Mathematics Professional Development: Resources, Trainings, and Publications to Support Math Instruction

The following materials, resources, and trainings have been compiled to assist educators looking for mathematics professional development opportunities. This is not a comprehensive list, but it provides a good starting point for educators looking for additional training or resources related to math instruction.

Resources:

AAA Math - A comprehensive set of interactive arithmetic lessons is featured in both English and Spanish.

Assessment of Essential Skills Toolkit - This is a process and resource guide to aid districts in designing, implementing and sustaining an assessment system for the Essential Skills that meets the requirements for an Oregon diploma.

Building Math Instructional Leadership Across Oregon (BMILAO) - Workshop components and resources focus on Algebra, doing activities that help develop process skills, using prompts that help develop understanding of content.

Common Core State Standards - Mathematics Crosswalk - This crosswalk document identifies matches between individual Common Core standards with Oregon standards in mathematics and includes rater comments that highlight the similarities and differences between the standards.

Education Technology - This Texas Instrument site has calculator and technology-related lessons and their own training opportunities.

Mathematics Achievement Standards 2010-2011 - A comprehensive description of the standards setting process and rationale for the new cut scores is provided along with links for additional resources, tools, and materials.

Mathematics Assessment Resource Service (MARS) - Samples of Balanced Assessment tasks including solutions, student work, and commentaries.

Mathematics Problem Solving Work Sample Tasks – Work sample tasks from past postings have been aligned to the 2007/2009 standards.

Moving Math Education Forward (MMEF) - Workshop components and resources focus on elements of effective instruction, analyzing cognitive demand, and formative assessment.

NCTM Illuminations - Resources for teaching math including activities, lessons, standards, and links.

OAKS Online Practice Test - This site will helps students prepare for OAKS Online by providing sample tests and the same look and feel. They can become familiar with the interface ahead of time.

OAKS Test Specifications and Blueprint Documents - These documents explain how the Oregon mathematics standards will be assessed. Included are the content standards, accessible content and vocabulary, achievement level descriptors, and scoring guides.

Resources (cont.)

OCTM Math Links - Links to numerous K-12 math resources on a variety of math topics, including problem solving, task banks, and practice tests are provided.

Oregon Diploma - To earn a diploma, students will need to successfully complete the credit requirements, demonstrate proficiency in the Essential Skills, and meet the personalized learning requirements. Find up-to-date information here.

PBS Teachers – Math - Multimedia resources and professional development are made available for PreK-12 educators.

Portland Public Schools Mathematics Curriculum – Math work sample prompts for Grades 6-8 may be found here.

Salem Keizer CIA (Curriculum, Instruction & Assessment) Online Resource - The website includes a number of resources for the current Oregon math standards, including deconstructed standards and pacing guides.

Silicon Valley Mathematics Initiative - Resources include coaching materials, performance assessment, lesson study, reports, and presentations.

Test Administration Manual - For specific procedures and guidelines for assessment of Essential Skills, local performance assessments, and work samples see Appendices L, M, and N.

Texas Assessment of Knowledge and Skills (TAKS) - This page contains the actual tests and answer keys. Some of the materials include a Spanish version.

Trainings:

A Closer Look at the Common Core State Standards for Mathematics - Dr. William McCallum presented this archived webinar in December and focused on the progression and connection of key concepts across grades.

Bridges in Mathematics: A Closer Look - Workshops are designed to assist teachers in improving their students' math understanding through the use of manipulative and hands-on learning. (Various Dates)

Common Core Standards Initiative: Preparing America's Students for College and Career – This is an archived webinar presented by Chris Minnich to learn about new teaching strategies, trends and to hear from experts in the math field.

Deeper Dive into the Common Core Mathematical Standards - This is a free Webinar, a follow-up to the November 30 NCSM Webinar on CCSS implementation and common pitfalls to avoid. (Feb, 23, 2011)

Getting Started with the Common Core State Standards: First Steps for Mathematics Education Leaders - This is an archived Webinar presented by NCSM President, Diane Briars on learning about the most productive ways to begin CCSS implementation and common pitfalls to avoid. (Posted Online)

Infusing the Classroom with Reasoning and Sense Making - NCTM's new Interactive Institute on High School Mathematics has designed this event to provide strategies for creating a high school math classroom in which students are engaged in reasoning and sense making. (July 28-30, 2011)

Leadership Seminar on Mathematics Professional Development - Institutes and courses designed for increasing all students' mathematical understanding and achievement through meaningful, effective professional development. (Various Dates)

Mathematics and Science Services - Provides educators with top-quality professional development, technical assistance, evaluation, and research services. (Various Dates)

Trainings (cont.)

Mathematics Northwest Conference - Strands will include: best practices in instruction and assessment, standards and NCTM Focal Points, historical perspectives in mathematics, and future trends in mathematics. (Oct. 13-15, 2011)

Math Problem-Solving Training - Next Event – Bring student work to calibrate scoring and may possibly have student work posted on the ODE website. Multnomah ESD (March 11 or April 8)

NCSM Annual Conference - The four strands feature: Assessment of Students/Assessment of Teaching, Developing Coaches/Developing Teachers, Teaching & Learning, and STEM (Science, Technology, Engineering, & Mathematics) (April 11-13, 2011)

NCTM Annual Meeting and Exposition in Indianapolis, IN - More than 650 presentations covering hot topics like Differentiated Instruction, Common Core Standards, Intervention, and Technology. (April 13-16, 2011)

OCTM Professional Development Cadre: Math Workshops - Workshops target effective instruction and include: Oregon math standards, Higher Order Thinking (H.O.T.), Questioning Strategies, Lesson Leverage, and Assessment for Learning. (Various Dates)

Preparation for Instruction of Science & Math (PrISM) Courses - A set of exciting, inquiry-based, integrated math and science courses for preK-8 teachers that are available in various online and flexible formats that meet the needs of working teachers. (Various Dates)

Seminar on Primary Mathematics - Practical Strategies to Differentiate Your Math Instruction Using Small Groups, Centers and Whole Group Instruction (Grades K-3) Portland, March 11, 2011

Standards, Intervention, Resources – The vision of Teachers Inspiring Problem Solvers (TIPS) is to work with teachers and students, helping deepen their understanding of mathematics while developing the habits and characteristics of a successful problem solver. (Various Dates)

Teacher Professional Development and Classroom Resources - Media and telecommunications are used to help teachers increase their expertise in their fields and assist them in improving their teaching methods. (Online)

Publications:

Adding It Up: Helping Children Learn Mathematics - Explores how students in PK-8 learn mathematics and recommends how teaching, curricula, and teacher education should change to improve mathematics learning.

A Guide to Oregon's New K-5 Math Focal Points - Includes several problem solving tasks for each math strand and elementary grade level.

Children's Mathematics: Cognitively Guided Instruction - This was written to help teachers understand children's intuitive mathematical thinking and use that knowledge to help children learn mathematics with understanding.

Classroom Instruction that Works: Research based Strategies for Increasing Student Achievement - Decades of research findings were examined to distill the results into broad teaching strategies that have positive effects on student learning.

Curriculum Focal Points Series – Build a focused curriculum with the Curriculum Focal Points series. Learn about instructional progression, how to introduce concepts, and how to build a deeper understanding of mathematical topics.

Publications (cont.)

Elementary and Middle School Mathematics: Teaching Developmentally - Understand how children learn, how to promote learning by teaching through problem solving, and how to plan and assess daily.

Essential Understanding Books for Teachers - This series addresses topics crucial to student development but often difficult to teach.

Focus in High School Mathematics: Reasoning and Sense Making - This series provides a conceptual framework to guide the development of future publications and tools related to 9–12 mathematics curriculum and instruction.

Foundations for Success: The Final Report of the National Mathematics Advisory Panel - On the basis of its deliberation and research, the Panel made recommendations for improvement in mathematics education.

Good Questions: Great Ways to Differentiate Math Instruction and More Good Questions: Great Ways to Differentiate Secondary Mathematics Instruction - Two powerful and universal strategies that teachers can use across all math content: Open Questions and Parallel Tasks. Specific strategies and examples for grades Kindergarten - 12 are organized around NCTM's content strands.

How People Learn: Brain, Mind, Experience and School -
Examines findings and implications for what we teach, how we teach it, and how we assess what our children learn. Exemplary teaching is used to illustrate how approaches based on what we now know result in in-depth learning.

How Students Learn: History, Mathematics, and Science in the Classroom - This book discusses how to overcome the difficulties in teaching math to generate real insight and reasoning in math students. It also features illustrated suggestions for classroom activities.

Implementing Standards-Based Mathematics Instruction: A Casebook for Professional Development – The focus is on teaching and learning in three contexts: learning mathematics, learning to teach mathematics, and learning to teach teachers.

Making It Happen: A Guide to Interpreting and Implementing Common Core State Standards for Mathematics – This NCTM guide is designed to help make sense of CCSSM and implement the vision that NCTM and CCSSM share.

Making Sense of Problem Solving K-8 - Each grade level book includes Warm Ups, Problem Solving Tasks, and Extensions and align to Oregon Math Standards.

Navigations Series: This series focuses on topics that emphasize the importance of incorporating the Principles and Standards into your mathematics curriculum. Activities, lessons, worksheets, and a CD-ROM with additional resources are included.

OCTM Publications - The Oregon Mathematics Teacher, Math in Literature, Puzzle of the Month, Elementary, Intermediate, and Secondary Problem Boxes.

Thinking Mathematically: Integrating Arithmetic & Algebra in Elementary School - In this book the authors reveal how children's developing knowledge of the powerful unifying ideas of mathematics can deepen their understanding of arithmetic.

Young Mathematicians at Work - This series help teachers support children's development in number sense and operation, from addition and subtraction through fractions, decimals, and percents.