

Subject Area: Math

Title of Instructional Strategy: Concrete- Representational-Abstract Instructional Approach (CRA)

Grade Levels: K-8

Description: CRA is broken down into three steps; concrete, representational, and abstract. In the first step the teacher introduces a math concept by modeling examples by using manipulatives. In the representational step, the teacher alters the concrete model into a representational level, an example of this might include drawing pictures for counting. The last step is the abstract step where the teacher models the concept at a symbolic level and uses math symbols to represent the number of circles or group of circles.

References:

Access Center: Improving Outcomes for all students K-8. *Concrete representational-abstract instructional approach*. Retrieved January 17, 2008 from http://www.k8accesscenter.org/training_resources/CRA_Instructional_Approach.asp

Bley, N. S, & Thornton, C. A. (2001). *Teaching mathematics to students with learning disabilities* (4th ed.). Austin, TX: PRO-ED.

Frances M. Butler, Susan P. Miller, Kevin Crehan, Beatrice Babbitt, Thomas Pierce (2003) Fraction instruction for students with mathematics disabilities: comparing two teaching sequences. *Learning Disabilities Research & Practice* 18 (2), 99–111.

Maccini, P. & Gagnon, J. A. (2000, January). Best practices for teaching mathematics to secondary students with special needs. *Focus on Exceptional Children*, 32(5), 11.

Miller, S.P., & Mercer, C.D. (1993). Using data to learn about concrete-semi-concrete-abstract instruction for students with math disabilities. *Learning Disabilities Research and Practice*, 8, 89–96.

“How-To” Information:

The teacher must model, guide, and assess. It is important that the student fully understand the steps in sequence of the math concept. The student must have a concrete knowledge of the skill before moving on to the next step in the strategy. This requires the teacher to monitor progress and provide prompts at every level for the student to be successful.

According to Maccini & Gagnon, some guidelines to follow are: “Select manipulatives that are connected to the concept and to students’ developmental level, incorporate a variety of manipulatives for concept exploration and attainment, provide verbal explanations and questions with demonstrations, provide opportunities for student interaction and explanation, encourage the use of manipulatives and strategies across settings, and to program for transition from concrete to symbolic representation (Maccini & Gagnon, 2000)”.

Implications for Practice:

For students with learning disabilities the teacher should consider spending more time on the concrete stage, as well as providing students with the same manipulatives that they will use to model the problem. Teacher should also aim to teach to each individual student's most successful learning style, such as visual, tactile, and kinesthetic.

Additional Links:

http://www.ct4me.net/math_methodology_instruction_resources.htm

www.nctm.org/2007_11nb_intervention.aspx-55k

www.education.umd.edu

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