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Exploring the quality of the mathematical tasks in the new Turkish elementary school mathematics curriculum guidebook: the case of algebra.

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Summary: To take its due place in the world of education, Turkey has been through serious reform initiatives in the curriculums of various school subjects since 2003. The new Turkish elementary school curriculum was prepared considering the research studies conducted in Turkey and in other countries, as well as the educational systems of developed countries and previous experiences with mathematics education in Turkey. This study attempts to provide a perspective on the nature of the instructional tasks in the new elementary school mathematics curriculum. In particular, our focus is to explore the level of cognitive demands (LCD) in the algebra tasks provided in the national elementary mathematics curriculum guidebook. This curriculum document is a major resource for administrators, stakeholders, textbook publishers and ultimately for teachers. For every learning objective, it provides sample tasks to be used in mathematics instructions. In this study, our purpose is to explore the LCD of each of these tasks by utilizing a framework developed by Smith and Stein (Math Teach Middle School 3:344-350, 1998). The framework classifies mathematical tasks according to the level of demands: lower-level and higher-level demands. While the lower-level demands are related to memorization and procedures without connections, the higher-level demands are related to procedures with connections and doing mathematics. The findings revealed that 60% of algebra tasks for each grade level required higher LCD and a great majority of the remaining tasks were at the level of procedures without connections. The findings of the study particularly inform curriculum developers about issues regarding the quality of the tasks given in the curriculum guide and provide possible suggestions to improve the implementation of the curriculum change process.

Classification: C32 C33 D32 D33 D52 D53

Keywords: cognitive demands; algebra; curriculum development; mathematical tasks; grades 1-8; empirical investigations

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