

PGBM-COMPS Math Word Problem-Solving Intelligent Tutor

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- Computer Technology
- Education

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About five to ten percent of school-age children have been identified as having mathematics disabilities. Students performing at or below the 20 to 35 percentile are often considered at risk for learning disability or having learning difficulties in mathematics (LDM). These students lag behind their peers in early education, and continue to fall further behind as they transition toward higher education. There is a need to explore potential intervention support that addresses the Common Core State Standards for Mathematics (CCSSM), emphasizing conceptual understanding of ideas and the connections to math.

Researchers at Purdue University have developed an intelligent tutor (PGBM-COMPS) designed to address the knowledge gap among students with LDM by nurturing the concepts that are essential to enabling these students to catch up with their peers. The tutor consists of two parts: turn-taking games constructed to strengthen fundamental ideas in multiplicative reasoning, the "Please Go and Bring for Me" (PGBM), and problem structure understanding and representation in models, the "Conceptual Model-based Problem Solving" (COMPS). Together the two aspects of the program establish multiplicative reasoning and generalize the understanding to the level of mathematical models. Tests demonstrate significant improvement in math problem-solving performance in students with LDM.

Advantages:

- Follows CCSSM
- Two parts
- Helps students with LDM

Potential Applications:

- Intelligent tutor

-Learning tool

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