INTRODUCING MATHEMATICAL MODELLING IN THE MALAYSIAN SCHOOL CURRICULUM

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ABSTRACT: This paper investigates the importance of introducing mathematical modelling in the Malaysian classrooms. By going through the mathematical modelling processes, students are exposed to the real life problems. In addition, by solving real-world problems would help one in making conjectures and reasoning that is one of the important focus in the mathematics curriculum. When solving the modelling tasks, students are not only required to formulate a model but also verifying that the model fits the real world problems. Modelling tasks are meant to show how modelling is an essential tool in the teaching and learning of mathematics. The implication of introducing mathematical modelling in the Malaysian mathematics curriculum will be discussed.

INTRODUCTION

Problem solving and mathematical modelling are two related standards in the mathematics education arena. First we have a brief outlook on problem solving and then the progress of mathematical modelling. Mathematics educators around the world had problem solving the focus in the mathematics curriculum since the 1980's. In the United States, the National Council of Teachers of Mathematics (NCTM) produced the Evaluation Standards in 1989 and problem solving was one of the standards focused. The push for problem solving became even stronger with the document that asserted that "problem solving should be the central focus of the mathematics curriculum" (NCTM, 2000, p.52).

One of the main aims of the mathematics curriculum for secondary schools in Malaysia is to "develop individuals who are able to apply mathematical knowledge effectively and responsibly in solving problems and making decisions" (KBSM, 2004, p. 2). In fact, the development of problem solving skills was as an important area in the teaching and learning of mathematics in the curriculum. The four stage problem solving heuristics by Polya (1945) that includes understanding the problem, planning the strategy, carrying out the plan and reflecting on the solutions could be applied by students while solving problems in their daily lives.

How about mathematics modelling? Modelling was highlighted in the document of the Curriculum and Evaluation Standards for School Mathematics (NCTM,1989). Educational organizations such as Consortium for Mathematics and Its Application (COMAP), the University of Chicago School Mathematics Project (UCMSP) and the Systemic Initiative for Montana Mathematics and Science (SMMS) have produced many educational books and lessons on mathematics modelling (Hodgson, 1995). Yet, the strongest support of modelling was the
Conclusion

In this article, the author argues why mathematical modelling should be introduced in secondary mathematics in Malaysia and how some countries placed modelling in their curriculum. The examples provided are meant to provide illustrations of the modelling tasks and processes that can be linked to the current curriculum. The benefits of modelling are enormous. One not only understands how mathematics is used in the real-world but also can construct a model or physical representation that is used to solve the problem. Using the modelling process to solve real-world problems would help one in making conjectures and reasoning which is one of the focuses of the mathematics curriculum. Mathematics lessons would be fun and challenging. This would develop further interest in this field. The importance of getting the "right solution" should not only be the focus in the lesson. By going through the mathematical modelling tasks, one would develop higher order thinking in order to solve real-world problems as well as applying problem-solving skills in the process.

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