

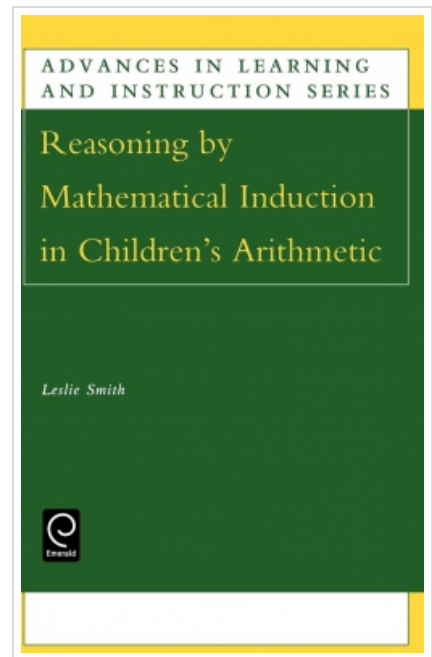
# Reasoning by Mathematical Induction in Children's Arithmetic

Advances in Learning and Instruction Series

Liane Smith

## About the Book

How do children understand reasoning by mathematical induction? Mathematical induction - Poincare's reasoning by recurrence - is a standard form of inference with two distinctive properties. One is its necessity. The other is its universality or inference from particular to general. This means that mathematical induction is similar to both logical deduction and empirical induction, and yet is different from both. In a major study 40 years ago, Inhelder and Piaget set out two conclusions about the development of this type of reasoning in advance of logical deduction during childhood. This developmental sequence has gone unremarked in research on cognitive development. This study is an adaptation with a sample of 100 hundred children aged five-seven years in school years one and two. It reveals evidence that children can reason by mathematical induction on tasks based on iterative addition and that their inferences were made by necessity. According to the study the main educational implication is clear: young children can carry out iterative actions on actual objects with a view to reasoning about abstract objects such as numbers.



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