

An Action Research on the Teaching of the 8th Grade Exponentials by Mathematical Modeling

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Extended Summary

Purpose: The aim of this research is to determine whether teaching the exponentials that students have difficulty in the elementary school mathematics curriculum, underlines many subjects and exists in the exam LGS (the exam of entrance to high school) through the mathematical modeling method has an effect on the students' success and their views about the mathematics. Also, it was aimed to investigate the effect of teaching the subject through mathematical modeling on the memorability level.

Method: This research was carried out with an action plan that was prepared for solving a problem existed as an action research. The participants of the study consist of 25 eight-grade students who are studying in 2017-2018 academic year of a state school in Kayseri. As data collection tools, investigator's diary and student view form were used in qualitative aspect, and exponentials success test as pre-test, post-test and memorability test was used in quantitative aspect.

Results: According to quantitative findings, it was seen that there was an increase on post-test scores of the students after implementation of the mathematical modeling activities and mathematical modeling activities have a positive effect on learning of exponentials with respect to the results of analysis done with SPSS. In addition, it was seen from the memorability test that mathematical modeling activities increased the memorability level of the subject. According to the qualitative findings obtained in student view forms, student's attitudes towards mathematics changed in a positive way through mathematical modeling problems.

Conclusion: As a result, it was observed that the integration of mathematical modeling activities in mathematics lessons have increased the participants' successes in exponentials and their interests in mathematics. Students and teachers can be encouraged to use mathematical models. In order to make students understand the models and use mathematics more effectively in daily life, it is recommended to include activities in which mathematical modeling is used in the curriculum at all levels. The fact that the teachers have detailed and extensive knowledge about the use of models provides a better transfer of models and modeling to the students. For this reason, in-service training for teachers, seminars, conferences and courses related to the subject can be given to teachers to be informed about the use of mathematical modeling. In addition, mathematical modeling can be included in the curriculums in some universities in order to ensure that teacher candidates in the faculties of education have knowledge and competence in this subject. One of the obstacles to teaching the use of mathematical modeling is the problem of time. In order to overcome this time problem, a separate period can be granted for the use of the model within the time frame given to the subjects in the curriculum. Mathematical modeling and mathematics modeling. United annual plans can be prepared accordingly. Or mathematics lessons can be made compulsory and compulsory. When the abstract structure of mathematics is taken into consideration, it can be said that the concepts are concretized and associated with daily life. Mathematical modeling problems also enable students to approach the problem from a different point of view, not from a single point of view. In this respect, teaching mathematical modeling methods can serve these purposes.

Keywords: Mathematical modeling, action research, exponential expressions