Q&A with Deborah Stipek: Building Early Math Skills

By Deborah J. Stipek JUNE 10, 2014

What is “early math”?

Parents should think of math as a continuum that begins very early in life and continues through school. You can begin teaching math concepts in infancy, and adjust how you teach your child depending on what he or she understands. For example, after she learns to count to 10, you might add a few new numbers. If he can recognize shapes, you might focus on teaching the defining characteristics (e.g., triangles always have three sides, but it doesn’t matter how long each side is or what direction it is pointing).

Early math is about understanding basic number and spatial concepts, and identifying patterns. For example, early math includes understanding one-to-one correspondence – that when you are counting objects, you count each object only once. Young children can learn number sequence and to recognize written numerals. These are the building blocks that help children develop later skills used in operations like addition, subtraction, and multiplication.

Children can begin learning geometry concepts by learning the names of shapes and how each one looks. They can also learn spatial vocabulary (terms like “in front of,” “next to,” “above,” “closest”) and order (first, second, third). And they can learn to notice patterns, such as in the color of beads strung on a string, and sounds (e.g., one short drum beat, followed by two long, followed by one short)

Children learn math when they enter school, so why is it important for them to start learning math at a young age?

We talk a lot about literacy, but not nearly as much about math. The truth is that young children enjoy learning math and what they learn before school lays the foundation for future math learning. Addition and subtraction, for example, don’t make sense if children don’t understand one-to-one correspondence. It is best to teach them these concepts early on when they are most interested in learning them.

Several studies show that children’s math skills when they enter school are very strong predictors of their academic success later on. One study showed that math skills upon kindergarten entry predicted children’s reading abilities in third grade as well as their reading skills at kindergarten entry. While children can learn beginning math skills after they enter kindergarten, they will be at a disadvantage.

What is the best way to introduce young children to math?

Children learn best during playful, everyday activities, like counting their toes, the buttons on their shirt, the steps they walk up. They can be asked to count out how many forks are needed to help set the table. Shape hunts through the house can be fun (the clock is a circle; the TV is a rectangle). Children can learn about the importance of numbers by doing a

number hunt, with a discussion of how the numbers on the telephone, clock, or elevator are useful.

It is important that parents help children find enjoyment in math. As soon as children start feeling pressure to learn something, then they may become anxious or it will take away their enjoyment. And parents should try to find the fun in math, even if they didn't like it in school. Parents who model enjoyment of math activities will help their young children build enthusiasm for it.

If a child seems to be behind in his/her math skills development, should the parents be concerned?

Parents should not be concerned, and they should not start pushing math on their child. They should focus on how to support their child and avoid anxiety. Children are not doomed for life if they enter school without a lot of math, and we don't want parents to start drilling kids. Not only do children not learn math very well that way, but they also may learn to dislike math. Parents can better support their child's early math by finding playful opportunities to develop math skills.

There's been media discussion around the gender gap in math. How can parents and caregivers better support young girls in math?

The gender gap in math is not so much in skills. In fact, if you look at high school, girls actually get better grades on average in math than boys do. The gender gap is more in perceived competence. By third grade, girls in our research rated their competency in math lower than boys, even though they were doing just as well. The best way to boost young girls' confidence is not just by *telling* them "you're good at math." They need to experience their skills and comprehension developing.

Parents and caregivers can support young girls in math by giving them as many opportunities as they would give boys. It's also important to avoid reinforcing the view that girls are not as good in math as boys. For instance, mothers are more likely to say "I was never good at math," and that sends a strong message to their daughters and sons.

What if math isn't a parent's strong suit?

The level of math expected of a child before school and even in the first few years of school is within most parents' grasp. A four-year-old, for example, is not expected to be able to count to higher than 10 or 20 or identify the defining characteristics of more than a few common shapes. It also doesn't matter the language that children use to learn math concepts. Children who learn to count or recognize a triangle in Spanish or Korean will easily convert that understanding to English when they are exposed to the English words.