'We must give more attention to the interplay between the science of teaching - pedagogy - and the art of teaching... A teacher must be anchored in pedagogy and blend imagination, creativity and inspiration into the teaching learning process to ignite a passion for learning in students.'

Peyton Williams, President ASCD 2003
Concrete-Representational-Abstract Instructional Approach

• The C-R-A model is an intervention for mathematics instruction.
  • It can enhance student performance
  • Promote student learning and retention of conceptual knowledge
    • Supports understanding of underlying concepts, before learning “rules” of math
Concrete

The First stage is the “Doing” stage – Using concrete materials to MODEL problems
Using tactile and kinesthetic learning styles to teach can take time to prepare and plan, but can make a world of difference in the learning process of mathematics.
Representational

The second stage is TRANSFORMING the concrete model to a representational model using pictures, etools/virtual manipulatives, drawings.
Representations are a stepping stone to expanding understanding and moving students to the next level of abstract learning.

**WARNING:** THIS IS MANY TIMES OVERLOOKED AND CAN BE DETRIMENTAL TO OUR STUDENTS’ LEARNING
Abstract

The third stage is when the teacher models the concept symbolically, using ONLY numbers, notation, and mathematical symbols (operation symbols).
How is C-R-A Implemented?

- May be implemented at all grade levels.

- May be implemented in small groups, individually, or in whole group instruction.

- The teacher should provide ample opportunities for practice and demonstration to help students achieve mastery of mathematical concepts.

- Provide a number of different strategies through the different stages (models/manipulatives, verbalization, drawings, numerical representations, summarization/journaling)
Please Remember to …

- Plan ahead
- Share ideas with your team
- Prepare materials and make them easily accessible for you and your students

*This strategy is great to use when teaching place value, computation, fractions, decimals, measurement, geometry, money, percentage, number bases, word problems, and probability.*
Concrete
- Edibles: M&Ms, Skittles, cereal, pretzels

Representational
- A map of Florida
- Virtual Manipulatives
- Drawing pictures of the manipulatives used
- Making a graph

Abstract
- Using spreadsheet software
- Understanding mathematical and real world processes
- Writing numerals
- Telling a story
- Constructing and input/output table
- Finding distances on a map