



Science Education Programme in 2016 and Beyond: A Quest for Social Stability and Poverty Alleviation in Nigeria

Dr.Garbashaibu¹, Dr.GarbaSaad²

¹Department of Science and Technology Education Bayero University, Kano-Nigeria

²Department of Education Bayero University, Kano-Nigeria

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ABSTRACT: The study focused on Science education programme in 2016 and beyond as a quest for social stability and poverty alleviation in Nigeria for sustainable development. Analytic method was used to review literature and qualitative method based on structured interview was also used to collect data from 20 Undergraduate students from the Department of Science and Technology Education BUK and 10 Postgraduate Students from the same Department. Two research questions were used for data collection. Data were analysed using table. The research analytic approach of the literature review revealed that social problems and poverty have direct link to security challenges in Nigeria. The qualitative data show that there is need for a radical strategic approach in the areas of skills acquisition through science education programmes for creation of employment opportunities and holistic restructuring of peace building mechanisms to curb the social ills and reposition the drifting Nigeria to a more purposeful track.

Keywords: Social/Historical Factor, Education, Science Education, Undergraduate students, Postgraduate students, Social Problems, Poverty Alleviation, Challenges,

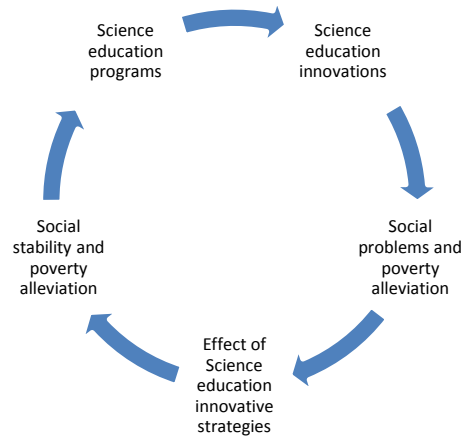
I. INTRODUCTION

Education existed within certain socio-historical context(s) and has remained the only essential and most significant instrument with which the overall experiences, cultural norms and developmental values of a given nation are transmitted across generations. Socio-historical context, refers to a given time and space. These two elements provide the historical and geographical confines and contexts within which human life and activity take place as well as they constitutes the factors that precipitate change and innovation. Change and innovation therefore, are the things that are not only constant but also inevitable in human history. Science education as an important segment of the education system occupies a central position in any sort of educational innovation activity. This centrality implies that while it is subject to change in the system, it is as well, the agent of the intended reform.

Change and Innovation in educational institutions, are perhaps the most critical points in present times, since they strongly impacts in stables socio-cultural and economic systems. As in line with Adebayo et al (2005) quality science and technology education is very crucial to national development and that technology education even at the basic education level is a veritable way to developing a stock of skilled manpower which a nation needs for development. Innovation in teaching and Science education in particular remains one of the most important aspects in the process of curriculum renewal; change depends on science teacher's effectiveness in a collective process of what they perceive and what they do. Currently, there has been concern in strengthen science teaching and directing it towards effective teaching and better students' understanding and functional skills acquisition. Numerous studies have been directed towards research on teaching styles of teachers, characteristics of a good teacher, the profile of successful teacher and students' perceptions of good teachers (Tailor and Harrington, 2003 & Borg, 2003). In global terms, the world is facing chronic teacher shortages that will persist beyond 2015 for future decades to come if current trends continue (UNESCO, 2013).

With the rapid changes occurring in the Nigerian society like all other societies in the world, the need to examine the contexts of science education innovation in the country becomes necessary. In this paper an attempt was made first of all to examine the aim of Science education, nature of Science, demonstrate the importance of science education innovation to national development and an overview of the state of the art in science education in Nigeria. The concept and motivating factors of science education innovation, the social problems and poverty alleviation efforts were then discussed. This was followed by DATA analysis on the effect

of science education innovation on social stability and poverty alleviation strategies in Nigeria and the challenges they posed. Against these discussions the actual challenges and contexts of science education innovation in present day Nigeria were identified and discussed. Recommendations and conclusion were then made. The diagram below illustrates the model of this paper.



1.2 Methodology

In this research study a qualitative research design was used to gather data. An interview question was conducted in order to collect the qualitative data from 20 Undergraduate and 10 Postgraduate purposely and randomly selected students in Science and Technology Education Department Bayero University, Kano-Nigeria. The data gathered were analysed in table form.

1.3 Problem of the Study

The situation in Nigeria today is such that many graduate are unemployed, they lack life skills in their area of specialisation as such so many atrocities affecting the nation economic and social life are depicted everywhere. Several developmental programs and reforms – Educational Reforms, MDGs, NEEDS, etc, were put in place in order to address some the socio-economic as well as educational issues unfortunately; Nigeria is yet to realize these potentials (Sanubi and Akpota, 2015). Hence the need to embark on this study is to examine Science education innovation in 2016 and beyond as a quest for social stability and poverty alleviation strategy for sustainable development in Nigeria.

1.4 Objective of the Study

Broadly the study examined the nature of Science education innovation currently and for the future, and proffer strategies and best practices in using Science education innovation for addressing the social problems and poverty issues in Nigeria.

Specifically it examined at:

- (1) The characteristics of Science education innovation in 2016 and beyond as opined by the study's sample.
- (2) The effect of science education innovation on the acquisitions of strategies for solving social problems and poverty alleviation in Nigeria

1.5 Research Questions

- (1) What are the characteristics of Science education innovation in 2016 and beyond?
- (2) What are the effect of science education innovation on the acquisitions of strategies for solving social problems and poverty issues in Nigeria?

II. SCIENCE EDUCATION AND THE NATURE OF SCIENCE

Good science education is true to the learner, true to everyday life and true to science. Then what should science education aim at? First and foremost to this question: what is the basic goal of education? Ideally True education develops and stimulates the spiritual, social, economic, intellectual and physical faculties of the children. Implicit in this aim is the notion that education has the potential to transform individuals and societies. What then should science education aim at? To be candid, any discussion on the aims of science education must take into consideration the Nature of science, its methods, scope and limitations.

Nature of Science Humans have always been curious about the world around them. The inquisitive and imaginative human mind has attracted to the wonder and awe of nature in different ways. One of these

actions has been to observe the physical and biological environment carefully, look for any meaningful patterns and relations, make and use new tools to interact with nature, and build conceptual frame of reference to understand the world. Science is a dynamic, expanding body of knowledge covering ever new domains of experience. How this knowledge is generated? Specifically what is the scientific method of investigation? The scientific method involves several interconnected steps such as: observation, analysis, critical thinking, looking for regularities and patterns, making hypotheses, devising qualitative or mathematical models, deducing their consequences; verification or falsification of theories through observations and controlled experiments, and arriving at the principles, theories and laws governing the physical world. Sometimes, a theory may suggest a new experiment; at other times an experiment may suggest a new theoretical model. Speculation and conjecture are also considered in science, but ultimately, a scientific theory, to be acceptable, must be verified by relevant observations or experiments or both. The laws of science are never viewed as fixed eternal truths they are always subject to change and modification (Adamu, 2012). Even the most established and universal laws of science are always regarded as tentative, subject to modification in the light of new observations, experiments and analysis. The methodology of science and its demarcation from other fields continue to be a matter of philosophical debate (Mintzes, et al. 2000). Its professed value neutrality and objectivity have been subject to critical sociological analyses. Moreover, while science is at its best in understanding simple linear systems of nature, its predictive or explanatory power is limited when it comes to dealing with non-linear complex systems of nature. Yet, with all its limitations and shortcomings, science is unquestionably the most reliable and powerful knowledge system about the physical world known to humans. Science is a social construct, it is knowledge and knowledge is power. With power comes wisdom and liberation, sometimes happens unfortunately, power can breed arrogance and tyranny. Science has the potential to be beneficial or harmful, salvager or destroyer. Occurrences in the twentieth century, is full of examples of this dual role of science. How do we use science to serve humanity and the world? The key to this depends on a strategic approach to issues threatening human survival such as money laundering, famine, social problems, poverty issues, etc. This is possible only through information, transparency and a tolerance for multiple viewpoints. In a progressive forward-looking society, science can play a truly liberating role, helping people out of the vicious circle of poverty, social vices, ignorance and unemployment. In a democratic term, Science, tempered with wisdom, is the surest and the only way to human welfare.

This contention ushers in the basic rationale for science education. Looking at the scenario of science education in Nigeria, three issues stand out remarkably. First, science education is still far from achieving the goal of peace, unity, respect, integrity, self-reliance and land of full opportunity for all citizens in our National Policy on Education. Second, science education, even at its best, develops competence but does not encourage self-reliance, job creation and creativity. Third, the paper and pencil examination system is basic to most, of the fundamental problems of science education in Nigeria. This is particularly so since, the growth of scientific and technological level of a country has become the main objective for majority of the nations. The implementation of knowledge into practice allows for the development of a competitive economy based on capital and on highly qualified labour force.

The extent to which gender equity has been attained with respect to participation and performance in STEM subjects has not been in favour of the females. A gender analysis of biographical data in Nigeria and in many other countries indicates that the female gender is grossly underrepresented in Scientific and Technological fields. In practice the number of female students in STEM in Bayero University, Kano-Nigeria for instance, is high in Biology education than in other subjects. In terms of the performance level it differs slightly with female achieving better than male in Physics and Mathematics (Shuaibu, 2005). The table below shows the STEM results in NECO/SSCE June/July from 2009-2010. The best students' performance in 2009 was in Biology where 43.34% have 5 credits pass (A1-C6) and in 2010 it was still in Biology with 45.26%.

Table 1: Level of Students' Performance by Subjects in NECO/SSCE June/July from 2009-2010.

Subject	Year	Candidates Reg.	Candidates that Sat	Credits Pass in %	Pass D7-D8 in %	Fail F9 in %
Mathematics	2009	1199664	1163689	27.15	39.18	22.72
	2010	1143169	1113177	25.62	46.01	22.42
Further Mathematics	2009	29614	25038	13.24	55.46	24.75
	2010	28706	23500	11.05	61.44	22.76
English Language	2009	1200398	1168546	23.38	46.04	19.62
	2010	1143169	1116195	22.05	53.74	18.27
Literature-in-English	2009	312451	290935	5.87	57.32	23.03
	2010	302243	283748	4.69	64.75	23.71
Biology	2009	1190881	1158141	43.34	23.06	22.71
	2010	1137906	1110753	45.26	28.47	20.26
Physics	2009	414291	401766	33.21	35.80	30.63
	2010	417532	407065	31.18	44.06	18.84
Chemistry	2009	415697	402785	43.34	30.13	21.00

	2010	418800	407889	37.99	37.32	18.71
Applied Electricity	2009	974	812	5.67	81.40	6.65
	2010	1138	1015	0.01	79.61	19.75
Technical Drawing	2009	11099	8923	43.14	30.70	22.32
	2010	12982	10178	43.60	32.84	22.47
Auto Mechanics	2009	276	226	44.69	36.28	16.37
	2010	256	240	13.75	64.58	20.47
Woodwork	2009	831	719	0	64.67	34.91
	2010	872	792	5.63	80.81	15.78

SOURCE: NECO Report (2010)

However Science education in Nigeria and world over faces a number of challenges namely:

- There is widespread concern about the outcomes of science education at school. Few students' offers science at school this leads to fewer applications for science degrees and reduces the supply of science graduates. More importantly, the number of students admitted for courses involving science or technology is reduced, which leads to skills shortages in many sectors. There are also low participation of female in the study of science-related subjects, students' poor experience of science education, the shortage of well-qualified and enthusiastic science teachers, and student's poor perception of science-related careers.
- There can be substantial discontinuities between what young people experience in their school science lessons and in the rest of their lives. Out-of-classroom contexts can add to and improve the learning of science in several ways. They can promote the understanding and integration of science concepts Therefore science educators should not ignore the crucial influences that experiences outside school have on students' beliefs, attitudes and motivation to learn. Some science teachers often see these influences only as a source of misconceptions
- All teachers know that what is taught by them is not the same as what is learnt by their students. As in all acts of communication, learners have to make sense of what they hear, see and read in terms of what they already know. Fundamentally learning involves individuals in actively responding to information and its situation, has been developed into several theoretical perspectives which have been used to inform the planning of science teaching Teachers can make this easier or more difficult for learners by the way that messages are put together, and the way that students' questions are elicited and answered.
- The science curriculum at any level of education is a statement about the elements of science selected to teach, selected from a much larger set of possibilities. Science educators have realised that major trends in 21st century scholarship on science itself, in particular the work of Popper and Kuhn, are important for science education. But much science teaching seems not to have absorbed this lesson.
- At intervals during, and especially at the end of, a science curriculum, summative assessment takes place in order to evaluate what has been learnt and to provide guidance on future choices. Current summative assessments have exposed many serious problems in terms of the level of students' performance and student's study habits. Assessment should drive the ideals of science, by inculcating in the learners scientific attitudes, systematic enquiry and problem solving skills. Such assessment must be frequent and continuous. The aim is not to generate data for categorizing learners but rather to evaluate students' strengths and weaknesses, using descriptive feedback and remedial lessons in order to improve students' skills and knowledge acquisition.
- Teacher is the most important factor that determines the quality of learning. The recruitment, development, and retention of good science teachers is very importance Studies show that the proportion of undergraduates willing to consider teaching seriously has broadly declined over. Despite this decline, potential teachers' judgments on the character of the job are comparatively stable. Students are often central to the attraction of becoming a teacher.

A way forward to the above challenges

- Teacher training institutions be made to emphasize adequate knowledge of content acquisition and current pedagogical and entrepreneurial skills;
- Increase in government funding of education to enhance the quality of teaching/learning environment.
- Science education should expose students to practical to enable them acquire scientific skills, attitude and competencies to meet both personal and everyday challenges such as social problems and poverty issues.
- Fundamental to the growth of Science education is innovation. This will not be realized until the goals of Science education are better delineated and the meta-discipline of Science education better defined; innovative Science education programmes and curricula are developed and teachers are professionally educated to deliver Science programmes and curriculum in line with current globalization trends.
- Programmes such as the Nigeria-UNESCO special Science Technology and Engineering (STE) Project and STEP-B Project should be extended to all post-basic institutions in the country as a step towards the

strengthening of the objectives of Science education. Improved relevance of Science & Technology education and relevance to the needs of Nigeria

- The emphasis must shift from assessment of learning in form of summative evaluation to assessment for learning based on formative evaluation. Doing this assessment as such would drive the ideals of science, by inculcating in the learners scientific attitudes, systematic enquiry, creativeness and problem solving skills.
- The entry-requirement and graduation performance criteria associated with teacher education institutions should be such that guarantee quality teaching work force that is needed to drive Science education programmes.
- Improvement of content knowledge and pedagogies of Science subjects through in-service graduate programmes and refresher training should be encouraged by the stakeholders in Science education programmes.
- In this era of globalization and students' poor performance in Science and Technology subjects at the SSCE level does not give the Nigerian nation the assurance of becoming one of the top 20 economies by year 2020 talk less of meeting up with the target of EFA and MDGs by 2015. In this line effective teaching and learning of Science and Technology subjects in schools focusing on social stability, Job creation, self-empowerments and poverty alleviation are some of the ways forward which will serve as bases for teachers' classroom reforms or innovations strategies in promoting Science education to greater zeniths.

III. SCIENCE EDUCATION INNOVATION

Nigeria has experienced an average GDP growth of 6.8% between 2005 and 2013. However, this growth in the economy has not been sufficient to enable poverty reduction and job creation. As a result of the reduction in government investments into the education sector, a number of private institutions at all levels of education have been established over the years. These increasing numbers of private schools (especially at the tertiary level) have been set up to satisfy the demand for education, both quantitatively and qualitatively. Between 2005 and 2013, the number of private universities in Nigeria doubled, rising from 24 to 50. Primary school enrolment has shown an overall relatively healthy increase over the time period. However, a 2012 EFA report revealed that of the estimated 61 million out-of-school children of primary school age in the world, as many as 10.5 million of these are in Nigeria alone. There is a wide and persistent gap between primary and secondary school enrolment marked by the highest level of only 44% secondary school enrolment attained in 2010. Tertiary school enrolment is dependent on the completion of secondary school. In a 2006 statistical analysis conducted by the National Population Commission, it was revealed that 33% of the working age population of Nigerians (aged 15 – 64) had received no form of education. In addition, only 13% of this population had received some form of tertiary education. Unfortunately, the standard of education at this level in the country has fallen quite badly in recent times. The system is characterised by low teaching standards, overcrowding, deteriorating infrastructure, amongst others.

Developmentally the Nigeria Education system underwent some number of reform which culminated into educational changes and innovation namely UPE scheme of 1954 and 1976, UBE scheme of 1999, MDGs of 2000 and specifically Transformation Agenda of 2011 which is aimed at:

- Reforming the Nigerian economy by creating millions of new jobs and promote infrastructural development.
- This would help to ensure that Nigeria becomes one of the world's top 20 economies by the year 2020 – Vision 20:2020.
- The education sector would potentially reap the benefits in the form of improved physical infrastructure (new school buildings, laboratories and student accommodation) as well as quality of teachers., etc

According to a 2014 webometric ranking of universities the highest ranked Nigerian institution was Obafemi Awolowo University in Ile-Ife, has a low African ranking of 21 and an even lower worldwide ranking of 1,926. This has caused a growing number of students mostly from wealthy background to go abroad in search of quality education. The 2014 Internet2 Global Summit, held in Denver, Colorado, USA, with the theme, “*Welcome to the New Era!*”, emphasised the fact that the world is entering a new era of innovation, community and transformation, in which the Research and Education community is a key driver. It attracted leaders from institutions around the world in an environment of open engagement, free exchange, partnership and collaboration. The Summit includes the NUC/NgREN delegation from Nigeria among about 700 global participants to learn new innovations and benefit from the peer review/presentations from other emerging RENS across the world.

The Internet2 Global Summit is a leading Forum that supports and drives the advancement of research and education, spurs next-generation innovation and accelerates global discovery. Some of the major topics discussed during the Summit included:

- Network Performance, Cloud, Trust, Identity and Middleware Applications;
- Network Architecture Operations and Policy;
- Global Innovation;
- Tackling Big Genomics Data;
- Innovative Campus Networking Applications;
- Innovative Global Trends in Video-Enabled Learning Spaces;
- Making Effective Use of Social Identities;
- Advanced Cyber infrastructure Research and Education Facilitators;
- Trust and Identity: Internet2 and In Common Strategies;
- Accelerating Global Collaboration to Address Common Challenges;
- Testbed as a Service: Creating Worldwide Laboratories;
- Operational Uses of Internet2 and MOU Partner Research and Education Networks (RENs); and
- Several other issues relating to administration, collaboration, building networks, etc.

Phillips's (2014) survey identified that employers and graduates emphasised the acquisition of the following skills in order to work effectively such as computer skills, subject/discipline knowledge, capacity to be flexible and adaptable, planning and interpersonal skills, Teamwork and Interpersonal skills, Effective verbal communication and the Ability to think critically and analytically as their top three "very important" skills. More than a fifth of the employers (23%) indicated that the least important skill required by graduates to work in their company was business awareness and entrepreneurial skills. All these skills are much promoted through effective science education program as identified from the 1976/77 Kano state Dawaki Science Secondary Schools project that contributed to the development of all calibre of manpower personnel in Kano state and Northern Nigeria in general.

To this length Nigerian educators are concerned about the need to improve learners' academic achievement in core subject areas (Mathematics, English Language, Science and Social Studies). The glut of researches on student's academic achievement in these areas is a disposition to this concern (Monica, 2014). This emphasises the need of revisiting the teaching and learning methods for better students' performance. For instance Student-Centred Learning is a teaching and a learning method which has its origin from constructivism, has emerged as a response to criticism of Teacher-Centred Teaching method, aiming to foster the effectiveness and efficiency of student learning. It is characterized by innovative methods of teaching and learning that aim to enhance student learning through communicating with their teachers and peers, fostering transferable skills such as problem-solving, critical and reflective thinking (Attard et al., 2010) inherent in science education. The method was adopted in schools by Science teachers in Nigeria in order to improve the quality of instruction and students active participation. Through practice and application students acquire skills, scientific thinking, and logical thinking, and given this strategy students have a sense of accomplishment, and develop respect for themselves and this in turn gives a sense to enjoy the curiosity for further learning and self-empowerment.

IV. SOCIAL PROBLEMS AND POVERTY ALLEVIATION

Currently, the social construction of reality is dynamic. Differences between countries and between people increase, and welfare gaps widen. Some groups accumulate, destroy, pollute and get richer, others get poorer. Some geographical spaces: cities and towns get overcrowded while others deserted. And vast numbers of people migrate. Successive governments in Nigeria have made series of attempts to alleviate poverty. Such as in 1972 National Accelerated Food Production Programme and the Nigerian Agricultural and Co-operative Bank; 1976 Operation Feed the Nation aimed at teaching the rural farmers how to use modern farming tools; 1979 Green Revolution Programme structured to reduce food importation and increase in local food production above subsistence farming; 1986 Directorate of Food, Roads and Rural Infrastructure [DFRRI]; 1993 Family Support Programme and the Family Economic Advancement Programme; 2001 National Poverty Eradication Programme [NAPEP], designed to boost and sustain poverty alleviation programme in Nigeria. All these programmes have failed woefully and have defiled all economic policies initiated to tackle poverty. The persistent of poverty in Nigeria is due to income inequality, long term ethno-religious conflicts, civil unrest, and political instability. For instance, income inequality worsened from 0.43% to 0.49% between 2004 and 2009. This is correlated with differential access to infrastructure and amenities. Specifically, there are more rural poor than urban poor. This is as a result of the composition of Nigeria's economy, especially the energy (oil) and agriculture sectors. A study by Ogunrinola (2008) on the distribution of unemployment reveals that unemployment in Nigeria affects job seekers within the ages of 20-24 and 25-44 years more than any other age groups in Nigeria. This marks a great threat to the domestic economy since it implies that many energetic youths are without gainful employment consequently idleness may result to poverty and social vices. A breakdown analysis of the study revealed that the secondary school leavers were worst hit by the unemployment crisis in

Nigeria. The study reveals that most graduates of polytechnic and university are relatively low in unemployment rate as compared to the school leavers.

Poverty: The concept of poverty has been defined from various approaches by scholars of divergent ideological perspectives. Poverty is classified into two forms: absolute poverty and relative poverty. The former means that a person's basic subsistence needs namely for food, clothing, and shelter are not being met while the latter means that a person's needs are not being met in comparison with the rest of his or her society (Alters, S. M. 2009). The United Nations Development Programme (UNDP) defines poverty as that income level below which minimum nutritionally adequate diets together with essential non-food requirements are not affordable. Poverty is grouped by UNDP in three broad categories as absolute poverty, relative and material poverty. Absolute poverty means the inability to provide such physiological subsistence such as foods, shelter, clothing, potable water, safety, healthcare service, basic education, transportation and gainful employment to the extent of being unable to protect human dignity. The category of people here, receive meagre income and their serving capacity is zero. Relative poverty means inadequate income to enhance active participation in societal activities to the extent that it hinders achievement of one's potentials. Poverty here means inability of one to satisfy his basic social needs. Material poverty is the deprivation of physical assets such as cash-crop trees, land, animal husbandry, etc. (UNDP, 1994). This paper considers all the three concepts of poverty.

In the early 1970s, Nigeria was rated as one of the 50 rich countries in the world because of its promising economic indices, but suddenly the nation's fortune declined to become one of the poverty-ridden countries in the early 2000s (Igbuzor, 2006). The decline is traceable to a number of factors, but apathy towards STM in preference for conventional education is a major factor. Official report also confirmed the shift towards conventional courses in the nation's tertiary institutions till date. To reposition the development process in Nigeria, the policymakers prescribed STM as a pragmatic education option for re-launching the nation towards sustainable development, poverty alleviation, responsible citizenship, technological progress and economic development (NPE, 2004; FME, 2005). The preference for conventional courses and neglect of practical skills precipitated massive youth unemployment, growing poverty rate, hopelessness, youth restiveness and very slow national development in Nigeria because graduates with conventional institutions lacked the hands-on skills needed by the world of work. The poverty and unemployment rates in Nigeria at present stood at 72% and 23.9% respectively (National Bureau of Statistics, 2011, Central Bank of Nigeria, 2011).

Ethical considerations of Science Education for Sustainable Development as underlined by Irina Bokova (2014) require that interactions between scientists and policy-makers address issues related to inequalities, extreme poverty, food security, health, as well as North-South divides in relation to development agendas, calling also for reinforced education and capacity-building. In a bid to redress the challenges of poverty, unemployment, low technological progress and slow National development caused by apathy towards STM, the policymakers pursued several socio-economic programmes, but their performances were woeful and catastrophic. Furthermore, poor mainstreaming of STM within the development process extricates Nigeria from the path of steady technological advancement and true economic independence. It is a point in which science education should lead us out of the ignorance of our misunderstandings, misperceptions and mistakes, regarding the social and natural world we inhabit, which should evolve to a context of discursively, morally and socially, ecologically, materially and economically sustainable, and personally healthy. When science educating the science educators for sustainability should plays their role in the social function of science, work and power. This represents that the distributed domains of the sayings, doings and relating (Kemmis, & Grootenboer, 2008) are to be related to the discourses of science educational innovation in any local situations. Diversity is today the new curriculum organizer, and diversities are opened to a world of multiple interactions, mixed identities, and multiple senses of belonging. At this point, Positive psychology and Positive actions in science education contribute to promote good interaction, democratic participation and a healthy balanced sustainable atmosphere of work to promote equal roles, diverse capabilities and abilities. Fundamentally, learning in the contemporary times with daunting environmental challenges should imbibe in the learners the proficiencies to make personal interpretations of knowledge acquired or must be problem solving-Functional skills acquisition based rather than limit learning to common experiences to what was conveyed in the learning environment or experiences acquired from others (Habermas, 1981).

Science education is critical to national development and yet there is a gap in our understanding of an Indigenous consciousness to cultivate not only formal science but also local knowledge inclusive, which can contribute to the search for home-grown solutions to local problems and challenges. Science education must be rooted in understanding local ecosystems and the particular socio-cultural and political context of the scientific knowledge. In effect, an Indigenous science knowledge system would comprise an understanding of the successful ways by which a people deals with their environments and surroundings to solve everyday problems and challenges.

For instance Agriculture is the second largest sector of Nigeria's economy the objective of government in this regard has therefore remained the substantial turn-around of agriculture to adequately play its proper role

in food supply, employment creation, poverty reduction, raw materials supply to industry, and diversification of the economy. In view of this, government has been making efforts to create enabling environment and incentives to private farmers, sensitize them through promotional and awareness activities, and provide infrastructure that would enhance their productivity. The specific policy measures in this regard include modernizing agricultural production, processing, storage and other practices, by introducing new and improved technology and seedlings. Other measures include the provision of farm inputs, encouraging local fabrication of farm machinery, encouraging state and local governments to develop grazing reserves, ensuring better and easier delivery of credit to farmers, assisting the unemployed to go into agricultural activity, revival of the strategic grains reserve program, and expansion of agricultural extension services.

However the most significant measure of addressing the dwindling nature of the agricultural sector is effective education of people toward the sector formally and non-formally through the policy maker's aspiration best own on Science and Technology. This necessitates effective development of Science, Technology, Mathematics and Agricultural Education. In this vein there will be a means of providing source of technical assistant and capacity building to the farmers and developing their economic potentials. *The African Manifesto for SCIENCE & DEVELOPMENT INNOVATION (STI)* By Urama, K. (2011) emphasised that Science, Technology and Innovation (STI) underpins almost every aspect of human life, so it is an increasing priority for the governments and people of Africa. Such innovations include Biotechnology development for food security, *Integrating Legumes into Maize System, Animals breeding, fish farming, etc.*

V. RESULTS OF THE STUDY

It is revealed that the general causes of social problems and poverty are multiple with different facets. Many literatures and studies have shown that those causes are much more related to socioeconomic issues and national economic system which are beyond the influence of the individual poor. There are so many causes of social problems and poverty in Nigerian society that are controllable ones like those associated with economic, social and political, in the sense that they can be checked by the government by placing on ground strong policy which can be implemented such that this study findings presented in the tables below.

Research Questions One

What are the characteristics of Science education programmes in 2014 and beyond?

Table 2: Students' responses on the current characteristics of science education programmes

S/N	Students' Response
1	<ol style="list-style-type: none"> 1. It makes the world sociable and comfortable 2. Introduction of Technology in the curriculum consolidate science education programmes. 3. Infusion of science education into medicine, engineering and technology as facilitated by Step-B project. 4. The used of multi-facets teaching such as activity and group methods, resource persons, e-learning, small group instruction, out-of-school visit, degree of classroom interaction fix-focused and goal-directed instruction. 5. It emphasised collection of empirical data, problem solving and application of knowledge and information to relevant situation. 6. Developing students' creativity, curiosity, systematisation, verification, research experiment, empirical data collection, scientific principle, attitudes and values in students and makes life better and real. 7. Developing fundamental skills that are needed for self-employment. 8. Globalization need of science and technology, development of scientific thinking inquiry of nature such as Biotechnology development in terms of crop production, animal breeding, etc. 9. It facilitates social approach to pure science to meet up with the global challenges as either Trans-disciplinary, collaborative, integrative or multi-disciplinary approach to socio-scientific issues. 10. It foster in the students the spirit of contributing toward the development of his society, self-dependent and helping others. 11. Introduction of new courses to equip the students to pursue their studies very well and to meet up with work and everyday life challenges.

The table above revealed the students responses on the characteristics of science education innovation currently in schools and contending them for the future. Some of them are the socio-scientific roles of science education innovations for catering about social issues for human survival.

VI. RESEARCH QUESTION TWO

What are the effect of science education programmes on the acquisitions of strategies for solving social problems and poverty in Nigeria?

Table 3: Students' response on the effects of science education programmes on the acquisitions of strategies for solving social problems and poverty in Nigeria.

S/N	Students' responses
	1. It help one to acquire skills, self-employment, creative and independent
	2. It make someone to be self-reliant and apply scientific knowledge in solving problems
	3. Individual become productive.
	4. Through science education individuals are encourage to conduct research and collect data.
	5. It encourages collaboration and partnership abilities in addressing issues and resource person.
	6. It provides one with skills, foster jobs creation, poverty alleviation, solution and understanding of social problems.
	7. Becoming a school proprietor, entrepreneur, self-employed through relevant vocation or career.
	8. Science education knowledge, qualification and social awareness leading to job opportunities.
	9. Applying the knowledge and skills acquired in becoming a publisher, resource person and business café/centre manager.
	10. Science and Technology are crucial for instrumental sustainable development of every country such as development of macro and micro economy through agriculture, manpower personal and other resources.

The table above illustrated the respondents' opinion on how science education programmes strategically could cater for social problems and poverty from the knowledge and skills acquired through sociability, employment, job creation, self-reliance, entrepreneurship and proprietorship.

VII. DISCUSSION OF THE STUDY

As pointed earlier by Ogunrinola (2008) on the distribution of unemployment reveals that unemployment in Nigeria affects job seekers within the ages of 20-24 who are mostly students' of tertiary institutions or universities. But this study's research question one and two in responding to this situation the respondents encouraged the study of science education programmes in order to acquire the fundamental knowledge and skills for becoming self-empowered and socially stable. Particularly in view of the strategic advantages for the study of science education programmes in the development of scientific attitudes, values and knowledge, problem solving skills, creativity, self-independent thinking and many other potentialities for the societal and individual sustainable development. This is in line with Habermas (1981) that learning in the contemporary times with daunting environmental challenges should imbibe in the learners the proficiencies to make personal interpretations of knowledge acquired or must be problem solving-Functional skills acquisition based.

VIII. CONCLUSION

This paper investigates the impact of Science education programmes in 2014 and beyond on social stability and poverty alleviation in Nigeria. Based on this intent, relevant literature was explored for deeper insight on the potentials of Science education programmes and associated challenges. For data collection, a total of 20 undergraduate and 10 postgraduate students were interviewed. The respondents were selected from Science and Technology Education Department using purposive and random sampling techniques. The finding from the interviewees indicate that Science education programmes has significant impact on social stability and poverty alleviation in Nigeria because of so many reasons such as acquisition of functional scientific attitudes, skills and values, creativeness, problem solving skills, self-employment, job creation, entrepreneurship among others. From the findings above, if society be stabled and poverty be alleviated and science education driven in Nigeria, there is need to create and implement policies that would encourage innovations, access and development of science education programmes in Nigeria.

RECOMMENDATIONS

1. With regards to funding for Science and Technology Education, the Federal and State Governments and other stakeholders are advised to appropriate adequate funding for the programmes in their annual budgets in order to enhance the capacity of science education programmes to meeting individual, group and national aspirations. Additional boost could come from the STEP-B Project and Tertiary Education Trust Fund (TETFUND) as intervention support in critical areas.
1. In the area of quality assurance, it is suggested that special attention should be paid to the development of adequate and competent manpower, instructional resources and infrastructural facilities available in the existing Science and Technology Education Institutions in Nigeria for optimal performance.

2. For the non-governmental organisations (NGOs) two interventions are required. The first is for increased exchange programme through internship, industrial attachment and capacity building training programmes designed to enrich the practical skills of lecturers and students to meet the needs of schools, industries, work place and society. The exchange arrangements are also expected to bridge the gaps between theory as disseminated in the schools and practice as exemplified in the working organisation and industry. The second intervention from the NGOs is to deploy their corporate social responsibility as support for Science and Technology Education institutions in the areas of instructional resources and infrastructural development.
3. The Science and Technology Education institutions in Nigeria need to reposition very well on capacity-building programmes for their instructors and lecturers for the purpose of keeping them abreast of new development in science education methodologies and curriculum harmonisation and standardisation facilitated by the quest of sustainable development in the globalisation trend. The curriculum should be relevant in addressing the societal needs and problems. The curriculum would considerably address the problem of graduate unemployment and underemployment, and would instil in students the necessary and relevant skills for their chosen field of work.
4. Science education programmes enable the students to derive the necessary values; skills and knowledge to enable them function effectively in the work environment and society. Hence, it is imperative that these science education institutions ensure that their graduates are empowered and make them productive contributors to the labour market and social stability.
5. In order to address the issues of lack of learning space, reduce the incidence of overcrowded classrooms and to make science education more accessible for all, alternative ways of delivering science education should be applied. Such as the use of technology would be instrumental here, to enable online learning for the students. In addition, strategies must be developed to **blend community-science** commonly refers to as **ethno-science** into the relevant curricula, so as to make the science education programmes more applicable to the learners' local environment and experience.
6. The quality assurance bodies, including those for the lower levels of education, must ensure that academic achievements are constantly monitored, tracked and analysed, in order for the necessary corrective steps to be taken.

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