

## **Cognition & Instruction: Cognitive Development and its Application to Education**

Session F-30 (10:30am – 11:45am) & Session F-59 (3:00pm – 4:15pm)

*ISACS Annual Conference -- Curriculum: Create and Cultivate*

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**Presenter:** David A. Stevens, Ed.D. – Developmental Psychologist

**Affiliation:** Cognitive Development Center of Lexington (Massachusetts)

**Contact:** [david@cognitivedevelopment.com](mailto:david@cognitivedevelopment.com)

**Synopsis:** This presentation provides an overview of the field of Cognitive Development. Two curricula are presented as examples of how Cognitive Development principles are applied to education design in order to improve student achievement.

**Example Program #1:** The *Numberworlds* program is an elementary math curricula designed to improve children's 'central conceptual structure for number'. The authors' (Sharon Griffin & Robbie Case) determined that some children fail to progress with math instruction because this key cognitive structure has yet to be solidified by the time they start school. Griffin & Case designed the *Numberworlds* program to develop this key cognitive structure. Outcome studies of the program provide evidence for the program's impressive effectiveness.

**Example Program #2:** The *Lexia Cross-Trainer* is an educational software program designed to improve key cognitive abilities such as visual-spatial skills and logical reasoning skills. Cognitive Development research has documented that many children struggle to thrive in school because they have not sufficiently developed some of these cognitive abilities. The *Cross-Trainer* program provides an opportunity for students between the ages of seven and adult to develop these skills. At this point only early pilot studies have been conducted on the *Cross-Trainer*. While these studies are encouraging, the long-term and large-scale studies needed to determine the program's effectiveness have not been completed.

**Resources:** Please go to [www.cognitivedevelopment.com/ISACS](http://www.cognitivedevelopment.com/ISACS) for links to some of the research articles cited in this presentation.

**About the presenter:** David is a Developmental Psychologist and Cognitive Scientist who has dedicated his career to the study, design, implementation and evaluation of interventions that improve cognitive abilities. His work is based on the hypothesis that children identified with learning difficulties or special needs often have underdeveloped cognitive abilities that contribute to academic and social frustration. The most profitable means to improve these situations is by helping the child to develop their areas of weakness. David received a \$2 million federal grant with Lexia Learning Systems, Inc. to develop educational software that improves cognitive abilities based on his research at Harvard University, where he received his Doctorate in Human Development and Psychology. He is a member of the American Psychological Association, the Cognitive Science Society, and the American Educational Research Association.

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