TMP UNIVERSAL JOURNAL OF RESEARCH AND REVIEW ARCHIVES

VOLUME 2 | ISSUE 2 | YEAR 2023 | APR - JUN 2023

RECEIVED DATE	REVISED DATE	ACCEPTED DATE
15/01/2023	26/02/2023	07/04/2023

Article Type: Research Article

Available online: www.tmp.twistingmemoirs.com

ISSN: 2583-7214

IMPORTANT REASONS WHY MATHEMATICAL LITERACY MATTERS TO BOTH GENDERS: PERSPECTIVE FROM DEVELOPING ECONOMY

***NWOKWU, TOCHUKWU CHRISTIAN**

**Afroatlantic Consulting & Enterprises (ACE), Nigeria*

ABSTRACT

Mathematical literacy is as important as proficiency in reading and writing. Mathematics is so entwined with today's way of life that we cannot fully comprehend the information that surrounds us without a basic understanding of mathematical ideas. Confidence and competence in mathematics lead to productive participation in today's complex information society and open the door to opportunity. Too often, society has accepted the stereotype that mathematics is for the few, not the many. The reality is that mathematics is deeply embedded in the modern workplace and in everyday life. It is time to dispel the myth that mathematics is for some (i.e. the male) and to demand mathematics success for all (i.e. both male and female). We must truly embrace the fact that every adult and therefore every child can do mathematics. If we convey the conviction that mathematical literacy is for everyone (i.e. both male and female), our confidence in students will build their self-confidence. Self-confidence is a key ingredient in learning and success in mathematics.

Keywords: Gender, Success, Male and Female Students, Competence, Technology, Developing Economy, Mathematical Literacy, and Self-Confidence.

CORRESPONDING AUTHOR

Name: Nwokwu, Tochukwu Christian

Affiliation: Afroatlantic Consulting & Enterprises (ACE), Nigeria

Email: toojahchris@gmail.com

INTRODUCTION

Limited Mathematical Foundation and Special Needs among Male and Female Students

Disability in a student does not change the gender of that student neither does it change the intelligent

quotient of that student. The way there are able male and female students, similarly, there are disabled male and female students. With this in mind, the able students should have empathy for the disabled students. It should be noted that some disabled male and female students are graduates, while some of them are still in school, and while some of them are yet to be enrolled into school. Students with learning disabilities will benefit from problem-oriented instructional methods. Students with learning disabilities are often relegated to a narrow instruction in mathematics as simple rules and procedures (Woodward and Montague, 2002). Special education typically places considerable emphasis on rote learning and mastery of math facts and algorithms for basic operations rather than on problem solving. Narrow procedural knowledge will not be sufficient for students with special needs in their future schooling or work. Like all students, students with learning disabilities will benefit from a problem-solving approach focused on making sense of mathematics. Beyond this approach, students with specific disabilities may need additional attention. Sliva (2004) argued that for students with special needs, additional support in some foundational math concepts is often necessary, and recommended, as the mathematics they are expected to learn becomes increasingly more complex through the junior grades. Instruction needs to begin with what students understand. Teachers may need to make use of primary mathematics concepts, such as place-value understanding and counting principles. When teachers are able to recognize and identify the gaps in students' understanding, they can choose appropriate activities and problems to help close those gaps. Students who have needs that cannot be addressed adequately in the regular program should have access to additional support in mathematics, including the support of special education teachers with specific training in mathematics education. The mathematics instructional training provided for these teachers should include an examination of some of the big ideas in primary mathematics that students must understand in order to progress – for example, the decomposition and recompositing of numbers. While the field of addressing learning disabilities within a problem-solving framework is relatively new, programs that are being developed are worth investigating. See, for example, the primary division program Mathematics Recovery (Wright, Martland, Stafford, et al., 2002). Special consideration should be given to all students with special needs, including gifted students. Gifted students also need to be provided with interesting, rich, and challenging programs. Using a balanced approach to instruction, and teaching math concepts through problem solving, teachers can provide the students in their classes with problems that have entry points for all learners. Problems should be sufficiently rich to engage gifted students. Gifted students may require additional extensions or enrichments that will help them further develop their understanding of the mathematical concepts being explored by the class.

In addition to students identified as having learning disabilities, there may be other students, harder to identify, who are struggling quietly because they do not have a sufficient understanding of fundamental mathematical concepts. Teachers who focus on the oral communication and explanation of ideas can make use of their discussions with students, along with individual interviews, to identify struggling students and prevent them from "falling through the cracks". Such students will benefit from a program based on solving problems with a range of entry points and solutions that can be reached through a variety of strategies. When teachers use paired or group work, they may want to place these students with other students at a similar level of understanding. Students in such pairings will have an opportunity to explain, test out, and develop their own ideas, rather than being shown and told what to do by a stronger student.

Eating Well and Learning Well among the Male and Female Students

It is a well-known fact that boys eat a lot than girls. This point should not be overlooked when accessing the male and female students' academic performances. Irrespective of whether the male students eat much food compare to their female counterparts, what matters most is for both the male and female students to eat well in order to learn well. The link between diet and the ability to learn has also been clearly understood by health and education professionals for some time. Nutrient deficiencies, for instance anemia, adversely affect performance on intelligence tests, ability to complete learning tasks and create delays in academic achievement. Mathematics is a fundamental human activity – a way of making sense of the world. Children possess a natural curiosity and interest in mathematics, and come to school with an understanding of mathematical concepts and problem-solving strategies that they have discovered

through explorations of the world around them (Ginsburg, 2002). Yet, for many adults, the "sense making" of mathematics is lost. As educators we need to provide experiences that continue to foster students' understanding and appreciation of mathematics. By providing mathematics programs in which students explore and make sense of mathematical patterns and relationships, we can help students develop mathematical knowledge that allows them to solve problems and explore new ideas, in and out of the classroom. However, when interventions such as breakfast programs are introduced, there are demonstrated improvements in school performance, attendance rates and tardiness among the participants. Schools are in a position now to provide knowledge and reinforce healthy eating behaviours. When restocking our schools' vending machines, we have the opportunity to influence nutritional choices for our students. In the food category, the greatest concern is the fat content of most snack foods and portion size. Items such as pastries, donuts, chips and chocolate bars contain notoriously high levels of fat and low or no nutrients. Suggested alternatives, depending on their specific ingredients and nutritional value, are fruit, granola bars. Fruit is preferred choices as such a low percentage of elementary aged children are getting their recommended servings of fruits and vegetables. However, general mathematics is one of the compulsory subjects in secondary schools in Nigeria. The term mathematics has been defined by several authorities in different ways. Mathematics is the science of structure, order and relation that has evolved from elemental practices of counting, measuring and describing the shapes of objects. Several methods of teaching general mathematics have been proposed by different educators and the knowledge of these methods may help in working out a better teaching strategy. But it should be noted that eating well will go a long way in helping students to learn mathematics well. Why the researcher made this assertion is because sometimes why students don't understand mathematics while the class is still on is because either they are hungry or they are busy thinking of food to eat which in some cases are not yet available. Meaning that after school they have to go and look for what to eat. However, Joshi (2005) argued that the method of teaching a subject will have to be selected with regard to their ability to impact new knowledge, influence attitudes and develop practical skills. The aim of teaching must target changes to be applied in knowledge, skills and attitudes. The argument that "without mathematics there is no science, without science there is no modern technology, without modern technology there is no modern society" is seen in Okeke (2011). He went further to say that mathematics remains the central focus on which any true science can rest; no true science can succeed without going through mathematical demonstration. Mathematics being the basis of science and technology and a compulsory school subject is recognized as seen as the foundation without which a nation cannot become prosperous and economically independent. These days we are loaded with data that must be absorbed, sorted, organized, and used to make decisions. The set of ideas of everyday life such as making purchases, choosing insurance or health plans, and planning for retirement; all involved mathematical competence. Mathematics is the science of reasoning and computations. It is the science or study of numbers, quantities or shapes. Mathematics enables one to make the invisible to be visible, thereby solving problems that would be impossible otherwise. Mathematical demands on students increases as they progress through school; take up their adult lives at home and in the workplace. In order to function in a mathematically literate way in the future, students must have a strong foundation in mathematics. Okeke (2011) suggested that quality mathematics education is required for science and technology to attain its maximum height. In addition, all students should be able to understand, make sense of, and apply mathematics; make connections between concepts and see patterns throughout in mathematics. The trouble is most kids haven't yet learned moderation and balanced eating habits as part of a healthy lifestyle. When children are exposed to less healthy choices at school, they do not compensate by choosing healthier choices when away from school. Our schools need to help children learn how to make the best nutritional choices and form good eating habits now to carry them through their lives. Inadequate nutrition can have a detrimental effect on children's learning ability, motivation and attentiveness as well as on their physical growth and development. Poor eating habits are also contributing to the rising rate of childhood and adolescent obesity and type-2 diabetes. The habits formed at these young ages are carried into adulthood and are increasing the risk of chronic diseases such as cancer, cardiovascular disease, hypertension, asthma and orthopedic injuries.

Socio-Economic Circumstances and Gender Differences

Teachers have been successful using problem-oriented methods in schools in all types of neighborhood's, regardless of the socio-economic circumstances of the students; for example, in her work comparing "problem-oriented" with traditional "procedural" instruction in two low-income neighborhood's schools. Boaler (2002) found that, after three years in the problem-oriented school, students obtained a significantly higher level of achievement on a range of assessments, including the national examination, at age 13.

Furthermore, she found more equitable gender achievement. Boys in the procedurally oriented school obtained significantly higher grades than the girls did, whereas there were no gender disparities in grades at the problem-oriented school – all students performed better on average. We do not wish to diminish the challenge that problem oriented instructional practices may place on a teacher in a particular classroom, or with particular students; rather, we stress that, despite obstacles, these methods have demonstrated strong results in all types of classrooms and should be made available to all students. There has been extensive research on the topic of gender and mathematics. On the one hand, Sanders and Peterson (1999) summarize the research regarding girls' mathematical achievement by stating: "What was once an alarming gender gap in math achievement and participation has been reduced to a few percentage points". In school achievement girls now typically fare as well as boys in mathematics – a dramatic change from earlier times. However, for students who go on to university there remains a discrepancy, and a growing one at each level in mathematics, in favour of men (Burton, 2004). Whether or not this discrepancy has roots in the junior grades is speculative, but it cannot be entirely ignored. On the other hand, there is also a growing concern that in fact boys are not faring as well in schools as they might (Ravitch, 1998). Boys are overrepresented in schools in behavioural classes, learning disability classes, and special needs of all sorts (Lajoie, 2003). The contention from some groups is that boys' stereotypical behaviour is not necessarily conducive to learning through traditional modes of instruction (e.g., sitting quietly for long periods). We feel that it is important to be aware that there are differences in how students do, understand, and think about mathematics. The methods that have been suggested in this document begin with this premise, which – while not a panacea – acknowledges the differences that students bring to the classroom. It may be, however, that teachers must go beyond this, and also pay careful attention to the context of problems: Do they engage all the students? Do students of both genders view mathematical inquiry as a positive and interesting activity? Joshi (2005) mentioned that teaching a particular content and process has to be compatible with the nature of science, objectives, existing classroom conditions and the cognitive level of children.

RECOMMENDATIONS

- Healthy food and beverage choices are highly recommended in all school levels.
- Both genders are encouraged to have good grades.
- Mathematics should begin with and capitalizes on students' thinking.

SUGGESTIONS FOR FURTHER STUDIES

Future researchers are encouraged to carryout same research with different scope.

SUMMARY OF THE STUDY

Summarizing this research, all students should be able to develop the capacity and the flexibility of thinking that will allow them to tackle new areas of mathematics and new problems, as well as view them as capable of doing mathematic. Exploration of worthwhile and interesting mathematical tasks should be introduced. All mathematics should be based on problem solving and inquiry. Mathematics should include varied and relevant instructional and assessment strategies. It should be noted that mathematical literacy will be essential to the people involved.

REFERENCES

1. Boaler, J. (2002). Learning from teaching: Exploring the relationship between "reform" curriculum and

equity. *Journal for Research in Mathematics Education, 33(4)*, 239–258.
2. Burton, L. (2004). *Mathematicians as enquirers: Learning about learning mathematics.* New
3. York: Kluwer Burton, D. M. (2003). The history of mathematics: an introduction. 5th ed. Boston: McGraw-Hill.
4. Ginsburg, H. (2002). *Little children, big mathematics: Learning and teaching in the pre-school.*
5. Proceedings of the 26th Conference of the International Group for the Psychology of Mathematics Education 1, 3–14, University of East Anglia.
6. Joshi, S. R. (2005). *Teaching of science.* New Delhi: APH Publishing Corporation. Kitta, S. (2004). Enhancing Mathematics Teachers' Pedagogical Content Knowledge and Skills in Tanzania. Print Partners-Ipskamp: Enschede.
7. Lajoie, G. (2003). *L'école au masculin. Sainte-Foy, QC: Septembre éditeur*. Limb, S., & Fullarton,
8. S. (2001). Classroom and school factors affecting mathematics achievement: A comparative study of the US and Australia using TIMSS. Australian Council for Educational Research (ACEReSearch).
9. Okeke, M. N. (2011). Quality mathematics education at primary school level as a tool for achieving
10. vision 20-20 for Nigeria. *Journal of the School of Sciences, Federal College of Education, Eha-Amufu, 5 (1),* 34 – 41.
11. Ravitch, D. (1998). Girls are beneficiaries of gender gap. *The Wall Street Journal,* p. A22.
12. Sanders, J., & Peterson, K. (1999). Close the gap for girls in math-related careers. *The Education Digest, 65(4)*, 47–49.
13. Sliva, J. (2004). *Teaching inclusive mathematics to special learners, K–6.* Thousand Oaks, CA: Corwin Press.
14. Woodward, J., & Montague, M. (2002). Meeting the challenge of mathematics reform for students with LD. *The Journal of Special Education, 36(2),* 89–101.
15. Wright, R., Martland, J., Stafford, A., & Stanger, G. (2002). *Teaching number: Advancing children's skills and strategies.* London: Sage.