

Role of Mathematical Modeling in Mathematics Teaching

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Abstract: Mathematics is very important as its application is found almost everywhere in our life. The subject mathematical is conceptual and is treated as the science of quantity. Each kind of problem in our day to day life produces mathematics. In traditional teaching method all the pupil within a class room may not be able to catch the concept and ideas delivered by the concerned teacher. By considering the fact, applied teaching method like modelling may help in empowering all the pupil to get the concept and ideas in class room teaching. This type of teaching method may also increase the interest of the pupil in mathematics learning. This paper aims to study the importance and utility of mathematical modeling in teaching aspect.

Key word: Mathematical modelling, Applied teaching, Quantity of Science

Introduction

Mathematics is the most comprehensive education area of the world is mathematics could be used in various ways in areas and topics that is not related to it. Mathematics is always used outside itself, in a covered manner or clearly especially in cases of problems, situations or areas including mathematical models and modeling [1]. In the past problem solving had a place in the mathematics classroom, but it was usually used in a token way as a starting point to obtain a single correct answer, usually by following a single 'correct' procedure. In the past decade it has been suggested that problem-solving techniques can be made available most effectively through making problem solving the focus of the mathematics curriculum. Although mathematical problems have traditionally been a part of the mathematics curriculum, it has been only comparatively recently that problem solving has come to be regarded as an important medium for teaching and learning mathematics [2]. Cockcroft (1982) stated problem solving as a means of developing mathematical thinking as a tool for daily living, saying that problem-solving ability lies 'at the heart of mathematics, because it is the means by which mathematics can be applied to a variety of unfamiliar situations[3].

Rapid development of information and technology today changed society's expectations form people and education world. Today's world expects mathematics teachers to raise individuals who are able to create effective solutions in cases of real problems and use mathematics effectively in their daily lives. Thus, they will enjoy mathematics instated of being scared of it and comprehend and appreciate the importance and power of mathematics [4].

Curricula reforms in many western countries, especially at secondary level have emphasised mathematical model-ling as an important element in an up-to date mathematics secondary curricula preparing generally for further education[5]. Mathematics is not a closed system or a subject that should be learned but a human activity and it has to have a relation with the reality [6].

The introduction of mathematical modelling and applications is probably - together with the introduction of information technology - the most prominent common features in mathematics curricula reforms around the world During the last couple of decades [7].

One of the aims of teaching through problem solving is to encourage students to refine and build onto their own processes over a period of time as their experiences allow them to discard some ideas and become aware of further possibilities [8].

Objectives

Mathematical modelling aims to formulate key questions, analyzing and conceptualizing problems, defining problems and goals, discovering patterns and similarities, seeking out appropriate data, experimenting, transferring skills and strategies to new situations for the formation of confident and open minded environment. Mathematical modelling may also aims to develop skills and ability among all category pupil in class room teaching by increasing curiosity.

Methodology:

Development of mathematical modelling for teaching aspect falls under Basic Research. Basic research studies are intended to create knowledge and theoretical understanding with regard to basic human processes and other natural processes [9].

Mathematical modelling theory focuses on individuals and suggests that knowledge is created as a result of a series of interactions between people and the world. This situation requires examination of students' situations with different practices. For this reason, it becomes important to present students with situations in which they use the knowledge and have application opportunities [10]

Mathematical modelling is defined as the transformation of any problem situation into a mathematical model. However this concept started to be used commonly to define the process including all the steps of structuring mathematizing, mathematical working and interpretation/verification. Sometimes the problem situation that is given is nothing else than a pre-structured mathematical problem or a mathematical problem that is full of real life. This is the classic "word problem" situation that generally occurs in schools. Using mathematics to solve problems that are encountered in real life is called as application of mathematics. Sometimes the application concept is used for a relation that binds real life to mathematics. In the last ten years "application and modeling" concepts were used to explain any relations between real life and mathematics [11]. Developing approaches that could discover patterns and relations and application of these patterns and relations in solving other problems are aimed in the modeling approach. Thus, through modeling the aim is to enable the students developed the skill to generalize, which is one of the basic skills in mathematical teaching[12]

Conclusion

According to Cansız, the students in the experimental group outperformed the students in the control group in which the traditional method was used and it was also determined that the students showed positive attitudes towards mathematics when using modeling approach[13]

Application of mathematical models in mathematics teaching may be useful to motivate the students, eliminate their fear and anxiety and allow them to develop a positive approach towards mathematics in addition to its many cognitive benefits such as realizing meaningful learning, establishing a relation between mathematics and daily life and developing problem solving skills.

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