

MATHEMATICS EDUCATION: A PANACEA TO SOCIAL ECONOMIC PROBLEMS

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Abstract

Socio-economic problems are factors that have negative influence on an individual's economic activities such as: lack of education, cultural and religious discrimination, overpopulation, unemployment and corruption. We are part of a globalised world that is reflected in problems associated with the development of the various dimensions of human endeavour. Intellectuals and scientists emphasize that human beings swing between a strong consumer tendency and the capture of immediacy. Relating Mathematics to real life issues will make learners to solve problems beyond the classroom boundaries (Fadara & Adedapo 2020). This paper therefore reflects on the work of Mathematics teacher as a key in the process of injecting the students with the required knowledge in solving socio-economic problems. Literatures were reviewed and practical strategies that focus on strengthening student's understanding of mathematical skills that can be of importance in real life problems were enumerated.

Keywords: Mathematics Education, Mathematical Skills, Socio-economic, Sustainability, Social transitions

Introduction

Family is regarded as the first group of socialization. However, the school is situated at key position in tailoring students to a more acceptable ways of living. This puts the Mathematics teacher in a major position of enhancing students' activities in the community. This is because teachers are the ones who have the power to influence, on daily basis and for hours, the knowledge and the reactions of the school community against the daily context, inside and outside the educational institution. Odili (2012) opined that Mathematics education as a discipline prepares students in gaining enough knowledge in becoming innovative instructors. He categorized Mathematicians into two: Mathematics educators and Mathematics professionals. Mathematics educators are for curriculum development, instructional development and pedagogy of Mathematics, while Mathematics professionals communicate Mathematics to learners at all levels of education.

The United Nations Organisation Report of 1987 highlights the close relationship between poverty and its consequences. Poverty, being a major socio-economic problem, is not only an evil in itself, but sustainable development requires meeting the basic needs of all and extending to the opportunity to fulfill their aspirations for a better life. Socio-economic problems and other catastrophe will always be a constant occurrence in a poverty endemic world (UN, 1987). Over the years, the United Nations Organisation has reviewed its Sustainable Development Goals (SDGs) to education aiming at ensuring inclusive and quality education for all and promote lifelong learning (UN, 2015). One of the goals by 2030 is to ensure that all learners acquire the knowledge and skill needed to promote sustainable development. Education is a major factor that will enable students to think about a life of sustainability, human rights, gender equality, promotion of peace, non-violence, contribution of cultural

diversity, global citizenship, a world free of social vices and appropriation of the contributions of culture towards sustainable development (UN, 2015).

Osafehinti (2015) describes Mathematics as a body of knowledge that is centred on concepts such as quantity, structure, space and changes as well as the academic discipline that studies them. He argued further that Mathematics is an organized thinking that involves the search for patterns and relationship which can be expressed in reason and the desire for aesthetic perfection. Mathematics is also regarded as a useful tool for the comprehension of scientific and technological advances, economic policies and business decisions as well as other complexity of social and psychological issues. Mathematics at all levels of education prepares students for quantitative and symbolic reasoning and advanced mathematical skills that are required in dealing with daily features of life (Fadara & Adedapo 2020). Mathematics education is a field of study which involves the tools, methods and approaches that facilitate the practice of teaching and learning of knowledge of shapes, patterns and arrangement of numbers useful in teaching problems

What is Quality in Education?

In the 21st Century, competencies refers to the need to cover all areas of human development in terms of social, family, personal and in the case of higher education, introduction into the labour world. Therefore, in addition to reading-writing and logic-mathematics, skills such as critical thinking, creativity, collaboration, computer thinking and problem solving stand out. The main aim of continuous and lifelong learning is to achieve equitable and inclusive education. This can be done in terms of intercultural dialogue and gender perspectives, as well as the relationship with minorities generated by race, religion, migration and gender preference with the perception that there are "others", embodied in different cultures and customs associated with unique processes of historical construction. There are at least two paths to take: understating or rejection, and both paths taken have their consequences. If a

respectful interaction is achieved in the school environment, then the bases for human rights will be greatly achieved. Many people teach, some are effective, they maintain students' interest in subject matter and then a few are truly great, they have spent much time in learning in order to be effective in teaching. Effective teaching is a bail of bright future whereas ineffective one digresses the environment (Hanif & Saba, 2002). Some evidence suggested that factors like class size, teachers' qualification, school size and other school variables may play an environmental role in student's achievement (Linad, 1999). Mathematics teaching is a field in which knowledge of the subject matter is the first necessity. Teaching Mathematics, however, involves more than knowing and enjoying the subject. The Mathematics teacher must be able to motivate his students, he must be able to guide them to discover ideas and he must be able to evaluate the achievement of his students (Mayor, 2005). Mathematical abilities are not innate but are properties acquired in life that are formed on the basis of certain inclination.

Orton (2001) observed that some persons have inborn characteristics in the structure and functional features of their brains which are extremely favourable to the development of mathematical abilities. He submitted that anyone can be an ordinary mathematician and that one must be born an outstanding talented one. There abound different methods for the proper working of Mathematics teachers. These methods of teaching are patterns of teacher's behaviour that are recurrent, applicable to various subject matters, characteristic of more than one teacher and relevant to learning (Farooq, Hussain & Mahmood, 2005). They stressed that successful teaching experience prior to professional training is an added advantage. Sidhu (1992) concludes that for a quality Mathematics education, every Mathematics teacher should prepare himself professionally. To be trained professionally is to educate a person so as to be fitted, qualified and proficient in doing some special assignment allotted to him (Dahama, 1999).

Moore (2004) suggested that for a quality education, teachers must be trained in the acquisition of certain competences related to aspects of classroom management,

long-term, medium-term and short-term planning, recording and reporting students' work leading to the achievement of the prescribed, assessable and acquired standards of living.

The National Policy on Education (FRN, 2013) rightly remarked that no education systems may rise above the quality of its teachers. This further underscores the Federal Government's effort not only to sensitize the nation to the importance of quantitative and qualitative teacher education but also to actually produce teachers who are highly motivated, conscientious and efficient. Onoshakokaiye (2011) stressed that teachers have various roles to play in the process of teaching and learning and that they need to be competent in their own area of specialization and also be able to apply different methods and strategies of teaching and understanding the learning process of students. Ololube (2009) observed that teachers have to be able to fuse their subjects matter knowledge and pedagogical knowledge into pedagogical content knowledge in their everyday activities in the classroom. It is of major interest that quality education of any community is based on the quality of teachers in such community. The work of Mathematics teachers in ensuring an egalitarian society cannot be overemphasized, because of the critical and logical reasoning involved.

Practical Strategies in Teaching Mathematics

Morin (2014) highlights that the figure of the teacher is decisive for the consolidation of an ideal model of education since the teacher "must be the orchestra director who observes the flow of knowledge and solves students' doubts". Teachers are the holders of public mission since they are educators of public opinion and future citizens. They need to be aware of the mission. Therefore, it is vital that Mathematics teachers articulate their basic academic understanding of Mathematics with other disciplines to dialogue with other fields of knowledge and, thus, be able to reflect with the students about the complexity of the current world, its past, and the future that they should build. In this content, Mathematics teachers should

lead the students to how past Mathematician used their knowledge of numbers and patterns in solving human problems. He should be able to link the past with the present and relate it to how future problems can be solved through the knowledge they gained in the classroom.

The complexity of our lives as a species requires continuous analysis and reflective processes that must be carried out by teacher in order to be able to transmit them into the school environment. This is an ideal space to explain the processes by which the problems of life, environment, violence, migration or poverty are shared globally since "Every person who takes on educational responsibilities must be ready to go to the forward posts of uncertainty in our times" (Morin, 2014). "A good teacher is kind, is generous, listens to students, encourages them, has faith in them, keeps confidence, likes teaching children, likes teaching their subject, takes time to explain things, helps them when they are stuck, tells them how they are doing, allows them to have their say, doesn't give up on them, cares for their opinion, makes them feel clever, treats people equally, stands up for them, makes allowances, tells the truth and is forgiving" (MacBer, 2000). All these qualities are in trained teachers, and for Mathematics teachers, all these qualities should be exhibited while teaching. This will not only make Mathematics interesting but as well make it meaningful and purposeful. An individual brought up in an environment of peace, love, affection and do it yourself, will be a smart problem solver in his community.

Puig (2011) submitted that moral culture is what is done in educational institutions. It is the set of educational practices that form the complex system of dispositions, actions, and activities of the educational institution. When moral culture does not hold up, external social problems filter into educational institutions and produce turmoil in teaching-learning strategies and processes. Moreover, it deepens the problem associated with the hidden curriculum of each teacher. In traditional pedagogy, moral culture was based on discipline, but presently moral culture in students can be impacted through affection, reflection and actions exhibited by

their teachers. All of these practices are done through dialogues and by listening to each other. Mathematics teaching should involve the teacher and the students. These will bring to the fore front the necessity in understanding different peculiarities in the culture of an individual and will lead to peaceful living with each other in the same environment.

Moon, Mayes & Hutchinson (2004) indicated that there are three main factors within teacher's control that significantly influence pupils' achievement. These are professional characteristics, teaching skills and classroom climate. Mathematics teacher's professional characteristics should be of listening and explaining to the understanding of his students. His teaching skills of teaching from simple to complex, known to unknown and diagrammed problems to worded problems will enhance good understanding by the students. Mathematics classroom should be a less tension environment as much as possible; students should be free to relate and interact with their peers as well as the teacher. Mathematics teacher that adequately explores all these three factors will not only produce students that understand Mathematics concepts but also those that are well behaved.

Mathematics teacher should encourage self-esteem in the classroom on daily basis, so as to let students know that school is a pleasant place, where they can find people that care for them and respect them for who they are. Children learn their prejudices from their families and take them to school. In school, their prejudices should not be reinforced by teachers, classmates, staff and the society in general. Therefore, it's the responsibility of Mathematics teacher to ensure that the cycle of intolerant behaviour and injustice is broken.

The teacher's quality is a major factor in the teaching-learning process of Mathematics. This is why the major emphasis in teacher's improvement programmes has been on producing more qualified teachers. The minimum recognised qualification for teaching in Nigeria is the Nigeria Certificate in Education (NCE). To this end, increasing the number of qualified teachers would mean increasing the number of NCE holders in

Nigeria. Olaoluwa (2017) observed that qualification, competency, efficiency and effectiveness are all factors required of a teacher in the teaching-learning process of Mathematics. A qualified teacher is one with the prescribed minimum general and professional qualification. He has undergone the prescribed courses and being awarded with the approved certificates. A competent teacher is the one who in addition to being qualified is also knowledgeable in the methods and principles of promoting learning in students. An efficient teacher is one who is able to apply the required teaching strategies in the classroom. While an effective teacher is someone who has the knowledge of the required methods and applies them creatively which translates to quality learning in students.

PTE (2011) as cited in Olaoluwa (2017) observed that qualified (i.e. certificated) teachers in Nigerian schools are not only insufficient but the available few presently on the field are not adequately catered for in terms of attractive welfare packages. He advocated for an Enhanced Special Salary Structure (ESSS) for teachers because the nature of its teaching demands for a committed, settled and devoted mind. A well catered for teacher will not engage himself in any other business activities and this will enable him to be more committed to his job of teaching students. A qualified, competent, efficient and effective Mathematics teacher will produce students that are well informed in Mathematical skills which will translate to an individual capable of providing for himself and his household. A well informed individual will pose no problem to the society.

It is important that at the beginning of Mathematics class, students and teacher should get to know each other. It is scary to participate in a class with members that you know nothing about. One activity can be implemented at the beginning of the class that will make students to mingle around the room. For instance, an activity like finding someone whose name is of six letters. This helps to break the "ice" and at the same time, students get to know more about one another. Mathematics teacher can use affective activities in the classroom. Affective activities will help student reduce anxiety

and feel more comfortable in class interactions. According to Amato (2003), affective activities in the classroom help students to reach an understanding of those beliefs and behaviours that give meaning to their lives. Furthermore, these activities provide interactions in the target language and at the same time bring students closer to one another. Teaching by tapping on multiple intelligences is also beneficial to create a positive Mathematics classroom environment. Using this strategy will promote more participation in the classroom since the lesson may be aimed to someone with a different learning style. Adding music, games, puzzles, role play, drama and debates can trigger the excitement and motivation of students to participate more in the class. Different grouping arrangements must be in place during instruction to give learners the opportunity to feel more comfortable and speak freely.

Mathematics teachers need to be aware of the "Action Zone". The action zone, according to Richard and Lockhart (1994), is the teachers' interaction with only a few students in the class. "An action zone is indicated by: those students with whom the teacher regularly enters into eye contact; those students to whom the teacher addresses questions and those students who are nominated to take an active part in the lesson". Once Mathematics teachers are aware of their action zone. They can move around the room or have different areas in the room where they deliver instruction as opposed to the traditional teacher controlled classroom. It is important to provide a silent period before students are ready to answer questions. One activity that can be implemented in large and small groups is having a talking pieces. Here, students sit in a circle facing each other and can speak only when they hold the talking piece. Implementing these ideas leads to greater participation from all students and a positive and respectful environment where everyone is welcome and valued because we need to learn how to live together in the 21st Century.

Conclusion:

The 21st Century Mathematics teachers should not be a bad teacher who creates a

tension based on pressure of unrealistic goals and deadlines and has a similar level of punishment for all incidents, big and small. Instead, he should be a good teacher who will always exhibit the qualities listed and emphasized by MacBer (2000). In every country, community and society, adults are the ones who must be informed about everyday events and the processes that have led to a period of time. This is in a bid to have a personal reading with answers to stand firmly in one's personal life and everyday work. Information and communication technologies can be valid tools in the process of being citizens of the world or social illiterates. Mathematics teachers are part of the social group that must educate in the complexity of the present thinking about the future.

Mathematics teachers should realize that it is crucial to generate educational practices based on moral culture. Ethics and understanding the complexity of human life is the ultimate goal. To this end, it is fundamental that Mathematics teacher as a helmsman should teach how to maneuver in turbulent waters of life as he does while solving mathematical problems. He should as well understand that the best way to arrive at a good port is, first of all, to listen to all the participants in order to incorporate resources that strengthen values towards a sustainable way of living in this complex reality.

Recommendations:

The followings are recommended based on the findings of this research work

1. Mathematics teacher must be able to motivate his students and guide them to discover ideas that will enable them in solving their daily socio-economic problems.
2. Mathematics teachers should become the strategists of education that lead to the great challenges of our 21st Century global society.
3. Mathematics class should be a less tension environment as much as possible to enable full participation of the students.
4. Mathematics teacher should be able to use various teaching strategies to drive home his points, since this will enable

the students to have various dimensions of handling problems.

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