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Gesture as a Cognitive Support to Solve Mathematical Problems

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ABSTRACT

The aim of this study was to investigate the relationships between gestures and mathematical problem solving. It concentrates on the idea that gestures can improve the student's mathematical conceptual abilities. The educational aim of the current study was to understand whether Penelope sewing the cloth every day will be eventually able to finish it in 50 days, before Ulysses returns in his home-town. To analyse children's gestures we applied the McNeill classification. The participants were five children aged between 9 and 10 years, attending the fifth-grade class of a primary school in Turin, Italy. We used the observational method to analyse the children's gestures behaviour. At the end of the analysis, we collected a corpus of 538 gestures. Results show that children use different gesture patterns to communicate their own mathematical ideas. Overall, these findings suggest that gestures facilitate children's learning of mathematical concepts and improve their cognitive strategies to the problem solution.

KEYWORDS

Gestures, Mathematical Problem Solving, Mathematical Learning, Cognitive Processing

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