EXTENDED SUMMARY

The main objective of educational programs is to enable students to recognize the changing conditions of life, have questioning minds and deal with problems in daily life. This view led to the revision of the elementary level mathematics curriculum in Turkey in 2013. The aim of this revision was to bring up individuals who can solve problems, communicate and use reasoning with the support of modeling. The revision was based on modeling technologies, which are supported by information technologies. It aims help students to use mathematics in daily life, to recognize various representations of concepts and their correlations and to discover mathematical relationships (Ministry of National Education [MNE], 2013). This study aimed to analyze the fifth-grade mathematics curriculum, which was gradually put into effect starting in the 2013-2014 academic year, regarding mathematical models and modeling based on teachers’ views.

This is a case study that uses a qualitative and interactive research approach. The objective of a case study is to investigate a complicated, specific and interesting phenomenon, incident or situation in its natural condition (Sonmez and Alacapinar, 2011). The sample of the study included 58 middle school teachers (32 females and 26 males) at one of the 69 secondary schools located in the districts of Erzurum, Turkey. The participants taught fifth graders, and their length of service varied from 1 year to 33 years. Structured interviews were held with them. The interviews were designed to reveal their views on mathematical modeling and mathematical models. The form contained eight questions, to which the participants responded anonymously in writing. While the questions were being created, great care was taken to ensure that they attempted to identify general amendments to the mathematics curriculum for secondary schools as well as amendments to the models used for teaching subjects included in the mathematics curriculum for fifth graders. The data were analyzed descriptively.

The purpose of the study was to identify how secondary school mathematics teachers evaluated the mathematical models and modeling on the mathematics curriculum for fifth graders. To that end, interviews were held with 58 secondary school mathematics teachers (32 females and 26 males) who taught fifth graders in the center and central districts of Erzurum, Turkey and whose length of service ranged between 1 year and 33 years. Only 57% (33 teachers) of the respondents knew about mathematical modeling, which restricted data collection. Those participants who had no idea about mathematical modeling either gave incorrect responses to most of the questions or skipped them. This finding is supported by Akgun et al. (2013), who discovered that, “teachers have insufficient knowledge about mathematical modeling, they confuse models, modeling, mathematical models and mathematical modeling with one another, and their use of mathematical modeling in their classes is inadequate.” This suggests that specialists or competent teachers should design activities for mathematics teachers in their schools to raise their awareness about mathematical modeling.

The participants noted that the curriculum for fifth graders was too simple, and that some subjects included in the curriculum for seventh graders should be moved to the one for sixth graders. In accordance with the study by Ciltas et al. (2013), the learning attainments for fifth graders should be increased and the ones for students of other grades should be reduced so that the curriculum for one grade will not be too similar to the others.

The study has limitations. Structured interviews were used, and the process was rather short. Therefore, future researchers could collect more in-depth information using semi-structured interviews. In addition, this study could be duplicated for sixth, seventh and eighth graders, too. One more recommendation could be sharing the results of this study with the relevant schools so that teachers can read and examine them.