Impact of Science Education in Economic Development

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Abstract - The paper itemised the functions of teachers in ensuring how the bookish curriculum can translate to job creating one through introduction of appropriate skills. The role of entrepreneurship education in the universities is also highlighted. Local artisans could be integrated into the system and students could be made to learn some science oriented vocations. What we need most at this time of our economic challenges is human capital development

Keywords: science education, economic development, entrepreneurship, human capital development

I. INTRODUCTION

From my personal assessment of what is going on in academic communities in Nigeria, one can easily observe the polarisation of knowledge in such a way that there is an artificial gulf among scientists, people in humanity (including education), economics and those in the production sector of the economy. This, no doubt, becomes a problem of utilization of our resources for the betterment of the citizenry.

If we want to be realistic, the launch of satellite in the orbit is not enough for economic development; human capital development is what we need at this crucial period of economic strangulation. Development therefore, requires modern agriculture, industrial system and education. And refusal to do these will lead to low economic development; we should re-fashion-out technology in line with our local environment rather than relying solely on what operates in the developed world.

We are aware that in Brazil, ethanol production from sugarcane is used as fuel to replace gasoline. This would invariably reduce the amount of money they will spend in buying gasoline. This is science in action. Our education in Nigeria is bookish and we produce best students who could cram the course content and regurgitate it in examination condition. I begin to wonder what our teaching and subsequent learning is all about.

Professor Oye Ibidapo-Obe, who served as Vice Chancellor of the University of Lagos and formerly President of the Academy of Science, emphasized the pivotal role of science in national progress. He expressed that widespread scientific literacy could mitigate the alarming prevalence of corruption within the country. Additionally, he underscored that science, with its predictive, precise, logical, and open-minded nature, is indispensable for national advancement. It is imperative to acknowledge that the global economy is heavily influenced by scientific advancements, a fact crucial for realizing the goals outlined in Vision 20:20:20.

What then is the current level of our teaching at all levels of our education? If truly through education, people are enable to develop their knowledge and skills, adopt new behaviour and be able to survive in the society, our teaching should be reoriented towards these goals. Oderinde (2005) opined that in all over the world, education is the key to development. The word development here should not be limited to academic development and mere acquisition of paper qualification, it should be an embodiment of skills which lead to creativity and consequently, problem solving for betterment and economic growth of the society. If enabling environment is provided and teachers are able to perform their functions optimally, their products will not come out of school looking for white collar jobs. To me, learning should not be limited to conceptual knowledge: it should be an inner transformation of how one can think logically to solve personal problem and problems of immediate environment.

It is unfortunate to note that the functionality of teaching professionals in Nigeria is stereotyped. It is characterised with dissemination of information, give test in order to evaluate. According to Anderson (2004), the following characteristics are associated with effective teacher.

i. Commitment
ii. Confidence
iii. Trustworthiness
iv. Respect
v. Analytical thinking
vi. Conceptual thinking
vii. Drive for improvement
viii. Information seeking
ix. Initiative
x. Flexibility
xi. Accountability
xii. Passion for learning

Many teachers do not realise that they can only control their teaching but definitely not students' learning but students can be encouraged and motivated to learn in a conducive environment (both external and internal). Teaching is not mere dissemination of information, knowledge of psychology, sociology and philosophical make-up of the students that are being taught is very important.

Infact, a teacher should be mentally alright and emotionally balanced and also well versed not only in the content of the subject he is teaching but also in the relevance of the content to the society. If this happens, the students would not leave the school with only knowledge of the subject matter but also with the application of what is taught to societal needs. This would make them to be useful to the society. And before any student can learn and acquire skills, the teacher must be humane in nature. I sometimes ago advocated for humanistic approach to teaching. No student can learn in a tensive environment and for meaningful learning to occur, teachers should take students like human beings and make the learning environment to be more friendly.

A rigid teacher cannot achieve success in his teaching. And no method of instruction is superior to the others and the methods adopted by the teacher would depend on the nature of subject, the student he is teaching and the learning environment. The time used in teaching a task would depend particularly, on the students because they will not learn at the same rate.

Characteristics of effective educators include:

(i) Demonstrating respect and care towards students
(ii) Establishing the relevance of the material being taught
(iii) Implementing active, hands-on learning experiences for students
(iv) Employing diverse instructional approaches
(v) Providing regular feedback on student progress
(vi) Incorporating real-world, practical illustrations
(vii) Drawing parallels and making analogies to aid comprehension
(viii) Setting clear expectations for assignments
(ix) Cultivating a comfortable and conducive learning environment
(x) Communicating in a manner accessible to students
(xi) Presenting themselves authentically in the classroom
(xii) Utilizing feedback from students and peers to enhance teaching methods
(xiii) Engaging in reflective practice to refine classroom effectiveness (Seldin, 1999).

The present curriculum in our schools is detailed enough with foreign outlook; what is lackened is the local touch which invariably makes the content to be bookish. Acquisition of theoretical knowledge which cannot be applied to the societal needs is a waste of time. We often teach purification of water in chemistry without letting students know its importance particularly to the water they drink. Oxyacetylene flame is also taught without telling students its application to the works of life.

Our educational system is confined to the four walls of the classroom and the main purpose of our education is to enable students pass examination and application of what is taught is missing. If we continue in this way, students will not be useful to themselves, let alone the society. The only option left to them will be white collar job.

The curriculum ought to integrate practical elements that combine real-world practices with academic conte nt. By doing so, society can undergo a complete transformation, leading to a decreased inclination towards seeking white-collar jobs.

II. THE SCIENCE EDUCATION

What should be paramount in the minds of students are (1) what is the purpose of science education and (2) of what relevance is the course after studying it? Fafunwa (1969) raised the same question “for what purpose was science first introduced into elementary and secondary school programme?” Students learn to pass and also for certification purposes in Nigeria, usually through rote memorization. If the aim of learning science is only this, we cannot develop economically. We should imbibe the true spirit of learning in our students and develop their human capital. This implies that the teachers should be ready to do their job, of course, very qualified teachers in a conducive environment with adequate infrastructural facilities. Enhancing human capital in science and technology education serves as the key to fostering a society that thrives on scientific and technological advancements. These advancements form the cornerstone of modern nations' progress and development.

The challenges confronting us as a community, whether on a global scale like climate change or locally such as aging populations and environmental degradation, as well as the imperative to boost economic productivity through scientific innovation, all hinge on the application of scientific principles. It is evident that no societal challenge, including the pressing economic recession, exists without a reliance on science and technology for effective solutions.

III. THE WAY FORWARD

This is the time of serious agrarian revolution. Overdependence on oil cannot solve our problem and when we think about ethnic chauvinism and religious bigotry and the natural north-south dichotomy, the resources in Nigeria are not evenly distributed, the more reasons why the country is always held to ransom by some sections. Intensification of modern agriculture is what we need at this period. Agriculture extension officers should be sent to every nook and crannies of the country to educate our local farmers on how to increase their farm yields. More importantly, the use of organic fertilizers should be encouraged. I will also want to suggest that agricultural science should be made compulsory from the junior secondary school. An average secondary school student should understand the rudiments of agriculture.

Beside making practical agriculture a compulsory subject, there are other practically oriented subjects in the secondary school curriculum which should be made selective subjects for students depending on their interest. These subjects are: ICT, Cultural and Creative Art, Indigenous Technology such as weaving, dying and hair dressing. Students would be made to offer at least, two of these subjects depending on their interest. There is no way a student could be versed in these subjects and be jobless when he or she leaves school. These subjects could be built upon when they enter higher institutions of learning in entrepreneurship education.

The Federal Government should make it mandatory for local governments to establish agricultural settlements where people are trained on the use of agricultural implements and modern agriculture. Beside the employment generation, there would be self-sufficiency in food production.

There are evidence of graduate unemployment in Nigeria (Anyaogu, 2009; Akpan and Etor, 2013) and this was blamed on the curriculum in higher institution which was based on theoretical knowledge without practical experience, which could make them acquire skills. Actually, our secondary education ought to lay strong foundation towards what we expect to meet in the higher level. Our curricula at all levels need to be refashioned out in line with present socio-political and economic realities.

The introduction of entrepreneurship courses in the university came as a big relief towards solving the problem of unemployment and consequently, boosts our economic growth. But the implementation of the curriculum is not impressive. In order to be more serious out this course, there should be private sector participation and workshops should be built in the universities to take care of practical parts of the courses. Visits to industries should also be encouraged in secondary schools whenever the need arises.

I want to suggest that schools should employ local artisans to put students through the production of some materials in our social life so that when the white collar job refuse to come as expected, they will have something doing. Economic development is strongly associated with human capital development and this is capital intensive. Salary earning is life enslavement of man and the creation of wrong values, which is, eagerness to make money fraudulently.

IV. ENTREPRENEURSHIP EDUCATION AND ECONOMIC DEVELOPMENT

The introduction of entrepreneurship education in our universities is a right step in the right direction but the approach of teaching this course lacks the expected practicals which should make the course useful to students particularly, in the self-sustainability when they leave school.

Many universities in Nigeria teach the course theoretically without workshops and examination is based on acquisition of knowledge without skills. Students should be taken through careers such as animal husbandry, which include poultry, snailing, piggery, electrical wiring, shoe making, eatery, radio/TV repairing, welding, block making and other jobs prevalent in the society. Entrepreneurship in the real sense of it is to develop in students the spirit of creativity. This is the only way whereby unemployment problems in the country will be addressed.

There is the need for universities to develop Entrepreneurship centre in which students will go and engage in meaningfully and sociologically inclined practicals so that when they come out, they would be able to practicalise what is learnt and make money for themselves and also develop the society economically. We are aware of two universities – Olabisi Onabanjo University and Osun State University which take students through career training different from the usual academic work. This is only possible if local artisans are introduced into the system and students should be made to spend at least, two hours in a week on training.

Under government small scale industry scheme, students should be encouraged to establish fitness centres, incubation centres and day care. This will make students to be on their own. It is necessary to say that this new approach to live will be alien to students and we would need to inculcate in them new value which would enable them to cope with the situation.

V. CONCLUSION

In conclusion, creating wealth is the focus of this paper through appropriate science teaching and introduction of skills development in our school curriculum. Practical Entrepreneurship education is also advocated for, so that students would not leave higher institutions looking for white collar jobs as the only option. At least, they would have something doing before the job comes if it is eventually needed.

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