**Funding Tertiary Science Education in a Depressed Economy: Challenges and Prospect in Nigeria**

**By**

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**Abstract**

*This study highlighted the challenges and prospects of funding tertiary science education in a depressed economy in Nigeria. The study noted that science education in Nigeria and its funding problem in particular is attributed to poor handling of laboratory practical material, corrupt leadership, and limited funding allocation, inconsistency of administrators, lack of accountability transparency and instability of policy strategy, inadequate qualified personnel and lack of awareness about the importance of science. The study recommended among others that, government should provide a ways to monitor school administrators on the disbursement of fund for effective delivery, school management should prepare budget and devise a means that will help them in managing the funds made available by the government and percentage of revenue generated by Federal Inland Revenue allocated to TETFund should be increased to address major challenges encountered by Nigerian universities.*

*Keywords: Funding, Science Education, Depressed Economy.*

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**Introduction**

Science educationist must be able to lead the educational transformation of the education systems in Nigeria to address the challenges of meeting SDGs 4 and 10 on quality education and reduce inequality, as well as the Africa Agenda 2063: the Africa We Want. We are committed to leading this determination by identifying the challenges and prospect of tertiary science education in Nigeria specifically in a depressed economy. Nationally, educational quality seems impossible but surmountable through changes in curriculum and policy development in other to train the 21st century students. This is in line with new Core Curriculum Minimum Academic Standards (CCMAS) (NUC, 2023). It is imperative for Nigerian universities to continue to strive to update their educational programmes in line with global best practices.

Science education can be defined as the study of physics, chemistry, biology and Mathematics with teaching method in order to impart scientific knowledge to individuals or community. It is a field of specialization concerning with two basic aims, which are the production of scientifically interactive society and technological manpower. Science education in the area of academic and industrial activity is the backbone of industrialization and development of any nation. The science related disciplines that will enable the learner to have true knowledge of science and to be able to use it in solving problem are Physics, Chemistry, Biology and Mathematics. Science education are school subject that play an important role in life, they are important because they are the basic subject for the development of many study fields such as mechanical engineering, electronics, nuclear sciences, medicine and surgery, medical laboratory sciences, pharmacy and digital information system. Science education presents various problems, from the simplest to the complex ones, as well as from the macro to the micro ones. Science education contributes to the technological infrastructure and provides trained personnel needed to take advantage of scientific advances and discoveries (Saifullahi, 2021). It plays a major role in the area of health, economic development, energy and environment. It generates fundamental knowledge needed for future technological advances that will continue to drive the economic engine of the world.

Years back, core science subjects were stand-alone but overtime, science educators saw the need to create an identity known as STEM because in the real sense of it, neither of these subjects can work independently to serve the course of global advancement and one out of the number of reasons for this identity is well put by Martín‐Páez, Aguilera, Perales‐Palacios & Vílchez‐González (2019). Science which is another terminology for curiosity has placed the science educator on a pedestal where the society constantly anticipates a lot from him as the need arises. According to Stroupe, Moon and Michael (2019), documents like the Next Generation Scientific Standards (NGSS) and the framework for K-12 scientific education continue to push us with new expectations for teaching and learning in this era of standards-based reform (National Research Council, 2012). It therefore becomes highly crucial to support scientific educators, teacher educators, instructors and learners as they navigate challenging new changes. This statement highlights two important points: society’s expectation for science education and the support needed. One of such support is the funding for science education as it is obvious that the wheels of science education is immobile without adequate funding.

When emphasis is placed on the funding of science education, it is imperative to bring to the fore front yet again, the importance and undeniable role played by science education. It has been said time and time again and it can never be over emphasized that science is the bedrock of global development and the answer to man’s societal needs and one of the most recent opportunity to justify this claim is the covid-19 pandemic. Dillon and Avraamidou (2020) viewed that the Covid-19 epidemic brought forth unprecedented challenges for science education in particular, as well as for education more broadly because in ways unimaginable, just a year ago science and scientists found themselves in the public eye as both possible saviors and as unreliable dummies and despite that, science instructors and science education are invisible. Again, so much is expected from science educators and much as there could be diverse reasons for the invisibility of the said educators, funding is no doubt one key factor.

Science Education in Nigerian university has been poorly funded and this has created the problem of inadequate standards and lack of understanding of scientific concept. Therefore, more attention needs to be given to the teaching of science subjects, especially at the university level in Nigeria. Presently, research findings revealed that students’ performance in the subjects have been very low in both internal and external examinations in Nigeria due to poor funding to procure laboratory equipment (WAEC, 2021; Gambari et al, 2013). To overcome this challenge, there is a need for a paradigm shift from traditional methods of teaching which requires large number of practical equipment to innovative teaching strategies using modern technological devices that allow student to learn and perform practical activities vicariously. Fortunately, technology has increasingly grown and infiltrated our classrooms, especially in developed countries; new learning models that are technologically based like the e-Learning and virtual laboratory emerged that move away from the teacher-centered approach to a more collaborative, student-centered learning environment which require less funding.

Media and telecommunication technology brought advancement in teaching and learning that cannot be over-emphasized. The rapid development in computer accompanied by ease of use, flexibility, storage effectiveness, suitability, reliability, versatility and interactive nature of the technology as an instructional medium for individualized instruction, have attracted educators more than any other medium ever developed as instructional delivery mode. Computers are becoming more prevalent in education, students’ familiarity with the technology has enabled the development of virtual reality tools. In science and engineering education, virtual laboratories have emerged as alternative or supplementary tools of the hands-on laboratory education, for instance, using them for preparing for the real laboratory task (Mahmoud & Zoltan, 2009). Virtual laboratory is an interactive environment without real laboratory tools meant for creating and conducting simulated experiments. It provides students with tools and materials set on computer in order to perform experiments saved on CDs or on website and it has been proven to improve students’ performance in science based subjects globally (Babateen, 2011). For instance, Mahmoud and Zoltan (2009) found that virtual laboratory instruction improves students’ academic achievements in science-based subjects.

Students need adequate access to new technologies which increase flexibility of teach. This entails provision of adequate computers and/or network access, consideration of the varied needs of different groups of learners. There is improvement in student’s accessibility to learning technologies in Nigeria because most schools are now well equipped with adequate and functional computers which according to Farida and Ezra (2005) are the basic requirement for facilitating access to computer-based learning activities. Computers have increasingly become both exercise books and textbooks for students and this makes learning through technology easier. Barbour and Reeves (2009) were of the opinion that for virtual laboratory to meet the educational needs, it must provide a high level of flexibility in order to ensure freedom from constraints of time and place which hinder access.

**Challenges of Funding Tertiary Science Education in Nigeria**

There has been a lot of debate about cost of tertiary education in Nigeria especially on who should bear the cost. Many individuals and corporate bodies in Nigeria have the opinion that university education should be financed by the government while the government on the other hand, complain of scarce resources. The way and manner the available funds are utilized is also an issue of concern in Nigerian universities. It is no longer news that the economic recession in the country has greatly affected government’s monetary support for universities. It is however worrisome that the available funds in universities are not judiciously used for the purpose for which it is meant for. One of the Federal universities in South-West Nigeria was shut down for over two months in 2016 and the members of staff in the University alleged the management of mismanagement of funds which was meant to pay backlog of certain allowances (Omobola & Success, 2019). Ogboka, Alegbe, and Bukuromo,  (2021) reported that political interference and instability in Nigerian tertiary education system has brought about number of challenges in its funding, such as inaccurate statistical data, high population explosion, indiscipline, corrupt leadership and diversion of funds. Tertiary science education as part of the education is also facing so many challenges such as inadequate funding, corruption, inadequate infrastructural facilities, shortage of academic staff, Strike actions, brain drain, poor research, weak administrators and insecurity (Okolo & Gregory, 2021; Niyi & Maryam, 2022)

#### In term of budgetary allocation, Nigeria in six years budgeted N3.6 trillion out of N55.3 trillion for education (Adesina, 2022). This hampered the entire educational systems of the country, especially science education which currently requires serious attention. The under allocation to education sector in the country brought about teaching and learning of science education in an unfavorable condition. There is a need to increase budgetary allocation to education and a paradigm shift in the mode of instruction from more physical classes to E-learning just to attain the goals of teaching and learning science education in Nigeria (Sidi, Badar & Shuaibu, 2022). The major challenges of funding tertiary education in Nigeria are highlighted below:

1. Poor handling of laboratory practical material,
2. corrupt leadership,
3. limited funding allocation
4. inconsistency of administrators,
5. Lack of accountability and instability of policy strategy.
6. Inadequate qualified personnel
7. Lack of awareness about the importance of science education in Nigeria.

**Prospects of Funding Science Education in Nigeria**

Despite the challenges on the funding science education in Nigeria, here are some of the prospects of funding science education in Nigeria. These includes:

1. There should be an encouragement of positive innovations in the area of science education to embrace 21st century technology.
2. Universities should embrace the used of E-Learning learning environment in the teaching and learning science.
3. Laboratory practical should be conducted using virtual laboratory instructional package as it reduces the number of physical classes that require the use of plethora of laboratory material and different personnel.
4. Government should initiate way to improve the quality of education through funding for curriculum development, lecturers training and provision of adequate laboratory gadgets.
5. Cooperate and non-governmental organization should contribute to the development of science education in Nigerian university through grants and scholarships.
6. There should be a public awareness that could address global challenges which may result into increased funding.

**Conclusion**

It was concluded that science education in Nigeria and its funding problem in particular is attributed to poor handling of laboratory practical material, corrupt leadership, and limited funding allocation, inconsistency of administrators, lack of accountability and instability of policy strategy, inadequate qualified personnel and lack of awareness about the importance of science to the society.

**Recommendations**

1. The government should provide a ways to monitor school administrators on the disbursement of fund for effective delivery.
2. School management should prepare budget and devise a means that will help them in managing the funds made available by the government.
3. Regular contributions from non-governmental organizations and individual should be provided to support the development of science education in Nigeria either in cash or by building classrooms, lecture rooms and by supplying equipment.
4. Assistance should also come from international bodies such as the World Bank and UNESCO.
5. Percentage revenue generated by Federal Inland Revenue allocated o TETFund should be increased to address major challenges encountered by Nigerian universities.

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