The changes that occur in the first decade of life are among the most profound in the human lifetime. It is natural, therefore, for those interested in change to be interested in cognitive development (Robert Seigler).

Award for Distinguished Scientific Contributions
Robert S. Siegler

• Born in Chicago in 1949.
• His parents moved to America during Nazi Germany to avoid being killed.
• His favorite subject was history and was interested differences among countries, past, present, and future implications.
• Tried to prove Piaget’s theory and was proved wrong and decided to study cognitive development.
Robert S. Siegler

• Graduated from the Univ. of Illinois, 1966-1970, B.A. Psychology
• Graduated from SUNY at Stony Brook, 1970-1974, Ph.D. Psychology
• Core research studies include mathematics and science.
• Became an assistant professor at Carnegie Mellon University in 1974 and continues to work there as Teresa Heinz Professor of Cognitive Psychology.
Robert S. Siegler

Has published 13 books and over 200 journal articles since 1972. Web of Science found only 124 articles written by Robert S. Siegler (Web of Science).

Assigned Reading:
• Web of science found 134 articles written by Robert Siegler

• Web of Science Cited Reference Search
• http://apps.isiknowledge.com.proxy.usf.edu/summary.do?product=WOS&search_mode=CitedReferenceSearch&qid=12&SID=1F29n5no3M6BFFMMmMg&page=1&action=sort&sortBy=

Chapter 7 Memory Development

Chapter 9 Academic Skills Development
First Research

Rule-assessment approach

Children solve problems by consistently adhering to specific rules

These rules can be identified by presenting problems for which each rule generates a unique pattern of correct answers and errors.

Encoding Hypothesis, the idea that young children’s frequent failure to learn more advanced rules from relevant experience was a result of their failing to encode relevant information.
• He learned that preschoolers and young elementary school children added or subtracted in many different ways. Which differs from Piaget’s theory that they use a single strategy.

• Raising the issue of how do children find new strategies.
Focus is on growth during childhoods of problem solving and reasoning.

Siegler’s cognitive-developmental theory interest are:

• strategy choices
• long-term learning and
• educational applications
The research on **strategy choices** focuses on how children decide which strategy to use from among the many strategies they know. My research indicates that even four-year-olds choose among alternative approaches in surprisingly intelligent ways. My colleagues and I have built computational models to illustrate how young children can make such intelligent decisions and also to show how the decisions improve as knowledge and skill improve. For more information see the following articles: Siegler & Shipley, 1995; Siegler, Adolph, & Lemaire, 1996; Siegler & Lemaire, 1997; and Chen & Siegler, 2000.
The research on long-term learning examines how children discover new strategies. Small numbers of children are given prolonged experience in solving problems. Videotapes and verbal protocols obtained on each problem allow examination of the discovery, the circumstances leading up to it, and the subsequent generalization of the discovery to new problems. The emphasis is on individual differences in patterns of learning as well as commonalities in the learning of different children. For more information see the following articles: Siegler, 1995; Shrager & Siegler, 1998; Siegler & Chen, 1998; Siegler & Stern, 1998; Crowley & Siegler, 1999; Chen & Siegler, 2000; Siegler, 2000; and Siegler & Svetina, 2002.
Educational applications

The research has yielded a number of educational implications, particularly in the area of early mathematics. It is being used to develop tests to identify young children who are at risk for later mathematical difficulties. We are also developing programs for preventing small, easy-to-remedy, early problems in mathematics from growing into large, intractable, later ones. For more information see the following articles: Geary, Bow-Thomas, Fan, & Siegler, 1996; Rittle-Johnson, Siegler, & Alibali, 2001; Siegler, 2002; and Siegler, 2003.
References


Web of Science, Citing Research


Children’s Learning

Written in 2005 Siegler states that a new way of learning is emerging. It is much different then the old way of learning.
Siegler (1991) used a staircase metaphor of Piaget’s theory of intellectual development.

Siegler (1996) modified his views of changes with his overlapping waves model.
Children’s Learning