

CURRICULUM AND INDIGENOUS EDUCATION FOR TECHNOLOGICAL ADVANCEMENT

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ABSTRACT: *The curricula at various levels must be tuned to lubricate the wheels and make the hub of the Nigerian education system free and flexible enough to accelerate the attainment of the new aspirations of Nigeria towards the realization of Vision 202020 which include technological advancement. Curriculum is the sum total of human endeavours geared towards the realization of the aspiration of the society through the institution of the school. 'Curriculum is also described as 'what happens to students for which the school is responsible', because curriculum happens within the school system, it is therefore imperative to include indigenous knowledge into the school curricula to ensure that local/indigenous technologies are improved upon as to bring about modernization of society. In nowadays knowledge-based society, the local embedded knowledge and innovation are considered as the core-competence of the curriculum of the region. In rural areas, maybe it is not suitable to adopt the high-tech or other industrial cluster development strategy as in urban areas because of the barrier of 'organizational thinness'. However, the rural areas always have their special local resources, especially the intangible asset, such as cultural resources and local knowledge embedded in the long history. Besides absorbing the external knowledge, exploiting the local knowledge will also enrich the knowledge network of the local areas. Moreover, because indigenous knowledge was generated from the local wisdom and culture, it fits to the local situation natively, and also it is very hard for others to imitate.*

KEYWORDS: indigenous education, local skills, local technology, curriculum, Nigeria, Educational gap.

INTRODUCTION

Whether formal or informal, education is capable of catalysing far reaching changes in the society. Because the society is dynamic, education for any given society must also change in order to meet the needs of the dynamic nature of the society. The inability of education to meet the needs as well as promotes the economic self-reliance and sufficiency has resulted into youth joblessness (unemployment) and increasing incidence of social ills among the youths.

Indigenous education specifically focuses on teaching indigenous knowledge, models, methods, and content within formal or non-formal educational systems. The growing recognition and use of indigenous education methods can be a response to the erosion and loss of indigenous knowledge through the processes of colonialism, globalization, and modernity (Grenier, 1998). Indigenous communities are able to 'reclaim and revalue their languages and (traditions), and in so doing, improve the educational success of indigenous students,' thus ensuring their survival as a culture. Increasingly, there has been a global shift toward recognizing and understanding indigenous

models of education as a viable and legitimate form of education. There are many different educational systems throughout the world; some are more predominant and widely accepted. However, members of indigenous communities celebrate diversity in learning and see this global support for teaching traditional forms of knowledge as a success (for example the establishment of the 'Centre for Niger Delta Studies' at the Niger Delta University, Bayelsa State where Izon language is taught and developed to global standard). Indigenous ways of knowing, learning, instructing, teaching, and training have been viewed by many postmodern scholars as important for ensuring that students and teachers, whether indigenous or non-indigenous, are able to benefit from education in a culturally sensitive manner that draws upon, utilizes, promotes, and enhances awareness of indigenous traditions, beyond the standard Western curriculum of reading, writing, and arithmetic.

In the emerging global knowledge economy a country's ability to build and mobilize knowledge capital, is equally essential for sustainable development as the availability of physical and financial capital (World Bank, 1997). The knowledge in the local areas is considered not only as the high quality competitive power for the developed areas, but also as the social capital of the rural poor, their main asset to invest in the struggle for survival, to produce food, to provide for shelter or to achieve control of their own lives. The rural poor's livelihood depends almost entirely on specific skills and knowledge essential for their survival. However, today, many indigenous knowledge systems are at risk of becoming extinct because of rapidly changing natural environments and fast pacing economic, political, and cultural changes on a global scale.

Practices vanish, as they become inappropriate for new challenges or because they adapt too slowly. However, many practices disappear only because of the intrusion of foreign technologies or development concepts that promise short-term gains or solutions to problems without being capable of sustaining them (Buseri, 2010). The tragedy of the impending disappearance of indigenous knowledge is most obvious to those who have developed it and make a living through it. At the same time, indigenous knowledge is not yet fully utilized in the development process. Conventional approaches imply that development processes always require technology transfers from locations that are perceived as more advanced. This has led often to overlooking the potential in local experiences and practices.

What is Indigenous Knowledge?

The increasing attention indigenous knowledge is receiving by academia and the development institutions have not yet led to a unanimous perception of the concept of indigenous knowledge. None of the definitions is essentially contradictory; they overlap in many aspects. Warren (1991) and Flavier Chambers, Pacey and Thrupp (1995) present typical definitions by suggesting that: Indigenous Knowledge (IK) is the local knowledge – knowledge that is unique to a given culture or society. IK contrasts with the international knowledge system generated by universities, research institutions and private firms. It is the basis for local-level decision making in agriculture, health care, food preparation, education, natural-resource management, and a host of other activities in rural communities (Warren 1991). Indigenous Knowledge is the information base for a society, which facilitates communication and decision-making. Indigenous information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with external systems (Flavier *et al.* 1995).

Why is Indigenous Knowledge Important?

The basic component of any country's knowledge system is its indigenous knowledge. It encompasses the skills, experiences and insights of people, applied to maintain or improve their livelihood (Ellen and Harris, 1996). Significant contributions to global knowledge have originated from indigenous people, for instance in medicine and veterinary medicine with their intimate understanding of their environments. Indigenous knowledge is developed and adapted continuously to gradually changing environments and passed down from generation to generation and closely interwoven with people's cultural values. Indigenous knowledge is also the social capital of the poor, their main asset to invest in the struggle for survival, to produce food, to provide for shelter or to achieve control of their own lives.

Indigenous knowledge is part of the lives of the rural poor; their livelihood depends almost entirely on specific skills and knowledge essential for their survival. Accordingly, for the development process, indigenous knowledge is of particular relevance for the following sectors and strategies: agriculture; animal husbandry and ethnic veterinary medicine; use and management of natural resources; primary health care (PHC), preventive medicine and psychosocial care; saving and lending; community development; poverty alleviation.

Indigenous knowledge is relevant on three levels for the development process (Sach, 1992):

- It is, obviously, most important for the local community in which the bearers of such knowledge live and produce;
- Development agents (NGOs, governments, donors, local leaders, and private sector initiatives) need to recognize it, value it and appreciate it in their interaction with the local communities;
- Lastly, indigenous knowledge forms part of the global knowledge. In this context, it has a value and relevance in itself. Indigenous knowledge can be preserved, transferred, or adopted and adapted elsewhere.

The development process interacts with indigenous knowledge. When designing or implementing development programs or projects, three scenarios can be observed:

The development strategy either

1. Relies entirely or substantially on indigenous knowledge,
2. Overrides indigenous knowledge or,
3. Incorporates indigenous knowledge.

Planners and implementers need to decide which path to follow. Rational conclusions are based on determining whether indigenous knowledge would contribute to solve existing problems and achieving the intended objectives. In most cases, a careful amalgamation of indigenous and foreign knowledge would be most promising, leaving the choice, the rate and the degree of adoption and adaptation to the clients. Foreign knowledge does not necessarily mean modern technology, it

includes also indigenous practices developed and applied under similar conditions elsewhere. These techniques are then likely to be adopted faster and applied more successfully. To foster such a transfer a sound understanding of indigenous knowledge is needed.

Benefits of Indigenous Education

For indigenous learners and instructors, the inclusion of these methods into schools often enhances educational effectiveness by providing an education that adheres to an indigenous person's own inherent perspectives, experiences, language, and customs, thereby making it easier for children to transition into the realm of adulthood. For non-indigenous students and teachers, such an education often has the effect of raising awareness of individual and collective traditions surrounding indigenous communities and peoples, thereby promoting greater respect for and appreciation of various cultural realities. In terms of educational content, the inclusion of indigenous knowledge within curricula, instructional materials, and textbooks has largely the same effect on preparing students for the greater world as other educational systems, such as the Western model.

There is value in including indigenous knowledge and education in the public school system (Ejide, 2010). Students of all backgrounds can benefit from being exposed to indigenous education, as it can contribute to reducing racism in the classroom and increase the sense of community in a diverse group of students. There are a number of sensitive issues about what can be taught (and by whom) that require responsible consideration by non-indigenous teachers who appreciate the importance of interjecting indigenous perspectives into standard mainstream schools. Concerns about misappropriation of indigenous ways of knowing without recognizing the plight of indigenous peoples and "giving back" to them are legitimate. Since most educators are non-indigenous, and because indigenous perspectives may offer solutions for current and future social and ecological problems, it is important to refer to indigenous educators and agencies to develop curriculum and teaching strategies while at the same time encouraging activism on behalf of indigenous peoples (Njoku, 1989). One way to bring authentic indigenous experiences into the classroom is to work with community elders. They can help facilitate the incorporation of authentic knowledge and experiences into the classroom. Teachers must not shy away from bringing controversial subjects into the classroom. The history of indigenous people should be delved into and developed fully. There are many age appropriate ways to do this, including the use of children's literature, media, and discussion.

Educational Gap

Some indigenous people view education as an important tool to improve their situation by pursuing economic, social and cultural development; it provides them with individual empowerment and self-determination. Education is also a means for employment; it's a way for socially marginalized people to raise themselves out of poverty. However, some education systems and curricula lack knowledge about indigenous peoples' ways of learning, causing an Educational Gap for indigenous people. Factors for the Education Gap include lower school enrollments, poor school performance, low literacy rates, and higher dropout rates. Some schools teach indigenous children to be 'socialized' and to be a national asset to society by assimilating. Thomas-Slater, Kabutha and Ford, (1991) opined that "Schooling has been explicitly and implicitly a site of rejection of

indigenous knowledge and language, it has been used as a means of assimilating and integrating indigenous peoples into a 'national' society and identity at the cost of their indigenous identity and social practices'. Intercultural learning is an example of how to build a bridge for the educational gap.

African Indigenous Education

Mushi (2009) defines African indigenous education as a process of passing among the tribal members and from one generation to another the inherited knowledge, skills, cultural traditions norms and values of the tribe. In www.eric.ed.gov/..recordDetail African indigenous education is defined as the native, locally developed form of bringing up the youngsters by the older and more experienced members of the society. Being native is by no means to deny the fact that indigenous learning goals, content, structures and methods have not been enriched, or for that matter, polluted or both by outside influences. African indigenous education can generally be defined as the form of learning in Africa traditional societies in which knowledge, skills, and attitudes of the tribe, were passed from elders to children, by means of oral instructions and practical activities. It put emphasis on practical learning and the young adult learned by watching, participating and executing what they learnt. The skills like carving, masonry, clay working, cloth making, building canoe making, cooking, and home management were insisted among the children in the community. These were the skills opened to all, as they consisted of the basic skills, knowledge and attitudes that enabled individuals to live and function effectively in their tribe. It was functional. The knowledge skills and values that were imparted were relevant to the socio-economic activities of an individual. The learners learned the skills that were for immediate and long term activities. Intellectual training occupied a very small place in traditional African education. This means that greater emphasis was placed on the 'concrete' rather than the 'abstract'. It is correct to argue that traditional African societies had their own ways of reasoning, but to some people this kind of reasoning could not enable them to imagine alternatives to decision arrived at, a factor that was partly attributed to the emphasis placed on traditions i.e. beliefs and their threats (Mushi, 2009)

Relevance of African Indigenous Education to Modern Education

African indigenous education is the basis for the foundation of Education for Self-Reliance (ESR) in modern education. During the establishment of ESR in 1967, Nyerere recalled how the traditional education was relevant to the community life-especially learning by doing, and included it in modern education. Learners' participation in learning is highly encouraged by modern educators. Furthermore, it prepared its recipients for life duties in their societies; likewise modern education is no exceptional. It prepares the learners to enter the world of work, and more specifically it changes with time. For example the introduction of information and communication technology course in colleges and universities responds to the current demands of information and communication technology, traditional education also changed in response to societal problems, like how to combat the emerging diseases, wild animals, enemies etc.

African indigenous education has also greatly influenced the need for development of more appropriate problem solving educational curriculum and the promotion of life-long education. Some aspects of African indigenous education have continued to feature in policy and practice of

education. Basically African indigenous education managed to provide education to all members of the community, although it differed from tribe to tribe. With the coming of western education however African indigenous education was seen inadequate to contribute to modern world's demands and the need for new skills. The isolationism of African indigenous education was broken up as societies were now introduced into a larger world of modern knowledge and technology.

The Perception and Application of Indigenous Knowledge in Relation to Technology

Regarding the knowledge in the local areas, there are various terms, such as Traditional Knowledge (TK), Indigenous Knowledge (IK), Traditional Environmental Knowledge (TEK) and Local Knowledge (LK), which generally refer to the matured long-standing traditions and practices of certain regional, indigenous, or local communities. Traditional knowledge encompasses the wisdom, knowledge, and teachings of these communities. It also encompasses the skills, experiences and insights of people, applied to maintain or improve their livelihood which includes local technology. Buseri (2010) stated that the use of the term 'local' to qualify some technology should not in any way devalue the technology which abounds in some developing countries. Rather, it simply suggests that it is that technology whose use, application, existence and indeed, knowledge remains restricted to a particular area, place or locality, and probably still in its very formative stages of evolution or development. Thus, this technology may not be very popular and widespread in terms of its knowledge, use and application by consumers of the technology.

Local technology is thus another term for indigenous technology. This is because of their origin. Momah (1999) describes indigenous technology as that which has evolved from the traditional and cultural milieu of a people. In effect, it is akin to 'appropriate technology' which connotes a given level of contemporary technology in relation to the level of development of the environment. Every locality may have its own technology which is peculiar to it and may develop along their-own characteristic needs – tradition and culture. Though Momah (1999) acknowledged that the efforts of the Nigerian Federal Ministry of Science and Technology are subtly manifesting themselves in the current upsurge in local products, African Fine Arts, African Prints, African Architecture, African wood/metal works, and the recent exhibition of the first Nigeria car; Momah's concept of technology is in agreement with the conceptualization of the very ancient nature of technology and what it actually represents even today.

Challenges of Integrating Indigenous Education into the Curriculum

There are numerous practical challenges to the implementation of indigenous education. Incorporating indigenous knowledge into formal Western education models can prove difficult. However, the discourse surrounding indigenous education and knowledge suggests that integrating indigenous methods into traditional modes of schooling is an 'ongoing process of cultural negotiation'. Indigenous education often takes different forms than a typical Western model. Because children learn through example, traditional education is less formal than the standard Western model. In contrast to structured hours and a classroom setting, learning takes place throughout the day, both in the home and in adults' workplaces. Based on the traditional belief that children are 'fragile, soulless beings,' the traditional education focuses on nurturing children rather than on punishing them, children develop an understanding of cultural values, such as speech taboos and the 'reflection' of individual actions 'on the entire household'. Forms of indigenous

knowledge, including weaving, hunting, carpentry, and the use of medicinal plants, are passed on from adult to child in the workplace, where children assist their relatives or serve as apprentices for several years. However, increasing modernity is a challenge to such modes of instruction. Some types of indigenous knowledge are dying out because of decreased need for them and lack of interest from youth, who increasingly leave the village for jobs in the cities (Buseri, 2010).

CONCLUSION

The start point of our argument is significant contributions to global knowledge have originated from indigenous people, the rational nature and sophistication of rural people's knowledge and believe that knowledge can be blended with or incorporated into formal scientific knowledge systems. If local knowledge and capacities are granted legitimacy within the scientific and development communities, existing research and extension services will pay greater attention to the priorities, needs, and capacities of rural people and, in the end, achieve more effective and lasting results. We argued that indigenous knowledge could contribute to solve existing problems and achieving the intended objectives. Moreover, because indigenous knowledge was generated from the local wisdom and culture, it fits to the local situation natively, and also it is very hard for others to imitate. Therefore, exploring the dominant factors for sharing, spreading, and transformation of indigenous knowledge is a key theme of vital importance to extension practice and theory research.

The promotion of indigenous methods of education and the inclusion of traditional knowledge also enables those in Western and post-colonial societies to re-evaluate the inherent hierarchy of knowledge systems. Indigenous knowledge systems were historically denigrated by Western educators; however, there is a current shift towards recognizing the value of these traditions. The inclusion of aspects of indigenous education requires the acknowledgement of the existence of multiple forms of knowledge rather than one, standard, benchmark system. Many scholars in the field assert that indigenous education and knowledge has a 'transformative power' for indigenous communities that can be used to foster 'empowerment and justice'. The shift to recognizing indigenous models of education as legitimate forms is therefore important in the ongoing effort for indigenous rights, on a global scale.

Technology may be as ancient as one can possibly imagine, it has continued to evolve and improve over time. This is so as man, on the other hand changes his environment profoundly and permanently, partly in an effort to cope with changes in his environment and partly to extend his scope for survival in new and hostile environments. He builds huts, lights fire, wear cloths, and constructs boats, aircrafts and space vehicles. All these then becomes part of man's environment, and themselves act as further agents of change. Teachers are recommended to reflect regularly on their teaching practice to become aware of areas of instruction in need of indigenous perspectives.

A lot of technological breakthroughs in terms of fabrication of metals (automobile spare parts) in the eastern part of Nigeria by young adults who do not have formal educational training attest to the importance of indigenous education. This knowledge can be harness and garnish with modern scientific knowledge for technological advancement.

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