

# Importance and challenges of science education in the development of Ilorin and its environ: Some policy implications

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**ABSTRACT:** The study focused on the assessment of science education in Nigeria (Ilorin metropolis in particular), its importance to the conurbation development, challenges of science education in the area and some policy suggestions. The researcher observed political and economic issues as major challenges hindering the development of science education in Ilorin and its environ. One of the major policies is that all science subjects' teachers should be exposed to necessary tools in order to enhance science teachings, and adequately trained on its utilization on regular basis so as to make teaching-learning more effective. Recommendations were suggested that science teachers should be employed based on merit, government and well-meaning people of the city should release fund into education especially science education to motivate its citizens to science education and more scholarship for the science students without political bargain among others.

**Keywords:** Democracy, development, economic, political, science education.

## INTRODUCTION

The name Nigeria was taken from the Niger River running through the country. This name was coined on January 8, 1897, by British journalist Flora Shaw, who later married Lord Lugard, a British colonial administrator. Nigeria is home to hundreds of different ethnicities and languages; she was nicknamed the "Giant of Africa" as it boasts of the largest economy in Africa and projected to rank among the world's top ten economies by 2050. Kwara state is one of the 36 states of Nigeria, its capital is Ilorin with different ethnic groups as well.

Ilorin is the capital city of Kwara State which is domiciled in the North Central geopolitical zone of Nigeria. The City of Ilorin has an estimated population of 1,622,438 inhabitants spread over a total area of 295 square miles. Ilorin has a Tropical Savanna Climate and mild weather conditions. The population of Ilorin as at 2006 census was 777,667 making it the 7th largest city in Nigeria (Oriola and Bolaji, 2012) and was estimated in 2011 to be 908,490 with density of 1,188/km<sup>2</sup> (3,080/sqmi) of metro

1.5 million (estimate) with Time zone UTC + 1 (WAT). Shehu Alimi was an itinerant Islamic preacher and teacher and was able to control the city through the spread of Islam with other scholars (Abdulkadir, 2015; Reichmuth, 2010; Ostien, 2012; Oyo-Yorubaland, 2014). According to the World Bank, United Nations, Census, Geo Names (2020), Ilorin is one of the biggest cities in Nigeria as number 10 with population of 950,000. The capital was occupied by the Royal Niger Company in 1897 and its lands were incorporated into the British colony of Northern Nigeria in 1900. The city retains a strong Islamic Influence although Christianity is now widely practiced in the cosmopolitan part of the city due to the religious tolerance of indigenes, its friendly environment (generally called the "Home of Peace") and significant immigration of people from other parts of Kwara State and the rest of Nigeria (Khalilieh, 2019; Dayil, 2015; Emelonye and Buergenthal, 2011).

Science is a universal subject that spans the branch of knowledge that accrues the structure and behaviour of the

physical and natural world through observation and experiment (Overton, 2003; Morgan and Morgan, 2008; Gintis, 2007). Science education is most commonly broken down into the following three fields: Biology, Chemistry and Physics. Science education is very important to the development of any nation (National Research Council, 2000; Harms and Yager, 1980; Chankseliani et al., 2020) that is why every nation must take it very serious in all institutions of learning. Many of the developed world were able to achieve so much in science and technology because of science education (Klingler-Vidra and Wade, 2020; Zucker and Noyce, 2020). Over the years, there are low enrolment on science courses especially physics which may be as result of its abstract nature (Akanbi, 2003; Yusuf, 2020a), factors that contribute to this include: society disdain, mockery of teacher etc., also, the performance of students has not been encouraged and this called for necessary action (Gandara and Contreras, 2009; Kola, 2013; Latine, 2016).

Physics is the natural science that studies matter, its motion and behaviour through space and time, and related entities of energy and force (Harman and Harman, 1982; Lu and Zheng, 2020; Redner, 2020). It is one of the most fundamental scientific disciplines and its main goal is to understand how the universe behaves, so physics is the backbone of technology (Yusuf, 2020b). Islamic scholarship inherited Aristotelian physics from the Greeks and during the Islamic Golden Age developed it further, especially placing emphasis on observation and a priori reasoning, developing early forms of the scientific method (Gauch Jr and Gauch, 2003; Kaminski, 2017; Fakhry, 2004; Iqbal, 2007). The most notable innovations were in the field of optics and vision, which came from the works of many scientists like Ibn Sahl, Al-Kindi, Ibn al-Haytham, Al-Farisi and Avicenna (Khan, 2017; Zaidi and Boudjelit, 2018).

Without science education (physics in particular), a reasonable development cannot be accomplished in a certain place at a particular period of time, Ilorin people should be encouraged and motivated to science education *for a stand of a better today than yesterday and a better tomorrow than today in the governance of our great emirate is good*. Therefore, this paper focused on importance of science education to the development of Ilorin and its environs.

## IMPORTANCE OF SCIENCE EDUCATION TO THE CONURBATION DEVELOPMENT

Science education aims to increase people's understanding of science and the construction of knowledge as well as primitive scientific literacy and responsible citizenship. Science communication can be used to increase science related knowledge among adults, in particular. Science education is very important to the development of any nation in many areas. A graduate of

physics education can be self-employed as opined by Tobias (1992) and Kola (2013). Many of the physics graduates have some knowledge of electronics, mechanism etc that is enough for them to be able to have a little period of training as apprentices and then stand alone as electronic technician, mechanics and so on. For instance, semiconductor is very important in the modern technology that if properly learnt it is enough for one to stand upon for a living; semiconductor physics is part of what any graduate in physics will learn and should learn and even mechanics as well. In Jorgenson and Stiroh (2000) and Kola (2013), semiconductor, is very important in a growing economy like ours in Nigeria; it is useful in ceramic industry and a well-trained physics education graduate can be well established in ceramic industry. Without science education, Information and Communication Technology would not be possible. Science and technology will not be possible without science education since technology is the application of science (Garfield and Merton, 1979; Wang et al., 2017). For instance, engineering, medicine, architecture etc will not be possible if there is no one to teach the students the core subjects needed for these courses. Biology education is very important to any growing economy (Li et al., 2016; Allman, 2019) like Nigeria and Ilorin inclusive. Many graduates of biology education are self-employed and employers of labour; many owned schools for themselves where people work and earn their living while some are into fish business and so on. Also, graduates of chemistry were been taught how to make dye and chalk, making of ceramic, soap etc., therefore they can establish their own business as soon as they graduate. If supported with fund, many of these graduates would be a successful entrepreneur.

## CHALLENGES OF SCIENCE EDUCATION DEVELOPMENT IN ILORIN METROPOLIS

### Political

The political economy of Kwara State can be traced to 1967 when it was created. Since then, the state has undergone various development efforts, most initiated by the federal government given the nature of the Nigeria state, a centralized federal system where development policies and programmes originate from the centre. Nigeria has not been having a stable political system of government since her independence in 1960. Stable political system of government is very essential to educational development of any nation (Nir and Kafle, 2013). Military ruled for 34 years in Nigeria out of 60 years of existence as an independent nation. After military ruled, the civilian (politicians) but as a result of change in policy by each individual elected bodies brings about instability in the education system in general. These leaders have no regard for education but concentrate on establishing their

government for long years. Many science equipment and infrastructures are lying in waste in our schools because of instability in political government and incompetence of teachers, though the present governor (Gov. AbdulRahman AbdulRasaq – Kwara State) intends to turn a new leave because present employed TESCOM and SUBEB teachers were based on merit without any particular bargain. Year 2020 can be regarded as a year of waste in both human and natural resources for Nigerians, many life are claims, properties were destroyed among others, as a result of COVID-19 pandemic and ENDSARS protests. Academic Staff Union of Universities (ASUU) has been the only union fighting for 26% of the total budgetary allocation to education according to the UNESCO recommendations. So, if the state can follow the trend, it will go a long way in solving both political and economical issues affecting the development of Ilorin and its environs.

### **Economy**

The state has a large area of rich agricultural land. The limestone and dolomite of Oreke, Kaolin and clay at Idofian and other parts of the state, pure gold in Kaima and the Patigi area, and the highly exportable rich tantalite deposit of Iporin make Kwara state rich in primary resources. Nigeria is blessed with many natural resources on which her economy rest upon; however, over dependent on petroleum has seriously affected the economy. The effect is on science education since science equipment and apparatus are inadequate in the country and the cost of importing these materials is high because of exchange rate and both teachers and learners need improvisation of some instructional materials to supplement the conventional one and both need to be trained/re-trained on improvisation to cover this bridge (Yusuf, 2020a). When students' improvised teaching aids, it help them in facilitating their learning, give room for motivation and as well boost teacher input to give out maximum output (positive feedback) (Yusuf, 2020a). In this case, reduce the cost of procuring imported teaching aids and boost the state economy and this income can be used for the payment of other allowances of science teacher and solve the problem of slow economic growth because of labour distortions, redundancy of the workforce, brain drain and others (Swiecki, 2017).

### **Teacher**

Science teachers are key factor to be considered when talking about the development of science education in any nation. There are shortages of qualified science teachers in Nigerian schools. So called science teachers are not professionally qualified. They may have the knowledge of the subject but lack the method and other teaching elements. Umar (2019) in his study of challenges and prospects of primary science teaching affirmed that there

are unqualified science teachers in our schools. Attitude of many teachers to teaching are discouraging; they have been teaching for many years without upgrading their certificate by going for in-service training so that they can be up-to-date. This affects their output and hindering the development of science education.

### **Poverty**

Poverty is a state or condition in which a person or community lacks the financial resources and essentials for a minimum standard of living. Poverty entails more than the lack of income and productive resources to ensure sustainable livelihoods (Cazacu and Crudu 2019). Its manifestations include hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion as well as the lack of participation in decision making. Science teachers are not well catered for in Nigeria instead they are looked upon by the politicians as beggar. Though the state government has established different ways to curb these phenomena, yet the process undergoes many political biases.

### **Corruption**

Corruption is the greatest challenge to development of science education in Nigeria; corruption leads to many problems in the country. Some hoodlums took the peace protests of ENDSARS to loot palliative items that supposed to have been distributed but kept in warehouse as a result of corruption. According to Turton (1978), corruption leads to slow movement of files in offices, extortion in highways, ghost workers in work places, election irregularities and many more. Corruption makes school administrator mismanaged fund meant for purchasing science equipment and asked science teacher to make sure student still pass in examinations by all means – examination malpractices. In many universities and research institutes, research has become history because government preferred to use research money for election or hire security for the family of government officials than science education research. Ilorin is a multiethnic city and has effect on its education. The world is in era of science and technology; every nation is craving for development in Information and Communication Technology (ICT) among others which cannot be fully achieved without science education. Parents encourage their children to study science oriented courses which is good; children who have no ability for such courses opted for courses in humanity and art, but when parents enforced them to do science courses is called corruption. Science teachers were employed without prerequisite qualification for science teaching. Those who originally studied sciences are schemed out of the job because of ethnicity; the attitude discourages young ones from studying science education. Employment is no longer based on merit; those

who are qualified for teaching science are not given employment because they do not have backup - someone to help in the government. Teaching appointment is done based on nepotism and favouritism. This is affecting the development of science education in the nation and the city of Ilorin in particular.

Lecturers in higher institutions have turned colleges and universities to supermarket shops where they sell handouts and books at outrageous prices. Staffers of many polytechnics have taken over the affair of the institution because the chief executives are corrupt in awarding contract that never existed and mismanaged fund meant for science equipment. They sell books and handouts at very expensive prices without being checked, these maybe parts of factors that is discouraging students who want to study science education and killed the confidence of those who are into it. Scholarships and bursary meant for science students are diverted to non science students because of ethnicity. Where the scholarship is given to science students, they introduce unnecessary officialdom into it that students may not get the money for many years or eventually give up or loss the interest.

## POLICY IMPLICATIONS AND RECOMMENDATIONS

1. All science subjects' teachers should be exposed to necessary tools to enhance science teachings, and trained on its utilization on regular basis so as to make teaching-learning more effective.
2. Scholarship should be awarded to science students and be thoroughly monitored to ensure money is release on time for same purpose.
3. There should be policy formulation that will ensure adequate provision for instructional materials, both foreign and local, also teachers should be employed based on merit.
4. Government should provide employment for young graduates; the state is blessed with abundant resources that if properly harness unemployment will reduce drastically in the metropolis. And graduate should be encouraged on self-employment after a little apprentice, they should be supported with necessary fund and encouragement.
5. Government should invent on agriculture since the nation is blessed with fertile lands. If government can invent on agriculture, there will be job for the jobless and there will be improvement in economic security of the city.
6. Importantly, inspections should be routinely carried out on schools, laboratories and worn out equipment replaced with new ones.

## CONCLUSION

From the above assessment, it is observable that science education is very important to any development; political

and economic are the major problems militating against its development in Nigeria and particularly in Ilorin. There are other problems like poor method of teaching and teachers' attitude to teaching, poverty in both teachers and learners and corruption all over the community and in nation at large. To solve the problems is our collective responsibility, students should always be encouraged to participate actively and interact freely with the teachers as this will improve their academic achievement gain, corruption must be shunned everywhere in the society; diversification of economy to agriculture and other sectors is necessary to curb poverty among its citizen.

## CONFLICT OF INTEREST

The author declares no conflict of interest.

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