

C-R-A Model

'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

BLOCKS

The First stage is
the “Doing” stage
– Using concrete
materials to
MODEL problems

“Doing”

FOOD

CANDY

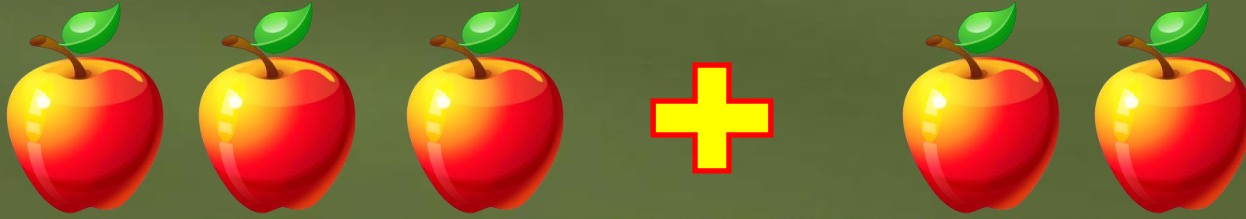
**BASE-TEN
BLOCKS**

CUBES



COUNTERS

FRACTION BARS



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.

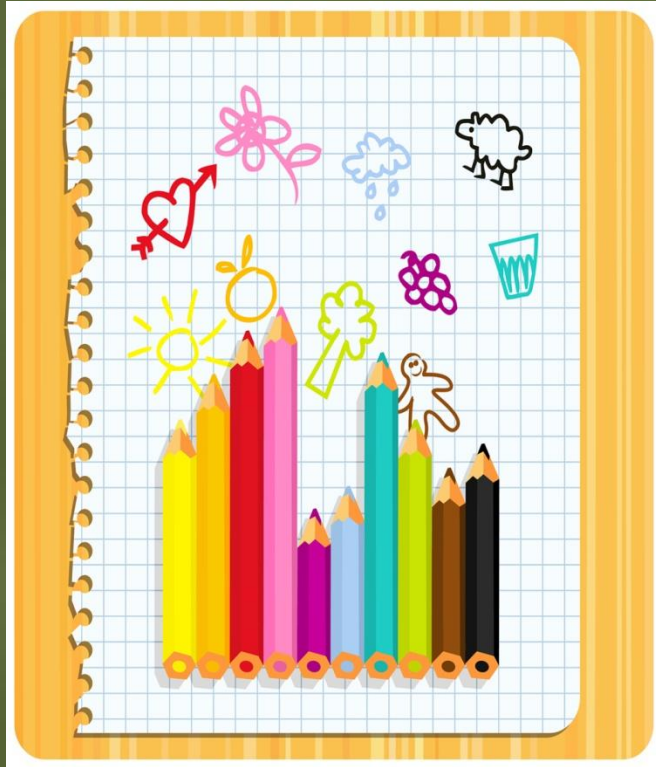


Representational

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).

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1, 2, 3, 4...

“symbolic”

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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

Counters

Algebra tiles

A ruler

Calculators

Representational

A map of
Florida

Virtual
Manipulatives

Drawing pictures
of the
manipulatives
used

Constructing and
input/output
table

Abstract

Using spreadsheet
software

Making a
graph

Understanding
mathematical
and real world
processes

Writing numerals

Telling a
story

Finding
distances
on a map