



RE – ENGINEERING TEACHER EDUCATION FOR SUSTAINABLE DEVELOPMENT IN ENUGU STATE, NIGERIA



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Abstract

This study examined re-engineering teacher education programmes for sustainable development at the basic education level in Enugu State, Nigeria. Descriptive survey research design was employed in the study. Data was collected using a twenty item researcher's structured questionnaire titled "Re-engineering Teacher Education Programmes for sustainable development Questionnaire (RTEPSDQ). The reliability co-efficient of 0.79 of the instrument was obtained using Cronbach Alpha method. Two research questions and one null hypothesis guided the study. The instrument was administered to 260 teachers in two urban and two rural public primary schools in four local government areas of Enugu state, Nigeria. 211 copies out of the 260 copies of the instrument administered to teachers were retrieved. Data analysis was done using mean with standard deviation while the hypothesis was tested using t- test statistics at 0.05 level of significance. With grand means of 3.29 and 3.25 for teachers, the implication is that teachers are of the opinion that sustainable development will be promoted when those changes are made in the school curriculum. It is recommended among others that teacher training and professional development should be greatly advocated to promote sustainable development.

Keywords: *Re-engineering, teachers, teacher education, programmes, sustainable development.*

Introduction

Sustainable development is a real challenge for our country. The world in general is facing numerous challenges including climate change, environmental degradation, social inequality, and economic instability. These challenges have significant implications for sustainable development which is essential for ensuring a prosperous and equitable future for all (UNESCO, 2019).

There are several paths towards achieving sustainable development. These paths according to UNESCO (2019) include sustainable agriculture, sustainable consumption, sustainable education etc. Education as one of these paths is a fundamental tool for achieving a more sustainable world, which is the essence of sustainable development Goal4 (SDG4). Sterling (2016) avers that, though, education does not bring about more sustainable future, it is however true that without education for sustainable development, we cannot manage to create a sustainable future.

Sustainable development according to Nayar (2013) is a development that meets the needs of the present without compromising the ability of the future generation to meet their own needs. In furtherance to this, the author opines that sustainable development promotes critical thinking and decision making in a collaborative manner. Hence, it could explore students and create opportunities for them to learn and examine how the resources they use affect the earth. However, much emphasis is now laid on education as a tool for sustainable development.

Education can be seen as a tool for sustainable development across all nations. As contained in chapter 36 of Agenda 21, it is defined as a basement for sustainable development. Thus, in the declaration which was adopted at World Sustainable Development Summit in 2002, it was described as an instrument for creating of humane and oriented at solving of mankind's society problems where everybody is granted his or her dignity. For education to be regarded as a tool or instrument for



sustainable development, it must be connected with values and ethics. Corroborating on this, Galteseva, Svitich, Kutsiy, Savechecho and Strukova (2020), assert that education for sustainable development is an important instrument for formation of values and knowledge about society that is in the state of balance and harmony with nature and provides balance between human's needs and its cooperation with environment.

Education for sustainable development (ESD) is a vision of education that seeks to balance human and economic wellbeing of people with cultural traditions and respect for the earth's natural resources (Arjen & Walls, 2010). Continuing, the authors reiterate that it emphasizes the aspects of learning that enhance the transition towards sustainability including future education, citizenship education, education for a culture of peace, gender, equality, and respect for human rights, health education, population education, education for protecting and managing natural resources, and education for sustainable consumption. For UNESCO (2023), ESD is a powerful strategy to transform education, covering what we learn, how we learn it and the environment in which we learn it. It sees education as the key to unlocking progress in all the global development goals. Education for sustainable development according to Abderrahim (2019), generally refers to the critical interrelationship between educational systems and sustainable development. The author further states it stresses the vital role educationa. Policies and programmes play in the successful implementation of sustainable and equitable development policies and programmes and the achievement of sustainability goals. Corroborating on this, Downess in Abderrahim identifies two dimensions of sustainable development as a curriculum development dimension whereby educational issues are incorporated into the learning process of each generation, and a human resources dimension whereby the educational system provides the skills, training and knowledge for a society to achieve the objectives of sustainable development.

Through education for sustainable development (ESD), people are greatly empowered with the knowledge, skills, values, attitudes and behavior to live in a way that is good for the environment, economy and society (UNESCO, 2014). ESD equally encourages people to make smart responsible choices that help to create a better future for everyone. Moreover, ESD focuses on participation, cooperation and engagement in teaching and learning. These methods according to Boevede Pauw, Genrike, Olsson and Berglund (2015), can generate changes in people's mentalities and can influence their attitudes and behavior while at the same time enabling them to cope with challenges of sustainable development. Consequently, ESD is a means of promoting key competencies for sustainability such as critical thinking, systematic thinking, self - awareness, problem solving e.t.c. Furthermore, ESD allows every human being to acquire knowledge, skills attitudes, and values necessary to shape sustainable future. The whole idea is to create a world that meets the needs of the present without compromising the ability of the future generations to meet their own..

In Nigeria, ESD programmes aimed at integrating sustainability principles into various levels of education from primary education to higher education. One of the most important things we can do to ensure a better future for our planet according to Twin (2023), is to educate the next generation on the importance of sustainable development goals (SDGs). SDGs as an integral part of doing this can be incorporated into the classrooms. Sustainability principles equip learners with knowledge, skills, attitudes and values necessary to address environmental, social and economic challenges for sustainable future. They can only be achieved through the application of interactive activities and hands on projects by teachers. Twin (2023), says that teachers as role models can help students understand sustainable development goals and how they can make a difference. Continuing, the author stresses that by introducing the students to the sustainable development goals through many approaches, they can help create a more sustainable world. This can help develop a sense of social responsibility in students empowering them to take active roles in making our planet a better place. Teachers as bridge builders in education can fill this gap by helping students to develop skills and knowledge needed to make a positive impact in their communities and elsewhere. Moreover, by introducing SDGs to students, teachers can help build a better understanding of how their actions can contribute to their achievement of these goals and help them develop a sense of social responsibility that will empower them to take

active part in creating a sustainable future. Inserting sustainability into education system involves a multifaceted approach that draws from various disciplines and pedagogical strategies (Senguptal et al in (Smelkova.Trofymenko. 2024). A number of approaches have been identified to be used in introducing students to sustainable development goals. These approaches include integrating SDGs into the curriculum, incorporating project based learning, real world connections, interactive activities, e.t.c. To achieve this, the focus should be on teacher education

Teacher education can be described as a process of training people to equip them effectively and efficiently to teach children from pre-primary to higher education level with the intention of achieving the objectives of education. According to Nnokami and Sule (2017), teacher education is the professional education of teachers towards attainment of attitudes, skills and knowledge that will make them efficient and effective in their work in accordance with the need of the society at any point in time. The authors further state that it includes training/education before service (pre- service), and education/ training during service (in service or on the job). For Imoge in Nnokami and Sule (2017), teacher education can be defined as the policies and procedures designed to equip prospective teachers with the knowledge, attitudes and skills they require to perform their tasks effectively in the classroom and the wider society. In the words of Swallow & Will-Dubyak (2020), teacher education refers to the process of training and preparing individuals to become qualified teachers.

Teacher education according to Good's dictionary of education include all the formal and non – formal activities and experiences that help to qualify a person to assume responsibilities of a member of the education profession or to discharge his responsibilities more effectively. Teacher education is the professional training that teachers receive for them to be classified as professionals (Jibril, 2007). Moreover, Jibril defines teacher education as the foundations of quality in the educational system and this is the key to unlock all facets of development. For Ipaye in Jibril teacher education is charged with the task of developing knowledge and skills as basis for practice, with preparing personnel entry into the teaching profession (pre-service), and with contributing to the ongoing development of practicing professionals (in- service),

In the words of Mkpa (2015), teacher education can be described as the procedures designed to equip teachers at the pre-service and in-service levels with the knowledge, skills, and competencies needed to perform their professional duties successfully. Continuing the author says that, it is a set of planned activities which are projected towards helping teachers to acquire appropriate knowledge, skills and attitudes so as to enable them function as creative, effective and competent teachers. With the acquisition of knowledge, skills and competencies teachers are now fully prepared to instruct and guide their students to achieve their objectives.

Teacher education plays a vital role in preparing and developing educators who will be instructing and guiding students in educational settings. It encompasses the processes and programmes designed to equip aspiring teachers with the knowledge, skills and competencies necessary for effective teaching and facilitating students' learning through teacher education programmes.

Teacher education programme is a programme that integrates course work and field work with purpose of preparing future educators for classroom teaching in a school system (Swallow & Will-Dubyak (2020), Teacher education provide prospective and practicing teachers with the necessary tools and resources to effectively engage with students, create supportive learning environment and promote academic and personal growth (Likes, 2023). A sound and viable teacher education programme is essential for qualitative improvement of the general educational provision for the citizens of the nation (Mahuta, n.d). According to the Federal Republic of Nigeria in its National Policy on Education (2013), it is highlighted that no education system may rise above the quality of its teachers. Therefore teacher education shall continue to be given major emphasis in all educational planning programmes and development.

In Nigeria, teacher education programmes are categorized as either pre- service or in-service training with various options for each. While pre-service training prepares individuals to become qualified teachers, in- service training on the other hand, aids teachers who are already on the job to

enhance their skills and knowledge. The objectives of teacher education according to Federal Republic of Nigeria in its national Policy of Education (2013) include the following;

- i. to produce highly motivated, conscientious and efficient classroom teachers for all levels of our educational systems;
- ii. to encourage further the spirit of enquiry and creativity in teachers;
- iii. to help teachers fit into social life of the community and society at large and enhance their commitment to national goals;
- iv. to produce teachers with intellectuals and professional background; There are a number of teacher education programmes in Nigeria.(Pp. 56)

Teacher education programmes in Nigeria are structured at three levels: The Nigeria Certificate of Education (NCE). Bachelor's degree in Education, Postgraduate diploma in Education and various in-service Training options including advanced Diploma in Education (ADE), Pivotal Teachers Training Programme (PTTP) and Advanced Diploma in Environmental Education (ADEE) (Nigerian Teachers Institute, NTI, 2021). These programmes are designed to equip teachers with the necessary knowledge, skills and competencies for effective quality education delivery and to prepare them for various roles within the education system. The Nigeria Certificate of Education (NCE) has been earmarked as the minimum qualification for entry into the teaching profession.

Every aspiring teacher must at least possess this minimum entry qualification before getting into the teaching profession. Jibril (2007), however, says that the quality of education depends largely on the quality of the teacher. To buttress this, Jubril reiterates that whatever input is made into an educational system in respect of management, resources, facilities and array of instructional materials, will be of little avail if the teacher is unskilled, poorly trained, or even ignorant. This means that teachers should be well trained before going into teaching job to be able to deliver quality education to their students for sustainable development. Corroborating on this, Abderrahim (2019), asserts that teachers, educational supervisors, directors and administrators must receive strong training before they step into their jobs. In Nigeria, teacher education has witnessed many reforms over the years. Despite this laudable reforms, the Nigerian teacher education programmes is still faced with many challenges (Ogunode & Agwor 2020).

Challenges facing teacher education programmes in Nigeria are many and varied. Umeora and Ogunode (2020). Identified these challenges as inadequate funding, inadequate lecturers, inadequate infrastructural facilities, poor supervision, brain drain, strike actions by teachers, poor capacity development of lecturers and others. Udida, Bassey, Udofia and Egbona in Umeora & Ogunode (2020) observe that the major issue in educational development is shortage of funds. Corroborating on this, Nnokami and Sule (2007) assert that the first and perhaps the greatest challenge facing Nigeria and making it difficult for good and quality education that is capable of bringing about sustainable development is inadequate funding by federal, state and local governments to the extent that funding has been in response to conditionality imposed by International Financial Institution (IFI).

In a study carried out by Hennessy, in Davison and Ezeh (2023), it was discovered that there are many factors and barrier that affect the use of technology in the education process in general and classroom in particular. Hennessy identified a range of physical and cultural factors that affect ICT use

by teacher, including lack of reliable access to electricity, limited technology infrastructure (especially internet access, bandwidth, hardware and software provision), language instruction and available software. Balanskak in Davidson and Ezeh (2023) also reported that there are a variety of boundaries, such as, the lack of ICT skills that could limit teachers in using IGT tools. Again, the author reported that many teachers are reluctance in using ICT tools in teaching. Despite, these challenges, teacher education programmes could still be re - engineered to promote sustainable development.

To re-engineer teacher education for sustainable development in Nigeria, the focus should be on improving the quality and relevance of training programmes, enhancing professional development opportunities and addressing the challenges faced by teachers. This includes integrating technology into teaching, promoting critical thinking and problem solving skills and ensuring teachers are equipped to handle the complexities of 21st century classroom. Wordu and Emesiobi, (2023), submit that the

solution to the problem of teaching in teacher education in Nigeria lies in re-engineering teaching through integration of digital learning whereby teachers use a wide range of activities to complement classroom work set the scene and engage lecturers in challenging activities. The many reforms made in education globally and in Nigeria call for the need to reform and reposition teacher education and profession (Ofoegbo & Ebebe, 2016). In furtherance to this, the authors outlined a number of reforms such as:

- a) The formal adoption of the 9- year basic education programme through the enactment UBE ACT of 2004. This led to the introduction of Basic Science and Technology, and computer Studies/ ICT in primary education components.
- b) Introduction of French as a compulsory subject for primary 4
- c) The infusion of such new emerging issues as Vocational and Technical Education. HIV/AIDS Education
- d) In the new curriculum structure for the 3-year Senior Secondary Education which now incorporated 34 trade/ entrepreneurship subjects.

Following these reforms, and ensuring that they are adopted, there is need for teachers efficiently and effectively utilize ICT in the classrooms especially in rural areas to acquire a better standard, Olarewaju, Adebayo. Omotosho and Olajide (2021), reported that high level of poor socio economic status, poor internet connectivity and lack of electricity in the remote areas has resulted to great digital divide gaps in schools in rural areas. These have negatively affected the educational status of rural schools and its environs. There is need to give full attention in addressing the digital divide in order to attain the targeted objectives of sustainable development (Akabugwo, 2022).

Studies have shown in different parts of Nigeria that learning and the use of ICT at the basic education level is still very low especially in rural areas. Hence, there is the need to integrate ICT into basic education curriculum early enough to enhance quality delivery of education at the basic education level. Egede and Asabor,(2019), assert that IT was included in the basic education curriculum as from primary one. Similarly, the FRN in her National Policy on Education (2013), has also integrated IT as a theme into the former Basic Science and Technology subjects from primary one to Junior Secondary School Three (JSS3). All are to ensure effective and quality education delivery by teachers for sustainable development

Statement of the Problem

Despite the importance of sustainable in the world and Nigeria in particular, it has been observed that many teacher education programmes do not prepare teachers adequately to address the issues of sustainable development in their teaching practices. As a result of this, there is a lack of awareness and understanding among the students about sustainable development concepts, issues and solutions. For this reason, there is a clarion call to tackle this problem for re-engineering teacher education programmes in order to equip teachers with the current knowledge, skills, and attitudes necessary to promote sustainable development in schools and in the community at large.

The researcher having seen the imminent danger of lack of the absence of these concepts and issues in the teacher education programmes in Nigeria, intended to carry out this study to determine how these problems can be handled to prevent their impending consequences. The study therefore aimed to explore numerous challenges facing teachers in the delivery of quality education and proffering solutions to them through re- engineering teacher education programmes in order to promote and support sustainable development, thereby improving the qualities and capacities of teachers to teach sustainable development concepts and practices.

The researcher is not aware of any study that has tried to examine the problems of this study, neither is there any empirical evidences to support this claim.in Enugu State or elsewhere in Nigeria. Therefore, it is against this background that the researcher carried out this study. The poser then is, to what extent do teacher education programmes promote sustainable education development in Enugu State, Nigeria.



Purpose of the Study:

The main purpose of this study was to determine the extent to which teacher education programmes promote sustainable development in Enugu state, Nigeria. Specifically, the study determined;

1. the challenges teachers face in delivering quality education in urban and rural areas,
2. the changes that will enhance teaching for sustainable development in Enugu State, Nigeria.

Research Questions:

The following research questions guided the study;

1. what are the challenges teachers face in delivering quality education.
2. what changes will enhance sustainable development in Enugu State, Nigeria.

Hypothesis:

The following null hypothesis tested at 0.05 level of significant guided the study.

HO1; There is no significant difference in the mean ratings of teachers in the urban and rural areas on the challenges they face in delivering quality education in Enugu State, Nigeria.

Method:

Descriptive survey research design was employed in this study. This study was carried out in Enugu State primary schools which are the bedrock of basic education in Nigeria. The population of the study consisted of 260 teachers in four local government areas of the state. Two of the schools are in the urban area while the other two schools are in the rural area.

Data were collected using the twenty item questionnaire titled “Re-engineering Teacher Education for Sustainable Development Questionnaire (RTEPSDQ). The validation of the instrument was done by three experts from the faculty of Education, Enugu State University of Science and Technology, Agbani. Two of these experts are from the Department of Educational Management while the other one is from Department of Mathematics and Computer Science Education (Measurement and Evaluation option).

The reliability co-efficient of the instrument was determined using Cronbach Alpha method. An alpha value of 0.79 was found indicating a high reliability of the instrument. The questionnaire was administered to the respondents directly with the help of four research assistants. Following the administration and collection of the instruments, some were lost and some were badly filled. At the end, out of 98 copies of the questionnaire administered to teachers in the two schools in urban area, 93 were retrieved giving 94% return rate, while 151 questionnaire out of 162 questionnaire administered to teachers in the schools in the rural area were retrieved giving 93% return rate, Any rating between 2.5 and above was regarded as very great extent, while those below 2.5 were regarded as very low extent. Data collected were analysed using mean with standard deviation, while t- test statistics was used to the hypothesis at 0.05 level of significance.

Data Analyses And Results

Research question 1: To what extent do the following pose challenges to teachers in delivering quality education for sustainable development?



Table 1: The mean and standard deviation scores on the extent the following pose challenges to teachers in delivering quality education for sustainable development

	Rural = 162			Urban = 98			Total = 260		
	X	SD	Dec	X	SD	Dec	X	SD	Dec
Inadequate teaching Resources	3.07	1.05	GE	3.43	0.50	GE	3.20	0.90	GE
Large class size	3.50	0.77	GE	3.29	0.70	GE	3.42	0.75	GE
Outdated curriculum	3.34	0.75	GE	3.57	0.50	GE	3.43	0.67	GE
Outdated teaching aids	3.67	0.62	GE	3.57	0.50	GE	3.63	0.58	GE
Insufficient training for teachers	3.33	0.75	GE	3.57	0.50	GE	3.42	0.67	GE
Limited relationships with the community members	3.15	1.08	GE	2.86	0.99	GE	3.04	1.06	GE
Inability of teachers to apply GE modern teaching methods		3.25	0.72	GE	3.43	0.50	GE	3.32	0.65
Poor background of students to adapt to modern teaching methods	2.91	1.19	GE	3.14	1.13	GE	3.00	1.17	GE
Lack of cooperation with parents	2.81	1.15	GE	2.86	1.13	GE	2.83	1.14	GE
Poor funding of schools	3.50	0.77	GE	3.86	0.35	GE	3.63	0.66	GE
Grand Mean	3.25	0.88	GE	3.36	0.68	GE	3.29	0.83	GE

Data in table 1 shows the mean response score of teachers in urban and rural location on the extent the above factors pose challenges to teachers in delivering quality education for sustainable development. From the table, the teachers in both urban and rural areas agreed to all the listed items with mean score greater than 2.50 set for the study. Therefore, the overall grand mean score of 3.29 shows that the listed items to a great extent posed challenges to teachers in delivering quality education for sustainable development.

Research question 2: what are the changes that enhance quality education delivery for sustainable development?



Table 2: The mean and standard deviation scores on the changes that enhance quality education delivery for sustainable development

	Rural = 162			Urban = 98			Total = 260		
	X	SD	Dec	X	SD	Dec	X	SD	Dec
Integration of sustainable concepts GE	3.25	0.72	GE	3.14	0.64	GE	3.21	0.69	
Encouraging inter- disciplining approaches	3.08	0.50	GE	3.14	0.64	GE	3.10	0.56	GE
Encouraging team teaching Techniques	3.33	0.63	GE	3.43	0.50	GE	3.37	0.58	GE
Attending teacher training and professional programs by teachers	3.40	0.64	GE	3.57	0.50	GE	3.47	0.60	GE
Organizing workshops for teachers	3.49	0.65	GE	3.86	0.35	GE	3.63	0.58	GE
Organizing seminars for teachers	3.17	0.80	GE	3.71	0.45	GE	3.37	0.74	GE
Providing modern resources	3.16	0.80	GE	3.14	0.64	GE	3.15	0.75	GE
Leveraging on technology	3.25	0.72	GE	3.14	0.64	GE	3.21	0.70	GE
Involving stakeholders in decision making process	2.74	1.01	GE	3.00	1.07	GE	2.84	1.04	GE
Increasing students' awareness on SDGs	3.00	0.70	GE	3.43	1.06	GE	3.16	0.88	GE
Grand Mean	3.19	0.72	GE	3.36	0.65	GE	3.25	0.71	GE

In table 2, the data reveal the mean response score of teachers in urban and rural location on the changes that enhance quality education delivery for sustainable development. From the table, the teachers in both urban and rural areas agreed to all the listed items with mean score greater than 2.50 set for the study. Therefore, the overall grand mean score of 3.25 shows that the listed items to a great extent bring changes that enhance quality education delivery for sustainable development.

H₀₁. There is no significant difference in the mean ratings of teachers in the urban and rural areas on the challenges they face in delivering quality education in Enugu state

Table 3: t-test on the mean ratings of teachers in the urban and rural areas on the challenges they face in delivering quality education in Enugu state

Group	N	Mean	SD	T	Df	Sig	Dec.
Rural	162			3.25	0.61	-1.469	258
0.143	NS						
Urban	98			3.36	0.46		

Table 3 shows that the t-calculated value of -1.469, is not significant at 0.143 level of significance, which is greater than 0.05 level of significance set for the study. Therefore, the null hypothesis is not rejected as stated. This means that there is no significant difference in the mean ratings of teachers in the urban and rural areas on the challenges they face in delivering quality education in Enugu state.

Discussion of Findings:

With the mean ratings of 3.29 and 3.25 for teachers in both urban and rural areas, on the challenges they face in delivering quality education for sustainable development, it was found out that teachers in both urban and rural areas agreed to a great extent to all the listed items. This finding is in consonant with that of Umeora and Ogunode (2020) who identified numerous challenges facing teacher education programmes in Nigeria as inadequate funding, inadequate lecturers, inadequate infrastructural facilities, poor supervision, brain drain, strike actions by teachers, poor capacity development of lecturers and others.

With the mean ratings of 3.29 and 3.25 for teachers in both urban and rural areas, it was found out that they all agreed to a great extent on the changes that can enhance quality education delivery for sustainable development. This finding is in consonant with that of Wordu and Emesiobi, (2023), who submit that the solution to the problems of teaching in teacher education in Nigeria lies on re-engineering teaching through integration of digital learning whereby teachers use a wide range of activities to complement classroom work, set the scene and engage lecturers in challenging activities.

Conclusion:

It was concluded that teacher education programmes can be re-engineered for sustainable development through integrating sustainable concepts into school curriculum. Moreover, sustainable development will be promoted when those changes are made in the school curriculum.

Recommendations

Based on the findings of this study, it is recommended among others that;

- 1) teacher training and professional development should be greatly advocated to promote .
- 2) teachers should be encouraged to embrace the 21st century classroom
- 3) students should avail themselves of the opportunity of the modern teaching techniques
- 4) government should appropriately fund education and procure the necessary facilities for effective teaching and learning

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