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**Prospective elementary teachers use of representation to reason algebraically.**

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Summary: We used a teaching experiment to evaluate the preparation of preservice teachers to teach early algebra concepts in the elementary school with the goal of improving their ability to generalize and justify algebraic rules when using pattern-finding tasks. Nearly all of the elementary preservice teachers generalized explicit rules using symbolic notation but had trouble with justifications early in the experiment. The use of isomorphic tasks promoted their ability to justify their generalizations and to understand the relationship of the coefficient and y-intercept to the models constructed with pattern blocks. Based on critical events in the teaching experiment, we developed a scale to map changes in preservice teachers' understanding. Features of the tasks emerged that contributed to this understanding.

*Classification:* C39 B50

*Keywords:* early algebra; algebraic thinking; algebraic reasoning; patterns; problem solving; representations; preservice teacher education

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