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Teaching middle level students to generalize: from implicit to explicit.

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Summary: This study took a broad view of generalization, exploring how classroom instruction within opportunities of implicit generalization may be related to students' abilities to generalize. From an integrated perspective of generalization and problem solving, we investigated twelve lessons of two middle level teachers based on three pattern-based problems. We found teachers' limited awareness and knowledge of problem situations, especially problem structures, were obstacles hindering their ability to support students' understanding of implicit generalization. Teachers tended to focus on particular "results" for individual cases rather than the "process" of obtaining those results, resulting in missed opportunities to develop students' sense of general patterns. Without attention to implicit generalization, explicit generalization rarely took place in a meaningful way during problem solving.

Classification: D50 C70 B50 A20 F30

Keywords: generalization; students' abilities; problem situations; problem structures; patterns; supporting students' understanding; problem solving; teacher difficulties; pedagogical content knowledge