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**Issues and Challenges of Science Education Curriculum in Nigerian Primary  
and Secondary Schools: The Way Forward.**

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**DR. R.G DAJAL**

**PHONE NUMBER 08065901975**

**EMAIL:bobydajal@gmail.com**

**and**

**MOHAMMED, Adamu Umar**

**PHONE NUMBER 08057523736**

**EMAIL:umarlamesco@gmail.com**

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**DEPARTMENT OF SCIENCE AND ENVIRONMENTAL EDUCATION  
FACULTY OF EDUCATION, UNIVERSITY OF ABUJA, ABUJA**

## ABSTRACT

*The strength of any society depends to a large extent on its curriculum. The strength of Nigeria depends squarely on school science curriculum, knowing that science and technology education are tools for sustainable national development. Various science curricular have been designed to help achieve the objectives of science education in Nigeria. The delivery of this curriculum towards the set scientific goals is challenged by many factors. This paper therefore examined curriculum issues in science education in primary and secondary schools, such as the need to teach and learn science through new technologies. Challenges such as inadequate funding, lack of infrastructures, equipment and materials, inability of teachers to effect the desired innovation, amongst others are discussed and suggestions are given in order to improve the science curriculum delivery in Nigerian primary and secondary schools as well as implementation of the innovations.*

**key words:** Science, Curriculum, Issues and Challenges.

### Introduction

Science education is a veritable instrument for national development. According to Okon – Enoh, (2008) science is a way of seeking information (process) and also an accumulated knowledge resulting from research (products). Okoro (2013) sees science as systematic investigations of nature with a view to understudy and harnessing them to serve human needs.

Science education is the field concerned with sharing scientific knowledge and methods with people not traditionally considered part of the scientific community. Science education has introduced a lot of changes in our world today and it will continue to do so in the future (Orukotan, 2007). Achievement in science education will go a long way in reducing illiteracy and poverty which are impediments for national development.

Science education curriculum can therefore be viewed as all the experience in science provided by the school for the achievement of goals of science education in the learning. Adeyegbe (2004) stated that curriculum generally is the hub of the activities in any educational endeavors, since it dictate what is to be taught, at what level, by whom, with what equipment and for what purpose and assessed by what means. This then implies that science curriculum does not only dictate but also direct/guides every other process of implementing the programme of

activities (Ugwu, 2008). Modernization in science education curriculum is inevitable in order to meet man needs.

Science education curriculum needs to be changed in both methodology and content of the subject matter. Such change influences the essence and the method of performance of the learning activities. The change must be monitored and assessed to ensure that it is achieving the goals specified and that the effect of the change meets the expectation of both the designers and users (Udo, 2005).

### **Issues and Challenges Facing Science Education Curriculum in Primary and Secondary Schools**

Good science education is important for every learner because it benefits society by helping students develop into more responsible citizens who would help to build a strong economy, contribute to a healthier environment and bring about a brighter future for the society. The issue of standards for students learning is therefore crucial because all students deserve to receive quality science education. Poor performance of students in national and school examinations provides alarming evidence that most of our students are not being prepared for a world that is shaped by science and technology,(Namasaka,2015). Studies indicate that to learn science effectively, students must compare their own ideas about how things work with experiments and from reading about and discussing their ideas with their peers and their teachers. But that is not what happens in the classroom (Mohammed, 2007). According to Namasaka (2015), a good science education curriculum encourages students to ask questions, make observations, collect evidence, and develop explanations. It builds on previous knowledge and skills. Therefore, current issues in science education include standards, overloaded content, assessment, teacher quality and teaching approaches.

There are a lot of challenges facing science education curriculum in primary and secondary schools making it difficult for good quality education that will empower the learners and bring about sustainable development to the citizens. Government and other stakeholders have been making efforts to improve science education in Nigeria such as restructuring of science curriculum content, regular teacher education programme for serving teachers, incentive to school teachers by government, improve evaluation technique and strategies and review of infrastructure in schools to create better opportunity for science teaching and learning. Despite these efforts, challenges facing science teaching and learning in terms of innovation still persist for teachers, students and educational bodies.

First, is the need to teach and learn science in the senior secondary school, through new technologies brought about by recent innovation. Recent technologies challenge the traditional teacher-centered teacher and learning. These technologies provide instant access for students to materials prevailing supplied by the teacher, it enhances the role of the teacher as manager of the learning process rather than the source of content. These techniques include the use of computers, simulation instruction, Computer Assisted Instruction (CAI), Computer Based Learner (CBI), and E - learning. Nigeria enhanced a policy on computer education in an attempt to keep pace with technological development worldwide. The plan was to establish pilot schools and diffuse the innovation thereafter first to all secondary schools and later to primary schools. However, the plan could not go beyond distribution and installation of computers in schools. Hence the chalkboard and textbooks continue to dominate classroom activities in primary secondary schools in Nigeria. This is a major challenge.

The second challenge in the curriculum is the lack of emphasis on active learning technique. Active learning as the name suggests is a process whereby learners are actively

engaged in the learning process rather than passively absorbing lectures. Hence, the usual problem solving approach like fieldwork, guided discovery, project, laboratory works, programmed instruction, etc. need to be sustained to enable students acquire 'hand-on' and 'minds on' skills. Active learning generates and sustains motivation and a student who is so motivated learns more easily (Abba and Ubandoma, 2008). Students have a sense of achievement as active learning encourages creativity and reduces conformity.

The third is the challenge of inadequate funding. Most often, science curriculum changes face a lot of problems, because of inadequate funds to recruit qualified teachers, train and retrain the teachers, recruit capable technicians and supportive staff, build laboratories for practical to cope with the innovation. Ereh (2005) identified lack of funding as a major factor that militates against science curriculum changes and implementation. Where there is inadequate fund, the anticipated change will suffer a serious setback because it will be difficult to implement an innovation effectively and efficiently (Ughamadu, 2006).

Fourth challenge is lack of infrastructure, equipment and material. Science is activity-based and students-centered and cannot be taught effectively without equipment and infrastructures. Also an innovation may not be fully effectively and efficiently implemented in the absence of these facilities and this will impede achievement of anticipated results. This challenge has given room or provided excuses for teachers who now neglect the practical aspect which is weightier and has greater potential for developing critical thinking and objective reasoning ability in the students (Nwagbo, 2006). Instead, they resort to expository method of teaching which is known for promoting rote learning and thus hindering transfer of learning.

There is also the challenge of most teachers, administrators, ministry of education officials being too conservative to effect change. They are often time suspicious of any new technique or innovation thus militating against any curriculum change.

Ignorance of the importance of curriculum change or innovation is also a major challenge. The society is dynamic and ever changing yet, some people are very ignorant of the need for curriculum innovation; in addition, they are also ignorant that advancement in science and technology usually call for extensive curriculum reconstruction so that the school does not expose the learner to irrelevant knowledge and skills.

Finally, lack of appropriate channels of communication necessary for dissemination of information about the revised curriculum is bound to disrupt the implementation of such a new curriculum. Infact, information about any curriculum innovation that is not properly and adequately disseminated to all the people concerned with the implementation will suffer some set back.

## **Conclusion**

Science is an indispensable tool for societal challenges, human and national development. Issues concerning the teaching-learning of science must be taken very seriously. Curriculum issues especially on innovation cannot be relegated to the background if the purpose of science education is to be actualized. Both prospective and in- service teachers, school administrators, ministry of education officials and other curriculum implementers should be well grounded and updated respectively on issues of curriculum innovations.

## **Ways of Improving the Science Education Curriculum**

Based on the foregoing the following are suggestions on how to improve the science education curriculum:

- i. Government should increase fund for the education sector particularly in science education program, because in adequate fund affect the provision of essentials such as well-equipped laboratories, relevant text books among others.
- ii. Stakeholders should connect internet in the schools within our educational levels to enable teachers and students access information in conformity with the rapid demand of globalization which necessitated innovations.
- iii. Stakeholders should employ qualified science teachers that have a lot to offer in terms of practical and theoretical aspect of teaching and not half baked teachers
- iv. Provisions of the necessary infrastructures and facilities that will encourage teaching and learning science education.
- v. It has become necessary for the government to send science teachers for training and seminars to ensure effective teaching of science subjects.
- vi. The appropriate bodies such as Nigerian Education and Research Development Council (NERDC) should monitor teachers and students in order to leave up to their expectations and be alive with their responsibilities as supervision of instructions will reduce laxity among science teachers and their students.
- vii. Government and other stakeholders should send science teachers for training and seminars to ensure effective teaching of science education programme.

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