

CREATIVE AND FUNCTIONAL SCIENCE EDUCATION IN A COMATOSE ECONOMY

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Abstract

Science education has been articulated, maintained and focused towards basic literacy and functional living in the society as well as stimulation of creativity. The Comatose Economy of the nation has pronounced effect on the educational system. This is readily evident in the teaching and learning in our schools but more pronounced in the area of science. The reason for this effect on science discipline is due to the special nature and requirements for effective teaching and learning in the discipline, which include laboratory facilities, teachers experience and training, adequate funding of science and science related programmes and research among others. The author recommended among others that for science educational to be functional and creative, science education curriculum should be restructured towards entrepreneurship education.

Key Words: Creative, Functional, Science Education, Comatose, Economy

Science Education is a process of learning that places emphasis on skills acquisition and use of various scientific processes. Okafor (2003) described Science Education as a process that involves the act of teaching and learning which builds citizens that could make reasoned decision about scientific issues that affect their lives. According to Igboegwu (2015) the objectives of science education has been articulated, maintained and focused towards the following issues.

(1) Basic literacy for functional living in the society.

(2) Development of basic concepts and principles in preparation for further studies.

(3) Development of essential skills and attitudes as preparation for application of science for development.

(4) Stimulation of creativity.

Science education is the field concerned with teaching science content, method of teaching and addressing misconceptions held by the students. Science education is very important to the development of any nation that is why every nation must take it very serious in all institutions of learning. Many of the developed countries were able to achieve so much in

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science and technology because of science Education.

The role of Education as the foundation of social, economic, political and cultural development is undisputed. All over the world, education is expected to be highly rated in national development plans because it is the most important instrument of change. The fulfillment of this role lies in functional education. Functional Education is a holistic and Educational experience that is focused on the identification of situational problems, gathering of information to make decisions in a world of challenges and realities of life, enhancing users and end users to acquire knowledge, skills and attitudes to showcase new concepts as a vehicle of globalizing such countries or state for meaningful co-existence, sustainability and developments (Adewale, 2014).

According to Geddes and Grosset (2005), functional Education is practical and useful purposes. Functional education will ensure the availability of food for people, creation of jobs, provision of services etc. Functional Education should be capable of producing Nigerians who can manufacture raw materials, machines and tools needed for local and international markets, invent new designs, discover drugs capable of curing diseases hitherto incurable and transform the nation from consumption to a manufacturing status (Udoh & Akpan, 2014). Functional education refers to education that comes from the child needs and uses the child's interest as a mechanism for activating him and towards his desirable activities. The

purpose is to develop the life of the mind, that acts as wholeness of organic life, with relation to practical life in the present and in the future.

Creativity usually include notions of personal involvement, novelty and value. Boden (2001) define creativity as a person's ability to come up with new ideas that are surprising yet intelligible and valuable in some way. Creativity is the entire process by which ideas are generated, developed and transformed into values. It comprises what people commonly mean by innovation and entrepreneurship. (Agbowuru, Saidu and Jimwan, 2017). Creativity is associated with achievements. There is an increasingly strong economic rationale for our school system to prioritize the development of students creative capacities. It is claimed that school leavers who think critically and respond creatively will more likely meet the challenges of the 21st century by contributing positively to the personal, social, technological and economic worlds they would inhabit as adults (Welle-Strand & Tjeldvoll, 2003). The future of Nigeria is closely tied to creativity. Scientific enterprise is a creative endeavour since science involves people investigating the living, physical and, material component of their environment and making sense out of them in logical and creative ways. Therefore, there is a strong intention that students should participate in science education as a creative activity (Haigh, 2003).

What is Comatose Economy

Comatose Economy is a period of economic slowdown featuring low output, illiquidity and unemployment. It is characterized by its lengthy, abnormal increases in unemployment, falls in availability of credit, shrinking output and investment, reduced amount of trade and commerce, as well as highly volatile relative currency value fluctuations, mostly devaluations, financial crisis and bank failures (Claessens, Ayhan & Marco, 2008).

A comatose economy in its simplest term is one in which all index of leading economic indicators are very poor or adversely negative. Symptoms of comatose economy include poverty, inflation, crime, human suffering factors, disease, death etc. The effect of comatose economy in Nigeria is in a disquieting proportion. There has been a crash in the stock market, the prices of oil sky rocketed and left many financial homes depressed with the fear of an impending crunch. Opeyemi (2008) observed that there are cases of unemployment, retrenchments, downsizing and layoffs, which served as indications to a troubled economy. As a result, there has been an increase activities such as militancy to different militia groups. These militia groups have become an enclave for the army of jobless youths which has resulted in a lot of bloodsheds, senseless killings, destruction of property, social and economic dislocation, insecurity, and psychological losses. More specifically, the comatose economy in Nigeria has brought an increase in price commodity

for both perishable and non perishable goods leaving her citizens in poverty. There has been layoffs and retrenchment.

Effect of Comatose Economy on Creative and Functional Science Education

Comatose economy of the nation has produced adverse effect on apparently every segment of the society especially the educational system. This is readily evident in the teaching and learning activities in school but more pronounced in the area of science. The reason for this effect on science discipline is due to special nature and the requirements for effective teaching and learning in the discipline. These requirements include:

- (1) **Laboratory facilities:** Students understand more when they have practical experience. When students perform experiments themselves during practical and obtain results, they cannot only remember the procedure involved but also be proud of themselves for obtaining correct result. Laboratory facilities enhance the quality of instructions. It saves teaching and learning process from being merely the talk and chalk approach. Olaitan (2009) stated that there are concepts which the teacher can transmit more effectively using laboratory facilities and properly use of laboratory facilities will help to clarify concepts, stimulate interest and promote better understanding of the lesson. Facilities for effective teaching of science are not adequately available in most Nigerian school due to the state of economy of the nation. The

problem is aggravated by high cost of these equipments. Najumba (2013) in his study of school achievement discovered that schools which are well equipped do much better in standardized examination than those which do not have equipments in their laboratory. This has resulted to graduating ill-trained or half baked students who do not possess the required science skills necessary for employment. The problem is aggravated by the high cost of these equipments and the recurrent expenditure involved in the running and maintaining them is outrageous. This has resulted in loss of interest in science.

(2) **Teachers experience and training:** It is argue that effective teaching and learning to take place, teachers need to possess some degree of experience. Mavhundutse (2014) is of the view that experience is one of the major factors contributing towards effective teaching. Most people argue that experience is the best teacher. Appropriate professional training are desirable for teachers of all subjects but particularly for science teachers who are not only to teach these subjects effectively but also have responsibilities for safe conduct of practical works. Unfortunately the nation's economy does not allow for adequate provision of the necessary training facilities to enhance adequate training of teachers. Most science teachers due to financial constraints are not able to go for further studies to increase and upgrade their knowledge in science. Such teachers are not aware of new scientific discoveries and research

findings. The government and most independent bodies do not for economic reasons, organize in-service programmes (e.g seminars, workshops and conferences) for regular teachers regularly. Tshabalola (2014) advances the argument that the quality of teacher training has an impact on teaching methods and improvement of skills. To heighten the problem, the relatively few trained science teachers often take to other more lucrative jobs due to lack of motivation. The absence or total absence of incentives for them in science teaching job, irregular payment of salaries all related to comatose economy have contributed towards this.

(3) **Availability of instructional materials:** Instructional materials are learning resources that carry messages (Abimbade, 2006). They are those materials or resources used in teaching and learning encounter to facilitate learning. They help the teacher to convey the intended message effectively and meaningful to the learner so that the learner can receive, comprehend, retain, recall, synthesize and apply the experiences so that the overall instructional goal will be achieved. Instructional materials can be classified into visual aids e.g models, charts, specimens, textbooks etc. audio aids e.g radio, tape-recorders and audio-visual aids e.g video tapes, television etc. The desire of every teacher is that stated learning objectives are achieved at the end of every lesson. This makes any professional and qualified teacher utilize every available

strategies and resources. Such a teacher must be very familiar with and also effectively select and utilize appropriate instructional materials in the classroom. According to Maduegbunam (2013), one good way of helping learners to learn is by bringing them face to face with reality and this can only be actualized through the use of instructional materials. Textbooks constitute an important tool of learning for students. It serves as a ready tool for individual study in terms of suggested activities, recommended readings and review questions. According to Fernandez (2014), the quality of learning material such as textbook is an ingredient of education. Many researchers argue that the availability of textbooks appears to be the most consistent factor in predicting the effectiveness towards teaching. The study by Chingos and West (2010) show a correlation between textbooks and educational achievement. Comatose economy in Nigeria has resulted to inflated prices of science textbooks thereby making it very difficult for most students and teachers to be able to purchase them. This means that high cost of science textbooks militates against effective science teaching.

(4) Adequate financing of science education:

Even though government claims to expend large amount of financial resources on education every year, it has equally been argued that they are not enough for optimum educational development of the country. Other sectors of the economy are known to be contesting for government's

financial allocations and this is legitimate for the overall development of the economy. This, however, accounts in a way for the inadequate funding of education by government. This is also attributable to the country's current poor economy, which is a reflection of the comatose economy. Funding science programmes and science related research has been a major problem facing technological growth and self reliance in Nigeria. Government do not adequately fund science and science related programmes and research and the little fund embezzled by top officials (Sjoberg, 2001). One of the most dis-service to young people in any nation is to provide them haphazard, confusing as well as poor scientific educational opportunity so much so that majority of them finish degree courses in science yet are scientifically illiterates. This state of affair is directly traceable to the levels of funding of education.

Issues that can be Addressed to Bring About Creative and Functional Science Education in a Comatose Economy

The most compelling way to move science education forward in a comatose economy is to ensure that available resources such as chemicals, equipment, specimen etc are judiciously managed. There are situations where imported tools and equipment for science education have been stolen, vandalized, kept in school or Ministry of Education stores (uninstalled) and left to rot or used for personal purpose only to breakdown for minor repairs and then permanently

abandoned. There should be judicious management of scarce resources. There should be an inventory of material resources in terms of their numbers, usability conditions, quality and where they are stored/kept. If a lesson can be taught effectively without resorting to experiments/practical, the teacher can use demonstrations. Every science teacher should try to supplement available teaching aids in his school through improvisation. Improvisation capitalizes on the use of local resources to minimize cost of scientific equipment and materials, promotes creativity and self reliance and at the same time contribute meaningfully to science teaching.

Despite the comatose economy, governments must give schools some working money to use in making the learning of science meaningful. Schools need fund to function and must be provided with money to meet many of their yawning needs.

Entrepreneurship Education for Creative and Functional Science Education

The comatose economy in Nigeria has created a lot of social and economic problems namely: corruption, poor infrastructure, illiteracy, poverty and most importantly unemployment. It is then pertinent that science education curriculum should be restructured towards entrepreneurship Education so as to foster to the students the habit of scientific attitudes and help them to acquire skills of constructive reasoning, effective mental activity and imaginative thinking as well

as helping Nigerian science students become confident and disposed to survive the harsh social economic conditions of the time.

Entrepreneurship education is a special training given to students to acquire skills, ideas and management abilities and capabilities for self employment rather than being employed for pay (Osuala, 2004). Oluka (2013) opines that any nation that is knowledgeable and skilled enough to influence positively the industrial, educational, agricultural and all other important sectors of the economy is classified as developed nation. To achieve this feats, the youths of such nation must be given the right type of education which will enable them to be self-employed or even employers of labour after their graduation. In recognition of this fact, the best education needed in this country at present is Entrepreneurship Education. Our education sector is in state of crises – crises that manifests in various forms including dilapidated infrastructure, inadequate facilities, resources, production of half baked or skill less graduates at various levels of education, poorly motivated workforce, inadequate funding and high level of unemployment and host of other woes. Therefore there is a serious need of some restructuring in the mechanics and machinery of the education sector to enforce entrepreneurial education so that there can be a turn around and re-dressing the woes already mentioned. Offor (2011) sees entrepreneurship in science education as an employment strategy deliberately designed to provide

career information to science students to enable them relate interests needs and abilities to occupational opportunity.

According to Emendu (2014), the benefits of entrepreneurship science education includes among others:

- (1) Encourages creative thinking and promote good spirit of self growth and accountability.
- (2) Create job opportunities for others.
- (3) Help to develop the occupational knowledge of the students etc.

This means that cash productive education should be introduced to make for maximum self development and self fulfillment so that graduates will acquire the right skills, habits and attitudes for surviving in the face of unemployment and be able to do something for themselves and their society.

Conclusion

Science Education in a comatose economy is confronted by numerous problems among which are low levels of funding, poverty, corruptions, poor infrastructure and most importantly, unemployment of young graduates. Schools need funds to operate, comatose economy notwithstanding. Meanwhile material resources already available need to be judiciously used and managed in integration with resources from the environment. For science education to be functional, science education curriculum should be restructured towards entrepreneurship education which is prompt response to the yawning of people for functional education. With graduates

with entrepreneurship skills, knowledge and right attitudes, self-reliance and self employed individuals, the society will record huge success which will promote economic growth.

Recommendations

The following recommendations were made:

- (1) Government should as a matter of responsibility encourage science and science related programmes and research.
- (2) There should be a proper budgetary allocation for the educational sector.
- (3) Entrepreneurship education should be made compulsory to all senior secondary students.
- (4) Science education curriculum should be restructured towards entrepreneurship Education.
- (5) Laboratory facilities and instructional materials should be provided for schools for effective teaching and learning of science.

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