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CONSTRAINTS TO EFFECTIVE IMPLEMENTATION OF SECONDARY SCIENCE CURRICULUM IN NIGERIA

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ABSTRACT

The significance of science and technology for sustainable national development has created a very serious awareness on the need for science education. Numerous science curricula have been developed to help achieve the objectives of science education which depend on effective implementation of the science curriculum. This paper therefore discusses the various constraints to effective implementation of the curriculum which include voluminous content of curriculum, poor remuneration among others. Elimination of less relevant topics, giving good motivational incentives were recommended as some of the possible way out.

Introduction

The world curriculum was derived from a Latin word meaning "a running course". It has been defined in various ways by different scholars. According to Wasagu (2001), curriculum is the total learning experiences acquired by students both within and outside the classroom. Mohammed (2007) viewed curriculum as the experience a school system provides for its students. Thus, curriculum can be seen as all the experiences/activities provided under the auspices of school to bring about a change in the learner in the desired direction. Science curriculum therefore can be viewed as all the experiences in science provided by the school for the achievement of goals of science education in the learner. It is pertinent therefore to note that science and technology is today ruling the world.

It is to this extent that Eze (2003) argued that almost all aspect of man's life on earth is directly or indirectly influenced by science and technology. Man therefore needs to be scientifically literate to a reasonable extent to exist comfortably well in his environment. This informs the need for the inclusion of acquisition of scientific literacy in the goals of science education in the country among others. Other goals of science education include the development of independent learning skills and application of science to solving societal problems. It is only through a well designed and implemented science curriculum that these goals can be realized successfully. Adeyegbe (2004) submitted that curriculum generally is the hub of the activities in any educational endeavors since it dictates what is to be taught, at what level, by whom, with what equipments and for what purposes and of course assessed by what means. This implies that science curriculum does not only dictate but also directs/guides every other process of implementing the programme of activities.

It has been observed with great dismay that science curriculum is poorly implemented in Nigeria secondary schools (Akpan 1996, Ali 1998, Ogunleye 2007, Ibe & Nwosu 2003, Wasagu 2004). Ibe & Nwosu (2003) argued that studies showed that the teaching of science in Nigeria secondary schools fall short of the expected standard. Ali (1998) argued that students do not achieve as much as they ought to in science, this is simply because of the problems related to the teaching – learning processes of science. These facts and even more confirm the observation that there is poor implementation of science curriculum in our secondary schools.

Efficient and effective science curriculum implementation at all level should be taken very serious if the country is to make any head way towards growth and development in science and technology. On this basic facts, five major issues militating against effective implementation of the science curriculum should be addressed properly so as to help achieve the goals of science education for sustainable national development.

Constraints to Effective Implementation of Science Curriculum

1. **Poor preparation of Science Teachers:** It is generally believed that no educational system can ever rise above the quality of its teachers. Therefore, science teachers preparation is a very critical issue as far as science curriculum implementation is concerned. Teachers are saddle with enormous responsibilities which must be backed by adequate preparation and continuous professional development as curriculum developers and implementers if sustainable national development must be achieved (matazu 2009).

Okeke (1999) observed that many science teachers are poorly trained in either science content or methodology or even both and this adversely affects the implementation of curriculum. Ugwu (2004) & Osuafor (1999) worked on the problems and extent of implementation of instructional methods recommended from research results in science education respectively and found out that most of the innovative instructional methods are not frequently used by most teachers in their teaching work.

Thus Adedibu & Olayiwola, (2007) delineated some of the weakness of science teachers as a result of poor preparation to include among others;

- Lack of practical skills as a result of inadequate exposure to teaching practice.
- Poor classroom control and management.
- Inability to communicate effectively in English language.
- Lack of professionalism.
- Lack of in depth subject and entrepreneurial skills.
- Poor attitude to work.
- Poor I.C.T. skills.

The above weaknesses adversely affect the implementation of the science curriculum and invariably the achievements of the goals of science education. Dike & Ndokwu, (2007) argued that the five objectives stipulated in section 9 of the national policy of Education (1981) as the philosophy of teacher education in Nigeria include:

- To produce highly motivated, conscientious and efficient classroom teachers for all levels of educational system.
- To encourage further the spirit of enquiry and creativity in teachers.
- To help teachers fit into the social life of the community and the society as large and to enhance further their commitment to national objectives.
- To enhance teachers' commitment to profession.
- To provide teachers with intellectual and professional background adequate for their assignment and to make them adaptive to any changing situations not only in the life of the country, but in the world wide.

Now (Dike & Ndokwu, 2007) submitted that these policies are laudable but lack implementation as there is little or no attempt to monitor periodically and evaluate the extent to which these philosophical blue prints are being implemented. To this end Wasagu (2009) strongly argued that in the list of science Education Teachers programme for the preparation of prospective science teachers in existence, there is no fusion between the content knowledge and the pedagogical knowledge. Thus poor science teachers preparation if not properly handle will certainly continue to affect

science curriculum implementation which will inturn affect sustainable national development.

2. **Voluminous content of the Curriculum**: According to (Adeyegbe 1993; Akpan 1996; & Adeyegbe 2004), science curriculum is over loaded with contents much of which is not only of little relevance to the general education for which secondary school is meant, but cannot be covered within the time limit. From the researcher's interaction with some science teachers on the extent of coverage of senior Secondary Science Curriculum, it was gathered that very few science teachers covered 2/3 of their curriculum. This is a clear indication that it is going to be difficult to make teachers cover senior secondary school curriculum if an extra effort is not made. Any efforts toward covering the curriculum, always stresses both the teachers and the students and also jeopardize other school programmes.

   Ugwu (2008), argued that a lot of problems always accompany voluminous curriculum contents ranging from the teachers not being detailed in preparation of their lessons, to not creating time for practical work, over loading the students with too many concepts at a time, leaving some topics untreated, use of improper instructional technique and even poor evaluation of the extent of achievement of the objectives of the lesson.

   Then, if the objectives of science education is to be achieved, it is necessary that curriculum planners off load the curriculum.

3. **Inadequate materials/Equipments for science teaching:** According to (Ugwu 2008), Equipments and materials whether standard or improvised, are the backbone of experimental work in science. Science is experimental in nature and so it is best learnt by doing. Experimentation in science is solely dependent on the availability of science equipments/materials for its understanding, development and application. Ogunleye (2007), argued that the provision of these science equipments/materials is grossly inadequate in schools, and these adversely affect the implementation of science curriculum. According (Bolorunduro 1997; Ugwu 2004; & Matazu 2009), lack of inadequate laboratory facilities is a common feature in most of the secondary schools today. It is however, expected that in the absence of laboratory equipments/ materials for teaching science, that improvised local materials should be an alternative, but this is not forth – coming either.

One of the goal of education spelt out in the national policy of education is "the acquisition of appropriate skills and the development of mental, physical and social abilities and contributing to the development of society". This goal may be difficult to realize in a school system where equipments/materials for doing science is inadequate.

4. **Poor Remuneration/motivation of Teachers:** Remuneration/motivation of teachers is generally inevitable for the effective implementation of science curriculum. According to Ngwu (2008), motivation of teachers entails caring for their welfare. This involves profesionalization of teaching and placing them as par with their counterparts in other professions, introducing teachers salary structure and paying them well, paying of science teachers allowances, encouraging them to attend workshops, conferences and seminars on regular basis to update their knowledge on the new development in their different areas of specialization and even evaluating them on regular bases to ensure quality in their work. These points are rarely achieve in Nigerian educational system and it is adversely affecting the teaching profession and the implementation of science curriculum and even other curricula.

Ugwu (2005) argued that science teachers are not well cared for; they have been relegated to the background in the remunerative ladder. Gyuse and Ada (2005), submitted that science teachers remuneration is not commensurate with their job. They argued that if we are to keep science teachers happy on the job and improve their professionalism, there must be a way of encouraging them through adequate supply of teaching materials and equipments, good bonuses as incentives for hard work and opportunity for continued professional development.

This is essentially what education reform is all about. Sustaining the interest of professional science teachers entails gardening jealously the attractive conditions that lured them into the profession (Gyuse & Ada 2005). This accordingly includes commensurable remuneration among other factors. It can be deduced therefore from the above fact, no matter how well planned and designed a science curriculum might be, or how well qualified or knowledgeable the teachers might be, without being well taken care of by the government, implementation of the curriculum will always suffer.

5. **Poor attitude of policy – makers:** The government in power, administrators, ministry of education officials etc are the core policy-makers in science

curriculum development. The science curriculum implementation faces a lot of hindrances when the policy makers are not in support despite the benefits that could come from such curriculum. Many educational administrators and top officials of the ministry are sometimes reluctant to welcome change. They are often suspicious of any techniques of innovation for fear that such could declare them redundant. They are also afraid of failure (Ozuzu, 2000). The attitude of these people in a way militate against any curriculum development and implementation. This will further affect meaningful sustainable national development.

Conclusion

Conclusively, this paper has discussed the concept of curriculum, sustainable national development, and there was a critical look into the constraints militating against effective implementation of science curriculum. Our desire to join the rest of the world in the growth and development of science and technology for meaningful sustainable national development is in shambles if serious efforts are not made to offer realistic solutions to these problems/issues, i.e. large curriculum content, poor remuneration as well as poor teacher preparation. Proper funding, curriculum reforms, and positive attitudes to education by government officials were highlighted as some of the way forward for meaningful implementation of science curriculum which will further brings about meaningful sustainable national development.

Recommendation

Based on these critical issues considered on the implementation of science curriculum and also considering the significance of curriculum implementation on every educational process for sustainable national development, the following were recommended.

a. Science curriculum planners and developers should work towards a reduction in science curriculum to help alleviate the problems of overloaded curriculum. This can be achieve by co-opting the classroom teachers in selection of less relevant topics to be eliminated and the kind of emphasis needed on the selected ones.

b. Since the funding of education seems to be too much on government alone, there is need for a committee of science teachers for improvisation of science manipulative materials. This should consist of science teachers, some curriculum planners/developers who should be trained on what can be improvised and how to do it on different subject areas. These people will then

take the job of organizing workshops and seminars for the training of the classroom teachers. Conversely, government should equally try and improve on the funding of science education. It is also pertinent to computerized the teaching and learning of sciences if sustainable national development should be attained.

c. Teachers in general and science teachers in particular should be well prepared for the job ahead of them by receiving sound training from different teacher education programmes, workshops, conferences and seminars to improve on the job. Also there is need for re-appraisal of programmes of teacher education across different levels to help look into their programmes for the quality of teachers needed.

d. Government officials, administrators, ministry of education officials should develop positive attitude toward education and science education in particular if sustainable national development should be realized since more often the yard stick used to classify the world into either developed, developing or underdeveloped nations is the country's advancement in science and technology.

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