

Improving Mathematics Learning

Raymond S. Hackett

In Trinidad and Tobago, mathematics is generally perceived as a difficult and complex subject. Most students, as well as many teachers, believe that only the “bright” can master it. Dismal primary and secondary school examination results in our education system over the past decades seem to support this picture of gloom and underachievement. Despite frequent expressions of concern about this sad state of affairs, little action has so far been taken to address it.

I wish to submit that mathematics can be demystified and taught with greater success. Mathematical language, like all languages, can be learnt. I would advocate that we discontinue the practice of viewing it essentially as a subject dominated by writing and working out problems. Indeed, mathematics can be discussed like any social science subject. Such an approach is likely to result in few, if any, problems identifying, discussing, and understanding mathematical concepts in our schools. Failure to embrace this method may mean that we will never extricate our students from the mathematical quicksand that characterises our education system.

It would seem that our training institutions have not been successfully researching the problem of mathematics underachievement. No new movement has emerged within recent times to arrest this trend of failure. No task force has been mandated to determine the factors related to underperformance in mathematics in the education system. If we are serious about the 2020 vision proposed for our society, we must immediately take action to promote mathematics as a subject that can be appreciated by all at their respective levels.

As a former mathematics teacher, I am convinced that the problem lies in the failure of our schools to engage in: 1) whole-school curriculum development through which schools or departments, rather than individual teachers, will be given the responsibility for creating programmes from the official mathematics syllabi to meet the needs of students and to construct tests to establish school standards; 2) in-service staff development to help teachers identify and adopt effective teaching techniques and strategies, and gain insights into how students learn various mathematics topics, taking into consideration their individual learning styles and abilities, and appropriate assessment procedures which must be tied to the specific objectives of the school’s mathematics programme; 3) allocating the necessary time through well-structured timetables, for both teachers and students, to maximise time on tasks; and 4) providing the resources needed for optimum mathematics teaching.

We must find new ways to stimulate the interest and imagination of our students. I would like to offer the following constructivist approach for use by teachers:

- Discuss the topic to be presented in the context of the experiences of students, emphasising why it should be learnt, its relevance to everyday living, and how it can help us to think more clearly.

- Present theory to students through first principles—for example, never simply throw a formula at students. Discover it with them.
- Once theory has been presented, provide a worked example. Against the background of the worked example, have students discuss how the problem was solved or worked.
- The next step is to have students work at least two similar problems in groups before they are instructed to try problems on their own.
- Homework is critical to reinforcement in mathematics. Students must always be given substantial homework, which must be discussed and corrected in the next class. Under no circumstances should teachers proceed without dealing with homework solutions and queries.

School of Education, UWI, St. Augustine