

ZMATH 2015f.00148

Dreher, Anika; Kuntze, Sebastian

Teachers facing the dilemma of multiple representations being aid and obstacle for learning: evaluations of tasks and theme-specific noticing.

J. Math.-Didakt. 36, No. 1, 23-44 (2015).

Summary: Using multiple representations plays a double role for learning mathematics: On the one hand changing between representations is essential for mathematical understanding, but on the other hand such changes can involve excessive demands and thus hinder learning. Balancing this dilemma appears consequently to be important for successfully teaching mathematics. Despite such significance it is however little known how teachers take into account this phenomenon when they select tasks for the mathematics classroom or whether they notice the occurrence of corresponding obstacles in student-teacher interactions. Therefore, this study focuses on teachers' evaluations of the learning potential of tasks which make use of multiple representations in different ways and on their so-called theme-specific noticing. Since the teachers' views on how to deal with the dilemma may depend on whether they address higher- or lower-achieving students, more than 100 German mathematics teachers from two different secondary school types ("Gymnasium" and "Haupt-/Werkrealschule") were included in the study. The results suggest generally a rather low awareness of the double role of multiple representations for students' learning, but they also indicate significant differences between the two subsamples in the way they take account of the two sides of the dilemma in situated contexts.

Classification: C29 C30 C70 D43 F43

Keywords: multiple representations; evaluation of tasks; theme-specific noticing; teachers' views; fractions
doi:10.1007/s13138-014-0068-3