

CONCRETE PICTORIAL ABSTRACT (CPA)

Concrete Pictorial Abstract (CPA) is a three step instructional approach that has been found to be highly effective in teaching math concepts. The first step is called the concrete stage. It is known as the “doing” stage and involves physically manipulating objects to solve a math problem. The pictorial (semi-concrete) stage is the next step. It is known as the “seeing” stage and involves using images to represent objects to solve a math problem. The final step in this approach is called the abstract stage. It is known as the “symbolic” stage and involves using only numbers and symbols to solve a math problem. CPA is a gradual systematic approach. Each stage builds on to the previous stage and therefore must be taught in sequence.

Steps

1. Teach the math concept using manipulatives (concrete level).
2. Allow ample opportunities for students to practice the concept using various manipulatives.
3. Make sure students understand the concept at the concrete level before moving on to the representational level.
4. Introduce pictures to represent objects (representational level). Model the concept.
5. Provide plenty of time for students to practice the concept using drawn or virtual images.
6. Check student understanding. Do not move to the abstract if students haven't mastered the representational level.
7. Teach students the math concept using only numbers and symbols (abstract level). Model the concept.
8. Provide plenty of opportunities for students to practice using only numbers and symbols.
9. Check student understanding. If students are struggling, go back to the concrete and representational levels.
10. Once the concept is mastered at the abstract level, periodically bring back the concept for students to practice and keep their skills fresh.
 - Remember that modeling the concept and providing lots of opportunities to practice is extremely important at all three levels. Also, do not rush through the levels. Students need time to make connections and build on what they already know. Give them time to process the information before moving on to the next level.

Benefits

- Provides students with a structured way to learn math concepts
- Students are able to build a better connection when moving through the levels of understanding from concrete to abstract
- Makes learning accessible to all learners (including those with math learning disabilities)
- Taught explicitly using a multi-sensory approach
- Follows Universal Design for Learning guidelines
- Research has proven that this method is effective
- Able to use across grade levels, from early elementary through high school
- Aligned with NCTM standards
- Helps students learn concepts before learning rules
- Can be used in small groups or entire class