

## **Singapore Math and Montessori Math: Parallels and Contrasts**

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Georgia Mathematics Conference 2008*

### **History: Singapore Math**

- Initial curriculum: “Primary Mathematics”
  - Created in 1981
  - Developed by CDIS (Curriculum Development Institute of Singapore)
- Revisions
  - 1992: stronger problem-solving focus (2<sup>nd</sup> Ed.)
  - 1999: reduced content (3<sup>rd</sup> Ed.)
  - 2001 & forward: adapted for U.S.

### **History: Montessori Math**

- Based on the work of Dr. Maria Montessori (1870 – 1952)
- Early roots: Italy, 1907
  - Holistic, experiential learning
- 1960 – American Montessori Society

### **Public School Adoption in GA**

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| <ul style="list-style-type: none"><li>• Singapore Math:<br/>Hall County Schools<ul style="list-style-type: none"><li>• Current year:<br/>All 21 elementary schools in county</li><li>• Last year:<br/>Pilot K-3 at 10 schools</li><li>• Phased plan this year:<br/>K-4 in pilot schools<br/>K-3 in new schools</li><li>• Goal: K-5 all schools</li></ul></li></ul> | <ul style="list-style-type: none"><li>• Montessori Math<br/>DeKalb County Schools<ul style="list-style-type: none"><li>• 3 Selected elementary schools, grades K-5, equipped with full set of Montessori materials and staffed with Montessori trained teachers.</li></ul></li></ul> |
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### **Parallels: Teacher Preparation**

- Extensive teacher training
  - Exceeds typical U.S. teacher training
  - Content and pedagogy
- Teacher manuals
  - Highly detailed
  - Scripted

### **Parallels: Approach (General)**

- Concrete to Abstract
  - Fundamental to system, not an add-on
  - More “spiraled” approach than most traditional instruction
- Integrated in Other Experiences and Disciplines
  - e.g., Montessori: fractional parts in cooking
  - e.g., Singapore: P.E. groups, division

### Contrasts: Approach (General)

- Singapore
  - quicker transition to abstract
  - assessments focus more on ability to extend concepts
  - less diverse groups
  - systematic; government defined
  - more formal and traditional
- Montessori
  - longer focus on concrete
  - mastery-based
  - ability to extend is implied
  - multi-age grouping
  - highly diverse (ability, ethnicity, etc.)
  - more holistic and experiential

### Parallels: Content/Methods

- Emphasis on number sense
- Emphasis on place value
- Place value strips (both)
- Number disks (Singapore) and Stamp game (Montessori)
  - Similar levels of abstraction (different values represented by same size pieces of different colors)

### Parallels: Content/Methods

- Math facts activities (Example: Sums to 10)
  - Number rods (Montessori)
  - Cards (Singapore)

### Contrasts: Content/Methods

- Singapore
  - Counting number sense
  - Some abstraction in initial math facts (paper, cards)
  - Number bonds
- Montessori
  - Concrete number sense (number rods)
  - Math facts: initially more concrete
  - Addition charts
    - Physically build
    - Progress to finger charts
    - Explore relationships

### Contrasts: Content/Methods

- Singapore
  - Place value by focus on patterns
  - Number sense for large numbers based on place value
- Montessori
  - Place value: Explicit transition from concrete to abstract
  - Concrete number sense with linear, square, and cube values

### Contrasts: Content/Methods

- Singapore
  - New topics often introduced with mix of concrete and abstract; applications and extensions are integrated
- Montessori
  - Each new topic introduced returns to very concrete manipulative objects; abstraction comes later

Examples:  
Multiplication  
Fractions