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Exploring the relationship between K-8 prospective teachers' algebraic thinking proficiency and the questions they pose during diagnostic algebraic thinking interviews.

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Summary: In this study, we explored the relationship between prospective teachers' algebraic thinking and the questions they posed during one-on-one diagnostic interviews that focused on investigating the algebraic thinking of middle school students. To do so, we evaluated prospective teachers' algebraic thinking proficiency across 125 algebra-based tasks and we analyzed the characteristics of questions they posed during the interviews. We found that prospective teachers with lower algebraic thinking proficiency did not ask any probing questions. Instead, they either posed questions that simply accepted and affirmed student responses or posed questions that guided the students toward an answer without probing student thinking. In contrast, prospective teachers with higher algebraic thinking proficiency were able to pose probing questions to investigate student thinking or help students clarify their thinking. However, less than half of their questions were of this probing type. These results suggest that prospective teachers' algebraic thinking proficiency is related to the types of questions they ask to explore the algebraic thinking of students. Implications for mathematics teacher education are discussed.

Classification: C39 H29

Keywords: algebraic thinking; questioning; teacher knowledge; teacher education

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