

ZMATH 2012d.00183

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A secondary analysis from a cognitive load perspective to understand why an ICT-based assessment environment helps special education students to solve mathematical problems.

Mediterr. J. Res. Math. Educ. 10, No. 1-2, 23-41 (2011).

Summary: This study is a continuation to two earlier studies we carried and which revealed that special education students showed a higher performance in mathematics in an ICT-based dynamic assessment including auxiliary features than in the regular standardized paper-and-pencil test. The focus in both studies was on subtraction problems up to 100 with ‘crossing the tens’. In the present study we tried to find an a posteriori explanation for these finding by adopting a Cognitive Load Theory perspective. We conducted a secondary analysis in which we related the features of the ICT-based assessment to the responses of the students. The results of this analysis were varied. For some features we found evidence that they might have influenced student responses, for other features this was not clear. Nevertheless, the analysis gave us a better understanding of how we can develop assessment tools that offer weak students in mathematics opportunities to show what they are capable of.

Classification: C36 D66 U76

Keywords: ICT-based assessment environment; educational diagnosis; Information and Communication Technology; special education; subtraction problems; CLT (Cognitive Load Theory); cognitive ability; mathematical ability; research; learning problems