

Use of Manipulatives in Early Learning

- Live interaction is better for learning than passively watching TV, which is why some medical organizations now recommend no TV viewing for the first two years of life (Lew-Williams, 2016)
- Small objects or toys may become the most important teaching tools.
- Counters or small blocks support toddler's learning in math and science as a means of learning complex concepts.
- As children combine, sort, or describe the characteristics of these objects, they are using active hands-on strategies for problem-solving, exploration, and experimentation to learn new information.
- During the early years, children discover mathematical dimensions of their world. They compare quantities, find patterns, problem-solve, communicate, and confront real problems such as balancing a tall block on a building or building a ramp for a ball.

Building a Mathematical Brain

- Mathematical development prior to entering school is important for children's academic success. The math knowledge that children bring to the start of school predicts their math and reading achievement through the 5th grade (Duncan, et.al., 2007)
- Early differences in children's math knowledge are related to the math activities completed at home (Gunderson & Levine, 2011).
- The amount of talk about numbers that parents provide to their children between 14 and 30 months of age is a significant predictor of children's knowledge of the cardinal meanings of number words at age 46 months (three= sets of three items) (Levine et.al., 2010).
- Parent talk about numbers seems to be most informative when it refers to present object sets (counting a set of five blocks) as opposed to rote counting (Gunderson & Levine, 2011).



Math All Around US

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School-Family-Community
partnerships are linked to
student achievement and
school success”
(Van Roekel, 2008).

Mathematical Thinking and Expression

Numbers & Operations-

INFANTS (BIRTH TO 12 MONTHS) The learner will: stack and unstack objects, dump and fill objects into and out of containers, repeat sound patterns (e.g., repeatedly beat drums). The adult will: count objects with children, build towers and ramps, and provide numerically rich environments (books, songs, pictures).

YOUNG TODDLER (9 MONTHS-27 MONTHS)

The learner will attempt to count. The adult will: count objects, build towers and ramps, provide numerically rich environments, count and use number words.

Algebraic Concepts –

INFANTS (BIRTH TO 12 MONTHS)

Infants and toddlers will engage in simple addition and subtraction experiences.

YOUNG TODDLER (9 MONTHS-27 MONTHS)

The learner will: group like objects into sets, engage in experiences related to adding and subtracting (finger puppets, songs, books). The adult will count and group objects. The adult will count and group objects.



Mathematical Play Encourages:

Exploration

Risk Taking

Vocabulary Development

Discovery

Problem Solving

Comparison

Mathematical Thinking and Expression

Geometry-

INFANTS (BIRTH TO 12 MONTHS)

The learner will: explore similarities and differences in the shape of objects, explore puzzles, stack and build, and manipulate shapes. The adult will: provide shapes for children to explore, offer puzzles and shape blocks, and describe objects by shape and name.

YOUNG TODDLER (9 MONTHS-27 MONTHS)

The learner will: put together simple puzzles with assistance and place shapes in shape sorters. The adult will: provide various shapes for children, offer puzzles and shape blocks, describe shapes and how they are similar and different.

Measurement & Data -

YOUNG TODDLER (9 MONTHS-27 MONTHS)

The learner will: use size words (big, many, and little), compare sizes of objects, explore measuring tools, and begin to use nonstandard tools to measure (hand, yarn, blocks). The adult will provide opportunities to explore weights and sizes, model how to measure, and ask questions about measurement.

**The cognitive processes
required for imaginary play
are more demanding than
looking at flashcards
(Lew-Williams, 2016).**