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Justifications and explanations in Israeli 7th grade math textbooks.

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Summary: This study analyzes six seventh grade Israeli mathematics textbooks, examining (1) the extent to which students are required to justify and explain their mathematical work, and (2) whether students are asked to justify a mathematical claim that is stated by the textbook or a mathematical claim that they themselves generated when solving a problem. Two different units of analysis were used to analyze two central topics in the seventh grade curriculum as follows: (1) equation solving in algebra and (2) triangle properties in geometry. The findings indicate that all six textbooks had considerably larger percentages of geometric tasks than algebraic tasks, which required students to justify or explain their mathematical work. Moreover, considerable differences were found among the six textbooks regarding the percentages of tasks that required students to justify and explain in both topics, but more so with the algebraic topic. Analysis of whether the textbook tasks required students to justify a mathematical claim that is stated by the textbook or a mathematical claim that the students themselves generated also revealed substantial differences among the textbooks. These findings are discussed, as well as the research methods used, in light of relevant literature.

Classification: H33 G43 U23

Keywords: algebraic tasks; curriculum analysis; explanations; geometric tasks; justifications; textbook analysis

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