

**MATHEMATICS INSTRUCTION AS A MECHANISM FOR SUSTAINABLE
ECONOMIC GROWTH IN THE MIDST OF HARDSHIP**

BY

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Abstract

Sustaining Nigeria's economic growth in the midst of hardship is a collective responsibility which requires collective efforts of entire citizens, irrespective of diversities. This study examined Mathematics instruction as a tool for achieving economic growth, most especially during difficult period. Samples of 150 Science teachers were purposively selected from Oke-Ogun Federal Constituency of Oyo State. A 20-item questionnaire was used to elicit reaction and for data collection. Mean was used to analyze the data collected. The results of the study revealed that Mathematics concepts and strategies used to deliver the subject matter have a lot of role to play in solving societal problems. Based on these results, it was concluded that attention must be given to Mathematics instruction as a mechanism for sustaining strong economy development and growth. And recommended among others, that Mathematics concepts should be selected to reflect the culture, needs, demand, and aspirations of the society based on the criterion of significance.

Keywords: Mathematics instruction, Economic Growth, Hardship

Introduction

The world is presently facing economic crisis and has changed the world and affected millions of people in ways that one could not imagine. Nigeria is also experiencing a turnaround in response to the development on the globe. In Nigeria, an average citizen may not be able to boast of three balanced meals in a day due to economic crunch and hardship that have affected the people over the years. The economic conditions seem to be at a standstill because of certain factors that have militated against her development. Nigeria's economic hardship could be attributed to poor implementation of mathematics instruction at various levels of our educational system and lack of economic empowerment which has affected tremendously its economic growth and sustainability.

Economy encompasses all the activities related to the production, consumption and trade of goods and services in an entity (investopedia, 2022). According to Britannica dictionary (2022), it could be the process or system by which goods and services are produced, sold and bought in a country or region. Growth, on the other hand, involves the entire social, economic, political as well as religious stability of a given nation that are facing some challenges which affects the development and sustainability of that nation which according to Lawal & Abel (2011) includes lack of executive capacity responsible for the formulation and implementation of national plans, lack of good governance, high level of corruption and indiscipline, the mono-economic base of the country, unstable educational policies and lack of adequate support for mathematics instruction/education among others. Therefore, economic growth is an increase in the production of goods and services over a specific period. In other words, it is the increase in the goods and services produced by an economy, typically a nation, over a long period of time (Amadeo, 2022). And, this is measured as percentage increase in real gross product (GNP). In view of this, the wealth and growth can only be sustained and brought to bear in the life of people when mathematics education or institution is given its rightful place. Education is the most valuable tool for human and economic growth of any nation. It is the development of the totality of an individual and, by extension, a nation in terms of cognitive, affective and psychomotor domains. It enables any nation to explore its environment. Federal Republic of Nigeria's National Policy on Education (2014) states clearly that government recognises education as the greatest investment that the nation can make to bring about civilisation, modernization, development and socio-economic progress. Oyekan (2004) averred that education could result to a sustainable

human development that could eradicate ignorance hunger, poverty and disease which are global issues among others. Mathematics education is the groundwork of any meaningful development without which a nation can never be prosperous and economically independent. This implies that the level of social and economic development is closely connected with the level of development in the knowledge of mathematics. Mathematics has been described as a precision tool used by all for a clear understanding of the physical world. It occupies a crucial and unique role in the human societies and represents a strategic key in sustaining the development of the whole mankind. The ability to compute, related to the power of technology and social organization, and the geometrical understanding of space-time, that is the physical world and its natural patterns, show the role of sustaining a society.

Man's present level of civilisation is a product of his ability to develop his potentiality in tapping the national resources through the development of technology. Since mathematics deals with logical reasoning and quantitative calculations, the theories and concepts given in mathematics help an individual to understand and solve various types of problems in academic as well as in real life situations. Also, the visible knowledge of mathematics is a necessity for social and economic transformation of any nation. Oluwayemi (2013) averred that human development is almost impossible without Mathematics and that no nation can develop beyond the level of her human resources. This simply means that the pursuit of Mathematics is vital and imperative for any society, community or nation in order to maintain its independence, ensure increased prosperity and keep its place among the comit of nations of the world in this era fourth industrial revolution.

Adeneye & Alfred (2017) opined that a country who aspired prosperity must shun violence in all areas, and then produce rational and analytical minds that can fashion out solutions and engage the methods of creative or productive in providing solutions to the enormous challenges facing her citizenry. According to Odili (2006), the objectives of teaching Mathematics includes generation of interest in Mathematics, development and practice of logical and abstract thinking, as well as development of ability to recognise problems and to solve them with related Mathematics knowledge among others.

In the study of mathematics, society at large gains a lot when considering our thinking and economic growth in this era of hardship in the country .The following are some of the merits of mathematics, according to AbdAlgani (2022)while quoting BosUtrech&Mehrtens (1977)

- Mathematics enables us to think analytically, which improves one's opportunity to travel and discover the reality of the world around them.
- The capability to think is developed through mathematics.
- Mathematics could help one to understand how things work.
- Mathematics encourages introspection.
- Our thoughts are stimulated by mathematics.
- Mathematics improves child's intelligence.
- Money could be made with mathematics.
- If you don't want to lose money, you'll need to know how to do mathematics.
- Mathematics could provide a child a passport to the rest of the world.
- In a world that is constantly changing, mathematics is very necessary.
- It is an important component of our daily lives.

By implication, for any nation to attain profitable success which can be seen in its sustainable economy growth, such nation must put its priority on mathematics instruction as the pivot stage of the nation's desire for sustainable economy growth. In this era of fourth industrial revolution, every nation, Nigeria inclusive, must acknowledge the corresponding skillfulness and manual ability in mathematics and mathematics instruction as the vital tool for attaining economy growth. The reason been that Mathematics penetrates the whole society, and its role would appear to be one of ever-increasing importance as its help is sought in handling situations and problems, which arise outside the field of Mathematics itself. Hence, this study focuses on mathematics instruction as a mechanism towards achieving a sustainable Nigeria economy growth in the midst of hardships in Nigeria.

Purpose of the study

The general purpose of this study is to examine Mathematics instruction as a mechanism for sustainable economic growth in the midst of hardship. Specifically, it sought to examine;

1. the roles of mathematics instructions towards the growth of Nigeria economy.
2. the extent mathematics contents enhance economy growth.
3. the strategies for improving the standard of mathematics instruction for the growth of Nigeria economy.

Research Questions

The following research questions were raised for the study.

1. What are the roles of mathematics instructions towards the growth of Nigeria economy?
2. To what extent do mathematics contents enhance economy growth?
3. What are the strategies for improving the standard of mathematics instruction for the growth of Nigeria economy?

Methodology

A descriptive research survey design was employed in this study. The population for this study consisted of all public secondary schools in Oke-ogun Federal Constituency of Oyo State, which comprises of 10 Local Government Areas divided into three (3) Federal Constituencies: Iseyin/ Kajola /Iwajowa/ Itesiwaju, Atisbo/ Saki west/ Saki East and Olorunsogo/Oorelope/ Irepo. The sample size for this study consisted of two (2) Local Government Areas randomly selected from each Federal Constituency which amount to six (6) Local Government Areas. The schools selected were from Iseyin, Kajola, Saki West, Saki East, Orelope and Irepo Local Government. In each of the Local Government Areas, five (5) schools were selected randomly and five (5) science teachers were given the opportunity to fill the questionnaire. The reason been that, the researchers opine that mathematics is universal language been used by science teachers to interpreted the results collected from laboratories.

In all, One hundred and fifty (150) science teachers were used as sample size for the study. The instrument for data collection was a questionnaire tagged “Questionnaire on Mathematics Instruction for Sustainable Economic Growth” designed to provide answers to the three research questions. The instrument was validated by three (3) experts in the field of test and measurement in the Department of Educational Psychology, Emmanuel Alayande College of Education, Oyo, Oyo State to provide the face and content validity for the instrument. Reliability coefficient of the instrument is 0.71 calculated using test-retest method. This was high enough and hence the instrument was reliable. The questionnaires were distributed by the researchers by hand, filled at the spent and collected back. This was to ensure all were returned.

Data collected was analyzed using mean on a four-point scale. A mean of 2.50 and above was accepted while a mean below 2.50 was rejected.

Results

The results were presented in live with research questions as shown in the table below:

Research Question 1: What are the roles of mathematics instruction toward the growth of Nigeria’s economy?

Table 1: Roles of Mathematics instruction toward the growth of Nigeria’s economy

S/N	Items	Mean	Decision
1	Mathematics is a language used to explain different phenomena or occurrences in the society.	3.14	Agreed
2	Mathematics instruction brings instruction brings about quantitative change in everyday situation.	3.11	Agreed
3	Mathematics instruction emphasizes economy development in terms of logical and analytical thinking.	3.22	Agreed
4	Mathematics is important and necessary for the solutions of life problems.	2.59	Agreed
5	Mathematics is placed at a position for ensuring all round economy growth and development.	2.89	Agreed
6	Mathematics knowledge is essential for the production of high skilled personnel required by economy experts.	2.81	Agreed
7	Mathematical knowledge is useful to reduce the present level of economic hardship.	2.66	Agreed
8	Mathematics serves as useful tools in understanding economy terminology.	2.86	Agreed

Cluster mean: 2.91 Agreed

Table 1 above, it can be observed all the items has cluster mean value that is above 2.50, hence it indicates that the role of Mathematics instruction is highly needed for the growth of Nigeria’s economy.

Research Question 2: To what extent do Mathematics concepts enhance economy growth?

Table 2: Extent Mathematics concepts enhance economy growth

S/N	Items	Mean	Decision
1	Mathematics concepts contents are used to explain laws and theory of economy growth.	3.53	Agreed
2	Mathematics concepts are used in the development of entrepreneurial skills in students.	3.39	Agreed
3	A mathematics concept is capable of providing lasting solution to the current economy hardship in the society.	3.21	Agreed
4	Mathematics concepts possess literacy that may enable students and individuals to participate in economy growth	2.90	Agreed

Cluster mean: 3.26 Agreed

From table 2, the cluster mean is above the bench mark, this is in line with the popular saying that knowledge is power.

Research Questions 3: What are the strategies for improving the standard of Mathematics instruction for the growth of Nigeria economy?

Table 3: Strategies for improving the standard of Mathematics instruction

S/N	Items	Mean	Decision
1	Mathematics specialists should be recruited to teach in basic and post-basic schools.	3.20	Agreed
2	Relevant agencies should sponsor mathematics teachers to conference, workshops, seminars and provide in – service training from time- to- time.	2.81	Agreed
3	Relevant stakeholders should take drastic measures to improve mathematics teacher’s competence, performance and effectiveness through supervision.	3.34	Agreed
4	Mathematics teachers should apply activity oriented strategies in mathematical class.	2.66	Agreed
5	Mathematics teachers should cultivate mathematical culture in children so as to build a solid foundation in mathematics.	3.26	Agreed
6	Mathematics teachers should include relevant technological and scientific implications and applications of each topic taught using experience in their immediate environment.	3.15	Agreed
7	Parents and guidance should supply their wards’ needs and encourage them to have love for mathematics.	3.27	Agreed
8	Government should provide and equip mathematics laboratories in our schools.	3.02	Agreed

Cluster mean : 3.09Agreed

From Table 3, with cluster mean value of 3.09 were accepted as the strategies for improving the standard of Mathematics instruction towards the desired growth of Nigeria economy.

Discussion of the findings

This study revealed that there is no way the economy of any nation will grow without mathematical inputs and applications. That is to say that effective Mathematics instruction play an important role in changing nation’s economic growth positively through logical thinking which are necessary for the solution of everyday activities. This is in line with Jekayinfa & Durojaye (2015) that concluded that exposure to Mathematics helps in developing an analytic mind and assists in better organization of ideas and accurate of thought.

In addition to this, Mathematics concepts help students and individuals to see the relevance of the subject to everyday life. This is in line with Charles-Ogan&Otikor (2016) that concluded that

Mathematics concepts help in Subject-matter mastery, and encourages students' interest and exploration on diverse way of usefulness.

Lastly, Mathematics teachers should strive to improve their classroom performance by employing learning environment strategies, and should also develop effective methods and skills that can stimulate students' interest in the subject for the immediate solution to the problems of the society.

Conclusion

Mathematics instruction in Nigeria is an indispensable area that requires to be given due attention if all mechanisms for all-round development of any nation is to be fully harnessed and boosted for strong economy. The economic development of Nigeria, no doubt, has been very unstable for a very long time due to poor economic policies and management. Even though Nigeria is to have strong economy over the past couple of years, it is still characterised by high rate of poverty. Therefore, all stakeholders must stand up to their responsibility in ensuring that a comprehensive Mathematics instruction is delivered in our schools so as to serve as a tool for achieving and sustaining Nigeria's economic growth in the current hardship being experienced.

Recommendations

The following recommendations were proposed based on the findings of the study:

1. Reforming Mathematics instruction to increase its relevance to the economy, labour market and national aspirations through a community driven curriculum.
2. Mathematics instruction concepts should be selected to reflect the culture, needs, demand, and aspirations of the society based on the criterion of significance.
3. Ensuring that knowledge acquired in Mathematics classroom is connected to life outside school and enriching the curriculum so that it goes beyond textbooks.
4. Lastly, seminars, conferences and workshop should be conducted for Mathematics teachers to emphasis the role of Mathematics in every situation.

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