

NEWSLETTER

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THE LASTING IMPACT OF MATH MANIPULATIVES

Why cubes, counters, dice, and pattern blocks matter in early mathematics.

In today's edition, we explore:

- **Manipulatives:** what different materials help children learn
- **Classroom tips:** using cubes, chips, dice, pattern blocks, and cards at home and school
- **The research:** what studies of manipulatives and home mathematics suggest

Educators!

Connecting cubes, counting chips, dice, wooden blocks, and pattern blocks are common materials in early childhood classrooms. Research suggests manipulatives can support early mathematical development by representing quantities, shapes, measurement units, and number relationships.

Different manipulatives support different mathematical ideas. Understanding these differences helps teachers and families select materials that match the mathematics children are learning.

What Can Children Learn From Different Manipulatives?

Different manipulatives are useful for representing different mathematical ideas:

- **Connecting cubes:** counting, composing and decomposing quantities, equal groups, and iterating measurement units.
- **Counting chips:** comparing quantities, part-total relationships, addition, and subtraction.
- **Dice and dot patterns:** subitizing, number recognition, composing quantities, and early operations.
- **Pattern blocks:** shape composition, spatial reasoning, geometric properties, and equivalence.

Wooden blocks support spatial visualization and informal measurement, and number cards support recognizing, ordering, and comparing numbers.

Classroom Tips

1. **Connecting cubes.** Build and compare quantities, compose and decompose numbers, or measure objects with equal-length units.
2. **Counting chips and dice.** Play games that involve counting, comparing quantities, recognizing dot patterns, and combining numbers.

3. Pattern blocks. Compose shapes, examine how shapes fit together, and compare regions made from different pieces.

4. Cards. Match numerals and dot patterns, order numbers, and compare quantities.

Math packs can provide families with these materials and a small collection of activities. Questions such as “How many?”, “How do you know?”, “Can you make that another way?”, and “What do you notice?” help children explain the mathematics they are investigating.

What Does the Research Say?

Research on concrete manipulatives shows that these materials can support mathematics learning with appropriate instructional guidance (Carbonneau et al., 2013). Early mathematics research also emphasizes the importance of experiences involving number, operations, spatial reasoning, and measurement (National Research Council, 2009). Research on at-home mathematics activities also suggests that structured parent-child mathematical activities can support early mathematics learning (Berkowitz et al., 2015).

Connecting cubes, chips, dice, pattern blocks, and cards provide different opportunities for children to develop mathematical understanding. Selecting appropriate materials and using them in mathematical activities can support learning at home and school.

Keep developing mathematical thinkers.

More Information

Read DMT Insight 26, watch the accompanying video, and download the Companion at mathsuccess.io/dmtinsights.

How do you use manipulatives at home or school? Share it with us at contact@dmtinstitute.com.

For more information on professional development and curricular resources, visit mathsuccess.io.



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