

Harnessing Adaptive Value-Based Education Model within the Era of the Fourth Industrial Revolution (4IR) in Kenya

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Abstract

The world today has entered in an era of the Fourth Industrial Revolution (4IR) characterized by artificial intelligence-AI, virtual interaction, digital channels, among others. This new culture is expected to alter the way we live, perceive and interact with others hence challenge, change and disrupt every sector of our lives. Consequently, the resulting new social-cultural, moral and spiritual values have introduced to the digital generation new choices and worldviews, philosophies and cultural orientations. As such, this has created a contemporary need for the educationists and other education stakeholders to guide the latter generation through development of a value-based education. Hence, the need to harness adaptive value-based education model within the era of the fourth industrial revolution in Kenya is a request to the education industry to rethink of educational paradigms that promote long term character development in the advent of post-modern fourth industrial revolution era. This review paper aims to develop and recommend a value-based education model in the era of the fourth industrial revolution in 21st century societies, alongside assessing some of the challenges and opportunities in the education industry in the era of fourth industrial revolution. Guided by the Howard Gardner's Multiple Intelligences theory and John Dewey's social constructivism theory, the paper uses thematic content analysis of various literature on fourth industrial revolution, and holistic value-based research work to evaluate the nature of value-based education in the Kenyan context. It was found that although Kenya is on the right trajectory in the global context to implement the objectives of fourth industrial era, however, there is need to emphasize training and acquisition of social and moral values in the Kenyan learners that will complement the digital and technological skills in the global context. Ultimately, it is anticipated that such value-based education model will make the 21st century consumer of the 4IR more relevant, competent and adaptive to navigate through the challenges revolving around the new global cultural contexts. The paper hence, challenges the planners, theorists and other stakeholders in the education 4.0 era within the Kenyan context, to design and actualize value-based curriculum models that meets the holistic aspects of a 21st century Kenyan human capital.

Key Words: Adaptivity, Fourth industrial revolution, Opportunities and Challenges, Value-Based Education.

Introduction

The globe has experienced emergence of various industrial revolutions since 16th century. According to Rembang (2021), this phenomena was birthed with the emergence of the first industrial revolution (1760-1840) characterized by steam energy and mechanical production machine; second industrial revolution (1870-1914) characterized by mass production and electrical energy; third industrial revolution (1969-2000) characterized by automation, computer and electronic; and the fourth industrial revolution (2000- to present) characterized by among others cloud computing, virtual interaction, big data analysis, Internet of Things(IoT), artificial

intelligence, digital channels, autonomous robots, cyber security, and system integration. With each stage of revolution, various value changes have been left behind. As such, the resulting new culture often alters the way of life, the perception and interaction with others.

Consequently, this challenge, change and disrupt every sector of our lives among them education sector leading to the emergence of new cultural patterns and value systems. As such, the resulting new social-cultural, moral and spiritual values have introduced to the digital generation new choices and worldviews, philosophies and cultural orientations. In such a context, the optimists of 4IR are excited about new culture's opportunities out there as it will bridge the global knowledge gap. However, the skeptics are cautious of the challenges and the potential risks awaiting the fourth industrial culture as it raises the question of inclusivity and equitable access to quality education for all learners as well as the risk of bleaching the moral fabric of the society. This has created a contemporary need for the educationists and other education stakeholders to guide latter generation through development of adaptive value-based education that emphasizes imparting ethical, moral and societal values alongside academic knowledge, empathy, social responsibility and fostering character development for holistic development (Kagama, 2022).

Multiple Intelligences theory in adaptive Value-Based Education

According to Howard Gardner's theory, learners possess multiple minds systems that encompasses various modalities, encouraging diverse teaching methods to accommodate different types of intelligence. Like Dewey's social constructivism theory, Gardener's multiple intelligence theory proposes that curriculum should build an orderly sense of the world where multiple intelligences are developed with the purpose of carrying out different task, progress in different domains, and solve diverse problems in a holistic manner, (KICD, 2017).

At the core of the fourth industrial revolution, digital networks, interactive technologies, data literacy, technological literacy, and human literacy among others, are considered to be the competencies needed to face the industrial revolution 4.0 (Jalinus et. al., 2021). For holistic character development, the learner needs to be equipped with personality values skills alongside post-modern multi-cultural technological skills. Exposure to such value-based education values will make the 21st century consumer of the 4IR more relevant, competent and adaptive to the challenges revolving around the new post-modern cultural contexts.

Education in the era of Fourth Industrial Revolution-4IR

Various definitions have been given on what is education. However, every society has diverse approach, objectives, and varying methodology to their form of education. Hence, it becomes hard to have a single, universal and unanimously agreed definition of the term. However, all educational aspects should have two main objectives; leading out into a new knowledge and experience, and the objective of feeding and thereby growing and developing, (Wijsen et. al., 2006). These two objectives make education a vital process in any human development. Contextually, Wijsen et al hence, view that any form of education should aim at helping human being get the grips of reality, take charge of reality so as to transform it, and accepting the demands of reality by taking responsibility and bearing its hardships. In addition, Bazić (2017) argues that education and its segments are required to transmit adaptive knowledge that shapes new competences required for life and work in specific circumstances.

Within the era of the fourth industrial revolution, Rais (2018) observes that education aims at improving the production efficiency and flexibility through digitization control systems and a

decentralized automation which has partially replaced the labour efficiency of human labour. In light of such understanding of the nature and objectives of education in 4IR, the qualities of a 21st century teacher becomes paramount for a successful shaping of the learner's adaptive basic skills and expertise, knowledge, and attitude. The learning process hence demands to be student-centered as students are required to do activates without being limited, (Purwanto et al., 2023).

According to Purwanto et al. (2023), education in the era of fourth industrial revolution-education 4.0, is a phenomena structure where humans and machines are allied together to solve problems, find solutions and new innovations. Hence, its success and failures can be assessed based on its effects on its users, the learners who are the main consumers, as well as the quality of the 21st century teachers. Hence, education 4.0 should be directed on formation of competent personality with the ultimate aim of improving the quality of human life by solving contextual life needs, and humanizing humans. To actualize this, various national, regional and global policy documents on education have been established with the aim of recommending development of the desired principles and values to be incorporated into the education systems.

With the unveiling of the new curriculum in Kenya based on the Sessional Paper No. 2 of 2015 on *'Reforming Education and Training in Kenya'* and the 2022 Presidential Working Party on Education Reform (PWPER) report on *'Transforming Education, Training and Research for Sustainable Development in Kenya'*, the government aims at placing the students at the global market with adaptive capabilities needed for success in the 21st century, (Presidential Working Party on Education Reform, 2023). However, the main question is whether the education industry in Kenya under the new competence-based curriculum is maximumly structured to instill integrative and adaptive value-based skills for the consumers of the existing 4IR. Such discussions should be informed by the fact that within the human capital, creativity, collaboration/teamwork, communication and critical thinking skills can never be automated or replaced.

Moral Education in the Context of Holistic Kenyan Education System

The concept of holistic education has been at the center stage of contemporary education theorists. This has made value-based education systems to receive a lot of attention formally and informally both in local and international face. Rudge (2008) observes that the concept of holistic education has historically been discussed with incorporation of various principles and ideas from; humanistic among others, Rousseau, Maslow, Pestalozzi; progressivists led by Dewey; and social critics among them, Jules Henry, Myles Horton, and Paul Goodman. These theorists view holistic education as a value-based education encompassing worldviews on recognizing divine reality, life interconnectedness and interdependence with internal and external ecosystem world. Hence, holistic value-based education is one that promotes equal rights, empathy, mutual responsibility, caring, love for self/divine, social justice and respect.

In the contemporary global community, the discourse on the call to develop a harmonious, moral, ethical and responsive society has been on the rise. This is informed by the decrease of the value systems among the contemporary generations (Argue and Greenway, 2020). Additionally, the contemporary adolescent's egocentric nature makes them to focus more on their needs instead of looking at circumstances from the point of view of others (Novik, 2018). Hence, Schonrt-Reichl (2011) notes that there has been a burgeoning global attention on the need of empathy construct informed by both; recent historical events related to school bullying and value decrease pointing

to an empathy deficit in today's children and youth; and the rise of the field of positive psychology and youth development into positive human qualities, development of empathy being among them. In Kenyan context, there has been a lot of effort to promote moral education among the learners. This is evident by the establishment of various commissions for example, the Ominde Commission among others, whose main responsibility was to advise the government on the best approach to establish a moral society through responsive education systems. As such, development of religious education as a subject of study within the 8.4.4 system of education was seen as a means to producing a moral, responsible and ethical citizen. However, Makoyo (2022) observes that irrespective of the several policy documents in education that have echoed the need to implement moral education in school, morality and value systems in Kenya has sunk to a record low. This has been despite of the establishment of policy documents as the Gachathi Commission Report of 1976 (GoK, 1976), the Mackay Commission Report of 1981 (GoK, 1981), the Kamunge Commission Report of 1988 (GoK, 1988) and the Professor Douglass Odhiambo Task Force Report of 2010 (GoK, 2010). However, their objectives have not yet wholly been realized. As such, the responsibility of inculcating moral, social and spiritual resilience as well as adaptability in students is partly assumed to be promoted through the teaching of the Christian Religious Education subject along other religious related supportive programmes both in and out of the school environments.

Value-based education model in the Fourth Industrial Revolution Era in Kenya

Kenya is on the forefront trajectory on adopting to the fourth industrial revolution era especially with curriculum change to the Competence Based system of education that partly emphasize digital skills in the learners. The aim of this rationale is to make the 21st century Kenyan students globally competitive, bridge the gender gaps, and prepare learners for the 21st century job market. On a positive trend, the current education system will help to shape the future of the Kenyan learners by conforming to the tenets of the industrial revolution. Here, 21st century pedagogical skills that emphasize value-based skills in digital contexts will help the consumer of education system in Kenya to be holistic in nature.

Various research has been undertaken on value-based education in the context of character and moral development. However, there has been limited research models related to the context of fourth industrial revolution era, and the adaptive value systems and skill development for human competitiveness and relevance. With the characteristic nature of fourth industrial revolution-4IR involving artificial intelligence-AI, virtual interactions, digital channels, machine learning, and biotechnologies, among others, the education industry in Kenya need to design itself with adaptive strategies that will sustain the contemporary and future human capital against the Darwinian principle of the 'survival for the fittest' to avoid elimination and facing out in the local and global realities in social-economic contexts.

Here, any consumer of modern education systems in the digital industrial world will need holistic education (HE) involving among other aspects like; recognizing interconnectedness and interdependence, divine reality, promoting equal rights, empathy, and mutual responsibility. In addition, social competence characterized by emotional intelligence (EQ) which involves among other aspects like; self-awareness, empathy, motivation, self-regulation, mutual responsibility, caring, social justice, respect and relationship management are/will be vital. This will encourage development of a morally upright, emotionally competent, resilient, autonomous, and a human capital with problem-solving adaptive skills. In view of this, this review paper recommends the