

# Theorising Itinerant Curriculum as the Pathway to Developing 4IR Skills in Nigerian Higher Education

Kehdinga George Fomunyam

Teaching and Learning Development Centre, Mangosuthu University of Technology, South Africa

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**Abstract** There are series of changes and transformations in the higher education domain globally and as a result of various economic and technological advances, there are immense opportunities for the higher education domain to improve activities, change the conduct of events and encourage research. With the changes assuming an evolutionary approach, it has moved from the first industrial revolution to the fourth industrial revolution. In the fourth industrial revolution, individuals will be able to transit between digital domains and offline reality by the apparatus of technologies to influence their lives. The fourth industrial revolution is driven by technologies such as automation, additive manufacturing and the industrial internet. Africa has not made serious achievements in line with the 21st century ideals and it lags behind in several indicators necessary for a digital revolution. An Itinerant curriculum is the future of curriculum studies, and it seeks to deterritorialize the curriculum theory by exploring new ways of thinking and feeling, finding approaches to produce new and different purposes of the mind. Findings from this study revealed that the higher educational curriculum as a result of British colonialism in Africa has contents that are foreign to the ideals of the region, and there is a need to consider local knowledge relevant to the needs and aspiration of Nigeria. The study therefore recommends that effort be intensified on leveraging on the fourth industrial revolution in Nigeria. Knowledge must be decolonized and deterritorialized so as to consider local knowledge critical to addressing the problems of this country in the light of the fourth industrial revolution.

**Keywords** Itinerant Curriculum, Fourth Industrial Revolution, Higher Education, Skills

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## 1. Introduction

Higher education globally has undergone series of changes and transformation that offer opportunities to educational institutions. As a result of various economic and technological changes, there are various opportunities in the higher education sector which seeks to improve activities, change the way things are done, and encourage research. The changes and opportunities brought about by these technological changes have the potency to cause shift in knowledge. These changes were delineated along various epoch, and we are currently at the fourth industrial revolution. The term "fourth industrial revolution" was coined by Klaus Schwab (2015), the founder and executive chairman of the World Economic Forum. Klaus maintained that in the fourth industrial revolution, individuals will be able to transit between offline reality and digital domains by the apparatus of technologies to influence their lives. The fourth industrial revolution is driven by technologies such as industrial internet, additive manufacturing, and automation. Africa has not made serious achievements in line with the 21st century ideals, and it lags behind in several indicators necessary for a digital revolution (World Bank, 2000). Fundamental questions around Nigeria's success in the earlier

revolutions need to be evaluated and questions such as having the right infrastructure need to be asked (Anna Okon, 2019).

As maintained by the United Nations Educational Scientific and Cultural Organization (UNESCO, 1998), higher education is provided by Universities or other institutions established by competent bodies, and is made up of different studies or training for research at the post-secondary level. Given the nature of the fourth industrial revolution, there is a need to build the knowledge economy in Africa. There is therefore the need for more investment in African knowledge base as gap in education is the only constraint to Africa's use of the opportunities that comes with the fourth industrial revolution. In order to have a change to the curriculum to develop fourth industrial revolution skills in Nigerian Higher Education, there is the need for an itinerant curriculum. According to Paraskeva, itinerant curriculum is the future of curriculum studies and it seeks to deterritorialize the curriculum theory by exploring new ways of thinking and feeling and finding approaches to produce new and different purposes of the mind. Paraskeva maintained that the itinerant curriculum seeks to fight against the coloniality of knowledge and prevent epistemicide in a bid to have a culturally relevant, democratically acceptable and socially just curricula.

Consequently, in a bid to develop fourth industrial skills in the Nigerian Higher Education, this study will theorize the need for itinerant curriculum as the pathway.

### **Higher Education Curriculum in Nigeria**

The academic curriculum in Nigeria has been reputed to be older than the country itself and it was passed down by the British colonial masters more than sixty years ago. With the old nature of the curriculum, civilization, development and innovation have left it behind. Coupled with the drive by education regulatory bodies to push for application of the outdated curriculum and content which might not have any impact on development in Nigeria. Britain that colonized Africa has moved on with their curriculum and in the curriculum, there are current and practical contents which have resulted to the production of competent, innovative and creative graduates. In Nigeria, there is an over reliance on paper qualification other than the skills and attitude needed for raising competent graduates. This implies that knowledge passed to graduates might not be able to culminate in development for the country (Edwin Agwu, 2019)

As a result of poor investment in human development and other problems associated with educational reforms in Nigeria, there has been under development in the country. Churning out graduates without the 21<sup>st</sup> century skills have consequences on the economy of the nation. There is therefore the need to develop an educational curriculum that will pragmatically identify how to improve the

Nigerian student and how to prepare them for the future by imbuing in them relevant skills in the 21<sup>st</sup> century. Calls for review to the curriculum has been made by various persons including the Vice President of Nigeria who emphasized the need to review Nigeria's curriculum of higher education to focus more on technology and creativity (BolajiOgundele. 2020)

### **Fourth Industrial Revolution Skills**

With the exponential growth in technology and its attendant impact on businesses and people, there is a shift not only in the type of talent required but the skills and competencies needed in the 21<sup>st</sup> century. With the fourth industrial revolution, there will be technologies such as advanced robotics, autonomous transport system, advanced materials and Nano materials, artificial intelligence and machine learning but also changes in the skills that are important (WEF, 2016). Increase in technology has taken over the knowledge based work. Cognitive skills vital to the educational systems will remain important but Schwab (2015) maintained that behavioral and non-cognitive skills critical for collaboration, innovation and problem solving will be more important.

The fourth industrial revolution skills according to World Economic Forum report (WEF, 2016) are complex problem solving skills, critical thinking and self-awareness, creativity skills, emotional intelligence, service orientation, people management skills, coordinating with others, judgment and decision making, negotiation and cognitive flexibility skills. These skills cover several other skills vital for survival in this new era, and these skills include, confidence and courage skills to challenge the status quo, and to tolerate the ambiguities/uncertainties of the creation process; personal influence skills, purpose based intentional and rotational leadership, clear mutual accountability in a collaborative, often virtual context; creative problem solving, learning from critical disagreement; fact-based and consequence focused feedback, driving engagement, awareness and consideration for diversity, developing high ethical standards and coherence; proactive initiative, system analysis, learning on the go; positive orientation, communication skills, multicultural fluency, calmness, open to learning and resilience; proactive initiative, system analysis, learning on the go skills. With the fast Pace of technological, socio-economic, and demographic disruption, comes various changes to business and industry models. These changes imply that the needed skills required of every employee will undergo changes too

### **Opportunities in the Fourth industrial Revolution for Higher Education**

The fourth industrial revolution has immense benefits

and opportunities for higher education. With the fourth industrial revolution being a fusion of physical, biological and digital technologies, it has profound impacts on educational processes. With emerging areas of genomics, data science, artificial intelligence, robotics and automation, nanomaterials etc. The fourth industrial revolution STEM curriculum will reconsider making changes to the traditional sciences and place a higher value for training in computer science as a form of 4IR literacy. The focus will be on moving from the traditional practice of teaching and intensifying efforts on infusing training in computer science. In the global fronts in biology, there are courses on synthetic biology and molecular design and further advances to studies on terminal diseases relying on data from scientific literature (Martha Cyert, 2017).

With the fourth industrial revolution, the curriculum in higher education is taking new shape. According to Tom Abate (2015), there are new curriculum such as bio-engineering in Stanford and this trains students on life sciences and engineering with competencies in medicine, biology and engineering. There are also various innovations in curriculum brought about by the fourth industrial revolution in chemistry and there are courses in Green Chemistry which is a composite of chemistry, biology and environmental science that allows students to tackle real environmental issues which ranges from synthetic fuels, bioplastics, toxicology and pollution (Liliana Mammino *et al*, 2015). Also, the curriculum in physics has been altered and the fourth industrial revolution has with its opportunities for the discipline. With technologies embedded in the fourth industrial revolution, building original equipment's such as cryptographic gadgets, instruments and other inventions is now possible (Caroline Perry, 2013). The additive manufacturing component in the fourth industrial revolution is of importance to production.

As a result of the fourth industrial revolution, there is a shift and restructuring in the educational patterns of institutions to bring in new programs emerging from interdisciplinary fields and the need to develop the necessary competence needed to encourage teaching and learning. Such new programs include nanotechnology, bio-technology, artificial intelligence etc. With the third industrial revolution being pivotal to the educational processes, the fourth industrial revolution is built on the results of the third industrial revolution. With the future of education being shaped by these revolutions, MIT noted that there is a need to take opportunities from online courses to encourage residential education and give more liberality and modularity to courses (MIT, 2013). Massive open online courses, is a kind of education that ensures stand-alone instruction online to a wide variety of audience (Xing, 2015).

With the fourth industrial revolution, there is consideration for human condition which has been

affected by new technologies and changing economic powers which has effect on people of all socio-economic status and the threats from a world that is at the brink of global connectedness in a manner that encourages intercultural understanding and respect for human rights. With such approach, there is focus on the development of intercultural and interpersonal skills which will be a major milestone in the fourth industrial revolution. With various opportunities for higher education in the fourth industrial revolution, Nigeria must be ready to harness these opportunities. There is a need for an overhaul to the educational process to factor in the need for science, technical, engineering and mathematics skills which are necessary for the jobs of tomorrow. To fully harness these opportunities, there must be an agenda to promote digital education and transformation which has the potential to affect education, entrepreneurship and infrastructure (BOI, 2019)

The opportunities the fourth industrial revolution has for higher education in Nigeria is massive and this can only be made possible by having an itinerant curriculum.

### Conceptualization of Itinerant Curriculum

João M. Paraskeva was notable for his works on curriculum theory and he fought against western epistemological boundaries. His works was spurred by Santos (2008) who maintained that decolonization of science is essential and strengthened by the notion that there is no global social justice without global social cognitive justice and having a mono-cultural view to scientific knowledge must be met with identification of other knowledge's. This is necessary to ensure epistemological diversity and multiplicity in cognition. Knowledge must be broad based, drawing from varieties of epistemological platforms and giving credence to other forms of knowledge especially indigenous knowledge which is beyond the western scope. In a bid to fight epistemicide, he proposed the itinerant curriculum theory.

Santos (2008) in a gathering of scientists from Latin America, Africa and Asia made attempts at showing how another body of knowledge exists apart from the Northern Epistemic knowledge. With the Northern epistemic boundaries, there is now coloniality of knowledge and power. With the colonial epistemic boundaries, our understanding of concepts such as modernity and development is affected. The logic of the monoculture of scientific knowledge must be met with identification and consideration of other bodies of knowledge hence the need for the itinerant curriculum. The concept of itinerant curriculum has been a topic of discourse amongst researchers involved in curriculum development. The itinerant curriculum emphasizes a broad approach to the curriculum and seeks to let go of any deified knowledge within the curriculum field. The itinerant curriculum challenges pejorative judgment in education research.

In the itinerant curriculum, deterritorialization is crucial and this is important to ensure socially acceptable curricula and to discard western dominated forms of knowledge and other knowledges. To shed light on this, as a result of British colonialism in Africa, the curriculum in most institutions of higher education has been dominated by western influences and this was upheld for various reasons by the colonialists. What this portends for Africa as a region is antithetical to the knowledge bank which has consequences on progress and development in the region. With British colonialism, elements of western domination have influenced the curriculum over time and one of the major avenues this is manifested is in the language of delivery of most curricula in Africa. English language has been the major language of delivery in the teaching-learning mix in Africa and this was as a result of British colonialism. The language was used as a tool to create a group of locals that collaborated with the colonizers. English has been tagged a language for success and a force for modernizing the country (Phillipson, 1992), and most countries have placed much emphasis on teaching and learning English as a leeway to modernization and development. According to Wolff (2017), African governments are faced with a dilemma in their need to design and implement adequate post-colonial language policies, “either to go endoglossic policies but then likely to see their formally independent states drown in eternal underdevelopment, or opt for exoglossic policies and risk to lose national identity and cultural authenticity by throwing all African mother tongue-languages overboard and jump for the life buoy of the net available global language of foreign origin-usually the language of the former colonial master”. Infested by Eurocentric thinking, they anticipate two disasters, first is the closing of the Linguistic ‘window to the world’ second is the fear that the official use of what they consider to be essentially inadequate indigenous languages will perpetuate underdevelopment and backwardness. At least 26 African countries list English as one of their official language, Most recently Rwanda, a French speaking country switched to English as an official language, and so are Burundi and Gabon which are also french speaking countries (Plonski et al., 2013), The challenges of English linguistic imperialism are a bane against itinerant curriculum (Phillipson, 1992, 2009).

Also, in an attempt to uphold other knowledges, deterritorialization was necessary. According to Giddens (1990) deterritorialization is a principal feature of globalization, and it encourages the thriving presence of social forms of involvement and contact which is beyond the confines of a specific territory. Africa as a region is characterized by various elements of culture which is marked by differences in language, clothing, dance, etc. With these differences are knowledge peculiar to the region which has been upheld over time and passed from one generation to the other. But as a result of western

domination, elements of these other bodies of knowledge have been neglected and the western knowledge has dominated which the itinerant curriculum theory seeks to fight against.

In the works of Paraskeva, to have an itinerant curriculum, there must be fight against coloniality of knowledge and prevent epistemicide in order to have curricula that is culturally relevant, socially just and democratically acceptable. This will not be achieved until the curriculum goes outside the confines of the western epistemic stronghold. This struggle to go out of the holds of the western epistemic harbor according to Paraskeva is the itinerant curriculum theory. Building on the works of Santos (2008) Paraskeva maintained that an itinerant curriculum theory will fight against fundamental features of abyssal thinking, the unachievable presence of two sides of the divide and challenge the cultural elements that denies and produce an absence of humanity.

Globally, history is replete with tales of how hegemonic forms of knowledge are produced, distributed and consumed. As a result of the rapid spread of the modernization, technological advancement and globalization, there has been increase in the domination of Northern epistemologies. With this in mind, knowledge alien to the western culture are suppressed and ignored which scholars called epistemicide (Bennett, 2007) a situation in which other knowledges are dexterously rendered invisible. Though new knowledge is produced but according to Santos (2004), they are produced as non-existent. In the itinerant curriculum theory, Paraskeva (2011) argued for democratization of knowledge as a way of achieving social justice and cultural relevance in the curriculum.

The itinerant curriculum as studied by Paraskeva attempts to challenge the predominant United States field to come to grips with Eurocentric Anglo Saxon epistemologies and to recognize and respect diversity in epistemological and intellectual culture with much attention on the Global South. Thus to address epistemicide, itinerant curriculum theory is important. The itinerant curriculum seeks to challenge epistemological fascism which is being perpetuated within the curriculum, and controlled in form and content by western modern Eurocentric platforms. Itinerant curriculum is characterized as posited by Paraskeva as one that has the potential for cultural and educational criticism within the curriculum field which must permanently maintain an itinerant position. Curriculum studies in the future must seek to overcome the tensions, twists and controversial tendencies within the curriculum field and be fully committed to itinerant curriculum theory against epistemicides (Paraskeva, 2011).

### **Theorizing Itinerant Curriculum as the Pathway to Developing 4IR Skills in Nigerian Higher Education**

Theorizing itinerant curriculum in this study will be

done using elements from Paraskeva's thesis on curriculum. As opined above, Paraskeva has made his arguments on the need to have an itinerant curriculum and the elements from his discourses on itinerant curriculum will be theorized as the pathway to develop fourth industrial revolution skills in Nigeria.

From his standpoint, it will make the case for de-coloniality of knowledge as an element of itinerant curriculum to serve as a pathway to developing fourth industrial skills in Nigeria. The objectives that established the first indigenous university in Nigeria which is University of Nigeria Nsukka was set in the second half of the 1950s. Time has changed and there is a need to rethink the curriculum which was in time past predicated on the vision of the founding fathers of the system. This objective was functional at that time but with current happenings globally, it has fallen out of line in this present dispensation. Also, as a result of British colonialism in Africa, formal colonial education was used by the British for their own vested interests and control of all colonies was done by Africans who were educated in colonial schools (Ken Post, 1968). Hence, this colonial education has influenced and colored indigenous African thought.

This necessitates the need to decolonize knowledge to serve as a pathway to developing fourth industrial revolution skills in Nigeria. Kofoworola (2003) studied the Nigerian higher education domain and found out that there is high evidence of curriculum inadequacies in the country's engineering education. This might be attributable to foreign models still present in the engineering curriculum in Nigeria. This will in the long run affect the development of fourth industrial revolution skills in Nigeria hence, the need to de-colonize as an element of itinerant curriculum. With de-colonization of education in Nigeria, knowledge indigenous to this clime will be tailored to challenges affecting the country as a whole. To thrive in the fourth industrial era, there is a need to understand how the world operate and this will be made possible by understanding the political and social nature of the surrounding one lives. This is a form of decolonization. The African method of learning such as informal apprenticeship, learning in the job and other informal knowledge systems have been a veritable learning and training opportunities for millions of Africans with little formal, curriculum based qualification (Omolewa, M. 2007. Decolonizing the knowledge base to factor in these considerations will go a long way in developing fourth industrial revolution skills relevant to the region.

To develop fourth industrial revolution skills in Nigeria, epistemicide must be prevented. Preventing epistemicide will ensure that we have culturally relevant, democratic and socially just curricula. In epistemicide, knowledge that are founded on an ideology which is radically different from the dominant form of knowledge will be silenced completely. It is an attempt to kill knowledge

using hegemonic powers. There are some bodies of knowledge that has been upheld over the locally prevailing knowledge in Nigeria. This in the long run results in development of technologies that might not directly address the prevailing challenges in Nigeria which has also stalled development. These bodies of knowledge are called African indigenous knowledge and it has often been marginalized, neglected and suppressed as a result of politics, western supremacy, ignorance and arrogance (Ocholla&Onyancha, 2005). These bodies of knowledge have wide application in many areas such as agriculture, education, environmental conservation etc. If the knowledge can be upheld and considered within the western epistemic boundaries, development of fourth industrial revolution skills will be encouraged. Also, preventing epistemicide will ensure that Nigeria creates her own technology to address the nations peculiar needs in the fourth industrial era. When epistemicide is prevented according to Paraskeva, there will be culturally relevant, democratic and socially just curricula which is critical to the development of fourth industrial revolution skills in Nigeria. To develop fourth industrial revolution skills, consideration must be given to local knowledge in consumer industries such as agriculture, food and beverages, transport and automotive industry, fashion and clothing etc. (Aurik J, 2016)

Borrowing from Deleuze and Guattari's (1988) conception of deterritorialization, he emphasized the need for curriculum to give credence to differences by deterritorializing and looking for new ways to think and feel about education. He went forward to conceptualize deterritorialization as an approach to have a different research platform. Deterritorialization is necessary as one of the arguments under Paraskeva's itinerant curriculum in that it seeks to recognize nuances. Having a uniform approach to the curriculum will minify the contributions others might have about it. According to Lull (1995), deterritorialization is a cultural process where a divide between the social and geographical births a new phase of unplaced human interaction. When differences are understood and considered between Northern epistemology and Southern Epistemology, new ways will be developed to encourage skills relevant for the fourth industrial revolution.

Furthermore, the itinerant curriculum advances the decolonization of methodological frameworks. When the methodological frameworks are decolonized, there will be opportunity to reclaim control over local ways of knowing and being. The colonized methodological framework is characterized by a Western-centric approach to inquiries and it neglects local relevance in knowledge. With decolonization of methodological framework being an element of the itinerant curriculum, advancing it in Nigeria will ensure that value is placed on local approaches to research hence developing the skills necessary in the fourth industrial revolution.

Another element of itinerant curriculum was found in the works of Boaventura de Sousa Santos and contends that his itinerant curriculum theory “challenges modern/postmodern western thinking, which is abyssal thinking in which the knowledge of the other is produced as non-existent. With elements of modern/postmodern concept in the educational curriculum in Nigeria, the country has performed poorly in attempts at leveraging on the immense opportunities the fourth industrial revolution brings. Challenging these modern/postmodern western thinking might encourage the development of fourth industrial revolution skills in Nigeria.

Paraskeva touches briefly on the hegemony of the English language and how it undermines the knowledge’s of those who speak other languages. For this, he stresses the need to initiate conversations of curriculum in languages other than English. De-anglicizing as an element of itinerant curriculum will ensure that knowledge is passed in simple, comprehensible language not alien to the people and this will stimulate and encourage teaching learning process. Hence, the development of fourth industrial revolution skills. In Nigeria, English language is the official language and the conduct of any enterprise depends on communication in English (Oribabor O.A 2014). This is an avenue in which western imperialist tendencies is propagated to the detriment of those from the other divide. With the politics involved in academic text production, it is against Santos (2008) global cognitive justice and the use of English language makes it impossible to achieve global cognitive justice. With communication being a critical skill in the fourth industrial revolution, the hegemony of English language must be broken so as to ensure that knowledge is communicated locally to others in a manner decipherable to all.

## 2. Findings and Discussion

Findings from this study revealed that the higher educational curriculum as a result of British colonialism in Africa has contents that are foreign to the ideals of the region and they are also outdated. In Nigeria, the British started a new system and introduced the British educational policy and system and the philosophy of education was typically British which started with the missionaries in 1842. It was found out that as a result of poor investment in human development and other problems associated with educational reforms in Nigeria, there has been under development in the country. Churning out graduates without the 21<sup>st</sup> century skills have consequences on the economy of the nation

Also, it was found out that Nigeria lags behind in leveraging on the ideals of the fourth industrial revolution and Nigeria need to find opportunities for development in this age or be left behind (Anna Okon, 2019). Concerns

were raised on whether the country has the right infrastructure such as electricity, internet penetration etc. to leverage on the fourth industrial revolution. This is a pointer to the fact that the country might not thrive well as the fourth industrial revolution. There are factors critical for meeting the ideals of the fourth industrial revolution which includes stable electricity, wide internet penetration, development of skills in STEM education. There have not been intensified efforts at ensuring that elements necessary for the success of the fourth industrial revolution in Nigeria are made available.

Findings also revealed that various opportunities exist for higher education in the fourth industrial revolution and Nigeria must be ready to harness these opportunities. In the light of this, there is a need for an overhaul to the educational process to factor in the need for science, technical, engineering and mathematics skills which are necessary for the jobs of tomorrow. Opportunities such as the proliferation of MOOCS (massive online open courses) in the third industrial revolution has been met with the development of hybrid online and in person instruction, global videoconferencing and other educational resources. Also, there are emerging research areas such as biotechnology and genomics which must be leveraged on.

The itinerant curriculum has been a tool to de-emphasise western epistemological imperialism and according to Paraskeva, he opined on various issues that need to be considered to ensure that there is a movement from West to Non-West dimensions in the curricular and to remove and hegemonic separation across the North and South.

## 3. Conclusions and Recommendations

The central theme in this paper is itinerant curriculum as a pathway to develop fourth industrial revolution skills in Nigerian higher education. The fourth industrial revolution are critical thinking, complex problem solving, self-awareness, coordinating with others, creativity, people management, decision making, judgment, emotional intelligence, cognitive flexibility, negotiation, and service orientation. Higher education globally has undergone series of changes and transformation that offer opportunities to educational institutions. As a result of various economic and technological changes, there are various opportunities in the higher education sector which seeks to improve activities, change the way things are done, and encourage research. The changes and opportunities brought about by these technological changes have the potency to cause shift in knowledge. With an evolutionary growth in technologies from the first industrial revolution to the fourth, there has been the development of various technologies which has the capacity to influence the higher education terrain in Nigeria. With the higher education domain being

influenced by British hegemonic tendencies, there is a need for an Itinerant curriculum which seeks to fight against the coloniality of knowledge and prevent epistemicide in a bid to have a culturally relevant, democratically acceptable and socially just curriculum. The study therefore recommends that effort be intensified on leveraging on the fourth industrial revolution in Nigeria so as to enjoy the benefits and opportunities that comes with it and not to be left behind. Also, knowledge must be decolonized to and deterritorialized so as to consider local knowledge critical to addressing the problems of this country in the light of the fourth industrial revolution.

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