Introduction

Early childhood programs have had success in developing pre-literacy skills, self-regulation abilities and creativity but haven't done as well in providing rich mathematical experiences

The mathematical skills children bring with them to the primary grades predict both their mathematical AND literacy achievement for years to come.

Myths and Realities

- **Myth #1: Math for young children is only counting and naming shapes.**

- **Reality #1: Early mathematics consists of more than isolated skills.**

  Mathematics is a way of thinking about and expressing comparisons and quantities. It also deals with the analysis of shapes and deals with abstractions.

- **Myth #2: Teaching early mathematics is easy since it's about the most basic math.**

- **Reality # 2: Teaching early mathematics requires not only knowledge of mathematics but also the knowledge of how to teach mathematics.**

- **Myth #3: Math for young children is in the environment, you really don't have to teach it.**

- **Reality#3: Math can be everywhere in the classroom, but ONLY if the TEACHER makes it so.**

BIG Ideas

- **Big Idea #1: Attributes can be used to sort collections into sets.**
  - **Attributes:** Descriptors of objects or sets of objects. Counting requires a set.

- **Big Idea #2: Quantity is an attribute of a set.**
  - **Numerosity:** Numbers used to name "how many?" are in a set.
  - **Subitizing:** recognizing the numerosity of a small set instantly.
  - **Cardinalilty:** The last counting word represents the total quantity being counted.

- **Big Idea #3: Counting can be used to find how many in a set.**
- Counting should be used when there is a real need to know how many.
  - **Rules for Counting:**
    - **One to One Correspondence:** Each object should be counted once and only once.
    - **Order Irrelevance:** It doesn't matter in what order the objects are counted.
    - **Cardinal Principle:** The last number refers to how many objects have been counted.
    - **Discrete Quantities**: Number of separate objects in a set determined by counting.

        - **Continuous Quantities:** Measurement quantities- How big? How long? How heavy?

- **Big Idea #4: Measurement tells us how much of an attribute an object possesses.**
    - **Capacity:** How much a container can hold. Importance of identifying units being used in measuring.

- **Big Idea #5: Shapes can be defined and classified by their attributes.**
  Need for children to be exposed to many shapes in different orientations and learn about their attributes: number of sides, number of corners, relationship of length of sides or faces, etc.

Implications for Teaching

- **Mathematize!:** Explore mathematical idea throughout the school day and help children see the math in their play and daily activities
- **Recognize Receptive Understanding:** Receptive understanding comes before the ability ot produce.
- **Make Practice Purposeful:** Use a variety of activities to connect new ideas to older ones.
- **Plan Intentional Mathematical Experiences:** Plan activities that move between concrete, pictorial and symbolic versions of mathematical ideas.

Summary:

- Children are eager, curious and capable of learning math.
- Teachers need to understand the big ideas of math in order to teach it effectively
- Classroom learning needs to include both intentional math lessons and the more informal mathematizing of children's daily experiences.