

Primary School Students' Modeling Processes: Crime Problem

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Abstract : As a result of PISA (Program for International Student Assessments) survey that tests how well students can apply the knowledge and skills they have learned at school to real-life challenges, the new and redesigned mathematics education programs in many countries emphasize the necessity for the students to face complex and multifaceted problem situations and gain experience in this sense allowing them to develop new skills and mathematical thinking to prepare them for their future life after school. At this point, mathematical models and modeling approaches can be utilized in the analysis of complex problems which represent real-life situations in which students can actively participate. In particular, model eliciting activities that bring about situations which allow the students to create solutions to problems and which involve mathematical modeling must be used right from primary school years, allowing them to face such complex, real-life situations from early childhood period. A qualitative study was conducted in a university foundation primary school in the city center of a big province in 2013-2014 academic years. The participants were 4th grade students in a primary school. After a four-week preliminary study applied to a fourth-grade classroom, three students included in the focus group were selected using criterion sampling technique. A focus group of three students was videotaped as they worked on the Crime Problem. The conversation of the group was transcribed, examined with students' written work and then analyzed through the lens of Blum and Ferri's modeling processing cycle. The results showed that primary fourth-grade students can successfully work with model eliciting problem while they encounter some difficulties in the modeling processes. In particular, they developed new ideas based on different assumptions, identified the patterns among variables and established a variety of models. On the other hand, they had trouble focusing on problems and occasionally had breaks in the process.

Keywords : primary school, modeling, mathematical modeling, crime problem

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