

The influence of manipulation and collaboration on the emergence of the conservation of numbers with four and five year olds

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Abstract:

Children's concepts of number conservation was investigated by Piaget some 45 years ago; he discovered that children tend to perceive an increase in the quantity of objects in a collection when these objects are spread out. The problem posed in this study is, how might children learn conservation of number best: by watching a teacher demonstrate it, by working with the materials in a "hands-on" way, or through conversation and manipulation? Sixteen pre-kindergarteners ranging from age four to five years old were split into three learning conditions: observing the teacher manipulate objects, manipulating the objects themselves, and in diads where the children both manipulated and discussed the problem collaboratively. It was hypothesized that children would learn the concept of 'conservation of number' best in pairs and least well (as measured by the number of trials in the 'game' needed to understand the concept) when they merely watch the teacher manipulate the pennies. Although the number of students or dyads in each group (4) did not allow concluding on any general statement, it appeared, in this experiment, that the children operating in pairs and who were allowed to collaborate and to manipulate understood the concept of number conservation faster than in the other two conditions. Implications for math in the preschool setting are discussed in light of the Preschool Early Learning Foundations and other math-related initiatives for young children.

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