

ZMATH 2015c.00982

Ma, Xiaojun; Xin, Yan Ping; Tzur, Ron; Si, Luo; Yang, Xuan; Park, Joo Y.; Liu, Jia; Ding, Rui

The effect of an intelligent tutor on math problem-solving of students with learning disabilities.

Liljedahl, Peter (ed.) et al., Proceedings of the 38th conference of the International Group for the Psychology of Mathematics Education “Mathematics education at the edge”, PME 38 held jointly with the 36th conference of PME-NA, Vancouver, Canada, July 15–20, 2014, Vol. 4. [s. 1.]: International Group for the Psychology of Mathematics Education (ISBN 978-0-86491-360-9/set; 978-0-86491-364-7/v.4). 145-152 (2014).

Summary: Reform-based math instruction calls for students’ construction of conceptual understanding, solving challenging problems and explanation of reasoning. However, existing literature shows that students with learning disabilities (LD) easily get lost in reform-based instruction. As an outcome of collaborative work between math education and special education in instructing students with LD, we’ve developed an intelligent tutor (PGBM-COMPS) to nurture multiplicative reasoning of students with LD. The intelligent tutor dynamically models individual student’s evolving conceptions and recommends tasks to promote her/his advancement to a higher level in the learning trajectory and solve complex word problems using mathematical model equations. This study evaluated the effect of this intelligent tutor on improving multiplicative reasoning and problem solving of students with LD.

Classification: U50 C40 M10 F90

Keywords: problem solving; learning disabilities; intelligent tutor; special education; multiplicative reasoning; word problems