Selecting Next Generation Curriculum Materials

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Friday 12:30 Room B
ABSTRACT: West Virginia is making a transition to the Common Core State Standards for Mathematics (CCSS-M), implemented as the Next Generation State Standards, over the next few years. It is critical that educators have quality resources and tools to determine if curriculum materials and textbooks truly align with the scope and intent of the new Standards. We will describe the CCSS Mathematics Curriculum Analysis Project, which is a set of mathematics curriculum analysis tools that will allow K-12 textbook adoption committees, school administrators, and K-12 teachers to analyze mathematics curriculum materials with regard to their alignment to CCSS-M.
History of project

“Almost no one thinks there are solid processes in place to examine the alignment of instructional materials to state standards.”

Michael Cohen—President of Achieve, Inc.

- CCSSM Curriculum Analysis Tools
- Professional Development
Development Team

• William S. Bush (chair), Mathematics Educator, University of Louisville, Kentucky
• Diane Briars, President, National Council of Supervisors of Mathematics, PA
• Jere Confrey, Mathematics Educator, North Carolina State University
• Kathleen Cramer, Mathematics Educator, University of Minnesota
• Carl Lee, Mathematician, University of Kentucky
• W. Gary Martin, Mathematics Educator, Auburn University, Alabama
• Michael Mays, Mathematician, West Virginia University
• Valerie Mills, Supervisor, Mathematics Education, Oakland Schools, Michigan
• Fabio Milner, Mathematician, Arizona State University
• Suzanne Mitchell, Mathematics Educator/Administrator, Executive Director of the Arkansas Science, Technology, Engineering and Mathematics (STEM) Coalition
• Thomas Post, Mathematics Educator, University of Minnesota
• Robert Ronau, Mathematics Educator, University of Louisville, Kentucky
• Donna Simpson Leak, Superintendent, Rich Township High School District 227, IL
• Marilyn Strutchens, Mathematics Educator, Auburn University, Alabama
Financial Support for the Curriculum Analysis Tools

- Brookhill Foundation (Kathy Stumpf)
- Texas Instruments (through CCSSO)
Goals of Professional Development Sessions

• To provide an overview of the CCSSM Curriculum Analysis Tools for reviewers
• To acquaint reviewers with the process and tools to be used in their reviews of curriculum materials
• To assist reviewers in using appropriate criteria for the selection of mathematics curriculum materials
Focus of Professional Development

To ensure that reviewers are familiar with the three tools to be used in analyzing mathematics curriculum materials:

• Tool 1—Mathematics Content Alignment
• Tool 2—Use of Mathematical Practices
• Tool 3—General Overarching Considerations
Tool Development Process

- Development Team formed in October 2010
- First version of tools developed in November 2010
- Initial drafts of tools piloted with groups of elementary middle, and high school teachers in December 2010
- Tools revised based on these pilots
- Tools reviewed by postsecondary mathematics educators, mathematicians, and public school administrators nationally in January 2011
- Tools revised based on input from these reviewers to obtain final versions in April 2011
Purpose of Tool 1

• Determine the extent to which the Core Content Standards for Mathematics are included in the mathematics curriculum materials
• Determine the extent to which Core Content Standards for Mathematics are sequenced appropriately in the mathematics curriculum materials
Components of Tool 1

Review the following components of Tool 1

• Information about reviewers
• Grade/Course location of content in textbooks
• Judgment about alignment with standard (N, L, M, A, H)
• Notes and comments about alignment and quality
• General comments about mathematical content and practices
Tool 1

K-5 Mathematics Content

• Two-Dimensional Geometry for Grades K-2
• Two-Dimensional Geometry for Grades 3-5
• Place Value and Base 10 Concepts for Grades K-2
• Place Value Concepts for Grades 3-5
• Addition and Subtraction for Grades K-2
• Multiplication and Division for Grades K-5
Tool 1
6-8 Mathematics Content

• Ratios and Proportional Relations
• Expressions and Equations
• Geometry
• Statistics and Probability
Tool 1
9-12 Mathematics Content

• Reasoning with Equations
• Interpreting Functions
• Similarity and Trigonometry
• Interpreting Categorical and Quantitative Data
Purpose of Tool 2 (Mathematical Practices)

To determine the extent to which the mathematics curriculum materials reflect and involve students in the Mathematical Practices
CCSS for Mathematical Practice

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.
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Overarching habits of mind of a productive mathematical thinker:

- Reasoning and explaining
- Modeling and using tools
- Seeing structure and generalizing
Components of Tool 2

- Information about reviewers
- Extent to which materials address the Mathematical Practices
- Judgment about integration of Practices among themselves
- Judgment about embeddedness of Practices in the materials evaluated
- Rationale and Examples about each of last 3 bullets
Tool 3

• Overarching Considerations Regarding Mathematics Curriculum Analysis are those that support the teaching of Mathematics Core Content and Practices:
  • Equity
  • Assessment
  • Technology
Links

• [http://www.math.wvu.edu/~mays/](http://www.math.wvu.edu/~mays/) for a copy of this presentation

• [http://www.mathedleadership.org/ccss/materials.html](http://www.mathedleadership.org/ccss/materials.html) for the full text of the Curriculum Materials Analysis Project

• [http://www.mathedleadership.org/events/webinars.html](http://www.mathedleadership.org/events/webinars.html) for a recorded webinar on the tools