METHODOLOGY FOR PROVIDING MATHEMATICAL CONCEPTS FOR PRESCHOOL CHILDREN

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Abstract: It is in the first years of life that the child has an opportunity to learn a lot of important information. There is a special technique for the formation of elementary mathematical representations, through which a small person receives the skills of logical thinking.

Key words: activities, teaching, daily, educator, mathematics, lesson, skills;

Children use early math skills every day, whether at preschool or at home, during their routines or at play. Getting dressed and brushing teeth, eating breakfast, going grocery shopping – all of these activities' present opportunities for teaching mathematics in early childhood when approached with the right mindset.

Importance of numeracy in early childhood

Numeracy–understanding how numbers represent the world–is present in children long before they open their first math textbook. Mathematics plays a major role in a child's development and helps children make sense of the world around them. Research has shown that babies as young as 3 months are sensitive to differences in quantity, so it's never too soon to start teaching mathematics in early childhood education. There are plenty of fun ways to introduce math in the classroom: songs with numbers and operations, observing patterns in nature, even geometric snack time!

Whatever your approach, the benefits of teaching mathematics to children through play are enormous. In fact, mathematical ability in the early years is a better predictor of future academic success than reading or attention. Encouraging mathematical skills in young children can also help to discourage them from forming harmful biases at an early age. Studies have shown that children express the stereotype that "math is for boys" about themselves and others as early as second grade. Even educators have been found to have biases about the mathematical abilities of female, black, and Hispanic students. Making mathematics a part of daily life from a young age helps reinforce the idea that math is for everyone.

Examples of math-focused play materials

Any of the following commonly-found items can be used as tools to help teach fundamental math skills such as adding and subtracting:

- Peg number boards
- Counting bears
- Car garages
- Magnetic 2D and 3D blocks
- Number tracing sheets
- Tangrams
- Playdough

- Books
- Puzzles

Check out more than 1,000 free developmentally appropriate activities for the classroom for more inspiration!

Teaching mathematics in early childhood

Parents and educators play an important role in early childhood development by providing opportunities for children to learn and develop new skills. Adults need to allow children to direct their own play and support them by enhancing or extending their play. In order to give children, the best chance to develop their math skills, adults must give them opportunities to:

- Discover and create.
- Use number concepts and skills to explore.
- Develop confidence in their ability to think things through.
- Solve meaningful problems.
- Create connections to help discover relationships (e.g., characteristics).

Teaching math skills in the early years is an entire subject in its own right, but the key is to make it hands-on, cross-domain, and above all, meaningful.

Measurement. This category includes ordering and comparing objects to figure out time, weight and length. For example, Kyle held up his block tower and said, “this is taller than me.” James looked towards Kyle and pointed towards the block tower. “Me too, it’s taller than me,” he said as he looked up towards the top of the block tower. Kyle and James demonstrated how they could compare how tall the block tower is to each of their heights.

Numeracy. Also known as number sense, this category includes saying number words, writing numbers, counting, and recognizing a number of objects. For example, “1, 2, 3, 4, 5, 6, 7, 8, 9, 10,” counted Devon as he pointed towards the cars lined up on the table. “I have more than you,” he said as he pointed towards Melissa’s cars lined up. “1, 2, 3, 4, 5, 6…oh yeah,” she said as she pointed towards her cars lined up next to Devon’s cars. Devon and Melissa demonstrated counting and recognizing the number of cars they each had to compare each other’s quantities.

Pattern and shape. This category includes identifying or creating patterns and shapes. For example, Jeremy and Mira sat on the carpet next to one another in the block area. Jeremy placed a magnetic block together. “I’m making a house,” he said as he placed more magnetic blocks together. He took a magnetic block apart and said, “this needs to be over here,” and pointed at his magnetic blocks on the floor. Mira looked towards Jeremy’s magnetic blocks and pointed down toward her magnetic blocks. “I’m making a pizza,” she said. Jeremy and Mira created patterns and shapes with 2D magnetic blocks to build symmetrical structures.

Classification. This category includes grouping or sorting objects by characteristics.
For example, Casey placed a red horse into the red bowl. She picked up a blue pig and placed the blue pig into the blue bowl. “The blue pig goes in the blue pig pen,” she said. Casey was classifying by sorting the blue and red animals into the corresponding same colored bowls.
Representation. This category includes using symbols or tokens to refer to quantities and operations. For example, Sarah takes four crackers from the plate. “Four because I am four,” she said. Preetish points to his plate: “I have four grapes because I’m four, too.” Sarah and Preetish are representing their age using snacks.
Estimation. This category includes the ability to approximate values, i.e., make an educated guess about size or quantity. For example, Jack is shown a jar filled with jellybeans and asked to guess how many are inside. “There must be a hundred jellybeans there!” he said. “I bet there’s a thousand jellybeans,” Sheena guessed. Jack and Sheena are estimating by trying to guess how many jellybeans are in the jar.
Developmental milestones in mathematics. Every child develops at their own pace, and math skills are no exception. However, having a set of milestones to refer to can help educators create developmentally appropriate lesson plans and communicate progress with parents and caregivers.
Math skills in toddlers
Measurement: understand comparative words, Numeracy: recite number sequences, Pattern and shape: match basic shapes, Classification: basic categorization, Representation: understand numbers mean “how many”, Estimation: experiments with size by filling containers, Math skills from age 2-3, Measurement: compare two objects by size, height, etc., Numeracy: counting up to 20 and accurately counting items in a group, Pattern and shape: recognize shapes and patterns in the world, Classification: sort objects by shape, color, etc., Representation: understands that numerals stand for number names, Estimation: understands “small” vs “large” numbers (1 vs 100), Math skills from age 4-5, Measurement: understands basic time concepts- morning, days of the week, Numeracy: add by counting fingers, Pattern and shape: can draw symmetrical shapes, Classification: understands abstract categories, such as possibility, Representation: can use basic maps to find “hidden treasure”, Estimation: identify the larger of two numbers expressed as numerals, Preschool activities to introduce math and counting, Gummy bear patterns: Using candy or food during a math lesson can be a great way to hold a child’s interest. It allows them to use real world materials (candy in this case!) to create and extend patterns while practicing sorting and counting. All of these skills can easily be transferable to the classroom for circle time and worksheets!
Roll and cover raindrops dice game: Roll, count, cover! It’s as easy as 1, 2, 3….4, 5, 6! Grab a game die, print out our printable, and use small rocks or beads to cover the numbers!
Math is an important part of learning for children in the early years because it provides vital life skills. They will help children problem solve, measure and develop their own spatial awareness, and teach them how to use and understand shapes.
Math matters. Math is an important part of learning for children in the early years because it provides vital life skills. Even in the early years, mathematics helps children problem solve, measure and develop their own spatial awareness, along with how to use and understand shapes. And, the best part is that your lesson plan for teaching mathematics in early childhood is limited only by your imagination!

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