
PREPARING PHYSICS TEACHERS FOR THE CHALLENGES OF VISION 2020: THE WAY FORWARD

By

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Abstract

Nigeria is yearning to be among the top 20 largest economies in the world by the year 2020. To achieve this objective, Nigeria needs to have skilled manpower in the field of science and technology particularly in physics. With skilled manpower in physics, Nigeria would have engineers, doctors, pharmacists, agriculturists, technicians, competence and technology teachers that could help in the realization of vision 2020. It is through well prepared science and technology teachers (physics) that Nigeria could have skilled manpower that can transform the economy into a vibrant economy that could compete favourably with any economy in the world. In the light of these, the paper focused on the concept of physics and vision 2020, the relevance of physics to the attainment of vision 2020 in Nigeria, the need for preparing physics teachers for the challenges of vision 2020, challenges and the way forward. The paper recommended among others that there should be efficient training and retraining of science and technology teachers (physics) through effective teacher education programme and human capacity development if the country wants to be among the top 20 largest economies in the world by the year 2020.

Human capacity development particularly in physics education is needed for the scientific and technological development of any nation. Nigeria now requires competent and well skilled manpower in her quest to become one of the top 20 largest economies in the world. Physics has major roles to play in the scientific and technological development of Nigeria. This is because with sound and functional physics education on ground; Nigeria would have skilled manpower in the fields of engineering, medicine, agriculture and science education which the country needs for the attainment of vision 2020. In order for Nigeria to achieve the laudable objectives of vision 2020, a functional science and technology physics education in particular must

be in place (Usman, 2010). Functional physics education would produce advanced knowledge on the basis for which Nigerian would be transformed into a truly human society that satisfies adequately, the material, moral, social and cultural needs of her people.

The concern of educators and all an sundry in Nigeria today is how to improve the quality of our education system. The quality of Nigerian education can only be improved through quality teachers. Quality teachers, on the other hand, could be obtained through improved teachers' preparation program. Improving teachers' preparation programme is a worldwide concern (Oduolowu, 2009). She further argued that modern societies now embark on strong and sturdy teachers'' preparation. In this case, Nigeria needs to develop human resources in physics education by way of improving her teacher education and preparation programme. Teacher education and preparation are important enterprise because no education can rise above the quality of its teachers. Human resource development in physics education has suffered a lot of set back in Nigeria. No wonder Omosewo and Salami, (2002) lamented that many schools do not have physics teachers. This calls for human resource development in physics education. Human resource development in physics education, therefore, is concerned with the process of making physicists, physics teachers, physics educators and other support personnel to increase their scientific knowledge or awareness to enable them facilitate or encourage the acquisition of knowledge, skill, competence and know-how (Malachy and Chinyere, 2006). Dashe and Emmanuel, (2008) stressed that any nation that does not plan for the development of human power (science teachers) can not positively make any meaningful progress. Hence no nation can develop beyond the capacity her human resources. With efficient and adequate human resource development in physics education attainment of vision 2020 is certain for Nigeria.

Concept of Physics and Vision 2020

The terms physics and vision 2020 are two independent concepts physics is a branch of science that deals with energy and matter and their interactions, (Omosewo, 2009). Physics is the study of nature. It is the study of matter in relation to energy, (Usman, 2009). Edwin and Richard (1999) viewed physics as a branch of science which comes from a Greek word meaning, knowledge of nature which attempts to describe the fundamental nature of the universe and how it works. It is an experimental and practical science which study nature systematically.

Vision 2020 on the other hand is a detailed framework designed and planned by the Nigerian government aimed at stimulating and revolutionizing the economic status of the country by the year 2020. Abdullahi (2009) viewed vision 2020 as a comprehensive framework to stimulate economic growth in the country.

Relevance of Physics to the Attainment of Vision 2020 in Nigeria

Physics is one particular field of study that Nigeria needs for her scientific and technological development. Scientific and technological development could lead to the achievement of vision 2020. The study of physics is also crucial for any nation that

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wants to maintain its relevance among the community of nations. The International Union of Pure and Applied Physics (IUAP, 1999) held that physics is an International enterprise which plays a key role in the future progress of human kind. They further argued that the support of physics education and research in all countries is important because:

1. Physics is an exciting intellectual adventure that inspires young people and expands the frontiers of our knowledge about nature.
2. Physics generates fundamental knowledge needed for the future technological advances that will continue to drive the economic engines of the world.
3. Physics contributes to the technological infrastructure and provides trained personnel needed to the advantage of scientific advances and discoveries.
4. Physics is an important element in the education of chemists, engineers and computer scientists, as well as practitioners of the other physical and biomedical sciences.
5. Physics extends and enhances our understanding of other disciplines, such as earth, agricultural, chemical, biological, environmental sciences, astronomy and cosmology subjects of substantial importance to all people of the world.
6. Physics improves our quality of life by providing the basic understanding necessary for developing new instrumentation and techniques for medical applications, such as computer tomography, magnetic resonance imaging, positron emission tomography, ultrasonic imaging and laser surgery.

The relevance of physics to society, Nigeria society inclusive, if pursued with vigor, could lead Nigeria to achieve the national objectives of vision 2020. Infact, the technological potentials of any nation could be more accurately gauged by the quality of its physics education for without physics, the technological culture of her citizens cannot be firmly rooted, (Ogunleye, 2001). Physics therefore is the life wire upon which any meaningful development in science and technology depends on.

The Need for Preparing Physics Teachers for the Challenges of Vision 2020 in Nigeria

The desire by Nigeria to become one of the most developed 20 economies by the year 2020 is a Herculean task that requires pragmatic and proactive measures put in place in order to contain the challenges ahead of Nigeria. In line with this, Ikponmwosa, (2010) lamented that becoming one of the 20 economies of the world by the year 2020 is a challenge which calls for Nigeria to be more pragmatic and proactive within the framework of national development as well as in the context of a global economy. One channel through which Nigeria may become one of the most 20 developed economies in the world by the year 2020 is through effective science and technology (physics) education programme. It is through effective teacher education programme that quality science and technology (physics) teachers could be produced. As noted by Dashe and Emanuel (2008), the improvement of the level of our present science and technology education cannot take place in a vacuum but through a teacher. Also, Lassa, (1996)

opined that “education is the key to national development and only teachers hold the key and can turn it for national development.”

Effective Science Teacher Preparation Physics in particular is needed for the achievement of vision 2020 in Nigeria. The science teacher (physics) is the pivot on which every scientific and technological development depends on. A well prepared science teacher (physics) will prepare a good crop of scientists that are intellectually capable in skills, attitudes and values that can lead to scientific and technological development of the nation. The challenges of vision 2020 are so enormous that requires Nigeria to have an articulated science teacher preparation programme (Physics) to tackle them. One of such challenges of vision 2020 to Nigeria according to Soyinka in Abdullahi, (2009) is the development of human capital. Human capital development in physics education is a great asset towards improving and sustaining a virile Science and Technology Education (STE) in Nigeria. To this end, efficient and effective science teacher resource development and preparation (physics) remain a *sin-qua non* for national development. To catch up with the developed nations like USA, UK, France, Germany and so on, Nigeria needs functional science and technology education particularly in physics.

Possible Challenges of Vision 2020

Nigeria would face some challenges in her quest for the achievement of vision 2020 project. Usman (2010) mentioned two factors:

- i. Internal factor and
- ii. External factors

Under the internal factors he listed the following:

1. Education sector
2. Power and energy
3. Implementation of vision 2020 economic transformation blue print.
4. Nigerian politics/governance
5. Human capital development
6. Security and
7. Corruption

Usman further stated two external factors that could pose challenges for Nigeria to achieve the vision 2020 objectives as:

1. Globalization and
2. Foreign policies.

The Way Forward

Based on the discussion in this paper, the following strategies/recommendations are proffered as a way forward for Nigeria to attain her vision 2010 agenda.

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1. There should be adequate and uninterrupted power supply in the country. Achieving this would place the country among the best 20 economies by the year 2020. This is because no nation could have vibrant economy without adequate and uninterrupted power and energy supply.
2. Federal and state government should take pragmatic and proactive measures to revamp the falling standard of education in the country particularly in the area of science and technology education. No nation would develop without having a functional science and technology education on ground.
3. Adequate measures should be made to stem corruption from the lowest level to the highest level in all sectors of Nigeria economy. Doing this will make the economy more vibrant that can compete favorably with any other economy in the world and hence attainment of vision 2020.
4. The issue of security should also be given prompt attention. This would encourage foreign investors to come and invest in the economy thereby boosting the economic status of the country and hence achieving vision 2020 project.
5. Federal government should ensure full implementation of economic transformation blue print in toto. This can be done by fully implementing the goals one after the other and hence attainment of the national objectives of the vision 2020.

Conclusion

This paper discussed the concept of physics and vision 2020, the relevance of physics to the attainment of vision 2020, the need for preparing physics teachers to the attainment of the vision 2020. It also discussed the challenges and provided the way forward for the attainment of vision 2020. Nigeria as a nation should try and catch up with the developed nations as this, would help the country to come out from the ravage of political, social. Economic, unemployment and insecurity that the country is presently experiencing. The issue of power and energy remains the most important single factor that if addressed, the country would have a vibrant economy that can stand the test of time and compete favorably with other developed economies in the world.

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