

Educational Curricula Design and Developmentⁱ in the African States, in the Digital Age

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Abstract: This paper examines the relevance of the educational curricula of African states in the digital age. Education is strategic in the formation and development of human capacity, as it is a prerequisite for self-discovery and development of society. Relying on the analysis of secondary data, the paper examines the mismatch between skills acquired in most African schools and the set of skills needed to function optimally in the digital age. It traces this to the curricula in use which contribute to the non-development and underdevelopment of learnersⁱⁱ capacity, and therefore an increase in the rate of unemployment, amongst other challenges. The revolution driven by information communications technologies has impacted virtually all walks of life and redefined how things are done in the digital age. We advocate an overhaul of the educational system of African states and subsequent reviewing and revising of their curricula to facilitate inculcating in learners a set of skills needed to function optimally for their development and for society.

Keywords: African states, design and development, educational reform, reviewing and revising educational curricula, the digital age

I. INTRODUCTION

The debates on the purpose of education curricula during the colonial era show that they were designed and developed to meet the aspiration of the colonial masters. In hindsight, education in the colonial era was designed to facilitate trade and later the recruitment of personnel into the civil service. We argue that during the period, education was deliberately tailored to inculcate in the learners the type of knowledge the colonialists wanted, rather than the development of skills and the building of capacities. In perspective, while African states like South Africa, Uganda and Kenya are making efforts to deviate from this kind of approach to education that restricts the learners' abilities, similar efforts are yet to be seen in Nigeria, Liberia, Benin, Madagascar, etc. Egypt is making radical reforms of its curricula in line with the requirements of education in the digital age.

Many school leaversⁱⁱⁱ and graduates in Africa are either unemployed, under employed, or unemployable. These are mainly the young population who ought to have acquired the needed skills and to have developed the ability to cultivate the entrepreneurial spirit and to exploit available resources for their own development and for society. The paper aims to show that the major challenge is with the content and pedagogy in the digital age in Africa. It points out the consequences and suggests ways to address them to facilitate development in Africa.

The educational curricula in force at any given time and its societal relevance is very crucial. This underscores the nexus between education and society (Onwughalu, 2012), which cannot be overemphasised. We have experienced global phenomenal changes caused by three industrial revolutions and arguably the fourth, which is emerging. This fourth is leveraging innovations of the third in unprecedented ways unknown before in global history (Onwughalu & Ojatorotu, 2020). Importantly, the trajectories that led to the discoveries which brought about these changes and advancement of the society are not unconnected with education. Thus, educational curricula impact on them invariably, and their outcomes should also be seen to influence the design and development of curricula.

This paper was necessitated by the state of development in Africa and the need to remedy the situation through leveraging the demographic configuration of the continent. The disruptive changes that drive the digital age are caused by human activities. Thus, the possession of "soft skills" or "transversal skills" (Jones, 2016; van Gaalen & Gielesen, 2016), has been identified as the needed response to cope with these changes and to initiate further innovations for human and societal development. While Africa's population was estimated at "1.25 billion and 60 percent are people under the age of 25 years old," "human capital" has been identified as one of the "drivers of production in the 4th Industrial Revolution" (Africa Growth Initiative, 2019; World Economic Forum, 2018 cited in Onwughalu & Ojatorotu, 2020:86-87). Education is one of the ways this potential can be harnessed for the transformation and development of the people and states in Africa.

The African Development Bank (2020) argues that as students graduate annually the level of unemployment and poverty in the region continues to rise, suggesting a disconnection between education and development. We linked the underlying cause of this challenge to the curricula used in their training (i.e. teaching and learning) and attempt to question it. In this regard, our concern here is to "bite" by reactivating the discourse on the relevance of educational curricula of African states in the digital age and to invite others to "chew", by provoking further reactions, intending that it will elicit the needed actions - the overhaul of the educational system, and subsequent reviewing and revision of the curricula to reflect the changes and needs of contemporary times.

II. BRIEF LITERATURE PERSPECTIVE

The level of knowledge one possesses drives the person's consciousness towards the setting and realization of their goals. Thus, Hudzik (2016:23) recognises knowledge as a defining factor that may be more important than "land, labour, and capital" in production. Education is one of the ways of acquiring knowledge. This borders on the understanding of education and the expected outcomes. If it is perceived to be mere attending of school(s) for the sole purpose of obtaining a certificate as a prerequisite for seeking employment, it becomes equated with certification.^{iv} The World Economic Forum (2016) conceives education as an embodiment of skills, and competencies, and how these are enhanced in the human person. Thangeda, Baratiseng and Mompoti (2016:10) locate it within the context of the school, which purpose is to "improve knowledge and develop skills" through the teaching and learning process. We define education as a holistic process that is designed to create the right awareness in learners, to enable them to discover themselves and exploit the educational system further, to fully realise their potentials and capabilities for self and societal development. Thus, it is a catalyst for transforming learners and society. Overall, education is a strategic and very potent instrument to achieve the desired end. Against this background, it should be structured and designed to address the present and future human and societal needs and challenges.

The knowledge school leavers and graduates possess is a function of the education they have acquired during schooling. The curriculum defines the kind of education the learners get, which in turn moulds them. Therefore, the curriculum is a roadmap in an educational system that captures the activities going on within and beyond the immediate learning environment, which ultimate aim is a positive change in the learners' behaviour (Subharani, Bhuvanewari, Selvi & Sujithra, 2014). Wen Su (2012) approached this from the angle of expectations and the final results of each stakeholder in the educational system and she conceived curriculum along five perspectives, i.e. (i) results (ii) content or discipline (iii) combination of content and pedagogy (iv) an official template that guides and regulates content and pedagogy (v) hands-on in and outside the school environment. The crux of a curriculum for Wyk and Higgs (2011:172) are: (i) imparting knowledge and skills (ii) how it is being done (iii) the relevance of the knowledge and skills in time and space. From the foregoing, the design of curriculum canvassed here is such that aims to make learners solutions providers. Zipin (2017:67) identifies it as "a problematic-based curriculum approach".

III. RESEARCH METHODOLOGY

Our study was qualitative in nature. We obtained data from secondary sources like the "African Economic Outlook 2020" and other relevant publications on education, curriculum, and development in Africa and beyond. We used content analysis method to analyse the data. We analysed the primacy of

content and pedagogy in curriculum design and development, and the impact on learners and for society. We presented an overview of the curricula in Africa and the aim during the colonial period. We also presented the efforts of some African states since independence, to change their curricula in line with the trends and dynamics of global development. We did not examine all the 54 countries in the continent; rather, we looked at those: (i) that were not making concerted efforts towards improving their curricula and educational system, (ii) making concerted efforts towards doing so, and (iii) those that have reformed theirs to meet the demands of the digital age. In the first category, we identified Nigeria, Liberia, Benin, and Madagascar. South Africa, Uganda and Kenya constitute the second category, while Egypt falls into the third category. We drew from the experience of these countries to support the analysis in our study.

Contestations on Educational Curricula

"What is in it for me?"

- Jones, Coelen, Beelen and de Wit (2016:4)

After independence, African states have attempted to redesign, review, or revise their curricula. In South Africa, educational reforms have been implemented in 1997, 2000, and 2012 (Zipin, 2017). Ezeanya-Esiobu (2019) presents insight into the cases of Tanzania, Uganda, Malawi, and Guinea. The African Development Bank (2020) gives an overview of the trend in most African countries. And of particular interest is the experience of Egypt, as its educational reforms reflect a response to the changes and demands of the digital age. However, despite these efforts, evidence shows that the educational system in Africa is yet to facilitate the maximisation of the demographic advantage of the continent through functional education that aims to inculcate in learners the skills that are relevant in the digital age.

The question posed above is very instructive to all the stakeholders in the educational system, especially, the learners. The answer(s) stimulate what the curricula should offer the students, and these should guide the design. When this is done properly, the educational system, through the curricula, strives consciously to impart education for the overall development of students and society. The curricula of most African states are yet to undergo a radical reform that will fully integrate into the mastery of "reading, writing, and arithmetic," and the content of "critical thinking, creativity, effective communication and collaboration" (National Education Association, 2012:2, 5). Some analyses on education and curricula in Africa and elsewhere tend to focus and prioritise important factors like access to education, rate of enrolment, number of years spent in school, assessments, test scores, the medium of instruction, outcomes, etc. (Coelen, 2016:38; Ezeanya-Esiobu, 2019:39-40; Leask, 2016: 50; Wyk & Higgs, 2011:173); relegating content upon which these are predicated to the background. Given this, the findings of the "4th Global Survey," Egron-Polak and Hudson (2014) cited in

Beelen (2016:59) observe a disconnection between “learning outcomes” and “teaching and learning,” as “more than 80% of universities cannot assure that all their students experience... learning within the context of their discipline or programme”. Though, we are aware that this may not suffice for generalisation. However, it does offer extremely useful insight into (a) where to start an overhaul of the educational system in Africa, and (b) the sequence or order of priority in the components of its curricula.

Beelen (2016:59), Deardorff (2016:84), and Wyk and Higgs (2011) underscore the centrality and priority of content in teaching and learning. The advent of globalisation and its impact on the society reinforced by the disruptions trailing the 4th industrial revolution have transformed content and pedagogy. These informed the entrant of “universal curriculum,” and “internationalisation of the curriculum,” into the lexicon of education (Jones et al, 2016; Trifonas, 2003:35). The “Global Dialogue on the Future of International Education” held in January 2014 under the auspices of the “International Education Association of South Africa” where the “Nelson Mandela Bay Global Dialogue Declaration” (de Wit, 2016:17) was made, indicates recognition of this approach to curriculum design in Africa. The CareerProfessor (2015 cited in Ripmeester, 2016:125) notes that there is a shift in what educational institutions used to provide learners. When the relationship between them was linear – i.e. the era educational institutions produce manpower that performed simple tasks, “... They have been knowledge and education providers, sometimes for centuries ...”. In the digital age, the relationship has become both symmetrical and intervening. The employers and disruptive changes influence the types of skills that are relevant, which educational institutions should inculcate in learners and/or make them cultivate, “... now they are *suddenly* confronted with a generation of students that consider employability a standard condition of a successful higher education degree” (Ripmeester, 2016:125).

The revolution in ICTs has in many ways brought the world to our immediate environment, and African states cannot ignore this reality, as, to do so, is at their peril. This is evident in the rate of mismatch between skills acquired in schools and those needed to function optimally beyond schools, discussed in the next section. We argue that what is included or excluded in the curricula is very crucial as they are fundamental in producing the results. In other words, they are instrumental in ascribing roles to the students in the society upon graduation – whether they will become employers of labour, unemployed, entrepreneurs, etc. Leask (2015 cited in Leask, 2016:50) defines “internationalisation of curriculum” as: “the process of incorporating international, intercultural, and global dimensions into the content of the curriculum as well as the learning outcomes, assessment tasks, teaching methods, and support services of a programme of study”.

The above definition suffices. Furthermore, we opine that in the African context, it is an eclectic approach to education that will entail (i) similarities in the content of the same subjects,

programme and discipline as obtainable globally, without losing the peculiarities of the respective immediate environments, (ii) collaboration, and (iii) the infusion of vocational, technological and agricultural programmes across all educational levels. The purposeful integration of these will either promote in the learners the ability to be “proficient communicators, creators, critical thinkers, and collaborators” (National Education Association, 2012:5); or the possession of what Wyk and Higgs (2011:174) describe as “skills of knowing and formal knowing” to enable them to solve problems, compete with peers on a similar pedestal, and provide solutions. Rubin (2016:77) argues that:

This format would bring into their studies other voices and other perspectives, engaging them in discourse with other cultures that they had not realised they wanted to be part of. They would not need to set themselves on this path – rather the path would open up before them. Hopefully, many would then find the path interesting and proceed further along as it led them to new experiences, where they would choose to venture still further on their own.

According to Wyk and Higgs (2011) when the “skills of knowing and formal knowing” are integrated successfully, they focus on the domains of (a) knowing, (b) being, and (c) acting. The first borders on gaining formal knowledge which general education helps to provide. The second centres on the consciousness of the learner as a human person, which is actualised through the process of self-discovery and rediscovery, for the full development of innate capacities - potentials and talents - for optimum participation and realisation of set goals in a dynamic world. The third is the ability to act successfully by exhibiting ingenuity – through invention, innovation, communication, creativity, or entrepreneurship, by utilising the first and second domains i.e. “manipulate knowledge in knowing performances” (Wyk & Higgs, 2011:174). Furthermore, these conform with three of the seven pillars of wisdom that a curriculum, according to Wyk and Higgs (2011:172) should promote – (i) the people’s overall well being, (ii) relevance to the environment, and (iii) constant quest for knowledge.

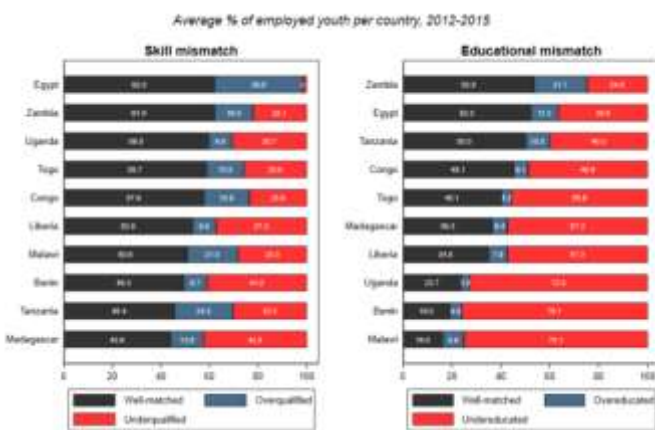
Manifestations of Obsolete or Defective Curricula

The consequences of using curricula that are obsolete or defective in training students manifest in several ways. These include, but are not limited to, the challenges of [un]employability, underemployment, mismatched skills, skewed or imbalance in programmes’ subscription, and enrolment. There are cases where vacancies are available and employers are ready and willing to hire, but available employees are unemployable. Pollock (2014 cited in Ripmeester, 2016:125) notes that “39% of employers stated that difficulties exist in filling vacancies for skilled labor.” The paucity of skilled workers in Africa is one of the major challenges identified by employers in their businesses (Schwab, 2017). Globally, Africa has the highest number of

people with either intermediate or advanced education who are unemployed. And for those who are employed, 57%, 33%, and 10% are in low, medium, and high-skilled jobs respectively (African Development Bank, 2020:66).

Furthermore, the data for 10 African countries sampled by Morsy and Mukasa (2019) showed that while about 3.4% of young people were engaged in jobs lower than the skills they possessed, the skills of about 22% were underutilised. These have further implications in terms of poor remuneration and lack of job satisfaction (Bauer, 2002:221). Concerning the compatibility amongst education, skills, and employers' needs, more than half who were employed considered "their skills as mismatched to their jobs" (African Development Bank, 2020:71). And because of this, the Bank further observes that while those in Egypt, Zambia, and Uganda are more likely to possess appropriate skills, there was barely evidence of under-skilled in Egypt. The dearth of skills was pronounced in Benin, Tanzania and Madagascar (see figure 1). In addition to these, there is a huge gap between enrolment in Sciences, Technology, Engineering, Mathematics courses, and other disciplines. In view of this, we argue that while elements of STEM courses are not mainstreamed into other disciplines, the choice of elective is introduced somewhat early in secondary school and tertiary level, which compound this challenge.

Figure 1: Skill and educational mismatches amongst the youth in some African countries



Source: Adapted from Morsy and Mukasa (2019). Youth jobs, skill and educational mismatches in Africa.

IV. WHY THE EDUCATIONAL SYSTEM IS DYSFUNCTIONAL IN AFRICAN STATES

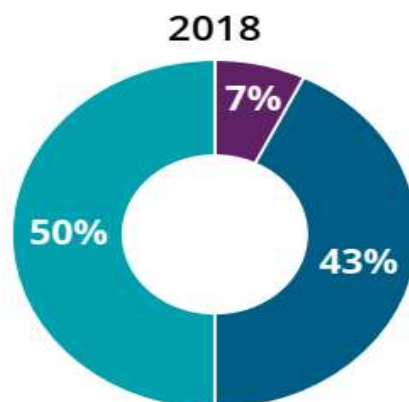
The political underpinning of the educational system: This is the main factor that informs the nature of the educational system in Africa; the curricula design and other militating factors are its corollaries. The decision whether to overhaul the educational system, redesign, review or revise the curricula is political (Ezeanya-Esiobu, 2019:2; Wen Su, 2012:154). This is a function of government policies (Lee, Yun, Pyka, Won, Kodama, Schiuma, Park, Jeon, Park, Jung, Yan, Lee & Zhao, 2018:9). The case of Egypt reported by the

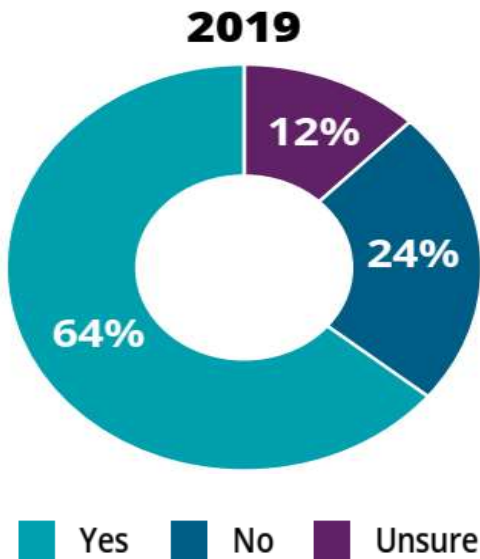
African Development Bank (2020:76) under the caption "A new learning agenda to reform education in Egypt," is a good case in point where the right policies are driving comprehensive reform of the educational system. The leadership of African states sets the framework for education and drives the curricula design. Most of them lack the political will and commitment to initiate and implement radical changes that will bring about comprehensive reforms of the educational system. Furthermore, in Nigeria for instance, Onwughalu (2017:148) notes that the acceptance of unexamined external interventions in the educational sector reinforces the status quo and sustains this challenge.

Education governance and management: The governance and management of education in most African states appear to be the sole responsibility of the education ministry. Strategic synergies seem to exist rarely amongst the ministries of education, science, and technology, commerce, trade and industry, agriculture, youth, and women's affairs, on how to make education functional for the learners and for society. This contributes to the gaps between knowledge acquired and the skills that are needed.

Stakeholders in curricula design: The key stakeholders in the design and development of curriculum in contemporary times should be employers, entrepreneurs, school leavers, and graduates. Up-to-date information on constant changes like the work and skills needed and feedback from them is sine qua non to redesigning the curricula. The Wiley Education Services and Future Workplace's (2019:15) survey shows that employers have started "collaboration with schools to make curriculum more responsive to workforce needs". And this is gaining acceptance as employers who have adopted this approach increased in 2018 and 2019 from 50% to 64% as shown in figure 2 below. However, this process is often dominated by the policymakers, educators, and teachers (Bascia, Carr-Harris, Fine-Meyer & Zorzolo, 2014) who may not possess the knowledge on types of skills that education is expected to impart in the digital age. They may likely resist suggestions from these other stakeholders who will bring changes and transformation into the educational system.

Figure 2: Employers and participation in the design and development of curriculum





Source: Adapted from Wiley Education Services and Future Workplace. (2019). *Closing the skills gap 2019*

Silos relationship: The stand-alone relationship amongst disciplines at the tertiary level that restricts acquisition of knowledge still exists in the digital age. Contemporary courses designed to inculcate requisite skills in the STEM areas are yet to be mainstreamed systematically across all disciplines.

A barrier to bridging the gap in STEM: There exists a barrier to migrate from Humanities and Liberal Arts to STEM courses, especially, at the postgraduate and undergraduate levels. For instance, Onu, Jacob, Onwughalu and Chiamogu, (2013) observe that the framework of the curricula in Nigeria stipulates evidence of certain grade level pass in STEM subjects at the secondary school exit examination as a prerequisite for participation in that area at tertiary level. This is despite the on-the-job experience, exposure, and renewed interest and passion of candidates in the area.

The focus of accreditation and re-accreditation: The evaluation for the establishment of schools and the introduction of subjects or courses and the re-assessment are yet to deviate from the traditional approach. The emphases are not on areas that could constrain the redesign of the curricula like currency and relevance of content, pedagogy, evidence of functional collaboration, and hands-on by the students, etc. rather, issues like the number of paper qualifications possessed by staff appear to occupy pride of place.

V. REFORMING THE EDUCATIONAL SYSTEM IN AFRICA

Some of the ways to address the challenges of education and the curricula are:

Educational consciousness and mustering political will for change: Transforming education is a proactive action as well as a reaction to both the disruptive changes and needs that are defining human and societal development in the digital age.

The first step to remedy the situation is for the leadership of African states to develop the consciousness that its education is dysfunctional. Second, this should propel the leadership to initiate and implement radical policies and programmes that will overhaul the entire educational system. Third, they should be wary of external assistance in the education sector that is counter-productive.

Synergies amongst Ministries, Departments, and Agencies: There should be functional synergies amongst all the ministries, departments, and agencies, directly and indirectly related to facilitating manpower development and capacity building, in the governance and management of education. They should make demand-driven inputs into the process and pull resources together in a well-coordinated manner, to initiate and actualise the needed reforms in the educational system.

Change in status quo: The status quo of employers as receivers of school leavers and graduates must change. Employers and entrepreneurs should be mainstreamed into designing curricula, teaching, and being involved in active participation as partners and collaborators in the training of learners, as well as in sharing knowledge, their facilities, and resources.

Cross-cutting relationship: The curricula design should accommodate strategic courses or subjects targeted at inculcating relevant skills across all disciplines through all levels. For instance, courses designed to impart technical skills should be infused into Humanities and Liberal Arts. On the other hand, those for effective communication should also be infused into STEM courses.

Removal barriers: The existence of artificial barriers to education, like the emphasis on paper qualification, as a prerequisite to participate in learning to acquire relevant skills, should be abolished. Rather, tests or examinations for admission and enrolment, should be structured to assess critical thinking, creativity, innovation, ingenuity, effective communication, etc.

A holistic approach to redesigning the curricula: Evidence in the literature show that discourses on curricula design, review, and revision focus more on tertiary or higher education (Ezeanya-Esiobu, 2019; Jones et al., 2016). The reasons are obvious; Hudzik (2016:24) notes that higher-level skills that drive economic growth, socio-economic and political development "are the product of post-secondary and higher education capacity." However, the basic and secondary levels should receive similar attention, as they form the foundation upon which learners build and improve their knowledge and skills at the tertiary level.

VI. CONCLUSION

The vintage demography of African states is an asset that could exploit its natural resources to redefine the continent's development trajectories. Education is one of the surest ways to unlock the potentials and talents of the learners and the

working population in the region. We have in this paper investigated the nexus amongst the educational system, human and societal development in Africa. We reflected on the understanding of education and curriculum respectively. We also unpacked the design of the curricula with focus on content, bringing to the fore implications for deploying outdated and/or defective curricula in the training of learners. We located the challenges of the educational system in African states within its leadership and concluded by suggesting some of the ways to transform education in the continent in line with the demands of the digital age.

Though, we argued that the immediate cause of dysfunctional education leading to mismatched skills, poverty, unemployment, and underdevelopment of society could be traced to curricula, because of its direct impact on learners. However, the responsibility for this and the entire challenges with education in the continent rest with the state's leadership that has failed to implement comprehensive reform of the educational system. A state like Egypt has demonstrated that it is not impossible. Given the changes and disruptions trailing the digital age, the reform is overdue. The leadership of African states should treat it as an emergency, to facilitate imparting the needed knowledge and skills in learners to harness the continent's resources, and to reverse the trend of poverty, unemployment, and underdevelopment in the region.

Notes

- i. Development as used here means the development of both the curricula and African states
- ii. Learners and students are used interchangeably here and do not exclude pupils where applicable.
- iii. All learners or students do not proceed to the tertiary education level. Those who either stop at primary or secondary school are regarded in the context of this paper as school leavers.
- iv. Certification here means the possession of an educational institution's certificate as evidence for schooling and prima facie eligibility for job applications, without possessing the requisite knowledge.

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