



# COACHING CORNER

**November 2010**

## **Math Knowledge is a Powerful Predictor**

Do you know which of the three R's (when learned during preschool) predicts the most learning later on? Reading or wRiting or 'Rithmetic? If you guessed arithmetic, you are right!

An analysis of six long-term studies by Northwestern University's Greg Duncan and colleagues found early math knowledge to be the most powerful predictor of later learning. In fact, early math was a more powerful predictor of later reading achievement than early reading was of later math achievement.

While interpretations of these findings may be debated, few argue that concentrating more on math and science in Pre-K isn't needed. Children are born with natural abilities to notice math all around them. They look for and notice shapes, make size comparisons, and explore spatial relationships and number concepts before they even have the language for them. Children are scientific and mathematical thinkers from the crib to the preschool rug! It is up to us to nurture it and expand how they use it.

Kimberly Brenneman, assistant research professor at the National Institute for Early Education Research (NIEER) and co-author of NIEER's math and science policy brief says, "Given the opportunity, preschoolers will use math- and science-related thinking to solve problems even though they may not be aware they are doing so." She says high-quality Pre-K classrooms support math and science by providing experiences that encourage numerical reasoning and lead to investigations of objects by considering their sizes, quantities, measurements, spatial relationships, and various other aspects. Children engage in explorations of science ideas and content, and skilled teachers interact with them in intentional ways to help extend their knowledge and reasoning. Scientific explorations are filled with opportunities to understand and use math concepts. How high will this grow? How many times will my ball bounce? What if we add three cups of water instead of two?

Highlight experiences that build on math and science ideas by:

- "Mathematizing" daily routines and interactions and bringing number, size, position, and shapes into any and all types of routine interactions.
- Adding a vibrant, growing scientific investigations area to the learning environment. Go beyond the magnifying glass and fall leaves! Add materials that may be explored and experimented with to watch scientific reactions and create an environment of questioning and wonder.
- Counting letters, people, beats, toys, or anything from 1 to 10 and then back again!

Last but not least, forget your own math and science experiences in school that may hold you back. Have fun using your own understanding of the world as you manipulate math and raise the science bar for your preschoolers.

Adapted from NIEER, (2010, Jan/Feb). Yet more evidence: Time to beef up math and science in pre-k. *Preschool Matters*, 8(1).