

ARTICULATED LEARNING TRAJECTORIES RELATED TO THE DEVELOPMENT
OF ALGEBRAIC THINKING THAT FOLLOW FROM PATTERNING CONCEPTS IN
MIDDLE GRADES MATHEMATICS

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Abstract

The construct of an *articulated learning trajectory* (ALT) was conceived of and defined to provide a lens through which to view and analyze content development in middle grades mathematics textbooks. The ALTs identified and described were used to characterize the development of patterning and sequence concepts as they relate to algebraic thinking in four middle grades textbook series. The perspectives of clarity, comprehensiveness, accuracy, depth of mathematical inquiry and reasoning, organization, and balance were considered in analyzing the mathematical development of these concepts.

Comparisons based on the disciplinary perspectives showed key differences among the ALTs identified across textbooks, including the extent to which authors presented patterns in geometric versus numeric contexts. Mathematical sequences were not well defined in any of the textbook series. The nature of the ALTs identified and the differences in the ALTs across textbook series have implications for the development of pattern concepts leading to algebraic thinking.