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**Learning area and perimeter with virtual manipulatives.**

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Summary: Manipulatives are considered a best practice for educating students with disabilities, but little research exists which examines virtual manipulatives as tool for supporting students in mathematics. This project investigated the use of a virtual manipulative through the National Library of Virtual Manipulatives – polynominoes (i.e., tiles) – as a tool to help teachers present a unit on area and perimeter. The results suggest instruction with virtual manipulatives improved the understanding of area and perimeter by middle school students with disabilities. The students performed better on the posttest in terms of number of problems correct and number of problems attempted than on the pretest.

*Classification:* G33 D73 C43

*Keywords:* learning disabilities; virtual manipulatives; research; pilot study; lower secondary; low achievement; elementary geometry; area; perimeter; educational media; teaching aids; manipulative materials; special education; visualisation; polyominoes; analysis of learning outcomes; achievement; affective variables  
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