

ZMATH 2009f.00463

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Teaching and learning of inclusive and transitive properties among quadrilaterals by deductive reasoning with the aid of SmartBoard.

ZDM, Int. J. Math. Educ. 40, No. 6, 1007-1021 (2008).

Summary: Learning to identify Euclidean figures is an essential content of many elementary school geometry curricula. Students often learn to distinguish among quadrilaterals, for example, by categorizing their geometric properties according to two attributes, namely the length of the edges and the size of the interior angles. But knowing how to differentiate them based on their geometric properties does not necessarily help students to develop the abstract concepts of the inclusive and transitive properties among the quadrilaterals. With the aid of dynamic geometry multimedia software in SmartBoard (SB), a kind of digital whiteboard (DWB), we enhanced the teaching and learning effectiveness by the effect of “animation-on-demand” in classrooms. This is basically a dual delivery of geometric concepts by texts, narrations and words accompanied by pictures, illustrations and animations. The preliminary results of our study on 9-year-old students’ performance in tests given after three such lessons show that those students could differentiate with reasons why a square is a rhombus (inclusion) as well as a parallelogram (transitivity).

Classification: G42 C32 E32 D32 U72

Keywords: deduction reasoning; inclusive and transitive properties among quadrilaterals; dynamic geometry software; student observation; primary education

doi:10.1007/s11858-008-0159-z