TEACHERS' PERCEPTION OF SCIENCE EDUCATION FOR POVERTY ERADICATION IN SENIOR SECONDARY SCHOOL, KWARA STATE, NIGERIA

Abidoye Florence Omosholape, Aladesuyi David Adeyemi & Ahmed Mulkah Adebisi

Department of Science Education, Faculty of Education, University of Ilorin, Ilorin, Kwara State.

Abstract

This study explores teacher's perception of science education for poverty eradication in senior secondary. It investigates the causes of poverty and the obstacles that hinder the potential of science education to alleviate it. Conducted in Kwara State, Nigeria, the research engaged 111 secondary school science teachers. One hundred and eleven questionnaires were analyzed using percentage and mean. The results of this study have shown that science education is a catalyst for poverty eradication. In addition, inculcating technical skills in students, developing creative skills of the students, developing entrepreneurship skills of the students, developing vocational skills of the students and problem-solving skills are how science education should be structured to help develop skills to solve real-life problems and generate wealth**.** Furthermore, the study revealed that technical skills, fostering creativity, developing entrepreneurship abilities, nurturing vocational competencies, and enhancing students' problem-solving capabilities be structured in science education to help develop skills. Moreso, the study concluded that science education plays a pivoted role in poverty eradication and sustainable development, because it underscores the potential that foster indigenous learning, ecocentric perspectives, circular economies, empowerment, and liberation, contingent on addressing associated challenges. The study recommends that valuable insights should be provided into transforming science education to empower students with practical skills for poverty reduction and socioeconomic development.

Keywords: Teachers' Perception, Science education, poverty eradication, Senior Secondary

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Corresponding Author Email:
abidoye.fo@unilorin.edu.ng,

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Introduction

No nation can grow or develop politically, socially, economically, scientifically, and technologically above the level of education of its citizens in general and science education in particular, and it has become necessary for countries of the world to regenerate education (science education in particular) for poverty eradication.

The issue of Poverty and Education was extensively discussed at a workshop held in Kampala, Uganda in 2001. The workshop was organized by the United Nations Educational Scientific and Cultural Organisation (UNESCO, 2001). At the workshop, Julius Nyerere said that "Education is not a way to escape poverty but a way to fight it". This underscores the role of education in poverty eradication. A commitment to poverty eradication was also one of the most important outcomes of the World Summit for Social Development held in Copenhagen in 1995, where abject poverty was considered a severe injustice and an abuse of human rights. Its action program proposes to support livelihood systems and survival skills to help poor people combat poverty. Subsequently, the United Nations General Assembly declared the period from 1997 to 2006 as the first United Nations Decade for the Eradication of Poverty. One of the sectors to be developed to help poor people combat poverty was education. The role of education in poverty eradication, in close cooperation, with other social sectors is crucial (Goldemberg, 1998; Omoniyi, 2013; Ozturk, 2011). According to Omoniyi (2013), education fosters self-understanding, improves the quality of life, and raises people's productivity and creativity thus promoting entrepreneurship and technological advances

Education plays a very crucial role in securing economic and social progress thus improving income distribution which may consequently salvage the people from poverty. No country has succeeded if it has not educated its people. Not only is education important in reducing poverty, but it is also a key to wealth creation (Ozturk, 2011). Science is the study of nature. It involves the understanding of natural phenomena and it is a major source of discovery and economic development. According to Goldemberg (1998), the United States of America, countries in Western Europe, Japan, China, and other Developed Nations have achieved their feat because they have developed their science and technology education and have utilized the products of well-developed science education programmes. For developing countries to reduce poverty and develop their economies, they must take the issues of science education more seriously

The teaching and learning activities in the classroom must not focus only on academics– that is teaching and learning on acquiring a chain of certificates, but rather geared towards using the acquired knowledge for creating wealth and reducing poverty. Recent studies have reported that the quality of teaching and teachers were dominant factors in students ' poor performance in science subjects. for instance, in a research conducted by Adebayo, Sekoni, Lan, Odubanjo, Akinyemi, Obembe, Olanipekun, Osungbade, and Omigbodun, (2018) on "science education in south-west Nigeria" it was found that many factors such as inadequately equipped laboratories, inadequate access to ICT by the in-school youth, low ratio of teacher to students are challenges in majority of the schools. Other factors include a lack of textbooks, science equipment and facilities, and poorly equipped laboratory rooms (Batomalaque, 2015). Large class sizes, inadequate funding, insufficient curriculum resources, poor teaching skills, and lack of support for teachers among other factors further limit the quality of science teaching and learning in Nigerian schools (Okebukola, 1997)

Statement of the Problem

Despite the renewed commitment over the past 15 years and more to poverty reduction/eradication as the core objective of international development discourses and policies, progress to this end remains disappointing (UNDP, 2003), due to the lip service being paid to science education. The impact of science education on poverty reduction has not been felt in most countries. Perhaps in the effort to improve access to education, the extent to which the teaching and learning of sciences in schools has not helped to bring about a reduction in the level of poverty of the students, their parents, members of their immediate environment, and ultimately the society at large has not been fully studied. Thus, improving scientific education has become of paramount importance in determining a country's socio-economic development of the country. It is based on this that research focuses on what promises teaching and learning science can reduce poverty.

Objectives of the Study

Specifically, the focus of this study included to find:

1. the causes of poverty
2. factors frustrating the objectives of science education on poverty reduction/eradication?
3. how science education should be structured to help develop skills to solve real-life problems and generate wealth.
4.

Research Questions

The following research questions were answered.

1. What are the causes of poverty?
2. What are the factors frustrating the objectives of science education on poverty eradication?
3. How should science education be structured to help develop skills to solve real-life problems and generate wealth?

Literature Review

Theoretical framework

The theoretical framework used in the study is the Human Capital Theory. The human capital theory regards education as an important driver for poverty reduction and economic growth (Jandhyala, 2002). Scholar such as Smith (1776) is credited with the human capital theory but it was Schultz (1961), who emphasized the role of human capital in economic growth. Mincer (1972), Becker (1964), Denison (1962), and Schultz (1961), have all given different perspectives on the formation of human capital but they place education as a top priority in economic growth theories.

Proponents of this theory believe that human capital leads to higher economic growth and education is the most important driver (Lucas, 1988; Mankiw, Romer & Weil, 1992; Romer, 1990; Schultz, 1961) although there are other components of human capital such as on the job training, health, occupational mobility, and skills. That is, investment in education leads to the formation of human capital, which is significant for economic growth. Romer (1989), said human capital constitutes the "stock of skills and productive knowledge embodied in people". These skills acquired improve the productivity of the individual thereby having a positive effect on earnings. It should be emphasized that the human capital theory reorganizes the direct (e.g.,

good nutrition and health) and indirect effects such as improved productivity and earning of education on development.

From the aforementioned, human capital theory emphasizes the significance of education as a key component of human capital formation and its impact on the productivity of workers and their earnings. Science Education helps to increase workers' productivity which improves their earnings and reduces poverty. It should be emphasized that Human capital is largely affected by the quality of education. As reported by the World Bank (2018), the majority of children are schooling but not learning. This has led to what the World Btermsterm as learning poverty—which means the "inability to read and understand a simple text before age 10" (World Bank, 2018). It is clear that if this issue is not addressed it will lead to a human capital deficit which will affect the positive impact of science education on poverty reduction as found in the literature

Methodology

Participants

One hundred and eleven Science Teachers randomly selected from 111 Secondary Schools in Kwara Metropolis, Kwara State, Nigeria, participated in the study. The ages of the sampled Science Teachers ranged between 25 and 56 years. Fifty-seven (57%) percent of them were women, while 43% were men. They have all taught Science for at least seven years at the SS level. They all possessed minimum qualifications (Bachelor's Degree in Chemistry and other Chemistry-related courses and the Teacher Registration Council of Nigeria (TRCN) for teaching at the SS level. Kwara metropolis has four Local Government Areas. All public SS schools and the Science Teachers in all the schools in the four local Government Areas were the target population. However, by using the simple random technique, one hundred and eleven (111) Senior Secondary Schools were sampled and all the Science Teachers in each sampled school were surveyed.

Materials

A questionnaire titled "Science Education and Poverty Eradication" (BSEPE) was used. It was administered to the sampled Science Teachers. *BSEPE*: It consisted of four sections A, B, C, and D. Section A sought information on demographics such as qualification, year of experience, and age. Section B sought information on the causes of poverty. Each statement was placed on 4 points on 4 points Likert scale of "Strongly agreed(SA)", "Agree(A)", "Disagreed(D)", and "Strongly disagreed(SD)". There were five items each under Sections B, C, and D and the reliability of the items was 0.81 (Cronbach Alpha). Section C sought information on factors frustrating the objectives of science education on poverty eradication. Section D sought information on how science education should be structured to help develop skills to solve real-life problems and generate wealth.

Procedures

The questionnaire was administered to the Science Teachers in their schools. Ten postgraduate students at the Institute of Education, University of Ilorin, Ilorin, Nigeria, were engaged as research assistants. Each research assistant was assigned ten schools. In each school, all the Science Teachers cooperated very well and the return rate of the questionnaire was about 97%. The questionnaires retrieved were analyzed using percentage and mean.

Results

Results are presented in the order in which the research questions were stated.
Research Question One: What are the causes of poverty?
Table 1 presents the results.

Table 1: Mean responses of Science Teachers on causes of poverty in secondary school

S/N	ITEMS	MEAN	DECISION
1	Lack of vocational skills and entrepreneurial abilities	2.76	Agree
2	Inequality of income distribution	2.89	Agree
3	Low income due to discrimination	2.90	Agree
4	Low educational background	3.71	Agree
5	Unemployment and under-employment	3.93	Agree
	GRAND MEAN	3.23	

Table 1 suggests that the majority of the teachers thought that lack of vocational skills and entrepreneurial abilities, inequality of income distribution, low income due to discrimination, low educational background, and unemployment and under-employment are the causes of poverty, as presently constituted have mid-point higher than 2.5.
Research Question Two: What are the factors frustrating the objectives of science education on poverty eradication?

Table 2: *Mean responses of Science Teachers on factors frustrating the objectives of science education on poverty eradication*

S/N	ITEMS	MEAN	DECISION
1	Obsolete teaching methodology	2.83	Agree
2	Lack of adequate practical exposure	2.67	Agree
3	Lack of instructional materials	2.96	Agree
4	Inadequate qualified science teachers	3.00	Agree
5	Curriculum deficiencies	3.16	Agree
	GRAND MEAN	2.92	

Table 2 suggests that Obsolete teaching methodology, Lack of adequate practical exposure, Lack of instructional materials, Inadequate qualified science teachers, and Curriculum deficiencies are the factors frustrating the objectives of science education on poverty eradication, as presently constituted have a mid-point higher than 2.5, it, as presently constituted.

Research Question Three: How should science education be structured to help develop skills to solve real-life problems and generate wealth?

Table 3: *Mean responses of Science Teachers on how science education be structured to help develop skills to solve real-life problems and generate wealth*

S/N	ITEMS	MEAN	DECISION
1	Inculcating technical skills in the students	2.93	Agree
2	Develop creative skills of the students	2.77	Agree
3	Develop entrepreneurship skills of the students	2.76	Agree
4	Develop vocational skills of the students	2.70	Agree
5	Problem-solving skills	3.16	Agree
	GRAND MEAN	2.86	

Table 3 suggests that inculcating technical skills in the students, developing creative skills of the students, developing entrepreneurship skills of the students, developing vocational skills of the students and problem-solving skills are how should science education be structured to help develop skills to solve real-life problems and generate wealth, as presently constituted have mid-point higher than 2.5, it, as presently constituted.

Discussion

The results of this study have shown that science education is a catalyst for poverty eradication. This is in line with Helen (2020) who observed education for the future. Critical evaluation of education for sustainable development goals. The result shows that science education can lead to indigenous learning, ecocentric, circular economy, empowerment, and liberation if the strategies and challenges are addressed.

The findings of research question one revealed that lack of vocational skills and entrepreneurial abilities, inequality of income distribution, low income due to discrimination, low educational background, and unemployment and under-employment are the causes of poverty. This is in agreement with the United Nations (1995) who observed the report of the world summit for social development and world development report: poverty. The results show that poverty has various manifestations which include among others: lack of income and productive resources sufficient to ensure sustainable livelihood; hunger and malnutrition; ill health; limited or lack of access to education and other basic services; increased morbidity and mortality from illness; homelessness and inadequate, unsafe and degraded environment and social discrimination and exclusion.

The findings of research question two revealed that obsolete teaching methodology, lack of adequate practical exposure, lack of instructional materials, inadequate qualified science teachers, and curriculum deficiencies are the factors frustrating the objectives of science education on poverty eradication. The findings are in line with Nwagbo (2005) who investigated the attainment of professionalism in science education. The result shows that science teachers lack the basic knowledge and skills needed for appropriate science teaching, especially at the primary school level which is the foundation of education". Also, Nwachukwu (2012) observed Revisiting science education and national development. The result shows that curriculum issues, quality of teachers, methods of teaching, and poor evaluation are factors frustrating the objectives of science education on poverty eradication.

The findings of research question three revealed that inculcating technical skills in students, developing creative skills of the students, developing entrepreneurship skills of the students, developing vocational skills of the students and problem-solving skills are how science education should be structured to help develop skills to solve real-life problems and generate wealth. This

is in line with Mijung and Diong (2012) who investigated science education for Social and Sustainable Development. The results show that science education is key to ensuring that provides the knowledge base to support entrepreneurship. Larai, Christine, Christiana, and Naomi (2017), affirmed that knowledge of and about science is integral to preparing our population to be actively engaged and responsible citizens, creative and innovative, able to work collaboratively and fully aware of and conversant with the complex challenges facing society.

Conclusion

In conclusion, this study affirms the pivotal role of science education in poverty eradication and sustainable development. It underscores the potential for science education to foster indigenous learning, ecocentric perspectives, circular economies, empowerment, and liberation, contingent on addressing associated challenges. Poverty's root causes, including the lack of vocational skills, income inequality, discrimination, low education levels, and unemployment, align with international reports. The study also highlights obstacles in science education, such as outdated teaching methods, limited practical exposure, instructional deficits, insufficient qualified teachers, and curriculum deficiencies. To realize its potential, science education should be reshaped to cultivate practical problem-solving skills and entrepreneurship, aligning with broader research in the field.

Recommendations

The following recommendations were made based on the findings of the study;

- Educational institutions and policymakers should revisit and update science education curricula to align them with the evolving needs of society. This includes integrating practical, real-life problem-solving exercises and emphasizing entrepreneurship and vocational skills.
- There should be investment in the professional development of science teachers to equip them with the necessary knowledge and pedagogical skills to effectively deliver science education. Special attention should be given to primary school teachers who form the foundation of education.
- Schools should have access to adequate instructional materials and resources, including modern teaching methodologies, laboratory equipment, and technology. This will facilitate hands-on learning experiences and enhance the quality of science education.
- Entrepreneurship education should be incorporated into the science curriculum to equip students with the skills needed to create wealth and drive economic growth. Encourage students to explore innovative solutions to societal problems.

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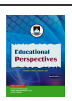

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