

Modeling in the Middle School: Eighth-Grade Students' Construction of the Summer Job Problem

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Abstract : Mathematical model and modeling are one of the topics that have been intensively discussed in recent years. In line with the results of the PISA studies, researchers in many countries have begun to question how much students in school-education system are prepared to solve the real-world problems they encounter in their future professional lives. As a result, many mathematics educators have begun to emphasize the importance of new skills and understanding such as constructing, Hypothesizing, Describing, manipulating, predicting, working together for complex and multifaceted problems for success in beyond the school. When students increasingly face this kind of situations in their daily life, it is important to make sure that students have enough experience to work together and interpret mathematical situations that enable them to think in different ways and share their ideas with their peers. Thus, model eliciting activities are one of main tools that help students to gain experiences and the new skills required. This research study was carried on the town center of a big city located in the Black Sea region in Turkey. The participants were eighth-grade students in a middle school. After a six-week preliminary study, three students in an eighth-grade classroom were selected using criterion sampling technique and placed in a focus group. The focus group of three students was videotaped as they worked on a model eliciting activity, the Summer Job Problem. The conversation of the group was transcribed, examined with students' written work and then qualitatively analyzed through the lens of Blum's (1996) modeling processing cycle. The study results showed that eighth grade students can successfully work with the model eliciting, develop a model based on the two parameters and review the whole process. On the other hand, they had difficulties to relate parameters to each other and take all parameters into account to establish the model.

Keywords : middle school, modeling, mathematical modeling, summer job problem

Conference Title : ICEP 2015 : International Conference on Education and Pedagogy

Conference Location : Venice, Italy

Conference Dates : April 13-14, 2015