IMPLEMENTING THE MATH WORKSHOP MODEL

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Learning Opportunities:

- Understand why Math Workshop is a valuable vehicle for learning
- Identify classroom arrangements, routines and procedures, and community building activities that will support Math Workshop
- Plan for a successful start to Math Workshop
Why Math Workshop?

Differentiation
“You don’t have an intervention problem, you have a ‘what you do all day long in the classroom’ problem.”
~ Buffum, Mattos, Weber (2012)
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 minutes</td>
<td>Warm Up</td>
</tr>
<tr>
<td>15 minutes</td>
<td>Homework Check</td>
</tr>
<tr>
<td>30 minutes</td>
<td>Teacher Model/Guided Practice</td>
</tr>
<tr>
<td></td>
<td>Teacher stands at the white board or SMART</td>
</tr>
<tr>
<td></td>
<td>board showing the steps of how to solve a</td>
</tr>
<tr>
<td></td>
<td>particular problem. The teacher models other</td>
</tr>
<tr>
<td></td>
<td>problems until he or she feels that the majority of</td>
</tr>
<tr>
<td></td>
<td>the students comprehend the procedure.</td>
</tr>
<tr>
<td>10 minutes</td>
<td>Student Independent Practice</td>
</tr>
<tr>
<td></td>
<td>Students attempt to solve problems in the same</td>
</tr>
<tr>
<td></td>
<td>way the teacher solved them. The teacher walks</td>
</tr>
<tr>
<td></td>
<td>around the room monitoring the students.</td>
</tr>
<tr>
<td>5 minutes</td>
<td>Assign Homework</td>
</tr>
</tbody>
</table>
# Math Workshop Structures

<table>
<thead>
<tr>
<th>TASK &amp; SHARE</th>
<th>WHOLE – SMALL - WHOLE</th>
<th>SMALL GROUP WITH STATIONS OR TASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>approx. 5-10 min.</td>
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</tr>
<tr>
<td><strong>NUMBER SENSE ROUTINE</strong></td>
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</tr>
<tr>
<td>approx. 30 min.</td>
<td>approx. 15 min.</td>
<td></td>
</tr>
<tr>
<td><strong>MATH TASK</strong></td>
<td><strong>FOCUS LESSON</strong></td>
<td></td>
</tr>
<tr>
<td>One task is given, students work in collaborative groups. The teacher moves to small groups and provokes thinking through asking good questions. This task typically has multiple entry points, allowing for all students to have access to this problem. This could be a parallel task or open-ended question, one that supports differentiation.</td>
<td>Whole group focus lesson that is well planned to allow for differentiation.</td>
<td></td>
</tr>
<tr>
<td>approx. 15 min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STUDENT SHARE</strong></td>
<td><strong>GUIDED MATH</strong></td>
<td><strong>STATIONS</strong></td>
</tr>
<tr>
<td>Students share out about the various strategies that were used. Students ask questions, clarify their thinking, modify their work, and add to their collection of strategies in their tool box.</td>
<td>Teacher meets with groups of students in heterogeneous and/or homogeneous groups for small group instruction.</td>
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</tr>
<tr>
<td></td>
<td>approx. 30 min.</td>
<td>approx. 45 min.</td>
</tr>
<tr>
<td><strong>REFLECTION</strong></td>
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<td><strong>REFLECTION</strong></td>
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<td><strong>NUMBER SENSE ROUTINE</strong></td>
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<td>Approx. 30 min.</td>
<td>Approx. 5-10 min.</td>
<td>Approx. 5-10 min.</td>
</tr>
<tr>
<td><strong>SHARE</strong></td>
<td><strong>NUMBER SENSE ROUTINE</strong></td>
<td><strong>NUMBER SENSE ROUTINE</strong></td>
</tr>
<tr>
<td>Approx. 1.5 min.</td>
<td>Approx. 30 min.</td>
<td>Approx. 45 min.</td>
</tr>
<tr>
<td><strong>STUDENT SHARE</strong></td>
<td><strong>GUIDED MATH</strong></td>
<td><strong>STATIONS</strong></td>
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<td>Students share about the various strategies that were used. Students ask questions, clarify their thinking, modify their work, and add to their collection of strategies in their tool box.</td>
<td>Teacher meets with groups of students in heterogeneous and/or homogeneous groups for small group instruction.</td>
<td>Students are working on engaging activities that are mathematically purposeful. These activities could be in the form of a single, cognitively demanding question or a variety of stations in which student choice is a factor.</td>
</tr>
<tr>
<td><strong>REFLECTION</strong></td>
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<td>Approx. 5-10 min.</td>
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</tr>
</tbody>
</table>

## Traditional Structure

### Warm Up
- Review concepts from previous lessons.

### Homework Check
- Correct and discuss homework questions from the previous day.

### Socratic Model/Guided Practice
- Engage students in a discussion-based approach to deepening their understanding of the topic.

### Student Independent Practice
- Students work on problems independently, applying the concepts and strategies discussed in class.
- 5 minutes to work on problems, followed by 5 minutes to review and discuss solutions.

### Assign Homework
- Assign problems for homework, ensuring they align with the day's lesson.

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**Let's Compare**
### Math Workshop

<table>
<thead>
<tr>
<th>What it is NOT:</th>
<th>What it is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Teachers doing most of the math</td>
<td>• Students doing most of the math</td>
</tr>
<tr>
<td>• One assigned worksheet</td>
<td>• Student choice</td>
</tr>
<tr>
<td>• Teachers showing the procedure and talking about the steps to follow</td>
<td>• Students talking about their mathematical thinking and reasoning</td>
</tr>
<tr>
<td>• Teachers as holders of knowledge</td>
<td>• Teachers acting as facilitators – asking good questions</td>
</tr>
<tr>
<td>• Students working in isolation; sharing answers or strategies is cheating</td>
<td>• Students working collaboratively and learning from one another</td>
</tr>
<tr>
<td>• Teachers rescuing students</td>
<td>• Students struggling with challenging mathematics and learning from errors</td>
</tr>
<tr>
<td>• Teachers presenting to the whole class</td>
<td>• Teacher working with small groups</td>
</tr>
<tr>
<td>• Focused on procedural skill</td>
<td>• Focused on conceptual understanding</td>
</tr>
</tbody>
</table>
Math Workshop: 3 Buckets

Classroom Arrangement

Mathematics Community

Routines & Procedures
CLASSROOM ARRANGEMENT

Setting the Stage for Math Workshop Success
A Place to Start Together

- Start your day with a Number Sense Routine such as Count Around the Room or Number Talk
- This is a student’s first impression of the class
A Place for Learning Stations

- Engaging
- Meaningful
- Quality over Quantity
- Clear Expectations
A Place for Group Work

- Collaborative
- Problem Solving Tasks
- Games
- Clear Expectations
A Place for Guided Math

- Small Group instruction
- Conferences
- “Just Right”
- Anecdotal notes
- Fluid
A Place to End Together

- Share Strategies
- Ask Questions
- Connect
- Reflect
ROUTINES & PROCEDURES
Structuring the Classroom So It Runs Smoothly
Routines and Procedures

- Where do I go?
- What can I do?
- How long do I do it?
- What do I do when I’m finished?
- Who can I work with?
Routines and Procedures

- Organize your materials
- Create a structure
  - Must Do ~ Can Do List
  - Think-Tac-Toe
  - Math Menu
- Explain the structure
- Practice the structure
- Provide feedback
MULTIPLICATION
Menu

Array Games
Egg Factors
Cover 50
Division Match
Skip Counting
(with multiples back)
<table>
<thead>
<tr>
<th>GROUP 1</th>
<th>GROUP 2</th>
<th>GROUP 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurtis</td>
<td>Hannah F.</td>
<td>Katie</td>
</tr>
<tr>
<td>Rohan</td>
<td>Tallulah</td>
<td>Matthew</td>
</tr>
<tr>
<td>Vinny</td>
<td>Tatiana</td>
<td>Peter</td>
</tr>
<tr>
<td>Sarah</td>
<td>Jason</td>
<td>Ashley</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GROUP 4</th>
<th>GROUP 5</th>
<th>GROUP 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faisal</td>
<td>Austin</td>
<td></td>
</tr>
<tr>
<td>Grant</td>
<td>Josh</td>
<td></td>
</tr>
<tr>
<td>Hannah R.</td>
<td>Trey</td>
<td></td>
</tr>
<tr>
<td>Danae</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Must Do ~ Can Do List!**

All students must complete the assignments listed in the **Must Do** column. When finished, students can choose to work on any of the activities in the **Can Do** column.

<table>
<thead>
<tr>
<th>Must Do!</th>
<th>Can Do!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dividing Mixed Numbers Dice Game</td>
<td>Fractions Maze</td>
</tr>
<tr>
<td>Adding &amp; Subtracting fractions (unlike denominators)</td>
<td>Skeleton Key (GCF game)</td>
</tr>
<tr>
<td>Square Puzzle</td>
<td>Chip Away (Number Sense Game)</td>
</tr>
<tr>
<td>Fraction Word Problems</td>
<td>Create your own word problem</td>
</tr>
<tr>
<td>Outback Menu Activity</td>
<td>Online Fraction Games (internet4classrooms.com)</td>
</tr>
<tr>
<td>Panera Menu Activity</td>
<td>Fit the Facts (Cards 1-5)</td>
</tr>
<tr>
<td>Real World: Budget Problems</td>
<td>Drawing Improper Fractions</td>
</tr>
<tr>
<td></td>
<td>Pick a Fraction Math Center from the Blue Crate</td>
</tr>
</tbody>
</table>

**All Centers should be completed with your center partner. By signing below, you acknowledge that you've completed the activities to the best of your ability and worked with your partner in solving the problems.**

*Student Name: ____________________________  Week of: December 12, 2011*
## Think-Tac-Toe

<table>
<thead>
<tr>
<th></th>
<th>Watermelon Math</th>
<th>Fitting the Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benchmark Fractions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiplication Madness</td>
<td>Geoboard Area Shapes</td>
<td>This Plus That</td>
</tr>
<tr>
<td>Read all about it</td>
<td>Tech Station</td>
<td>Color the Fraction</td>
</tr>
</tbody>
</table>

## Math Menu

### Appetizers (choose 2)
- 
- 
- 
- 

### Entrée (choose 1)
- 
- 
- 

### Side Dish (choose 2)
- 
- 
- 

### Dessert (choose 1)
- 
- 
-
Math Journals

- Solve problems
- Explain thinking
- Ask questions
- Record someone else’s strategy
- Reflect on learning
Where do I find ideas for Stations?

- Number of the Day
- Estimation Stations
- Counting Bins
- Daily Data
MATHEMATICS COMMUNITY
Creating Opportunities for Student Discourse
Culture of Mathematics

- Math is not my thing….
- I was never good at math anyway….
- I’m not a math person…..
- He gets that from me; I wasn’t good at math either….
Culture of Mathematics
I don’t know **YET**

The difference between NOT knowing and not knowing **YET**.

- Decrease anxiety
- Increase engagement
- Promote growth mindset
- Increase achievement
Which does not belong?
Which does not belong?

8
9
12
Show me....
Number Talks

234 + 126 =

Check out session #72
Tasks with Multiple Answers:

● I have one dollar in coins. What coins might I have?

● $14 = \underline{\hspace{2cm}}$. You fill in the blank.

● Perimeter is 24. What are the dimensions?
How do we build it?

- Use Sentence Frames
  - I had a different idea. I was thinking…
  - I would like to add on to what ___ said…
- Don’t say anything a student can say
- Make a commitment to stop rescuing students
How do we build it?

- Promote conceptual understanding by encouraging a variety of strategies and/or solutions
- Require students to listen to each other and try to understand each others’ strategies
That First Month:

- Establish and Practice routines and procedures
- Start with one learning station – no small groups
- Move to 2-3 learning stations – plan to pull one small group per day
- Bite off only as much as you can chew!
Everytime I see a math word problem it looks like this:
If I have 10 ice cubes and you have 11 apples. How many pancakes will fit on the roof?
Answer:
Purple because aliens don’t wear hats.
My “Go To” Resources

Math Workshop
By
Jennifer Lempp
Published by
Math Solutions
COMING SOON!
Thank you

Contact me:

JWLEMPP@FCPS.EDU

linkedIn: Jennifer Lempp

@Lempp5
Evaluations and Wrap-Up

Digital Handouts Available At:
www.modelschoolsconferenc.com

Please fill out the evaluations:
http://tinyurl.com/MSC16eval
Paper or MSC APP

Thank you for a great session!