

ZMATH 2015b.00442

Granberg, Carina; Olsson, Jan

ICT-supported problem solving and collaborative creative reasoning: exploring linear functions using dynamic mathematics software.

J. Math. Behav. 37, 48-62 (2015).

Summary: The present study investigates how a dynamic software program, GeoGebra, may support students' collaboration and creative reasoning during mathematical problem solving. Thirty-six students between the ages of 16 and 17 worked in pairs to solve a linear function using GeoGebra. Data in the form of recorded conversations, and computer activities were analyzed using *J. Lithner's* [Educ. Stud. Math. 67, No. 3, 255–276 (2008; ME 2008a.00098)] framework of imitative and creative reasoning in conjunction with the collaborative model of joint problem space. The results indicated that GeoGebra supported collaboration and creative reasoning by providing students with a shared working space and feedback that became the subject for students' creative reasoning. Furthermore, the students' collaborative activities aimed toward sharing their reasoning with one another enhanced their creative reasoning. There were also examples of students using GeoGebra for trial-and-error strategies and students engaging in superficial argumentation.

Classification: D54 U74 I24 C74

Keywords: creative reasoning; problem solving; collaboration; dynamic software; linear functions

doi:10.1016/j.jmathb.2014.11.001