Pre-K Teacher Meeting
Games for Young Mathematicians

Today’s Agenda
• Overview
• Math and Growth Mindset
• Math Games
  – About the Math
• Reflections
• Resources

People’s feelings about math

<table>
<thead>
<tr>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>I’m a “math person”</td>
<td>I’m not a “math person”</td>
</tr>
<tr>
<td>I love doing math puzzles (sudoku)</td>
<td>Just the word “math” makes me feel nervous</td>
</tr>
<tr>
<td>Math is beautiful and fun</td>
<td>Math is boring and pointless</td>
</tr>
<tr>
<td>Math makes sense</td>
<td>Math is a mystery</td>
</tr>
</tbody>
</table>

What do you believe about intelligence?

Do you believe that intelligence is a fixed trait—that you are born with a certain amount of it and it cannot be changed? (fixed mindset)

Or do you believe that intelligence is a quality that can be developed through effort and education? (growth mindset)

The types of praise we give to children may be related to our mindset...

Process Praise—Praise that emphasizes effort, strategies, or actions

<table>
<thead>
<tr>
<th>Praising the process, not the product</th>
<th>Trying many strategies</th>
<th>Persistence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Praise for challenge seeking</td>
<td>Enjoying difficulty</td>
<td>Enjoying mistakes</td>
</tr>
</tbody>
</table>
Why Math Games?

- Are fun and engaging
- Spark big mathematical ideas
- Promote problem-solving
- Promote persistence
- Support social-emotional skills
- Build math vocabulary

Math Games List

- Dot Cards
- Lily Pads
- Two Numbers
- Pattern Block Puzzles
- Patterns
- How Many are Hiding?
- Shape Card Games

Numbers, Numbers, 1, 2, 3. How many do you see?

Can you show 5 fingers a different way?

*Drawings of hands by Melody Hachey, EDC

Can you show 5 fingers a different way?

Can you show 5 fingers a different way?
Let’s play a game: Quick Images

- Flash a card for 1 second
- Show with your fingers the number of dots you see as quickly as you can

How many did you see?
Show with your fingers.
How many did you see?
Show with your fingers.

Which arrangement of dots was the hardest for you?

Subitizing and Chunking
Seeing how many quickly

Can you find?
...a card with 2 dots?
...a card with 3 dots?
...a card that doesn’t belong?

Can you find?
...a card with the same number of dots as mine?
...a card with one more dot than mine?
...a card with one less dot than mine?

Play Dot Card Games
1. How many do you see? (Fingers)
2. Cover the dots
3. Can you find?
4. Quick images
5. Which one doesn’t belong?
6. Match the number
7. Make the image
8. Memory (Concentration) game
**Dot Card Games: About the Math**

Focus on number sense and quantity:
- Counts in the correct order
- One-to-one correspondence when counting
- Cardinality (identify number of items in a group)
- Subitizing (identify small number of objects without counting)
- Connect meaning to written numerals

**Play Jumping on the Lily Pads**

Object: Jump to the 5 (or 10) and go for a swim
1. Place your frog on “home”
2. Take turns rolling the dot cube (say the number you rolled)
3. Move that number of spaces on the board until you get to the pond
4. If you choose... jump back to home

NOW IT IS YOUR TURN TO PLAY!!!!

**Play the game on the floor!**

**About the Math: Jumping on the Lily Pads**

Focus on Number
- Number Magnitude
- Recognize written numerals
- One-to-one correspondence when counting (and jumping!)
- Subitizing: Immediately knowing how many
- Composing and decomposing numbers

**Number Magnitude: Mental Number Line**

<table>
<thead>
<tr>
<th>@ 3 years</th>
<th>@ 4 years Preschool</th>
<th>@ 5 years Preschool</th>
<th>@ 6 years End of K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compares collections less than 5: i.e. 4 is more than 2, etc.</td>
<td>Beginning to have a mental number line to 5</td>
<td>Mental number line to 5</td>
<td>Mental number line to 10</td>
</tr>
</tbody>
</table>

**Two Numbers Game**

Object: Turn all your cards face down.
1. Arrange your cards in order.
2. Rolling the dot cube(s) and turn over cards.
   - Say the number of dots on each die
   - Turn over the numbers you see
   OR
   - Add the numbers together
3. If no card can be turned, wait for the next roll.
### Two Numbers Games Progression

<table>
<thead>
<tr>
<th>Game</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Put the cards in order</td>
<td>1 to 6 cards</td>
</tr>
<tr>
<td>Play 1-6 with 1 die (1-3 dots)</td>
<td>1 to 6 cards, 1 die with 1-3 dots</td>
</tr>
<tr>
<td>Play 1-6 with 2 dice (1-3 dots)</td>
<td>1 to 6 cards, 2 dice with 1-3 dots</td>
</tr>
<tr>
<td>Play 1-12 with 2 dice</td>
<td>1 to 12 cards, 2 regular dice</td>
</tr>
<tr>
<td><em>Play 0-12 with 2 dice (subtraction)</em></td>
<td>0 to 12 cards, 2 regular dice</td>
</tr>
</tbody>
</table>

### Number Path Board

- Use board for children who have a hard time with cards
- 1 die OR 2 - 1 to 3 dice
- Piece of paper to cover numbers OR laminate and use dry erase marker

### About the Math

**Focus on Number**
- Recognize written numerals
- One-to-one correspondence when counting
- Subitizing: Immediately knowing how many
- Compare numbers
- Composing and decomposing numbers

### Suggestions: How to Math Games

- Materials
- Picture book
- Suggested plan for games
- Questions to ask
- Praise the process

### Integrate Math Throughout the Day
Take Home Points

- Repeated exposure to math games improves children’s math knowledge.
- Games are an authentic assessment: Teachers learn more about children’s math knowledge.
- Children use more math into their free play when math is a regular part of the classroom.
- Games are a fun way to include more math in preschool classrooms.

Math Resources

- Young Mathematicians website (includes links to all math game materials)
  – http://youngmathematicians.edc.org/
- Math at Play website
  – http://www.mathatplay.org/

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