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Teaching 3-D geometry – the multi representational way.

Aust. Prim. Math. Classr. 18, No. 3, 23-28 (2013).

Summary: Many students have difficulties in geometric and spatial thinking. Students who are asked to construct models of geometric thought not previously learnt may be forced into rote learning and only gain temporary or superficial success. Therefore it is imperative for instruction that promotes geometric thinking and spatial ability to provide a variety of activities that promote visual imagery, as well as use language that is appropriate to the level of the students. Open-ended geometry tasks have been shown to foster engagement and independent mathematical thinking with children as young as six years old. Dienes emphasises the need for "multiple embodiments" in mathematical concept development as being necessary to produce abstractive learning rather than associative learning. In this article Sonja Kalbitzer and Esther Loong describe a number of open-ended tasks that draw upon the use of multiple three-dimensional representations to develop the spatial ability and geometric thinking of students. Simple tools like multi-linked blocks, isometric dot paper and the use of the "Insert Shapes" tool in "Microsoft Word" are used. These tasks have been adapted and revised from lessons prepared and implemented by the first author with her Year 5/6 mixed ability class. The article concludes with some discussion on assessing the tasks and providing student feedback. (ERIC)

Classification: G40 U70 U60
Keywords: spatial geometry; geometric concepts; activities; manipulative materials; use of technology