



doi:10.5281/zenodo.14723311

Teachers Competencies for Selected Science and Mathematics (SME) Subjects: Implications for Sustainable Development in Nigeria

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ABSTRACT

It is obvious that Teachers' Competences in Science and Mathematics Education Subjects are crucial in enhancement and sustainability of the country, like Nigeria. It is pertinent, that this paper exhumes the SME adverse effects for sustainable development. The study also talked about the historic nature of SME concept of SME in development and sustainability of Nigeria. The study also hangs on the factor influencing teachers' competences to SME educations delivery in Nigeria, and others. It also emphasized that teachers' competences is considered as one of the notable competences for teachers and learners general develop new ideas which SME can be achieved and some tips were also listed including its adverse effect for sustainable development and enhancement.

Keywords: Adverse effects, SME, Sustainable Development and Teachers Competences.

INTRODUCTION

The controversy regarding the ugly quality of education in Nigeria has been the talk of the day and an issue of concern nationally over the past decades without any realistic approach to enhance the situation. The ability of the country to explore the potential of its environment resides on the quality of education provided to its citizenry, and how well the citizenry have inculcate the culture a developing country with low economic, politics, cultural and technological indicators (AST, 2010).

In all the country today, there is a growing concern regarding the inability of teachers to effectively deliver in their assignments of teaching SME related subjects especially in public schools. This development has resulted to declining standard of education in the country. This is a clear indication of corrosive failure of students in SME such as the West African Examination Council (WAEC) and National Examination Council (NECO). This showed that students have not been well taught and

prepared by teachers in the various subjects. It is on this note, that the study attempts to find out teachers' competencies for some selected subjects in senior secondary schools in Rivers State.

Teachers are the hallmark of any educational hub around which any educational system revolves, Okoto (2000); teachers are with sound knowledge in their subjects areas with a view of achieving academic excellence in the classroom situation. (2022) stressed that good teaching can only be attained when resourceful, good and dedicated teachers are employee to lead, so as to guide against insufficient use of methods and strategies in teaching and learning process, competencies in teaching is not universal but depends mainly on individual teachers teaching habit and the school setting in which the teacher finds himself.

Teachers competencies has been seen as the impact that classroom factors such as teaching methods, teachers expectation, classroom organization and use if classroom resources, have on students performance (Abali, 2010) are expected to be honest, dedicated, firm and consistent in their job.

The progress and development of a nation anchored mainly on teachers. The quality of teachers determine the quality of education. So, teachers are considered an essential factor of any educational system because they are the backbone of a nation. Teaching competencies among teachers are one of the most critical factors in facilitating and enhancing study leaning, thereby bringing a positive alteration in the society. Jean (2011) teaching competencies is the degree of success of a teacher in performing instrucional and other duties specifically in his contrast and demand by the nature of his position.

Science is the bedrock of any nation as no nation can achieve scientifically, without paying adequate attention to its science education.

Standard (2014) posited that scientific knowledge is the collective heritage capable of solving problems confronting mankind and that it also guarantees a purposeful life for the majority of individuals globally, SME is an acronym for science and mathematics education. SME education is an important pre-requisite for the development of any nation. SME is the fundamental upon which capacity building and self – relief are built – upon.

CONCEPTS OF SME EDUCATION

The United Kingdom Departments of Education (2010) gave a reliable definition of SME Education. Science and mathematics education programme are defined as those primarily intended to provide support for or to strengthen science and mathematics education at other primary and secondary through post graduates levels including community education comprehensive SME education is an cross – disciplining approach to leaving where rigorous academic concepts are coupled with real – world lessons, students apply science and mathematics in content that commit school, community, work and globally (Dede, 2020).

SME is an acronym for science and mathematics education. SME education is a vital pre-requisite for the development of any nation. It is the pivot upon which science advancement revolves. SME education is a crucial to the strengthening of higher levels of education capacity building and self – reliant development. The inter – related nature of science and mathematics is such that as a seamless robe, it is integrated into one entity.” Science Education” whose policies and foundation hinged in mathematics (Ben, 2015) SME education contributes to general educational development and practice. It has become a stimulating point and necessary catalyst which has engendered the spirit of science and mathematics sustainable development throughout Nigeria.

All the fields of SME have some relationship both in contents as tools for development. Science accounting to Science Council Association (2020), is the pursuit and applications of knowledge of the national and social world following a systematic ways based on evidence while mathematics is defined as subject that deals with calculation and thinking.

Oxford Dictionary (2020) defined as the study of shapes and reasons and usually a special system of symbols and rules for organizing them. The level of development of any nation largely rely on the effective use of specialized knowledge and competences in these SME fields to hornets and manage its national resources (Kings, 2022). But mathematics is mortal in the world techniques being the creature

abilities that is backed up with sciences. SME education therefore occupies a special place in the educational systems. If nations as the foundations for developments because development is largely stir by science and mathematics (Erico, 2023).

Socio-economic transformation of any nation are accelerated turn around of the fortunes of the other countries more especially on the level of SME education.

Ada (2021) states that SME includes everything we experience from the natural world such as transportation, communication and skills.

IMPORTANCE OF SME EDUCATION

These skills are:

1. SME education help students develop effective reasoning in tackling day to day problem.
2. Problem solving and prediction
3. To be creative and emulative
4. Self-dependent

Factors influencing teaches' effectiveness to SME Education delivery in Nigeria.

1. Large Class Size

The emphasize involvement due to UBE programme has resulted in over-crowded classes. SME demands that students should be involved in practical work. Stephen (2021) stated that all learning in science must begin and end in the laboratory. The laboratory is a place where students solve their problems, generate and test the hypothesis.

2. Poor Teacher Quality

Some teachers in our schools today are incompetent. They lack knowledge as well as ideas that will yield good result during their time. The quality of teacher handling science subjects are few and majority of them cannot deliver.

3. Lack of Teaching Equipments

Nigeria schools suffers a lot of backwardness regarding affective teaching and learning (Miky, 2020) must schools in rural areas have know teachers to teach them including know equipments or materials to teach.

4. Unequipped Environment

Teachers need effective environment to sale in teaching, but lack of equipment has designed learning in schools' etc.

Characteristics of SME Teachers

1. To provide opportunity to students for competitions among themselves in practical and theory.
2. Flexible and open to change: One of the most challenging characteristics of SME teachers is to be adjustable in every situation.
3. To motivate and encourage students to embrace team learning.
4. To encourage sense of belonging and enhance effective learning.

Rules of SME Teachers

1. To pass subject matter knowledge and skills required for SME subject to thrive, both skills are vital for teachers who have determined to be acquired with teaching and learning process.
2. To develop SME learning activities and ensure needed materials for class use is provided for learning.
3. To ensure curriculum are designed based on the subjects invoke or for learning.
4. To ensure proper sensitization and workshops on SME
5. To train pre-service teachers and in-service.

SUGGESTIONS

It is pertinent that SME can enhance the teaching and learning when properly applied and given attention. This can as well help to ensure quality education. In this development government has not done so much on science and mathematics subjects in Nigeria, having known the importance of SME.

Too, having considered science and mathematics subjects very important, the following tips are therefore made:

1. Successful implementations policy regarding SME must be considered appropriate and both teachers and learners must have warm interest towards it.
2. There should be teachers training and retraining towards SME.
3. Curriculum should be designed in line with the needed objective that will enhance learning of SME in schools.
4. There should be appropriate guide on how to achieve the needed facts in SME.

CONCLUSION

Science and mathematics education is the key major subjects that expose students and teacher into serious thinking and calculation because of its nature as a course or subjects of enhancements. It also provide experience and competences to teachers and learners to get new ideas that will add value to their life. Science and mathematics education remains a valued subjects that can transform the present teachers and learners and ensure they are properly focused in knowledge, understanding, wisdom and practicals, science and mathematics education remains the hallmarks of every learners and teachers development in line with international perspectives.

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