

## **Creating a Balanced Mathematics Program**

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### **Contrasting Approaches and the Need for Change**

#### **The Manipulative Mandate**

- Students are concrete learners
- Math is a language for relationships
- Understanding and Motivation come through active engagement
- Learning styles require activity
- Retention comes through understanding
- The brain seeks meaning, collaboration, and activity

#### **Creating Balance: Concepts, Skills, and Application**

**Concepts** (something you understand)

Forming a Classification: Knowing what is included and what is not included in some group of things or ideas

Associating a Label with the Class: A term or label with which to refer to the group of things or ideas

**Skills** (something you can do)

Skills tend to develop by degree, skills improve over time

Skills improve through:

- developing a stronger conceptual base
- memorization of additional facts
- repetitive practice

**Application** (using a skill or concept to accomplish some task or solve some problem)

Involves the identification of analogous situations---the recognition that this situation is similar to another situation in certain ways and that those similarities allow one to apply the same concepts and skills in both situations.

**Creating Balance: Balance in the kinds of activities that students are asked to do**

**Developmental Activities**

**Exploratory activities** allow the child to experience his world. Students gain experience and information that will be needed to learn a new concept or skill (teacher less involved)

**Consolidating Activities** follow exploration  
Teacher more actively directs students to visualize a new idea, to verbalize a useful rule, to see relationships, to agree on terminology, to standardize a system of procedures, to relate what's seen to what's written.

**Practice Activities**

Allows the student to become efficient and comfortable

**Procedural activities** standardize the procedures, help to gain confidence and accuracy. There should be a lack of pressure with plenty of teacher assistance available.

**Habitual activities** are used to make procedures quick and efficient. The student now works alone and with more limited time.

**Application Activities**

Provides regular opportunities to apply mathematical learning. These activities highlight daily practical use.

Real world application NOW as opposed to the future.

**Creating Balance: Three Levels of Problem Analysis**

**Concrete**  
What the Child Does

**Verbal**  
What the Child Says

**Abstract**  
What the Child Writes