

The study concludes that verbal ability has no significant effect on the content of students essay writing in French Language. Other variables should be responsible for the significant difference found in the pretest conducted before the experiment.

Recommendations

The researcher recommends that future researchers could find the effects of other variables, such as teacher's method of teaching and scope of students reading on the content of students essay writing in French.

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SUSTAINABLE DEVELOPMENT GOALS IN NIGERIA: ROLE OF CHEMISTRY TEACHER EDUCATION.

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Abstract

This paper examined the role of chemistry and teacher education as a tool in achieving sustainable development. Issues that were regarded as being responsible for teaching were

highlighted. This paper employs secondary sources of data from reports, journals and findings of other researchers. Effects of the role of chemistry and teacher education in combating pollution and enhance qualitative teaching in chemistry are stated. This paper recommended that teachers should explore the use of improvised materials from within their locality to ensure good performance, and that teacher education sector be monitored so as to ensure the turnout of good and qualified teachers to teach chemistry, hence attain sustainable development of the country.

Keywords: Sustainable Development Goals, Chemistry Teacher Education.

Introduction

The importance of education to the human race cannot be over emphasized. It is considered to be a very important tool for attaining national goals. Education provides learners with skills needed for survival. Science, a veritable instrument for national development is described by Okoro (2013) as a systematic investigation of nature with a view to understudy and use it to serve human needs. Central to this, is chemistry which has been the cornerstone of science, technology and industry. It is central in the drive of global sustainable economic development. Chemistry and its related field is the economic driver of highly-developed industrial society (Bradley, 2005; Ware, 2001). According to Emendu (2014), chemistry plays a major role in food industry, medicine, textile industry and transportation.

Chemistry is the bedrock for other science subjects because of its relevance in transforming the economy. It is the vehicle through which chemical knowledge reach the people in need of capacities and potential for development. Chemistry is very important in the area of technology, manufacturing, inventions, designing of tools and equipment, evaluation of new processes and adoption of these processes help in the production of goods and services for the benefit of mankind (Henry, 2010). Chemistry education has a great potential for improving the level of general education

skills among students, it gives room for participatory learning. (Mareike, Franz & Ingo, 2012). Chemistry education is useful in the area of food processing, modern technology, and operation of chemical industries, forestry, agriculture, petroleum, pharmaceutical industry, cosmetics, and textiles and brewing. Chemistry is also very important in the process of turning raw materials to useful products for the economy in terms of social and political well being of the citizen (Okeinimen, 2007). Therefore, chemistry education in Nigeria will be relevant to the teachers who serve as intermediary in the teaching and learning process, and will help to inculcate in their students the knowledge needed in chemistry teaching.

Teachers at all levels of the educational system are very important in the overall development of any nation. According to the National Policy on Education (FRN, 2013), the aim of teacher education is to:

- Produce highly motivated, conscientious and efficient classroom teachers for all levels of education system.
- Encourage the spirit of enquiring and creativity in teachers
- Help teachers to fit into social life of the community and society at large and to enhance their commitment to National goals.

- Provide teachers with the intellectual and professional background adequate for their assignment and to make them adapt to any changing situation in the country.
- Enhance teacher's commitment to the teaching profession.

Chemistry is one of the core science subjects offered by senior secondary school science students together with other science subjects such as physics, biology and mathematics. The objectives of teaching chemistry as a subject are stated below:

1. To enable students develop interest in chemistry as a subject.
2. To make students acquire knowledge in basic theory, practical knowledge and skills.
3. To foster development of interest in science, technology and mathematics.
4. Acquiring basic STM knowledge and skills.
5. Development of reasonable level of competence in application of ICT that will engender entrepreneurial skills.
6. Application of skills to meet societal needs of creating employments and wealth.
7. Positioning to take advantage of many career opportunities offered by chemistry.
8. To show chemistry and its links with industry, everyday life and activities and hazards. (FME, 2009).

From the objectives of teaching chemistry, it was discovered that some of the objectives are related to some of the sustainable development goals which can contribute to the development of the society. The sustainable development goals are 17 in number and are stated as follow: 1. No Poverty; 2.Zero Hunger; 3.Good Health; 4. Quality Education; 5. Gender Equality; 6.

Clean Water and Sanitation; 7.Affordable and Clean Energy; 8. Decent Work and Economic Growth; 9. Industry, Innovation and Infrastructure; 10.Reduced Inequality; 11. Sustainable Cities and Communities; 12. Responsible Consumption and Production; 13.Climate Action; 14. Life below Water; 15.Life on Land; 16. Peace, Justice and Strong Institution; 17.Partnership to Achieve the Goals.

To achieve these goals through chemistry teacher education, the problems associated with teaching and learning of chemistry need to be addressed. These problems include the following:

- (i) Lack of regular power supply and proper infrastructures.
- (ii) Lack of proper funding and mismanagement. This has affected the teaching and learning of chemistry in the area of purchasing apparatus, chemicals/reagents for practical, and building of standard chemistry laboratory, these affect the teaching and learning of chemistry.
- (iii) Unavailability of functional chemistry laboratories which, makes it difficult for students to understand what they are being taught in theory. This of course will consequently affect their performance in the subject.
- (iv) Inadequate manpower- The number of qualified chemistry teachers available to teach the subject is low. This has given room for unqualified teachers (those who do not have the requisite qualifications) to teach the subject. This again will have an adverse effect on the performance of the students.

Attaining Sustainable Development: The Role of Teacher Education

Education, according to UNESCO (2000), is the process of developing human ability and behaviors, it is an organized and sustained instruction designed to communicate a combination of knowledge, skills, and understanding value for all activities of life. Teacher education refers to the professional education of teachers towards attainment of attitudes, skills and knowledge considered desirable so as to make them efficient in their work in accordance with the need of the society at any point in time (Osuji, 2009).

Teacher education policies and procedures are designed to equip prospective teachers with the knowledge, attitude, behavior and the skills they need to perform their tasks more effectively in the classroom, school and in the society. This include training from certified teacher training institutions, support during the early years of teaching and retraining of teachers during the course of their career. This is to ensure that teachers meet up with the trend in the teaching profession. This should be done on a continuous basis to make them competent. According to Okemakinde, Adewuyi and Alabi (2013), for National development to be attained, there is need to give priority to teacher education. The professional and adequate manpower training for the education sector cannot be successful without competent teachers to handle the training program so as to ensure that students are independent and not dependent on the government for white-collar jobs after graduation; this will assist in reducing the poverty level of the society.

The quality of teacher education program in Nigeria has not been innovative enough in relation to instructional methods and teaching methods put in place during the course of training of prospective teachers. The content of the curriculum is regulated by

the board in charge of teacher education training in Nigeria, which is the National Commission for Colleges of Education (NCCE). This body ensures that the quality assurance and evaluation of both teachers' in-training and in-service teacher education programs are carried out properly. One of the ways to ensure proper training for prospective teachers is in the area of teaching practice; the program that exposes student-teachers to what they are expected to meet when they are in the teaching profession. Teaching practice exposes teachers – in- training to the nitty-gritty of teaching. Therefore in order to achieve the sustainable development goals in Nigeria, teacher education should be given top priority.

Chemistry Education: The Path to Sustainable Development.

Chemistry as a subject taught in Nigerian secondary schools could play a major role in the attainment of sustainable development goals (SDGs) depending on how it is being taught by the teacher. Chemistry can be described as an important subject in the achievement and implementation of SDGs. An aspect where chemistry has contributed to the SDGs is in the area of GOAL 13 (climate Action) in combating this goal; green chemistry has played a vital role. Green chemistry takes place when there is a design of chemical products and processes to reduce the use and generation of hazardous substance (Anastas & Kirchoff, 2012). Green chemistry contribute to sustainable development in the aspect of renewable energy sources, reducing or eradicating pollution of the environment through clean alternatives, and the use of products derived from renewable/recycled materials. Green chemistry makes use of chemical innovation to meet environmental and economic goals of the society (Anastas

& Eghbali 2010). Green chemistry provides solution to dangers caused by pollution of the environment through burning of fossil fuels, destruction of n tropical forests, all of which lead to global warming [green house effect] in which the Ozone layer is depleted by chlorofluorocarbons (CFCs) which leads to skin cancer and cataracts. Chemistry education can help to reduce the effects of all these through teaching and learning about carbon emission.

Jeon (2018) is of the view that green chemistry prevents pollution; improve the yield and efficacy of chemical products through manufacture and use of chemicals, all these in line with the objectives of teaching chemistry showing its links with everyday life, industry and health. Teacher education policies and procedures are designed to equip prospective teachers with the knowledge, attitude, behavior and the skills they need to perform their tasks more effectively in the classroom, school and in the society. One of the challenges of chemistry education according to Grassian, Meyer, Abruna, Coates Achenie & Alkson (2007), is the need to educate future chemists to contribute to a more sustainable society. This led to the incorporation of sustainability into chemical education as one of the highest priorities of sustainable chemistry (VanRoon 2001) so as to improve the contribution of chemical education to sustainability in areas such as environmental chemistry, medicinal chemistry ,polymer chemistry and enzyme chemistry. Sustainable development could be enhanced through thr teaching of chemistry across different disciplines through chemistry teacher education, since one of the objectives of chemistry curriculum is to make use of different career opportunities provided by chemistry (such as production of vaccines, drugs in medicinal chemistry); all

these will lead to the attainments of sustainable development goals.

For chemistry education to contribute to sustainable development of the nation Nigeria there is need for quality control and professionalism in the Nigerian education system. This can be through evaluation and assessment of individual qualities or characteristics of students (teachers – in-training) and focus on program that suits each intending teacher such that they will be trained in line with their ability which will assist them in teaching when they become certified teachers. Also there is need to assess students' misconceptions about chemistry as being abstract, not easy to comprehend and difficult to learn; when all these are addressed, students will be encouraged to go into teaching of chemistry. There should be provision of good laboratory and materials for practical for students and chemistry teachers should be encouraged by sponsoring them seminars and workshops in order to keep them abreast of the current trend and development in teaching.. This in turn will enhance their teaching and students' performance in chemistry.

To ensure quality chemistry teacher education, the chemistry curriculum has to be reviewed regularly to be in line with current trend in teaching and learning of chemistry. There should be improved welfare package for teachers; this will serve as a boost to their morale.

Conclusion

This paper discussed the role of chemistry and chemistry education in achieving sustainable development goals in Nigeria, status of chemistry education, challenges and problems confronting teacher education. Chemistry plays a vital role in the quest for national development; it unveils

the effects of pollution on the environment and how to curb them.

Recommendations

Based on the roles of chemistry in attaining sustainable development, this paper recommends that:

1. There should be increase in the funding of teacher education so as to encourage students to go into the teaching profession.
2. There is need for Teachers Registration Council of Nigeria (TRCN) to be more proactive and ensure the code of ethics and standards of teaching profession is strictly adhered to.
3. Government needs to be more committed to the welfare of teachers through improved conditions of service, regular payment of salaries and allowance as well as prompt promotions backed with financial rewards.
4. Chemistry teachers should explore improvisation of local materials in their locality in the absence of instructional materials for teaching.
5. Chemistry teaching at all levels should be practical oriented, this will ensure better performance, and thereby sustainable development will take place.

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INFLUENCE OF TEACHERS' CHARACTERISTICS ON EFFECTIVE TEACHING AND LEARNING OF AGRICULTURAL SCIENCE IN ASA L.G.A., KWARA STATE

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Abstract

Education being a very important tool for individual and national development cannot be neglected and undermined. This study was conducted to determine the influence of teachers' characteristics (teacher's qualification, experience etc) on effective teaching and learning of Agricultural science. The design adopted was a descriptive design of the survey type. A sample of 100 students was randomly selected from 10 schools in Asa, Kwara State. The instrument used was a structured questionnaire divided into five sections. Frequency count was used to answer the research questions, while Analysis of Variance (ANOVA) was used to test the hypotheses. The findings of the research showed that teachers qualification, teaching experience, method of teaching and their attitude all have significant influence on effective teaching and learning of Agricultural Science. Based on the findings, it was recommended that during delivery of instruction, teachers should use a variety of teaching methods/equipment; Teaching and learning materials and ICT tools including computers should be made readily available in schools by the authorities and teachers should endeavor to attend workshops and seminars to improve on their teaching skills and effectiveness.

Introduction

Nigeria as a nation is struggling to be self-sufficient in all facets of life and also in the race to change her status, from developing country to a developed one. For us to achieve this, science and technology need to be better developed. Adu & Tadu, (2015) stated that there have been various efforts by government in improving the scientific and technological development of the nation. In the process of improving science

and technology, more emphasis was laid on science education. Olorundare (2014) as cited by Adeniyi (2014) found that Science education is responsible for discovering, developing and evaluating methods and strategies to be used in teaching science.

Agricultural science is one of the core vocational curricular subjects taught at both junior and senior secondary schools in Nigeria. Egbule in Modebelu (2013) defined agricultural science as a process of training