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**Prediger, Susanne; Krägeloh, Nadine**

**Low achieving eighth graders learn to crack word problems: a design research project for aligning a strategic scaffolding tool to students' mental processes.**

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Summary: Topic-specific didactical design research provides means not only to investigate how to learn but also what to learn, i.e., for specifying learning contents by analyzing students' comprehension processes in detail. This important characteristic of didactical design research is exemplarily shown for students' difficulties in finding symbolic expressions for word problems, which can often be traced back to deficits in their comprehension strategies. The article presents a design research project on strategic scaffolding for eighth graders with limited language proficiency for specifying fruitful comprehension strategies and enhancing their use. Intensive qualitative investigation of students' processes was required to align the strategic scaffolding tool, the word problem cracker, to students' mental processes. Four cycles of design experiments allowed iteratively developing a local theory of learning to write algebraic expressions for multi-step word problems.

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