Math Materials Selection

May 7, 2013
Overview of Presentation

1. Purpose & Rationale
2. Key Understandings
3. Pilot Process Review
4. Criteria for Decision-Making
5. Data Analysis
6. Recommendation
7. Next Steps
Purpose

Select a primary resource to support the newly revised K-5 math curriculum.

Select a primary resource to support the Common Core State Standards (CCSS-M).
Rationale

In order to best meet the needs of students in the Winnetka Public Schools, it is essential that we provide a coherent K-8 math program that ensures all students engage in a well-constructed sequence of high-quality math experiences. Therefore, one common set of materials will be selected for the three K-4 elementary buildings that coordinate with grades 5-8. We believe this will enhance learning by:

- Engaging students in a developmental sequence of cumulative math concepts and skills
- Maximizing teacher collaboration and professional development across grade, building and district
- Providing a vehicle for the development of meaningful common formative assessments

“Math Materials Position Statement” (2011)
Key Understandings
Winnetka Math Beliefs
Major Steps in Pilot Process

1. Established framework for the pilot process
2. Vetted six initial programs
3. Selected two sets of pilot materials
4. Selected and trained pilot teachers
Major Steps in Pilot Process

5. Piloted materials
6. Completed reflection tools
7. Analyzed data
8. Generated a recommendation
If math materials are the vehicle to engage all students in a challenging curriculum of high quality mathematics.
The 6 major systems check:

- **FOCUS**
- **PROBLEM SOLVING**
- **DEEP CONCEPTUAL UNDERSTANDING**
- **COMMUNICATION**
- **COHERENCE**

**CHECK**
The 8 Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.
Data Analysis

- Mixed Methods Review of the Summative Reflection Tool (SRT) by Curriculum Department
  - Quantitative
    - All indicators by strand (n = 45)
    - “Super” indicators (n = 15)
  - Qualitative
    - Comment coding
    - Comparison to primary indicators
Strands of the SRT (Indicators)

- Alignment to the Rigor of the CCSS-M (7)
- Student Experiences (14)
  - Problem Solving (5/14)
  - Connections (3/14)
  - Communication (6/14)
- Instructional Support (13)
- Assessment (7)
- Mathematical Tools (4)
Performance by Strand (average)

- **Student Experiences**
  Investigations > My Math

- **Instructional Support**
  My Math > Investigations

- **Assessment**
  My Math > Investigations

- **Mathematical Tools**
  My Math > Investigations

- **Alignment to the Rigor of the CCSS-M**
  Investigations = My Math
% of Strand by Indicator

Alignment to the Rigor of the CCSS-M
- 57%
- 43%
  n = 7

Student Experiences
- 93%
- 7%
  n = 14

- Investigations
- My Math
% of Strand by Indicator

**Instructional Support**
- 73%
- 27%
- n = 13

**Assessment**
- 57%
- 43%
- n = 7

**Mathematical Tools**
- 50%
- 50%
- n = 4
% of Total Indicators (n=45)

- Investigations: 64%
- My Math: 31%
- Tie: 5%

n = 45
### “Super” Indicators (n = 15) Performance by Grade Level

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Investigations # of favorable questions by average</th>
<th>My Math # of favorable questions by average</th>
<th>No favor identified (Tie)</th>
<th>Calculated Composite Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>13</td>
<td>0</td>
<td>2</td>
<td>Investigations</td>
</tr>
<tr>
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<td>6</td>
<td>6</td>
<td>3</td>
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<tr>
<td>3</td>
<td>3</td>
<td>12</td>
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<tr>
<td>4</td>
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</table>
Qualitative Analysis

- The SRT asked pilot teachers to evaluate the strengths and weaknesses of each material in an open-comment format.
- Noted patterns of response led to the creation of a standard coding system by members of the Curriculum Department.
- Each comment on each SRT was coded, allowing for categorization and analysis.
## Qualitative Summary

<table>
<thead>
<tr>
<th>Investigations</th>
<th>My Math</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category (Net)</strong></td>
<td><strong>Category (Net)</strong></td>
</tr>
<tr>
<td>Conceptual Understanding (+19)</td>
<td>Technology (+11)</td>
</tr>
<tr>
<td>Problem Solving (+14)</td>
<td>Assessment (+9)</td>
</tr>
<tr>
<td>Communication (+9)</td>
<td>Teacher Support (+6)</td>
</tr>
<tr>
<td>Games (+8)</td>
<td>Pacing / Prior Knowledge (+6)</td>
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<tr>
<td>Tools (+5)</td>
<td>Differentiation (+4)</td>
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<tr>
<td>Developmentally Appropriate (+3)</td>
<td>Aesthetics (+3)</td>
</tr>
<tr>
<td>Other (+3)</td>
<td>Other (+3)</td>
</tr>
<tr>
<td>Lesson Design (+2)</td>
<td>Language / Readability (+2)</td>
</tr>
<tr>
<td>Engagement (+1)</td>
<td>Procedural Knowledge (+2)</td>
</tr>
<tr>
<td>Student Independence (0)</td>
<td>Real-World Connections (+2)</td>
</tr>
<tr>
<td>Aesthetics (-4)</td>
<td>Tools (+2)</td>
</tr>
<tr>
<td>Procedural Knowledge (-4)</td>
<td>Communications (+1)</td>
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<tr>
<td>Teacher Support (-4)</td>
<td>Student Independence (0)</td>
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<tr>
<td><strong>Real-World Connections (-5)</strong></td>
<td>Engagement (-1)</td>
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<td><strong>Challenge (-5)</strong></td>
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<td><strong>Pacing / Prior Knowledge (-8)</strong></td>
<td><strong>Lesson Design (-7)</strong></td>
</tr>
<tr>
<td><strong>Technology (-8)</strong></td>
<td><strong>Conceptual Understanding (-7)</strong></td>
</tr>
</tbody>
</table>
Revisiting Our Criteria

- Investigations showed FAVORABLE results in: Deep Conceptual Understanding, Problem Solving, and Communication.
- My Math showed UNFAVORABLE results in: Deep Conceptual Understanding and Problem Solving.
- Focus, Coherence, and Mathematical Practices were not commented on frequently enough for inclusion in this data.
Other Data Points

- Pilot Teacher Group Critique
  - April 11th Gathering
  - Results Mirrored Qualitative Findings
- Feedback from Local Area Users
  - Personal Interviews of Comparable Districts by Curriculum Department
- What Works Clearinghouse™ Research
Recommendation
Next Steps...

- **Materials**
  - Order for all classrooms & teachers
  - Select and organize supplemental materials

- **Curriculum**
  - Align to the *Investigations* Units

- **Staff Development**
  - Offer 12-24 hours of spring & summer training
  - Design comprehensive, 2-year plan

- **Communication**
  - Support parent education
6-8 Math Materials

- Unable to identify a 6th-8th grade CCSSM-aligned math program that meets the rigorous standards noted in our review process.
- Begin implementation of new KUDs in 2013-2014 by supporting classrooms with current materials and commonly selected supplemental tools rather than a new, comprehensive program.
- Allows for additional time to coordinate the material selection with the New Trier Township.
Final Highlights

- Implemented first District-wide pilot process
- Common set of math materials recommended for use across the 3 elementary schools
- Alignment of materials K-5 to support transitions
- Increased communication between 6th and 7/8th grade math departments with commitment for alignment of materials 6-8
- Comprehensive staff development commitment provided by *Investigations* authors and math facilitators