "transversal," "transferable" or "social-emotional" skills or competencies, have become an increasing area of focus in the international education discourse, with more and more countries across the globe striving to ensure that their education systems go beyond the cognitive domains such as reading and mathematics and equip children and young people with these skills.

The survey by OECD (2015) on 21st Century Skills and Competencies identified the following as key:

<ul style="list-style-type: none"><li>• Creativity/innovation</li><li>• Critical thinking</li><li>• Problem solving</li><li>• Decision making</li><li>• Communication</li><li>• Collaboration</li><li>• Information literacy</li><li>• Research and inquiry</li></ul>	<ul style="list-style-type: none"><li>• Media literacy</li><li>• Digital citizenship</li><li>• Information and communications technology operations and concepts</li><li>• Flexibility and adaptability</li><li>• Initiative and self-direction</li><li>• Productivity</li><li>• Leadership and responsibility</li></ul>
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Dealing with a new perspective of knowledge management in a global economy, education systems must evolve focusing on rethinking the teaching–learning process to prepare better individuals for meeting the changing social and economic demands. The dominance of the ‘knowledge transmission’ paradigm has decreased in favor of new paradigms, such as ‘process-oriented’ teaching and ‘competency-based education’ (CBE). This transition has triggered curriculum reforms in many institutions. Education for sustainable development should neither neglect nor forget the global dimension of the sustainable future, and the interconnectedness of local and global development.

## II. KENYA AND THE DEMAND FOR 21ST CENTURY SKILLS

The government of Kenya acknowledges that ‘global trends in education and training are shifting’ and is looking to align its education system with the latest education movements. The government has engaged with the prioritization of 21st Century Skills, primarily in association with the objectives for Vision 2030, developed in 2008 to define a path toward middle-income status by 2030. Kenya Vision 2030 advocates for a link between education and labour markets; it aims at making Kenya a newly industrialized, middle-income country providing high quality of life for all its citizens by the year 2030. It also places great emphasis on the link between education and the labor market, the need to create entrepreneurial skills and competencies, and strong public and private sector partnerships. The Ministry of Education, Science and Technology (MoEST) intends to equip citizens with 21st century skills required for the modern economy, at the same time as providing relevant knowledge, national values, and social competence values for contributing to Kenyan society (Republic of Kenya, 2015). In addressing this, Kenya’s MoEST published a paper in 2012, ‘Reforming Education and Training Sectors in Kenya’, which focused on the need for non-routine tasks and complex problem-solving as a result of the labour market evolution and in response, curriculum reform is currently being undertaken to enable students to better integrate into a competitive global economy. At the center of reforms is the political drive to impart the skills that young people need to enhance their employability and economic productivity. This curriculum reform is associated directly with the drivers for 21st Century Skills: globalization, technological revolution, future unpredictability, and expanding needs of employers. To align with 21<sup>st</sup> century agenda; the government has adopted Competency Base Curriculum (CBC). A curriculum that emphasizes the complex outcomes of a learning process (that is, knowledge, skills and attitudes to be applied by learners) rather than mainly focusing on what learners are expected to learn about in terms of traditionally-defined subject content. Competence Based Education (CBE) is a new way of thinking in the Kenyan system of education designed by the Kenya Institute of Curriculum Development (KICD) and launched by the Ministry of Education in 2017. It is the product of the Task Force on realignment of the Education Sector (2012) which was mandated to review and align the education, training and research sector in accordance with the Constitution of Kenya 2010. Competence-based learning considers that learner’s demonstration of desired learning outcomes is central to the learning process. Competence-based teaching and learning emphasizes on powerful or rich learning environments that enable students to engage in meaningful learning processes.

### What are the features of CBC?

- i. **It is learner-centered-** The learner is the focus of the learning process. Individual learners’ needs and learning styles are given priority in determining the content to be covered, the teaching and learning methods and the mode of assessment.
- ii. **It is outcome-based-** Students must demonstrate mastery of all required competencies to earn credit or graduate or advance to the next level.
- iii. **Involves multiple measures of assessment to determine competency-** Students earn credit toward graduation in ways other than seat time and course taking (such as apprenticeships, blended learning, and dual enrollment).
- iv. **Practice oriented-** Students must demonstrate practical skills and tangible outcomes to determine competence and not just the possession of theoretical knowledge.

**What is different?**

This presents the difference between traditional content-based learning and competency-based teaching and learning:

<b>Parameter</b>	<b>Content based teaching and learning</b>	<b>Competence based teaching and learning</b>
<b>Outcomes</b>	Focuses on a narrow set of academic outcomes emphasizing academic skills, memorization and comprehension of content. Fails to recognize that student success is dependent on a full range of foundational skills, including social-emotional skills, and the application of skills	Focuses on a broad and holistic set of student success outcomes that include deep understanding of content knowledge and skill demonstrated through application, and competencies that prepare students for college, career and lifelong learning.
<b>Mindset</b>	Based on a fixed mindset: that people’s abilities are innate and immutable. Ranks and sorts students creating “winners” and “losers,” perpetuating patterns of inequality in society.	Builds upon a growth mindset: that learning and performance can improve with effort. Demonstrates belief that all children can learn with the right mix of challenges and supports. Takes responsibility for all students mastering learning expectations. Requires shared vision, collaborative approach, flexibility to be more responsive and commitment to continuous improvement.
<b>Pedagogy</b>	Delivers a single curriculum to all students based on age. Emphasizes covering the curriculum each year. Fails to ground learning and teaching in the learning sciences.	Draws upon learning sciences to inform pedagogical principles for students and adults. Takes into consideration student pathway in designing instruction. Increases motivation, engagement and effort through research-based strategies.
<b>Culture</b>	Emphasizes compliance and order in school culture. Relies upon a bureaucratic, hierarchical system that perpetuates traditional roles, cultural norms and power dynamics.	Nurtures empowering, inclusive cultures of learning. Values agency for students and adults with distributed leadership. Recognizes safety and belonging as important to learning.
<b>Student support</b>	Targets supports to students when their academic or behavioral needs are identified as significantly above or below the norm.	Designed to provide timely and differentiated instruction and support. Provides daily flex time and time for students to receive additional support before and after semesters.
<b>Programme standards</b>	Students are expected to master grade level, college and career ready standards.	Students are expected to master competencies aligned to college and career ready standards with clear, transferable learning outcomes.
<b>Basis</b>	Teaching and learning is based on the rote memorization of factual knowledge	Teaching and learning focuses on understanding the concepts, skills and competencies which in turn calls for changes in teaching, learning and assessment approaches
<b>Learner motivation</b>	Extrinsic driven by external factors.	Intrinsic through learner activation and provision of multiple opportunities.
<b>Assessment</b>	Emphasizes assessment for summative purposes to verify what students know. Conducts one-size-fits-all assessments at predetermined points of time or at the end of the unit and are administered to all students at the same time and in the same format on the same content.	Embeds assessment in a personalized learning cycle and aligns to outcomes including the transfer of knowledge and skills. Clarifies students’ next steps for individual learning pathways. Informs educator professional learning. Aligns assessment with the expectation that students will be able to transfer knowledge and skills to challenging new contexts.
<b>Grades</b>	Grades are norm-referenced,	Grades reflect the degree of mastery of

	reflect course standards, are typically based on weighted components and a final exam	competencies. If students do not earn course credit, records indicate competencies that need to be re-learned instead of the entire course.
<b>Advancement</b>	Is time-based. Batches students by age and moves them through the same content and courses at the same pace. Advances students to the next grade level after a year of schooling regardless of what they actually learned.	Advances students based on attainment of learning expectations (mastery) through personalized learning pathways. Provides instruction until students fully learn the concepts and skills and then advance after demonstrating mastery. This requires additional support, not retention.

**Requirements for implementation of CBC**

According to OECD (2019) and Republic of Kenya (2018), the success of CBC requires:

- **Meaningful contexts-** Where trainers will create or look for meaningful contexts in which students will in a natural way experience the relevance and the meaning of the competences to be acquired.
- **Multidisciplinary approach-** Competences are holistic and as a consequence the educative approach needs to be integrative and holistic too.
- **Constructive learning-** Philosophically, competency-based teaching and learning has its roots in the social constructivism. Therefore, learners engage in a process of constructing their own knowledge by interaction with their environment, rather than as a process of absorbing the knowledge that the traditional teacher might try to transfer to them. By focusing on the construction of models, products, guidelines, rules of thumb, reports, or other tangible outputs the learning easily and naturally will turn out to be constructivist.
- **Cooperative/ interactive learning -**The central idea under competency-based teaching and learning is to help learners to develop and construct their own knowledge and seek ways to make optimal use of other people’s competence in their learning journey. This is what social constructivism is about. For learning outcomes aimed at developing individual and personal competences, the approach must take diversity of learner needs into consideration to meet the learners goals and objectives. This requires an open approach in which education includes dialogues between learners and educators about expectation, needs, goals, choices among others (Palmer et al, 2010).
- **Discovery learning-** Discovery learning as opposed to receptive learning means making content available and accessible and that the way of acquiring this knowledge or competences, should not be just a process of providing information, but should always be embedded in a discovery-based approach. Learners themselves discover theories, rules and patterns as they interact with the environment, peers and teachers.
- **Reflective learning-** Competency-based teaching and learning also focuses on the learning processes of the learner. Learning is always in a spiral-fashion, that is, it requires learners to go back and fro to reflect on their learning. As the learner reflects on their own needs, motivation, approach, progress, results among others, they develop learning competences that may be considered “learning to learn”.
- **Personal learning-** In the competence oriented theories learning is conceived as a process of constructing the learner’s own personal knowledge and competences. Information, knowledge, strategies, only becomes meaningful for a person if they become an integral part of their own personal body of knowledge and competences. In education this implies that students need to be able to identify with the contexts, the persons, the situations and interests that are included in the learning domains involved.

**III. UNIVERSITY EDUCATION IN KENYA**

Universities are responsible for research on sustainable development, as well as development of the necessary knowledge, skills and norms of behaviour. Scientific and technological improvement for sustainable production and consumption should be carried out by researchers in universities. The crucial role of higher education as the highly advanced and comprehensive knowledge provider is to find the best way to bring about harmony and synthesis among the three pillars of sustainable development: economic, environmental, and social tasks and issues. The university sector in Kenya is regulated by the Universities Act. University education is necessary in generating a pool of highly qualified personnel in various specialized skills and the potential for promoting higher production of human as well as economic capital and other resources in their individual capacities. The role of university can be understood as follows:

- i. **The preservation and dissemination of knowledge-** Academic libraries have traditionally been centers for preserving and organizing the cultural and intellectual heritage of a society. Libraries not only collect books and journals (the essential elements of knowledge), they also organize scholarly and scientific material of all kinds for effective use and preservation for future generations. Even in the age of digital storage, libraries remain essential parts of universities and of the organization and preservation of knowledge (Baker, 2001).

- ii. **Intellectual centers-** Universities almost everywhere have become key creative institutions. Many professors, in addition to their teaching and research, involve themselves in the intellectual life of society as commentators, experts or analysts. Some are public intellectuals. Academicians serve as experts on a wide variety of topics. Professors are asked to provide analysis for the government, the media and the public on different topics. Academic institutions frequently sponsor journals and other publications that contribute to intellectual life. Some even own or manage television and radio stations. These enterprises help to educate people and add to the wealth of ideas in society.
- iii. **Access and equity-** Universities provide the education needed for most skilled occupations and professions in society.
- iv. **Engines of economic development-** From their origins, universities have stimulated local Economies. Any university generates economic benefits for its community through local purchases, property investment and expenditures by students and faculty. Universities support knowledge- and technology-based industries that make use of the knowledge produced by the institutions – including skills of graduates and scientific innovations. Universities have contributed to this development by establishing science parks and even by investing in companies that use university-based knowledge.
- v. **Human resource development-** Produce high level labour in scientific and technological and other fields to meet the social and cultural as well as economic development needs of the nation. University education is expected to play an increasingly greater role in socio-economic development by training skilled manpower and producing and disseminating the knowledge required for a knowledge-driven economy. It should enable individuals to develop their capabilities to the highest potential; serve the needs of an adaptive, sustainable and knowledge-based economy and play a major role in the shaping of a democratic, civilized and inclusive society. The Commission for University Education (CUE) established under the Universities Act, No. 42 of 2012, as the successor to the Commission for Higher Education is the Government agency mandated to regulate university education in Kenya. The Commission is mandated to ensure the maintenance of standards, quality and relevance in all aspects of university education, training and research. The Commission continues to mainstream quality assurance practices in university education by encouraging continuous improvement in the quality of universities and programmes.

#### **Why should universities in Kenya redesign education programmes?**

- 1) Demand for Authentic Education - the rapid and intricate changes in the labour industry in the global community in the last decades such as technological advancements have brought about significant challenges and novel responsibilities especially to the field of curriculum development and education. The past education with traditional thinking of acquiring as much knowledge as possible has hence been overtaken by the new task of modern society which is exposed to an immense amount of knowledge and information. The new challenge in education is therefore to select the highest quality of knowledge and make effective use of it. Thus, a curriculum being a means through which education systems help its citizens acquire desirable knowledge, skills, values and attitudes, must seek to overcome the narrow-minded past of traditional syllabi or written plans and focus on providing learners with the ability to acquire, develop and apply knowledge, values and attitudes which should lead to the utilization of skills.
- 2) Around the world higher education is under pressure to change. It is growing fast and its contribution to economic success is seen as vital. The universities and other institutions are expected to create knowledge; to improve equity; and to respond to student needs– and to do so more efficiently.
- 3) With globalization, universities have complex roles to play. Tertiary education can help countries to become more globally competitive by developing a skilled, productive, and flexible labour force and by creating, applying, and spreading new ideas and technologies (“Altbach, &Salmi, 2011).
- 4) Globalization together with new information technology and the innovative processes are driving a revolution in the organization of work, the production of goods and services, relations among nations, and even local culture which require realigning education.
- 5) Declaration by heads of state of the East African community(EAC) partner states on the transformation of the East African community into a common higher education area with emphasis on accomplishing the objective of harmonization of higher education and training systems in the East African Community (“EAC”) by establishing a common frame of reference to facilitate comparability, compatibility and mutual recognition of higher education and training systems and the qualifications attained within the EAC Partner States, based on shared views on quality, criteria, standards and learning outcomes, for promoting student and labour mobility in the EAC.
- 6) Need for internalization of education-Universities, although they are national entities, have been recognized as some of the most international institutions, even during periods of aggressive nationalism. Internationalization tends to address the increase in border-crossing activities amidst national systems of education. The internationalization of education implies the development of knowledge, skills and values which

have universal appeal and application. It also implies that a curriculum becomes cross-national and intercultural in nature. Cross-border education is the best visible example of globalization of higher education. One of the important components of cross-border education involves the movement of students from domestic to foreign countries.

7) Revolution of Technology - The global economy has continued to undergo profound changes characterized by the spread of new ICTs. The advent of new technologies dictates the enhancement of people's talents and skills and the creation of a knowledge-based-economy, which in turn, demands for even more high-skilled workers. One of the most essential skills in the job market today is Information and Communication Technologies (ICTs). ICTs are widely understood to be an enabler of economic growth and overall development (Jorgenson & Vu 2016).

8) World Bank (2018) calls on the need to prioritize student learning on its report *learning to realize education promise*.

9) The World Bank (2019) report on the future of work suggests a balance between general and vocational education, especially in higher education, is essential to enable skilled workers to compete in the dynamic labor market where technology has taken a center stage. Skilled human resource produced by an effective training system enables economies worldwide to achieve headway in technology, productivity, and global competitiveness. With technological progress, work is constantly reshaped; this calls for adoption of new ways of production, expansion of markets, with rapid evolvement of societies and education systems.

10) The Kenya Government ratified the Incheon Declaration which was adopted at the World Education Forum (WEF 2015) held in Incheon, Republic of Korea. The Incheon Declaration constitutes the commitment of the education community to Education 2030 and the 2030 Agenda for Sustainable Development Goals (SDGs). The Vision 2030 has placed special demands on the tertiary sector as the leading engine that the economy must essentially rely upon to produce adequate numbers of middle level professionals needed to drive the economy towards the attainment of the Vision. Kenya's aspiration of becoming a middle-income country is an ambitious intention, which will heavily depend on the quality of her education and quality of her human capital.

11) The need to deliver curriculum that is aligned to national priority areas among them; vision 2030 and The Big Four" transformation agenda for the Nation on Food Security, Affordable Healthcare, Affordable Housing and, Manufacturing and other industry demands.

12) The need to focus on the vision in Kenya's National Education Sector Strategic Plan 2018 - 2022 for "Quality and inclusive education, training and research for sustainable development", whose mission is "To provide, promote and coordinate competence-based equitable learner centered education, training and research for sustainable development". The plan has three themes: access and equity; quality and relevance; governance and accountability. The Plan aims at achieving four important strategic objectives for education, training and research, which are: to enhance access and equity; to provide quality and competence based education, training and research; to strengthen management, governance and accountability; and enhance relevance and capacities for Science, Technology and Innovation (ST&I) in education, training, and research for labour markets.

13) To address the big problem that was articulated by industry- reports from employers indicate that, many of the graduates from our universities are not employable. In most cases they require additional training in order to be useful in the industry which is a pointer on the need to rethink university education.

14) Higher education is expected to create lifelong opportunities that promote economic success, political participation, and other benefits.

15) Universities and other higher education institutions are knowledge-producing. Through their knowledge-producing and transmitting capacities, higher education institutions have the potential "to respond to inequities due to poverty and social injustice by strengthening citizen rights and voice, influencing policy-making, enhancing local governance, and improving the accountability and responsiveness of institutions.

16) The new Mission delegated to the universities, that is, academic entrepreneurship and participating in socio-economic development of the communities.

17) Universities are responsible for research on sustainable development, as well as the necessary knowledge and skills and also norms of behaviour. Scientific and technological improvement for sustainable production and consumption should be carried out by researchers in universities.

18) As creators, transmitters, preservers and receivers of knowledge, higher education institutions – universities, in particular – can play a unique role in advancing the goals of participatory sustainable development. They have an international orientation that is directed at protecting cultural diversity. They can act as a strong counter balance to the more negative aspects of homogenization brought about by educational globalization. However, there is still a long way to go. Higher education institutions need to be more active in strengthening social networks, particularly at the grassroots level. Many of their own processes and procedures require democratization. They can do much more by making new technologies accessible to a much broader range of the community. More community groups, particularly the less powerful ones, should play a more significant role in the research process, particularly with respect to research questions that directly affect them.

- 19) Institutions must keep pace with progress of epistemological factors. Quality of education must advance as new discoveries are made, new truths are discovered, and as opinions and circumstances change.
- 20) Problems of environmental degradation whether natural or man-made and their relation to social sustainability need our urgent attention now, rather than at some undefined point in the future. Universities have an important role to play in this process. They can model sustainable practices as they engage in research and teaching. They cannot afford to be disinterested, detached observers, but must bring their resources to bear on the search for sustainable development solutions; and that this can indeed be achieved by integrating learning and research with the principles and practices of conservation and sustainability.
- 21) Research universities are considered among the central institutions of the 21st-century knowledge economies. Universities stand at the center of the 21st-century global knowledge economy and serve as flagships for postsecondary education worldwide.
- 22) Competition for world-class recognition has propelled universities into techno bureaucratic institutions as they vie for measurable accomplishments and visibility instead of developing partnerships for people-centered development.
- 23) To achieve Sustainable Development (ESD), education is an essential component for the future success of society noting that Education is intrinsically linked to the growth and development of communities.

### **Reforming curriculum in universities in Kenya**

As modern societies face new trends of political, climatic, environmental, economic, health related, or societal challenges; depletion of resources, the development of artificial intelligence and new technologies, ongoing globalization entailing migration, urbanization, increasing diversity in population; there is a deepening call for structural and curriculum reform in education. The dominance of the 'knowledge transmission' paradigm has decreased in favor of new paradigms, such as 'process-oriented' teaching and 'competency-based education' (CBE). This transition has triggered curriculum reforms in many institutions. Curriculum reforms refer to the process of making changes to the curriculum with the intent of making learning and teaching more meaningful and effective. To survive universities need to reform. Reorienting existing education at all levels to address sustainable development is very urgent and necessary, so that all citizens, young or adult, can gain knowledge, skills, perspectives and values of sustainability so as to assume responsibility for creating a sustainable future and lifestyle. Reforming the role of universities involves changing the means of knowledge production and the way in which students are trained, making students more socially responsible and critical.

A good curriculum contributes to the development of thinking skills and the acquisition of relevant knowledge that learners need to apply in the context of their studies, daily life and careers. The curriculum, therefore, needs to be a channel that brings about mastery of acceptable global competencies. The curriculum should reflect the Kenya National Development Agenda reflected in the Constitution, Vision 2030, Sessional Paper No. 2 of 2015, Sessional paper No. 1 of 2019 and other policy documents. Sessional paper No. 1 of 2019 recommends reforming the Education and Training Sector to provide for the development of individual learner's potential in a holistic and integrated manner, while producing intellectually, emotionally and physically balanced citizens. It further recommends a competency based curriculum (Republic of Kenya, 2019).

Kenya is developing a new curriculum for a new era. The National Policy on Curriculum Reforms is guided by the vision of "Nurturing every learners' potential" which is in line with Kenya Vision 2030 and the Constitution of Kenya 2010. The overall aim of the new curriculum is to equip citizens with skills for the 21st century. The shift hinges on the global shift towards education programmes that encourage optimal human capital development. Competence-Based Education (CBE) is perceived to be desirable for aligning education provided to the dynamic social and economic demands of the society. CBE 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. Competence-Based Education (CBE) appears to be a panacea to the concerns raised about the capability and employability of graduates as it emphasizes on the acquisition of knowledge, skills, attitudes and behaviors essential for effective performance of real world tasks (Maodzwa-taruvunga & Cross, 2012). The introduction of competence-based approach in schools calls for comprehensive change in instructional approach in terms of teaching, learning, and training as well as resources used at all levels of education (Paulo and Tilya, 2014).

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 (World Bank, 2011). Lecturers are expected to use a variety of teaching strategies and resources that involve the learner. Learners are expected to be active and participate during lessons so as to construct knowledge, skills and attitudes. Piaget (1970) holds that the learner should play active role in

learning. To him, knowledge construction takes place when new knowledge is actively assimilated and accommodated into existing knowledge. Learner-centered teaching strategies are advocated for the implementation of competence-based curriculum among them : role plays, problem solving, projects, case study, simulation, discussion, and outdoor activities.

### **Competency-based education in university settings**

Because of the newfound popularity of competency-based education (CBE) and requirements for accountability in higher education, institutions of higher education all over the world are implementing CBE initiatives that place significant emphasis on the demonstration of learning instead of on the completion of classroom hours. This approach represents a shift away from what are considered traditional instructor-centered models of instruction to more student-centered models. University programmes should focus on accommodating learners from senior secondary in three areas: a) Art and Sports Science b) Social Sciences, and c) STEM to prepare learners for the world of work. The curriculum should be designed after a thorough assessment to ensure that the following criteria have been met: it aligns with standards; research of sufficient quality and quantity is available; levels of competency are defined; high rates of responding are embedded; opportunities for providing feedback are provided; scope and sequencing are progressively spelled out; mastery-based instruction is required; and formative assessment is specified.

### **Steps in designing a competency based curriculum:**

- 1) Constitute curriculum review committees.
- 2) Establish the requirement for CBC as documented (national curriculum framework, Basic Education, Curriculum Framework, and others).
- 3) Development or identification of general competencies- identify and map the general competency areas using a wide range of sources of information and techniques to collect them. These competencies offer a framework based on specific performance outcomes to develop a curriculum and measure performance.
- 4) Organizing competencies into specific themes- to be able to fully define a competency reflect thoroughly on its composing elements. For instance, for communication, consider both delivery (body language, voice) and content (language, persuasion, organization).
- 5) Establishing criteria for performance- For each of the competencies create the standards by which competence can be measured.
- 6) Creating learning experiences- once competencies have been defined and criteria for outcomes determined, think about how students will demonstrate these skills via learning experiences.
- 7) Assessing competency- A successful competency-based curriculum will enable students to apply and execute knowledge, skills, and abilities desired by the industry in general.
  - Have the students acquired the specified competencies by the end of the programme?
  - A variety of assessment methods are needed for assessing the programme-level competencies including formative and summative assessments as well as self-assessment.
- 8) Evaluating the effectiveness of the curriculum-As the curriculum gets implemented and students begin to develop their competence in various areas, there will be a lot of likely changes. It is, therefore, important to evaluate the curriculum's efficacy to deliver competence, refine it to better meet the desired goals and then repeat the process to ensure ongoing effectiveness.

### **Model for redefining curriculum**

A model is a format for curriculum design developed to meet unique needs, contexts, and/or purposes. In order to address these goals, curriculum developers design, reconfigure, or rearrange one or more key curriculum components. The following models are key in the re-thinking university curriculum:

**1) SPICE MODEL-** Beginning in the 1980's, Harden et al. (1984) proposed a model for educational strategies in curriculum planning with the mnemonic SPICES:

**S -Student-centered**, students assume responsibility for their own learning.

**P -Problem-based** application of knowledge to and derivation of knowledge from problems in educational practice and research.

**I- Integrated teaching, unifying** subjects across academic subjects or departments.

**C- Community-oriented**, with a goal of preparing students to ultimately work and serve in areas of education need within the community

**E- Elective study periods**, which incorporate some flexibility within the curriculum and give students the freedom to choose subjects and projects.

**S -Systematic approaches**, moving away from the apprenticeship model and emphasizing learning that is not "left to chance" but rather planned and recorded.

The model calls for a replacement of didactic teaching with small group teaching, problem based learning and community oriented education. Traditional methods of teaching and learning are no longer considered the most appropriate approaches. The traditional approach of sorting curriculum in terms of subject areas is no longer appropriate and integration of disciplines is more desirable. Community needs are paramount when designing the curriculum. The curriculum should provide learners with electives so that learners teaching and learning is individualized and meets needs of the community.

2) **PRISM MODEL**- The model proposed by Bligh et al(2001) propagated new strategies for curriculum development including increased use of technology and problem-based learning, and emphasized the need for more practical experience and more protected time for learning. The PRISMS model can be broken down into each of its components.

**P: Product-focused**, the curriculum should emphasize applications to practice, that is, practice-based including feedback from those experiencing service.

**R: Relevance to communities and students**, meaning that curricula should be planned around outcomes with a focus on local needs, and revised and reviewed frequently.

**I: Interprofessional**, in that a culture of multi-professional and interdisciplinary learning should be promoted, with emphasis of teamwork and collaboration between all persons involved with respect to education and research.

**S: Smaller class sizes** and shorter courses, with units as building blocks implementing modern technology.

**M: Multisite**, further emphasizing the product-focused goal of the curricula allowing learners to ultimately practice in diverse settings.

**S: Symbiotic**, in that each of the above components combine to form a cohesive and coherent philosophy and produce

3) **LOGIC MODEL**- The logic model can be used to chart a course's learning goals and how specific objectives can be attained throughout the course's duration. Main components of the model include Inputs (resources needed for programme implementation), Outputs (specific actions expected of the stakeholders in the process), and Outcomes (specific overall learning goals and changes expected to occur as a function of the generated activities). Outputs can be broken down further to identify the specific activities expected of the stakeholders and the ways in which stakeholders will be expected to participate in the course (Kellogg Foundation, 2004).

### **How will universities remain relevant in the 21<sup>st</sup> century?**

1) **Learning and Research**-To make the issue of sustainability meaningful in a university context, it is essential to develop an appropriate curriculum. At the tertiary level, education should be about the process of learning, and students should be encouraged to see the learning process as akin to research and to take responsibility for that research. Universities should also be committed to the development of students' minds so that they will readily engage in finding solutions to complex problems.

2) **Building job-relevant competencies**- universities can work with employers to determine a set of required competencies. Skills and competencies needed by these institutions should be translated into the Content and learning experiences for learners. Job advertisements by these institutions are a pointer to what should be reflected in the curriculum. Educational and Training institutions find themselves working to meet the requirements academically and professionally. The market forces dictate what to include in a curriculum. In the 21<sup>st</sup> Century, Qualifications and Competencies required by employers include:

i. **Communication**: Excellent interpersonal abilities; good listening skills; assertiveness in presenting ideas and outstanding writing and verbal skills.

ii. **Decision-Making**: Ability to evaluate risks and opportunities; uses analytical and problem solving skills; takes initiative and drives for results; able to prioritize.

iii. **Execution**: Strong project management skills; meets deadlines; sense of urgency and responsibility; ability to multi-task and work under pressure; detail oriented.

iv. **Leadership**: Thinks innovatively and creatively; displays negotiation skills

v. **Partnership and Relationship Building**: Strong professional representation of the Foundation, interpersonal abilities, intercultural knowledge, and appreciation, strategic partnership building.

vi. **Strategic Ability**: Anticipates future opportunities and consequences, demonstrates innovative approach to work, ability to organize chaos into coherent plan.

vii. **Integration**: Accesses functional and substantive expertise organizationally; demonstrates inclusiveness, collaboration

viii. **Respect**- Positive attitude (tolerance, courtesy, respect for diversity)

3) **Work experience**- Opportunities for, and active engagement – developing students' expertise and attributes, and where possible building links with the rest of the curriculum. This could be in many different

forms, for example: blocks of work-related experience; a short two-week work-based experience; a year-long industry placement; a volunteering experience; individual or group project work for an employer.

4) **Reflection-** Regular opportunities for students to reflect on and articulate their learning and development and to plan further growth and learning opportunities. Reflection can support students in: deepening their learning and development; making their skills and learning explicit; communicating their strengths and abilities; and analysing their own actions and thinking, identifying areas of development.

5) **Enterprise education and mindset-** Enterprise education and building an enterprising mindset for all students, not just those that wish to set up their own business. Enterprise activities allow all students to develop creativity, leadership, innovation, negotiation, and confidence; all of these attributes are highly valued in various work contexts. Enterprise education develops a range of skills valuable to our students' effectiveness and impact within and beyond their studies. Entrepreneurship support can unlock setting up a business as a specific career path.

6) **Employer and alumni engagement-**Allowing employers and alumni to inform the curriculum can provide insights into what knowledge and skills students may be expected to display when they move into work. Employers and alumni can provide valuable insights into career options and can enhance students' professional networks, while highlighting or sharing current trends/challenges across their sector.

7) **Dialogue-based learning-** Dialogue creates oral interactions between students that seek to stimulate the exchange of ideas. It works as a bridge between people and creates a friendly space for developing thoughts, reflections and proposals. Dialogue helps develop communication and active listening skills, so it promotes understanding of different issues according to different points of view. It is a crucial element of any global education learning process. This involves engaging learners in projects, and trips among others.

8) **Enquiry-based learning-** The inquiry teaching model is one of the models that fill the needs and challenges of education in the 21st century (Jeffrey et al., 2014). The inquiry teaching model is a series of teaching activities that focus on critical and logical thinking processes to solve the problems given (Motlan et al., 2016). Teaching inquiry in science emphasizes the involvement of students in cognitive processes such as asking questions, generating hypotheses, designing investigations, collecting and analyzing data to answer the questions, and communicating and justifying explanations (Williams et al., 2017).

**Phases in the inquiry teaching model** (1) formulating problems, (2) formulating hypotheses, (3) collecting data, (4) testing hypotheses, and (5) making conclusions (Friesen & Scott, 2013). The National Science Education Standards (NSES) states that there are five main things that must be filled in an inquiry class, that is, (1) students have to make scientifically oriented questions, (2) answer questions using appropriate evidence, (3) formulate explanation of facts, (4) linking of explanations to scientific knowledge, and (5) communicating and justifying explanations (Mokiwa & Nkopodi, 2014).

9) **Lifelong learning-** This presupposes the constant integration of an individuals' learning in the system of cultural and civicingferences of the group, community or society he/ she belongs to or identifies with. This helps learners to expand, test and apply new experiences in their daily lives fostering a global vision of society.

10) **Participatory Research-** The tradition of participatory research has benefited from the work of Paulo Freire, Myles Horton and Julius Nyerere, as well as the kind of work that has happened in self-help groups and community. The essential premise of participatory research is recognition and utilization of knowledge for purposes of transforming the relations of power in social systems. This perspective allows the knowledge production function to be carried out in "engaged" stances. Participatory research methodologies are thus used to both learn about realities and transform the same towards such desirable public values.

11) **Construction and operation of science parks** (also called a "university research park", "technology park", "techno park", "techno pole", or a "science and technology park" (STP)) to accommodate and foster the growth of tenant firms so that knowledge can be shared, innovation promoted, and research outcomes progressed to viable commercial products. Science parks are elements of the infrastructure of the global "knowledge economy". They provide locations that foster innovation and the development and commercialization of technology and where governments, universities and private companies may collaborate. Science parks are also often perceived as contributing to national economic development, stimulating the formation of new high-technology firms, attracting foreign investment and promoting exports. Science Parks are thus an effective way to stimulate a culture of innovation and to grow associated, knowledge-based businesses and support for the Big 4 agenda.

12) **Community/ service learning -** This technique involves community services and reflection on those services. It nurtures social responsibility and commitment towards closer reality. Community learning can also be used to apply knowledge and skills to specific issues or to learn how to transfer specific situations. It is related to the idea of practical actions linked to the process of building knowledge. Contents are learnt not only from a theoretical approach but also from an added value coming from a new component – field work and

practices — that deepens the concepts learnt in the theory by strong notions experienced in real life. Community learning is an excellent practice in global education learning, providing information and developing skills for training in real daily life situations and society. Students develop deeper: a) understanding of social issues (or other subject matter, b) lifelong learning and problem solving skills, and c) skills for community action and involvement.

### **Elements and strategies of community engagement and participation**

Universities are no longer the only producers of knowledge, universities must have some link to and serve some useful purpose in addressing the major issues of the day or else they become socially irrelevant” (Ostrander, 2004). The engaged, participating institution thus draws on its academic strengths and resources (physical, social and intellectual) to benefit both the university and its community. Benefits include the building of social capital, contributing to the resolution of local issues, the well-being of the community, local support and economic growth. Community engagement/participation is an umbrella term that refers to a wide variety of elements and practices.

### **Elements of community/service learning**

#### **1. Integrated learning**

- The service learning project has clearly articulated knowledge ,skills or value goals that arise from broader classroom or institutional goals

- The service informs, the academic learning content and academic learning content inform the service.
- Skills learned outside the classroom are integrated back into classroom learning

#### **2. Learner voice-** Learners are actively involved in:

- Choosing and planning the service project
- Planning and implementing the reflection sessions, evaluation and celebration
- Taking on roles and tasks that are appropriate to the level of learning.

#### **3. Collaboration -** Service learning project is collaboration among all the partners, students, recipients of service, professors, and community based organisations.

4. **Applying academic knowledge and critical thinking skills.** Students take what they are learning through course readings, classroom discussions and faculty lectures, and they apply the learning to a community setting. The application of academic knowledge allows theories to come to life and provides students with opportunities to find relevance and meaning in their course content.

5. **Reciprocity -** Community service partnership must be valuable to all participants. The activities should be meaningful to the site and consistent with the course student learning outcomes.

#### **6. Civic responsibility and diversity**

- The service- learning project promotes students responsibility to care for others and to contribute to the community.
- By participating in the service- learning project, students understand how they can impact their community

#### **7. High quality service**

- The service responds to an actual community need that is recognised by the community
- The service is appropriate to the academic level of the course
- The service is designed to achieve significant benefits for students and community

#### **8. Systematic Reflection**

- Reflection establishes connection between students service experience and the academic curriculum
- Reflection occurs before, during and after the service- learning project.

According to John Dewey and Daniel Kolb it is important to combine individual action and community service with reflective thinking to provide greater understanding of the content being studied. Effective strategies for fostering reflection are based on five core elements of reflection known as “the Five C’s”=creative, continuous, connected, challenging, contextualised. Experience enhances understanding and understanding leads to more effective action (Eyler2009).

9. **Assessment and Evaluation -** All the partners are involved in assessing the service learning partnership and project. Evaluation seeks to measure how well students have met the learning and service objectives.

Practices of community engagement include: community-university partnerships to address questions of mutual concern; strategies of economic and social regional development;teaching and learning for civic participation;collaboration with local business and industry; support for social and cultural initiatives and, locally-relevant and applied teaching and research.

### **Pillars for successful reforms in university education**

To promote student learning outcomes and to produce life ready graduates, universities must take cognizance of the eight drivers of education:

- 1) **Decision making (how do we decide?)**-An evidence-based decision-making framework emphasizes three components: (1) best available evidence, (2) client values, and (3) professional judgment. Stakeholder values and context are cornerstones of the evidence-based decision-making framework. Stakeholder perspectives about the goals of intervention and the appropriate methods for accomplishing those goals can guide decision makers as they consider various interventions. Contextual variables that must be considered when adopting an intervention are; level of training and experience required, amount of training time to ensure effective implementation, cost of the intervention relative to potential benefits, and amount of time needed for implementation.
- 2) **Implementation (How do we make it work?)**- Successful implementation requires careful planning, consideration of how the intervention will mesh with current practices, adequate resources for the intervention, training and support for those responsible for the intervention, and a method for evaluating the impact of the intervention and making rapid adjustments as needed to improve benefit. The four stages of effective implementation are exploration, installation, initial implementation, and full implementation. Different activities and outcomes are associated with each stage. In the exploration stage, the critical activities are identifying the problem, reviewing the evidence for various interventions, and ultimately making a decision about which intervention to adopt. In the installation stage, the system is reorganized to ensure that all levels of the system are aligned to support the adopted intervention. During the initial installation stage, the intervention is rolled out on a small scale to determine what adjustments need to be made before the intervention is implemented at scale. Finally, in the full implementation stage, the intervention is rolled out across the entire system. Across all stages of implementation, data are used to guide decisions.
- 3) **Monitoring(is it working?)**- Because no intervention will be universally effective, frequent monitoring of effects is necessary so that decisions can be made on how to proceed. It is also essential to monitor how well the intervention is implemented (treatment integrity). This helps to know whether or not an intervention is effective or ineffective and whether it was implemented properly or so poorly that benefit cannot reasonably be expected. Knowing about the quality of implementation allows practitioners to make data-informed judgments about the effects of an intervention.
- 4) **External influences**- reforms should consider forces and factors which may affect operations of universities among them government policies, capitation, and professional bodies.
- 5) **Quality Trainers** –trainers play a pivotal role in student success. Trainers should have necessary competencies in terms of: instructional delivery; Classroom management; Formative assessment and; Personal competencies (soft skills).
- 6) **Quality leadership**- critical competencies for curriculum leaders to be effective include (a) leading staff learning and development, (b) establishing goals and expectations, (c) ensuring quality teaching, (d) resourcing strategically, and (e) ensuring an orderly and safe environment.
- 7) **Effective instruction**- should take into consideration trainer competencies and will require staff development courses and continuous support. Effective instruction should focus on: Encouraging contacts between students and faculty; developing reciprocity and cooperation among students; communicating high Expectation to students; use of active learning approaches; respect for diverse talents and Ways of Learning; giving prompt feedback and; Allocating realistic amounts of time to Task.
- 8) **Educational resources**- Education resources refer to all human, material, non-material audio-visual, institutional environment and community. Appropriate Materials available in an academic environment help to facilitate institutional administration and simplify the teaching- learning process.

### **Challenges facing higher education**

- 1) Challenges for research in a constantly evolving landscape
- 2) Due to difficulties in finding research grants and funding, funding for research remains a serious constraint
- 3) As lecturers pursue fast-track promotion up the academic ladder, few engage with communities as collaborators or allies.
- 4) Huge increase in the costs of universities is starting to seriously turn off potential customers. The Higher Education Loans Board (HELB), the agency that disburses loans to students on behalf of the government, is not able to loan all the applicants due to budget cuts for public universities by the Kenya National Treasury occasioned by a significant fall in government revenues, largely taxes on the back of reliefs extended to taxpayers to alleviate COVID-19 shocks.
- 5) Increase in competition for students, research funds and academic staff – among the private sector and internationally

6) Challenge of educating students to lead productive lives- The demand for and value of post-secondary education is greater than ever, and will continue to increase as machines take on more physical and basic intellectual tasks.

7) One of the biggest challenges is the lack of enabling environments in the university, non-acceptance and non-recognition or even prohibiting transformative personal development efforts as integral to the work of academia. Non-conducive academic assessment, prioritization of research agendas and practices that are predominantly market-oriented, non-recognition of alternative paradigms of knowledge production even in practice-oriented disciplines, the kind of programmes and courses offered, and didactic one-way teaching-learning approaches are concrete examples of the non-conducive university environment and practices.

8) Universities worldwide are being called on to fulfill more and more roles, often with fewer resources. As a result, academic missions may become dispersed and the quality of the work may decrease.

9) Limited Autonomy- In an era of growing accountability, universities are challenged to maintain their management autonomy and to control their essential academic decision making. Research universities are in the uncomfortable position of being for the most part, state institutions subject to bureaucratic rules and parts of complex bureaucratic academic systems.

#### **IV. CONCLUSION**

The world is changing faster than ever therefore; universities will need to produce life-ready students by the time they graduate. There is a compelling need to reform university education to contribute to a broader development of the society and the country's development goals. With affordable and easy to manage technology that transforms classroom time, educators can focus on delivering personalized learning experiences that help enable better learning outcomes. University education should focus on creating new values with reference to society at large (including to business) and purpose to focus on value created as knowledge generated through research. Graduates should be more valuable as a result of their education, and thus can be said to embody value. This can only be measured over the course of a lifetime, and in the course of knowledge generated by research. Participatory, democratic, pluralistic, and emancipatory approach to education and engagement will enable universities to improve the quality, relevance, and effectiveness of their teaching and research missions" through reflecting "on their role in finding solutions to challenging social problems. Enquiry-based learning model helps students to conduct investigations in an attempt to understand the content. This way, students are able to develop critical thinking skills which can be used to advance the world and create new knowledge and also address social concerns.

#### **V. RECOMMENDATIONS**

1) Within the future unpredictable business environment and the accelerated knowledge economy development, universities need to increase their knowledge generation and knowledge transfer toward the society.

2) Establishment of University-Community Partnership Office as a one-stop center for community outreach and industry partnerships.

3) Strengthening Quality Assurance of Higher Education as a means of Capacity-building.

4) To address the upcoming challenges for sustainable development, there is need for adequate partnerships at the global, national and local levels. This will help to strengthen University Research Ecosystem.

5) Universities should switch from creating adaptation knowledge to produce generative knowledge to become learning organizations.

6) A move from the conceptual to the practical as a way of permitting or promoting development.

7) Focus should be on Action Research and Engagement of Communities to promote transfer of learning.

8) Sensitizing of students on environmental issues with a focus on green curriculum.

9) Strengthening higher education management and financing- The management and financing of higher education require the development of appropriate planning and policy-analysis capacities and strategies, based on partnerships established between higher education institutions and state and national planning and co-ordination bodies, so as to secure appropriately streamlined management and the cost-effective use of resources. Higher education institutions should adopt forward-looking management practices that respond to the needs of their environments.

10) Promotion of academic entrepreneurship by establishing appropriate links between the university, entrepreneurs and industry. Academic entrepreneurship can include all entrepreneurial behaviors of academicians like setting up new companies at the university, setting up research centers with the industry, paving a suitable way for protecting intellectual properties, and licensing of research results carried out at the university.

11) Strengthening of internships to help learners experience education outside the classroom and offer students the life skills that they need to operate in the real world.

- 12) Universities should embrace programmes geared towards sports, visual and performing arts (Art and Sports Sciences) to promote development of learnertalents and also provide supportive infrastructure for the same.

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