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## CHEMISTRY EDUCATION AND ENTREPRENEURSHIP DEVELOPMENT IN NIGERIA

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### ABSTRACT

Chemistry is very crucial for entrepreneurial skills development to students. But, the product from schools today seems to lack this competency. This paper therefore, examines chemistry Teacher education and entrepreneurship, and the factors that have militated against its effective achievement in colleges of education. It also makes some recommendations towards the improvement of chemistry for entrepreneurship.

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### Introduction

The desire of any nation is to see her population been fully involved in an activity that will lead to its development by increasing the income generation of its citizens. This informed why government introduces different empowerment strategies such as National Directorate of Employment (NDE), National Poverty Eradication Programme (NAPEP), and National/State Economic Empowerment and Development Strategy (NEEDS/SEEDS) in its reform strategy. Under the NEEDS/SEEDS education agenda, poverty reduction, enhancement of quality education and employment generation are some of the issues considered (Akale, 2004).

In this regard, Education is the key instrument for empowering children with the ability to take care of their lives in the future. It is also a veritable tool for social as well as economic enhancement of the individual member of the society (NPE,2004) and science education is the pivot of control. That is why Government emphasizes on science education as a mean of creating awareness among individuals and propelling the country into a technologically growth Nation. Ukpene (2001) re-emphasized that, Science and technology Education is prepared to teach skills acquisition that will enhance Gross domestic products (GDP), self-reliance and reduction in

unemployment. Chemistry in particular, has a vital role, and a science centre where technological applications have great impact in developing areas such as biotechnology, material science, the environmental area, etc. Therefore, the training of personnel who are able to transform knowledge, generating chemical technology, processes jobs and wealth is of great importance. However, the question is; during the academic life of our students is there any content, form of encouragement or support that may awaken in the students the entrepreneurial side? Or why the professionals in the field of chemistry and science in general always seek for government jobs? Not to talk of those trained as Teachers, who beliefs on teaching as the only potential job and automatic to Teacher Education certificate holders. Employment in government sectors is no longer easily available today and where it is, only few candidates are considered, as Jatto (2007) reported that, "out of an average of 30,000 qualified N.C.E. Teachers annually produced by N.C.E. awarding institutions, not up to 8% of these N.C.E. holders are employed". The situation is now posing a danger to the social security of the country. That is why education based only on the training for workforce is now an obsolete model, where the training of employees for public sector no longer in the modern context (Mary et al, 2005). Therefore, entrepreneurship development in schools is a very timely innovation, considering the fact that half of Nigeria's

population consists of children. Based on this the paper examines chemistry Teacher Education for entrepreneurship development.

### **Chemistry Education and Entrepreneurship**

An entrepreneur is a person who manages business enterprises. Komolafe (2008) described it as an initiator of an economic activity in a free enterprise system especially in services of economic activities which comprises production and distribution of goods services. An entrepreneur may even have the ability to create a market that does not exist yet. An entrepreneur can also create business opportunities and innovative work and professional achievement to others. Entrepreneurship according to Ajagu (2006) is a factor of production, an act of creating business through innovation and risk-assuming management. Similarly, entrepreneurship is the process of doing something new (development) and / or something different (innovation) for the purpose of creating wealth for the individuals and aggregate value to the society (Kao et al, 2002). It is therefore, a process rather than a result. Entrepreneurial skills are acquired in youth, in a friendly and familiar environment where the culture encourage local initiative and not the dependence ,or an attitude ,skill or set of knowledge /skills that can be taught (Mary et al,2005). Chemistry as a science subject teaches skills to uncover the gift of nature for the maximum benefit of mankind. Its intrinsic as well as utility values in spheres of human activity necessitated its inclusion in the school curriculum. At the N.C.E. programme, chemistry is aimed at producing highly qualified middle-level manpower knowledgeable in the process of chemistry and capable of inculcating

these in the students (N.C.C.E, minimum standard ,2002).The graduates should have among its objectives, the competencies and ability to ;

- develop functional knowledge of chemistry concepts and principles,
- Observe and explore the chemical environment,
- Develop scientific attitudes such as curiosity etc,
- Manipulate simple apparatus for purposes of demonstration and use,
- Improvise simple equipment from available junk in the chemical environment, and
- Apply the skills and knowledge gained to solve day-to-day problems.

These objectives presuppose a prospect for self-reliance/employment to graduates of chemistry Teacher Education programme. To buttress the assertion, Joseph (2008) reported that, Teacher education programmes are structured to equip teacher trainees with necessary knowledge, ethics, skills, and attitude above the challenges in class room. Also the inclusion of courses such as chemistry laboratory techniques, metals and alloys, environmental and industrial chemistry, liquid state and colloids, organic and natural products chemistry and a lot of practical leading to synthesis, tests, and characterization of organic and inorganic substances etc, indicates a good design of the programme to entrepreneurial development skills. However, because of the several problems that have plagued in to the study of science, products from schools are bereft of initiative /innovation of productive thinking that may lead to self-employment. Among which implementation factor cannot be denied. Science education is now being taught with several problems, such as poor conditions of teaching and learning environments, inadequate funding, lack of chemicals/equipment, etc. The consequence of which, Hassan (2008) re-instated that, what is being practiced today in science is seem to be at the level of memorizing facts, principles, theories, and laws .These could not leads to the skills required for self-employment

.Therefore, for chemistry education to prepare for effective knowledge and practical skills for entrepreneurship (self-employment) all inadequacies identified below must be addressed.

### **Factors Militating Against Entrepreneurship Development**

Implementation of any education curriculum contents rest squarely on the teacher. Thus, teachers' quality and effectiveness determine the quality of the products from schools. Therefore for chemistry teacher education to be effective and efficient in the discharge of this noble task, he/she must be knowledgeable enough in the subject matter. This is necessary because it's what

the teacher has that he gives out. This seems to be the anchor on which good classroom delivery of instruction hangs and which is reportedly lacking in the crop of chemistry teacher on the field (Olayiwola, 2007). Similarly, Olarewaju cited in Garba (2008) reported that, majority of teachers in secondary schools are not adequately prepared to teach the contents of science curriculum. It is then logical to reason that concepts or practical could not be properly handle due to lack of deep knowledge of the subject matter. Although, this is at secondary school level yet, it is a signal that the situation is not even better at the tertiary level where the teachers are trained. Another pre-requisite aspect to skills acquisition in schools is teaching materials. Teaching chemistry has its unique and attributes conditions without which it cannot be achieved well. Practical materials are very important in skills acquisition, unfortunately, a visit of our schools today proved disappointing. The conditions of laboratories with respect to chemicals and equipment for practical which could lead to entrepreneurial skills are deplorable. The situation compels lecturers to group students for demonstration of a practical supposed to be carried out individually. For instance, Imagine entrepreneurial education achievement in a situation observed (Garba, 2008) where a chemistry lecturer was completely surrounded by students and about 25% of the students were standing outside. Obviously, student brought out in this practice cannot think of being self-employed from the training, because he/she may not get what the lecturer taught. Funding is always a problem and a serious militating factor when it comes to running of schools. The fact has come to stay in colleges as the schools executives always emphasizes “there is no money”, but when the money eventually come department will never know. The implication for the inadequate teaching/learning materials in schools. The consequence of which many colleges of Education are viewed as glorified secondary schools and teachers trained under this condition cannot be said to be competent, talk less of being self-employed. The strong culture of seeking government employment and the belief that teaching is automatic and the only potential job for teacher education graduates is seriously killing entrepreneurial zeal’s of many students. Many students in colleges of Education believed on this as such they don’t think of any possibilities since they can easily have teaching employments. Also, absence of standard entrepreneurship courses in science education programme as the case is in many developed nations (Mary et al, 2005) is an inhibiting factor towards development of entrepreneurial behavior in students. Therefore, for quality education and entrepreneurship development the following recommendations are made.

## **Conclusion**

Chemistry education graduate who have been exposed to different skills and practices has a better chance of succeeding in business for self-employment. Therefore, chemistry teachers should Endeavour in their task of imparting knowledge to arouse in their students the desire of being self-employed. With minimum encouragement gained in classroom and some financial

assistance, teacher education graduate can start their own business using the already acquired training skills. These enterprises can make them self-employed and contribute to the national development through the revenue generated.

### **Recommendations**

- a. Qualified teachers capable of handling practical should be provided to teach and also seminars should be organized to both teachers and students on entrepreneurship.
- b. Enough teaching /learning materials should be available to all Teacher training colleges to guide against lack of practical skills to students teacher.
- c. Financing education should be a sole responsibility of government, if the desire objective is effectively required. Therefore, adequate funding of colleges is necessary for achieving effective entrepreneurial skills.
- d. Since Teacher education is not only preparing students for teaching, let the impression that, 'Teaching is the only potential job for Teacher education graduates' be corrected in the mind of students, by incorporating entrepreneurship training in science education and students be allowed to spend enough time under supervision to gain enough experience.

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