

Pedagogical Approaches in Agricultural Science and the Nigerian Teachers' Education Reforms: Prospects and Challenges

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Abstract

The Nigerian educational reform act of 2007 provides information on wide ranging reforms for the country's education sector. Great changes are occurring in the global world, and the Nigerian agricultural educational system must respond to these changes or become obsolete and irrelevant. There is evidence in Nigeria which over the year has shown that government investment in education has not achieved the desired results, goals and objectives. The failure of the educational sector has increased the incidence of poverty and deprivation of the vulnerable groups. While the conceptual ideas and provisions are laudable, the issue of implementation becomes a matter of concern. This necessitated the paper, pedagogical approaches in agricultural science and teacher education reforms: prospects and challenges. The paper explores the basic concepts of reform, educational reforms, pedagogical approach, agricultural science and teacher education. The paper also examined; teacher-centered, learner-centered, and learning-centered pedagogy as pedagogies and its form making learning by doing as a focal point. The paper concludes on the need to systematically use different ways of teaching, different pedagogical approaches, in agricultural science education as a reform in Nigerian education system.

Keywords: Reforms, Educational Reforms, Pedagogical Approach, Agricultural Science and Teacher Education.

Introduction

A common lexicon in the Nigerian education system has, of recent, been the issue of educational reforms. As regards its conception, goals and strategies for implementation, it has attracted the attention of all stakeholders. The colonial system of education inherited from the British pattern of education was structured along with their values and beliefs. It was oblivious of the educational yearning and aspirations of Nigeria. Education is a service provided in all countries of the world with many objectives in mind. These objectives include the skills required for a more rapid growth of the economy and the provision of basic knowledge to the citizens. Knowledge has become the most important factor for economic development in the 21st century. Through its capacity to augment productivity, it increasingly constitutes the foundation of a country's competitive advantage, (Olayiwola, 2012). It is apposite from the onset to compartmentalize the major concepts which are essential in the understanding and treatment of reforms within the Nigerian education

system. Such terms which need clarifications include: reform, educational reform, pedagogical approach, agricultural science and teacher education.

Statement of the Problem

Education is a critical priority for Nigeria, as it is for any nation serious about growth and development. Unfortunately, in the past ten years, we have not seen any focus on or dramatic improvement in education due to pedagogy. Nigeria best efforts at addressing education have put us steps behind its peer nations in all key development indicators. Nigeria inadvertently signal to the world that she does not care about the future. Education is a fundamental human right that should be available to all citizens, regardless of socio-economic status or background. This paper tends to look at problems of Nigerian education reforms and the way out.

Objectives of the Study

The broad aim and objectives of the study is to look at the concept of reform, educational reform, pedagogy, agricultural science and teacher education and their applications to Nigerian context, while the specific objectives are as follows;

1. Forms of pedagogy
2. Different pedagogical approaches
3. Some challenges of education reforms
4. Some prospects of education reforms

Methodology

Literatures from various authors were used for the purpose of the study as review materials.

Concept of Reform, Educational Reform, Pedagogy, Agricultural Science and Teacher Education

Reform

The term reform is etymologically derived from the Latin root reform are which means "to shape". It is a verb that refers to improvement by alteration, a correction of error or removal of defects (Yahoo Education, 2007). Conceptual clarification. The New Webster's Dictionary of the English Language, (2000) defines reform as to improve by removing faults and weaknesses or by strengthening good qualities; to put an end to (an evil, abuse etc,) to correct; to persuade a person to change his ways for the better, Man's journey on earth has witnessed three remarkable periods in his socio-economic revolution (the agrarian, the industrial and the information age). All these milestones are in an effort to align himself with and respond appropriately to the needs and demands of the times as they exert pressure on his various institutions-religious, political, economic and educational (Riegle, 2007). It therefore follows as noted by Enemuo & Onwuka, (2007) that reform is implemented, when man through actions congruous with the demands of the changed and changing circumstances of life, aligns himself accordingly, he alters his situation and

environment for the better, witnessing himself enabled to attain his goals faster with enhanced efficiency and at a reduced cost. At this point in the continuum of time, both man and his environment are bound to witness thereby some form of reform and reconstruction. The reform is aimed at making changes or modification or establish some innovation. Hence, there could be social reform, military reform, religious reform, agricultural reform and educational reform which in any case may be either trivial, structural or fundamental. In all, it is the candid position of this paper that reform is necessitated when prevailing policies or practices are considered out of tone with the demands of the present and foreseeable future. That could entail partial amendment, major changes or total reorganization of the entire system in a bid to make the system more relevant.

Educational Reform

According to Wikipedia, the free encyclopedia is the name given to the goal of changing public education. Historically, reforms have taken different forms because the motivations of reformers have differed. However, since the 1980s, education reform has been focused on changing the existing system from one focused on inputs to one focused on outputs (i.e., student achievement). Similarly, Young and Levin, (1999) defined educational reforms as program of educational change that are government directed and initiated based on an overtly political analysis (that is, one driven by the political apparatus of government rather than by educators or bureaucrats), and justified on the basis of the need for a very substantial break from current practice.

National Policy on Education, (2004) places a high premium on the development of human values through education. For example, it lists the following as desired ends for educational activities in the country; respect for the worth and dignity of the individual; faith in man's ability to make rational decisions, moral and spiritual values in interpersonal and human relations, shared responsibility for the common good of society, respect for the dignity of labour and promotion of the emotional, physical and psychological health of all children. To attain these values the NPE recommends that Nigerian education be geared towards self-realization, better human relationship, individual and national efficiency, effective citizenship, national consciousness, national unity as well as social, cultural economic, political, scientific and technological progress. (NPE 2004).

Western education in Nigeria transferred activities hitherto carried out at home to the school. This has its implication as observed by Bergonann, (2002) that there have been complaints that education was too academic and not preparing the children for life. Consequently, there has been need for policy makers in education to demand for an education which will prepare the young and adult leaving school for self-employment in agriculture and related occupations.

Pedagogy

Is the discipline that deals with the theory and practice of teaching. Pedagogy informs teaching strategies, teacher actions, and teacher judgments and decisions by taking into

consideration theories of learning, understandings of students and their needs, the backgrounds and interests of individual students. Pedagogy includes how the teacher interacts with students, the social and intellectual environment the teacher seeks to establish. Spanning a broad range of practice, its aims range from furthering liberal education (the general development of human potential) to the narrower specifics of vocational education (the imparting and acquisition of specific skills).

Effective Planning and Implementation of Appropriate Pedagogy

Learning is dependent on the pedagogical approaches that teachers use in the classroom. A variety of pedagogical approaches are common in schools, but some strategies are more effective and appropriate than others. The effectiveness of pedagogy often depends on the particular subject matter to be taught, on understanding the diverse needs of different learners, and on adapting to the on-the-ground conditions in the classroom and the surrounding context. In general, the best teachers believe in the capacity of their students to learn, and carefully utilize a range of pedagogical approaches to ensure this learning occurs.

Forms of Pedagogy

Pedagogy refers to the “interactions between teachers, students, and the learning environment and the learning tasks. This broad term includes how teachers and students relate together as well as the instructional approaches implemented in the classroom. Pedagogical approaches are often placed on a spectrum from teacher-centered to learner-centered pedagogy, though these two approaches may seem contradictory, they can often complement each other in the realization of educational goals for example, a teacher-centered approach may be useful to introduce a new theme, while a learner-centered approach may be necessary to allow students to explore these ideas and develop a deeper understanding.

- i. **Teacher-Centered Pedagogy:** Teacher-centered pedagogy position the teacher at the centre of the learning process and typically relies on methods such as whole-class lecture, rote memorization, and chorus answers (i.e., call-and-response). This approach is often criticized, especially when students complete only lower-order tasks and are afraid of the teacher. However, whole-class teaching can be effective when teachers frequently ask students to explain and elaborate key ideas, rather than merely lecture. (Petrie, 2009).
- ii. **Learner-Centered Pedagogy:** This pedagogical approach has many associated terms (e.g., constructivist, student-centered, participatory, active, learning by doing), but generally draws on learning theories suggesting learners should play an active role in the learning process. Students therefore use prior knowledge and new experiences to create knowledge. The teacher facilitates this process, but also creates and structures the conditions for learning. Considerable research and advocacy has promoted learner-centered pedagogy in recent years for economic, cognitive, and

agricultural reasons. Some research suggests this approach can be very effective but it is also difficult to measure consistently. It is often challenging for teachers to shift from teacher-centered pedagogy to learner-centered pedagogy, and so considerable support may be needed if this is an important goal for a given education system. (Kuttu *et al.* 2019).

- iii. Learning-Centered Pedagogy: "Learning-centered pedagogy" is a relatively new term that acknowledges both learner-centered and teacher-centered pedagogy can be effective, but teachers must consider the local context, including the number of students in the class, the physical environment, the availability of teaching and learning materials, etc. It suggests that teachers should be flexible and carefully adapt their pedagogical approaches based upon the school environment. (Petrie. 2009).

Pedagogy and the Education System

National examinations, curriculum standards, and other education system policies influence teacher pedagogy. For example, national examination that primarily test discrete factual knowledge, rather than comprehension or analysis, discourage teachers from using pedagogy that develops higher-order critical thinking skills. For this reason, if education planners wish to change pedagogical practice, it is not sufficient to simply issue new pedagogical guidelines, they will also have to explore ways to align other policies and practices throughout the system. (Kincheloe, 2008).

Different Pedagogical Approaches

Every teacher develops his or her own way of teaching, he or she uses a personal pedagogy. This is often defined as the way teachers teach their pupils. According to the literature, there are different kinds of pedagogies;

- i. Learning by doing
- ii. Learning by listening
- iii. Discovery learning
- iv. Learning through discussion and debate
- v. Blended learning

Learning by Doing

This is the focal point of this paper. Aristotle's wisdom that "the things we have to learn before we do them, we learn by doing them", while being common sense, is often ignored in the realm of conventional education. Ironically, "learn by doing" is an instinctive activity, as can be seen by the role play games by children that help them understand complex systems and dynamic processes in real life. (Petrie, 2009). . A phrase associated with John Dewey and the representatives of "progressive education," whose trends dominated American schools in the early 1900's. According to a pragmatic and progressive perspective, there was an effort to bring the school into the real world making it capable of delivering

the information and values necessary in those changing times. (Dewey, 1916). To understand and store information effectively it is best to operate practically, manipulate, simulate, use the entire body, but on one condition, that the experience is accompanied by thought, by reflection. Thus, the key to effective learning by doing is learning by thinking! Reflect on experience, revise, integrate; make new experience, reflect, revise and integrate again- a continuous cycle of experience and reflection. Learning by doing is a kind of a 'hands-on experience', so it's a very practical form of learning. This kind of learning is often adopted in science studies where students gain their knowledge in laboratories fields and farms. They practice their skills and test their knowledge in a very practical setting. With the use of the Web, the practical settings are also offered in online-learning environments. The students can do the simulations in the online environment and write their knowledge, questions and critique and can get feedback from a lot of people. But practicing things on a screen isn't practical enough. The 'learning by doing' pedagogy is the most effective in a traditional setting where students can create their own things. (Kuttu, *et al* 2019). The writing and critiquing part, is of course very effective in an online-learning setting because a lot of students and experts have access to give and get feedback.

Learning by doing refers to a theory of education expounded by American philosopher John Dewey. He theorized that learning should be relevant and practical, not just passive and theoretical. He implemented this idea by setting up the University of Chicago Laboratory School. His views have been important in establishing practices of progressive education.

"I believe that the school must represent present life, life as real and vital to the child as that which he carries on in the home, in the neighborhood, or on the playground". *John Dewey (My Pedagogic Creed)*

John Dewey's influence on Philippine education started to get sharply visible when it became independent. Student governments and student councils became extended widely as a mode of school discipline. In 1957, as a breakaway group from the Student Council Association of the Philippines (SCAP), the National Union of Students of the Philippines (NUSP) was established. It is a nationwide alliance of student governments committed to the advancement of students' democratic rights and welfare. John Dewey pointed out how important the presence and engagement of student voice are to the educational process. In his book *Democracy and Education*, he talked about the necessity of engaging student experience and perspectives in the curriculum of schools. He stated that the essence of the demand for freedom is the need of conditions which will "enable an individual to make his own special contribution to a group interest" as well as to "partake of its activities in such ways that social guidance shall be a matter of his own mental attitude, and not a mere authoritative dictation of his acts" (Dewey, 1916). This eminent thinker of the Progressive movement was the dominant figure in American education. His most valuable and enduring contribution to our culture came from the ideas and methods he fathered in this field.

Dewey won a greater international following for his educational reforms than for his instrumentalist philosophy. Between the two World Wars, where previously backward countries were obliged to catch up quickly with the most modern methods, as in Turkey, Japan, China, the Soviet Union and Latin America, the re-shapers of the educational system turned toward Dewey's innovations for guidance.

Agricultural Science

Is the act and science of cultivating crops and rearing of animals for human consumption. (Alumode, 2010). Agriculture is the bedrock of economic development because it contributes meaningfully to the growth of the Nation's economy. The development of this sector of the economy cannot be achieved without an efficient agricultural education system. This could be realized if efforts are geared towards reforming the current state of agricultural Education in Nigeria. (Osageide, 2010).

Importance of Agriculture

For food, raw materials, for exports, employment, pets, recreation, security, research.

Teacher Education

Teacher education according to Abdul-Kareem, (2001) refers to professional education of teachers towards attainment of attitudes, skills and knowledge considered desirable so as to make them efficient and effective in their work, in accordance with the need of a given society at any point in time. It includes training and or education occurring before commencement of service (pre-service) and during service (in-service or on-the-job). Every society requires adequate human and material resources to improve its social organization, preserve the culture, enhance economic development and reform the political structures. Education is often seen as a prerequisite for quality manpower development and creation of wealth, a sure path to success in life and service to humanity. Thus, teachers have important role to play to adequately prepare the young for their roles in the society in order to achieve the set national objectives.

Education is an inevitable tool for sustainable development and a vehicle for advancing the frontier of knowledge (Abdul-Kareem, 2001). In this regard, education is severally conceived and inculcated by people of varying backgrounds, ages, needs and aspirations for sustainable development. The potency of education is more evident in its globalization trends imbued with instrumental values of nurturing productive citizens for sustainable development. Teachers' influence is always felt in every aspect of the society. The effectiveness of any educational system depends greatly on the educational attainment of teachers because no system of education can be qualitatively higher than the quality and commitment of its teachers.

The fact remains that teaching and learning depend on teachers for there can be no meaningful socio-economic political and economical development in any country without teachers. It is on teachers' numbers, quality and devotion that rest the effectiveness of all

educational arrangements, development and growth. Even the educational planners may have the best educational policies and designs, the government may vote the largest sum of its revenue to education, but the ultimate realization of any set of aims for education depends on the teacher. It is the teacher who will ultimately be responsible for translating policy into action and principles into practice in their interactions with their students.

According to Ukeje, 1988 in Wanekezi, Okoli and Mezieobi, 2011), pointed out that education unlocks the door to modernization and sustainable development but that, it is the teacher that holds the key to the door. Thus, the teacher has the responsibility of translating educational policies into practice and programs into action. It is clear from the foregoing that the role of the teacher in sustainable development cannot be quantified, especially in training personnel in various areas of the workforce. (Wanekezi, Okoli & Mezieobi, 2011). For national development and peaceful co-existence to be attained, there is need to give priority to investment in human capital through teacher education and training. The Nigerian educational system needs to be responsive to the technological social and economic needs of the society and provide the type of human resources needed in the industrial and economic sector. Herein comes the role of effective teacher education program to translate the needed skills, knowledge and attitudes to meet their needs and the societal ones.

This can be influence by the availability of adequate training and retraining program for those about to teach and those already teaching respectively. Hence, the efficiency of teacher training should be the main determining factor in the success or failure of education to meet the country's needs. The training is the policies and procedures designed to equip prospective teachers with the knowledge, attitudes and skills they require to perform their tasks effectively in the classroom, school and wider community. Education is the most powerful instrument for social and economic progress. It is the greatest power get known to man for his\her own improvements. Teachers are the heart and soul of the educational enterprises; indeed, the life of the school system depends on them.

Demanded in the call is a change in pedagogy. Teachers of the new dispensation should highlight the values embedded in each subject of study. They should teach for comparison -while exposing students to the current social realities that are contributory to our present malaise also highlight the transformed aspect and the attendant benefits to the individual and the society at large.

A coherent teacher education program should systematically embrace integrated curriculum innovations which reflect the social, economic and political environment of a modern society to solve societal problems. Oyekan, 2006), says the purpose of teacher education is to produce well-qualified professional teachers that can adjust to the changing needs of the students and developmental prospects of the modern society.

Some Challenges of Education Reforms

Previous educational reforms and implementation in spite the promises of the education reforms, the salient question is, "can the reform be implemented successfully?" Previous

educational reforms had been implemented half heartedly or abandoned at its inception. A few examples will suffice. Although the implementation of the 6-3-3-4 system of education commenced in the early 80's most institutions could not effectively implement the introductory technology aspect, due to lack of manpower, equipment, and lack of leadership. In fact, the then Minister of Education, after his assumption of office, announced that some of the reforms introduced will be reversed, the Minister announced that the Federal Government had suspended the series of reforms initiated in the education sector during the Obasanjo administration (Nzeshi, 2007).

A study by Owolabi and Jegede (2003), revealed the wide gap between the policy and its implementation. Several reasons adduced for the lack of success in the implementation of past reforms include:

- i. Inconsistency in government policy and lack of political will to effect lasting solutions to educational problems.
- ii. Lack of required personnel resulting from lack of training back up when policies are designed,
- iii. Inadequate funding, top down approach to the development of educational reforms
- iv. Lack of proper monitoring, over emphasis on paper qualification instead of placing such on productive marketable skills, and so on (Adamu, 2007).

Some Prospects of Education Reforms

The issues of teacher preparation, supply, status enhancement, motivation and retention as well as continuous training and retraining are at the heart of education reform at all levels. The overarching goal of human capacity development for the efficient and effective delivery of the Universal Basic Education (UBE), Education for All (EFA), and related Millennium Development Goals (MDGs) is that by 2020 Nigeria would have human resources base to manage and implement the UBE scheme (National Action Plan (NAP 2006). Thus, through strategic actions that include the following, the objectives may be realizable:

- i. Continued expansion of teacher training opportunities;
- ii. Continuous program of enhanced status and professionalism for teachers through training and retraining, reviews of current remuneration packages, and enhanced career opportunities;
- iii. Programs designed to address the capacity needs of schools and educational management;
- iv. Building the capacity of the inspectorate services to improve quality
- v. Engaging civil society partners in the roles of quality assurance, monitoring, evaluation and impact assessment work at all levels.
- vi. Systematically put into place teacher quality mechanism: Systematic certification for teachers and accreditation for teacher education providers have to be put into place. Educational authorities can establish professional standards, independently to what is taught in the teacher education program. This is also a way to influence on these

programs, and make their outcome closer to what the educational system needs, in terms of skills and competences.

- vii. Increase the coherence between the education received by teachers and what actually happens in the classrooms: The role of practical field-experience in teacher education has to be reevaluated: to include practicum during initial teacher education allows to familiarize aspirant teachers to classrooms, to prevent "reality-shocks" at the beginning of their teaching career, to link pedagogical theory with practical problems and to construct a sound professional identity. (NAP 2006).

Conclusion

Reforming education is not an easy task, it has to take care of all the relevant parameters such as; national needs, wider consultations, commitment, reliable statistical data, practicability, sustainability and quest for development that would make the reform desirable and useful to the society. Process of education reforms must march modern scientific and technological innovations for it to remain relevant to the learner and the nation. It also takes years for any meaningful educational reform to yield fruits. Nigeria must learn to plan its education and implement it with commitment and sense of direction for the greater good of all its citizens.

Recommendations

- i. Government should set up an independent committee made up of experts in the education sector, to study various reforms in the education since independence and come up with a strategy that will enable the nation move forward.
- ii. Government should accord every education segment its rightful place; in the sense every segment in the education sector should have codified objectives that are subject to periodical evaluations.
- iii. Government should establish secondary education commission as a watchdog to secondary education in the country. The essence is to give secondary education the deserved priority that aims at making our youth arm with sellable skills and knowledge to continue with their studies.
- iv. Policy haste in education never gives desired result. It would be better if policies are made in such a way that changes can be accommodated without disturbing the overall system in operation.
- v. Nigeria education should aspire for manpower training. Mass benefit approach to education has been heavily politicized and it is on its way out, and cost benefit approach is too sophisticated for the country.

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