

Effect of Prompts on Young Children's Two-Dimensional Problem Solving

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This study examined young children's ability to integrate 2 dimensions when solving physics-dynamics problems. It investigated the effect of prompts, such as a behavioral demonstration or verbal explanation, on young children's ability to solve and transfer problems by integrating 2 dimensions, the gradient and texture of a slope, which are familiar to young children. Behavioral and verbal representations adopted from Karmiloff-Smith's RR model were examined. In this study, 286 young children aged 3 to 6 years solved 3 physics-dynamics problems in the context of 1 source story and 2 target stories read to the children by experimenters. The children failing to solve the problem in the source story at the pretest were randomly assigned to 1 of 6 prompt conditions or the control group. The children were administered posttests immediately following and 2 weeks after the treatment.

The results revealed that most of the 3-to-6-year-old children did not have the 2-dimensional verbal representations required to solve the problems. However, verbal explanations modified the young children's representations from behavioral to verbal. However, the positive effect of the prompts did not transfer to the solving of the 2-dimensional transfer problems. This finding seemed to indicate that the young children's ability to solve 2-dimensional problems was derived from interplay between the external prompts and the children's development.

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