Re-engineering agricultural education for sustainable development in Nigeria

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Re-engineering agricultural education is the re-thinking and radical redesign/ renovation of agricultural education concepts, policies, structures and strategies aimed at achieving dramatic improvements in the performance of agriculture; and reflecting current changes in human and society development. This work reviews the present structure of agricultural education and practice in Nigeria; identifies the needed changes in the understanding of agriculture such as school agricultural science curriculum and delivery, gender disparity in school enrolment and extension work, agricultural policy and infrastructures. Recommendations for a holistic and integrated agriculture policy and policy consistency, planning of the educational process, teacher education, improvement of school enrolment and extension services, utilization of information communication technology and strategic partnership were made for national development.

Keywords: Re-engineering, agricultural education, sustainable development, policy, Nigeria

INTRODUCTION

Re-engineering is the fundamental re-thinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance, such as cost, quality, service, and speed; as a consequence of scientific and technological developments (Hammer, 1990). Re-engineering in education is a process of reforming, redefining, redirecting or even re-modelling of an existing structure to meet the demands of current situation. Consequently, Omeniyi (2010) states that re-engineering in education involves renovation of education concepts, policies, structures and strategies with the view of achieving identifiable objectives.

In Nigeria, re-engineering in education is not new, as the first visible re-engineering of education was in 1847 when the British Privy Council Committee on Education vaguely referred to the need for securing better conditions of life and the development of Africa as a peasant on the land. In 1882, the first government ordinance was promulgated for the colony of Lagos and what education was meant to achieve were spelt out (Fafunwa 1974). However, the 1969 Curriculum Conference remains a cardinal milestone in Nigeria’s educational history, as it not only spelt out the aims of education but pointed out ways of achieving them. The Conference gave birth to the National Policy of Education of 1981, which having been through various revisions metamorphosed in 1982 and 2004. The National Policy of Education (2004) stating the purpose of education were as follows:

1. The inculcation of the right type of values and attitudes for the individual and the Nigerian Society.
2. The inculcation of national consciousness and national unity.
3. The training of the mind in the understanding of the world around and
4. The acquisition of appropriate skills, abilities and competencies both mental and physical as equipment for the individual to live in and contribute to the development of the society.

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Objective 3 and 4 are crucial in national sustainable development as a society inhabited by people who are vocationally equipped and entrepreneurial in orientation remain assets to the nation. This implies the operation of social and quality educational system enriched with competency acquisition and knowledge emphasizing the “Hows” and “Whys”, stimulating intricate values of national stability and achievement based on production. It is expected that this will be achieved through schooling, as education especially the formal type generally gotten through schooling has been accepted to provide quality work force and sound knowledge to drive quality production (Ajaja, 2012) and accepted end products.

Agricultural education is defined as a subject of vocational education which is an occupational related training aimed at exposing, inculcating and developing knowledge, practical skill, competencies and attitudes. It provides the right type of skills, and knowledge that will make individuals function effectively in any profession or job chosen, and in agricultural related job or career (Ogundipe, 2009; Suleiman, 2011). Agricultural education as an integral part of vocational education can generally be described as education for vocation. Re-engineering agricultural education can be described as the re-thinking and radical redesign/renovation of agricultural education concepts, policies, structures and strategies aimed at achieving dramatic improvements in performance of agriculture; and reflecting current changes in technology, environment, globalization, economic deregulation, and consumer empowerment. The driving force is usually the end product of education - what education is expected to do for the individual and the society at large.

A look at Vietnam’s GDP and exports shows that agriculture provides about a quarter and employs two third of the labour force. It has an estimated 2.8 million hectares of potential agricultural land (Wikipedia, 2014). This when compared with Nigeria’s almost 80 million hectares of potential agricultural land, Vietnam becomes almost inconsequential. However, Vietnam’s labour force is skillful and has a high level of qualitative agricultural education when compared with Nigeria, as the country boasts of research centres and institutes in each of the eight zones that carry out studies on agricultural production systems in these zones to identify their constraints and to find solutions in order to reach the objectives of the country’s agricultural system, which are: to increase productivity; to raise incomes and to create employment. The need for reengineering agricultural education in Nigeria is premised on the inability of the current agricultural education to meet the strategic objective of inculcating skills, abilities and competencies in its recipients in order to bring about the much desired agricultural revolution for sustainable national development. Adedayo (2010) stated that the status of agricultural education in Nigeria is grossly undermined and ineffective as a lot of vocational agricultural students are unable to accomplish simple practical farming activities given the required facilities. Hence, there is a mismatch between the products of agricultural education and the world of work. Therefore, there is need for radical departure from the status quo as a consequence of scientific and technological developments; and for policy makers in education to demand for an education which will prepare the young school leavers and adults for self-employment and agricultural related occupations for production to meet the demands of current situation, and national development.

THE NEEDED CHANGES.

1. Understanding of Agriculture: Agriculture is a composite of many areas of learning and practice which have occupied people over time, especially crop cultivation and to some extent animal husbandry. Agriculture is an omnibus word in which many occupations or areas of specialization are encapsulated and need training. These include apiculture, floriculture, pomology, snail farming, and seed multiplication. These areas need skill and competence which their effective application would meet the projected self-sufficiency and sustainability in food production. Therefore, the social misconception that farming is occupation for those who did not go to school should be eradicated especially among those aged people who currently constitute 70% of the small scale farmers.

2. Agricultural Policy: Agricultural policy can be defined as a document of action plan designed to achieve a sustainable agricultural production to meet a projected target. Generally, the target embodies an array of intended objectives; instruments and strategies for achieving the set objectives. At present, there is the absence of a well – defined policy in operation; as agricultural programmes initiated are dependent on the government in power with the assistance of foreign funds and are usually elitist. Also, agricultural policies (programmes) are left in the hands of Ministry of Agriculture, a practice that needs to be discouraged.

3. School Agricultural Science Curriculum and Delivery: For every educational programme or enterprise, there is a package commonly referred to as curriculum usually offered to learners under the guidance of the school. Agriculture as a composite discipline should form the core of the curriculum in both primary and secondary schools. Bergonann (2002) observed that there have been complaints that education was too academic and not preparing the children for life. The curriculum should be vocation oriented to reflect skill and knowledge acquisition for production. The curriculum contents should be in line with the needs of the society and the world of work – industries reflecting or anchored on National agricultural policy.
4. Agricultural Infrastructure: Agricultural infrastructure are grossly deficient in schools. The land available to schools even Universities of Agriculture is a limiting factor to modern agriculture practice. Modern agriculture requires the use of machines developed as a result of science and technology. Well-equipped laboratories are lacking in schools and where they exist are grossly deficient in equipment. Simple farm tools are also not available, as students rely on local tools brought from homes for their school practice. There is need therefore to provide simple modern agriculture science tools.

5. Gender Disparity in School enrolment in Science and Extension work in Agriculture: Available statistics shows a wide disparity in the enrolment of girls and boys in science related courses. Although government policy insists on equal opportunities for all, women enrolments in science and technology education in secondary and tertiary institutions have not been encouraging. As cultural, religion and traditional domestic roles have been given as reasons for this phenomenon (Egun and Tibi, 2010). This low participation has affected the number of girls entering into agriculture.

6. Effective Marketing of Agriculture and its Process: Agricultural practices are retarded by many factors amongst which are inadequate delivery of agricultural education to field practitioners. This is a marketing function. As marketing a management process through which goods and services move from concept and commons to communicating the value of a product or service to consumers (Adcook et al, 2001; Chekitan and Schultz, 2005; Kotler and Keller, 2012). Essentially it involves selection of a distribution channel to reach the consumers place, development and implementation of promotional strategy (Kotler and Keller, 2009). All these are lacking in Nigerian Agricultural Practices.

RECOMMENDATIONS

The Food and Agricultural Organization (FAO) defined sustainable development as the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. The basis of effective and sustainable agriculture, which is an important component of the global biological system, is the maintenance of the biological equilibrium as demonstrated in a simplified input-output-system (Corwin et. al. 1999). It involves the ability to see relationship between needed factors of production; the combination of which will lead to the achievement of desired goals in agriculture for self-sufficiency in food production, food security and provision of raw materials for agro-allied industries in Nigeria. On the premise, the following recommendations are made:

1. Agriculture Policy and Policy Consistency: The needed policy in agriculture should be an integrated type involving the rural populace, those in school, especially as some of them are expected to take to farming after leaving school; practising farmers and business men and women in the industrial sector who will be involved in adding value to agro-products through agro-based industries. The needed policy should create the conducive macro-environments to stimulate greater private sector investment in agriculture and have a secured funding mechanism (Trust Fund), as many agricultural venture have long period of gestation during which there is need for continuous funding. Recognizes the roles and potentials of small-scale farmers as the major producers of food in the country, and ensures that donor and developing-country investments and policies support sustainable smallholder farmer productivity. It is also imperative that we develop strategies that would ensure policy stability on agriculture, as the fear of policy reversal discourages private investors and limits their chances of raising credit. Therefore a measure of certainty and stability (Patlitzianas et al., 2008) needs to be injected into the agricultural policy environment if we must attract the right kind of investments into the sector.

2. Planning the Education Process: As education policies change, the processes of achieving stated goals or objectives of education changes (Olulube, 2009). It involves laying out a logical structure and how these activities will be carried out, made effective and serves as a guide in administering the resources of time, money and personnel in the educational sector. Tied to the above, is the student-teacher ratio. The Nigerian secondary school classrooms are overcrowded with an average pupil/ teacher ratio of 40.2 (Huebler, 2008). This does not permit effective teaching for a course like agriculture in the secondary school where the foundation for the choice of occupation is properly laid. Consequently, supervised projects in agriculture and food works are not effectively carried out as a result of teacher burn-out. There is need therefore to employ more teachers to reduce the slide ratio especially in the vocational courses such as agriculture.

3. School Enrolment and Extension Services: Findings in science and technology bring about new ways of doing things, which applied to agriculture by greater majority of people will increase food production. The role that women play and their position in meeting the challenges of agricultural production and development are quite dominant and prominent (Rahman, 2008); as women make up some 60 - 80 percent of agricultural labour force in Nigeria (World Bank, 2003). Yet, in spite of these, widespread
4. Assumption that men – and not women— make the key farm management decisions has prevailed. Sadly, female farmers in the country are among the voiceless, especially with respect to influencing agricultural policies. Such policies, which are aimed at increasing food security and food production, tend to either underestimate and totally ignore women’s role in both production and the general decision-making process within the household (Ogunlela and Mukhtar, 2009). There is need to increase the enrolment of females in the study of science and technology through exemption from school fees and provision of other incentives that will increase their number in science related courses. Also, the extension services which would have been the fastest means of marketing agriculture are poorly managed by government institutions and are male gender dominated. Therefore increasing the number of female extension workers will increase interaction and confidence building in the adoption of innovation in Agriculture. As discussion among people of some sex are usually more detailed and relenting as more mutual understanding is usually exhibited and anchored on confidence (Maliki, 1991; Maigida, 1992).

5. Teacher Education: Teacher quality is of high importance in the education sector. Ajaja (2012) posited that quality education is hinged on some indices which include teacher quality and quantity. Tanner and Tanner(1980) observed that the success and usefulness of a curriculum not to a very high degree on the teachers in the educational system. A truism that a teacher can only offer what he has holds. Many teachers in Nigerian schools are not qualified and those certificated fall below the minimum standard (Egbule, 2012). This makes for school ineffectiveness, which according to Ololube (2009) in the production of undesired result or outcome. The curriculum for Teacher education need to be re-evaluated to be in line with modern trend of economic developments in Agriculture; least teachers continue to perpetuate obsolete offerings; as knowledge and society are dynamic, changing to the dictates of time. Curriculum review is not new in Nigeria. Also, teacher educational institutions should equip the pre-service teachers and in-service teachers with needed competencies and skills relevant to various areas of specialization in Agriculture.

6. Information Communication Technology (ICT): The digital revolution has created an information age. Information and Communication Technology (ICT) holds the key to every issue of human development including agriculture. For example, smart power systems, precision agriculture tools, farm management software, affordable sensors and clean technology advances from ambient energy, to waste-to-energy, to renewable sources (Chel, 2011). When deployed effectively will achieve efficient farm management and resource efficiency, product differentiation, food safety, product quality and supply chain efficiency. Therefore, there is urgent need to increase/ improve rural infrastructure in communication technology to enhance the marketing of agricultural innovations and its adaptations

7. Strategic Partnerships and Market Systems: For agriculture to be the driving engine of Nigeria’s economic development, there is need to increase the penetrative capacity of our agricultural products in the international market by enhancing our value-addition capabilities. There is need for increased partnerships with the international community, multilateral institutions, private foundations, and others for the growth of the agricultural sector. Promote Private Public Partnerships (PPPs) to encourage long-term investment in agriculture infrastructure. Create a forum of large agribusinesses to leverage existing networks and create financing opportunities in emerging markets, in order to scale up financing for agricultural small and medium enterprises (SMEs). Strengthening farmer organizations through capacity building for managerial skills and improved corporate governance.

CONCLUSION

As re-engineering education has changed in the past to adjust to the needs of society, the evolution must continue and change is needed to address the needs of the 21st century. Re-engineering agricultural education for sustainable development is achievable. This demands a radical change in both curriculum content and delivery; employing modern methods in teaching which seek to develop in the individual appreciation and love for work through knowledge and skill acquisition based on attitudinal change and business orientation. Change in attitude towards farming and competence in agricultural acts can only emanate in the societal young recruit, through school effectiveness resulting from the tutelage of competent instructors, use of adequate instructional materials procured on good funding.

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