

Math Play with a Purpose



NCTM Annual Conference 2018

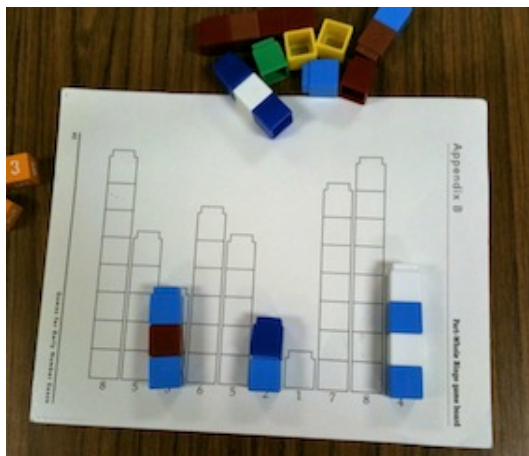
Kathryn Coffey, PhD
Jordan Mathews

David Coffey, PhD
Jackie Bush

**Grand Valley State University
Mathematics Department**

Math Play with a Purpose

This session will explore how to support the development of young mathematicians through purposeful play. We will be using manipulative-based games with a focus on the Standards for Mathematical Practice and the content domain of Number & Operations in Base Ten, including number sense, computation, and estimation.



Learning Goal

The participant will recognize the importance of supporting the development of young childrens' number sense through purposeful play.

Stick Around – Door Prizes!



Make an IMPACT on student learning!

We can help you supplement your core curriculum with hands-on resources that:

- **Target** troublesome standards
- **Differentiate** instruction
- **Deepen** student understanding
- **Support** small-group learning
- **Encourage** independent skills practice



Please visit us at Booth 134 to learn more!

Role of Context

- Play is a characteristic of children in all cultures
- Games provide children an opportunity to develop executive function
- Anchoring experiences set a context for intentional teaching

Fosnot, K. T., & Cameron, A. (2007). *Games for Early Number Sense: A Yearlong Resource*. Heinemann
Lahey, J. (2014). How family game night makes kids into better students. *The Atlantic*

Math Practice Pairs

Consider the following similes:

<i>Ideally</i>	doing math is	like...
climbing a mountain	conducting an experiment	cooking a meal
reading a book	working a puzzle	playing a game

**In your opinion,
which simile best
reflects your
perspective of what
it means to do
mathematics?**

Mathematical Practices

1. Make sense of problems and persevere in solving them

6. Attend to precision

2. Reason abstractly and quantitatively

3. Construct viable arguments and critique the reasoning of others

4. Model with mathematics

5. Use appropriate tools strategically

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.

Game Centers

Number & Operations – Addition & Subtraction [K-2]

- Play the games
- Do the work of teaching:
 - Break the rules, if necessary, to improve the game
 - Anticipate issues and possible highlights



Game Centers

- Race to 100 $K - 2^*$
- Part-Whole Bingo $K - 1^*$
- Roll-A-Square 2^*
- Tens Go Fish $K - 2^*$
- How Many More
to 10/20? $K - 1^*$

*can be modified for K-3

Mathematician's Chair

- What did you/they do?
- So what did you learn?
- Now what will you do with what you learned?

In play a child
always behaves
beyond his average
age, above his
daily behavior. In
play it is as though
he were a head
taller than himself.

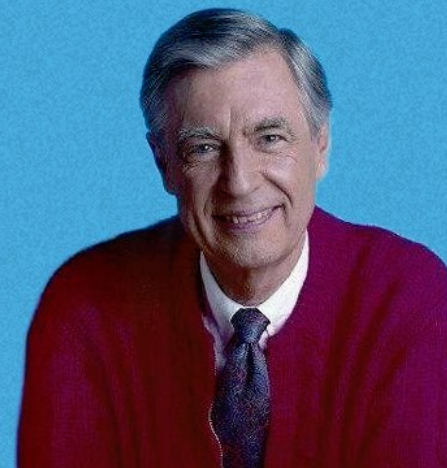
- Lev Vygotsky



notimeforflashcards.com

**Play is often talked about as if it
were a relief from serious learning.
But for children, play is serious
learning.**

**Play is really
the work of
childhood.**



Fred Rogers

Please complete your form!



Make an IMPACT on student learning!

We can help you supplement your core curriculum with hands-on resources that:

- **Target** troublesome standards
- **Differentiate** instruction
- **Deepen** student understanding
- **Support** small-group learning
- **Encourage** independent skills practice



Please visit us at Booth 134 to learn more!

Link to Resources & Presentation Slides

<https://tinyurl.com/NCTM2018Games>

Contact Information

Kathryn Coffey, PhD

coffeykathrynn@me.com

<http://literacygurl.blogspot.com/>

Twitter: @literacygurl

David Coffey, PhD

coffeyd@gvsu.edu

<http://deltascape.blogspot.com/>

Twitter: @delta_dc

GVSU Teacher-Leaders

Jordan Mathews

Twitter: @jordanmathews01

Jackie Bush

Twitter: @jgvandewege

References & Resources

- Coffey, David, Delta Scape Blog <http://deltascape.blogspot.com/>
- Coffey, Kathryn Literacygurl Blog <http://literacygurl.blogspot.com/>
- Fosnot, K. T., & Cameron, A. (2007). *Games for Early Number Sense: A Yearlong Resource*. Heinemann <http://www.contextsforlearning.com/>
- Investigations in Number, Data, and Space®, 2nd grade module Putting Together and Taking Apart: Addition and Subtraction <http://investigations.terc.edu/>
- Lahey, J. (2014). How family game night makes kids into better students. *The Atlantic* <http://www.theatlantic.com/education/archive/2014/07/how-family-game-night-makes-kids-into-better-students/374525/>
- Red & White bead Rekenreks & other manipulatives: ETA Hand2Mind <http://hand2mind.com>
- National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for Mathematics*. Washington, DC: Authors. <http://www.corestandards.org/the-standards>
- Norris, Carollee. Focus on Math Blog <http://focusonmath.wordpress.com/>

Materials

Roll-a-Square:

100s board

Unifix Cubes

Roll-a-Square directions

Dice

Race to 100:

Recording Sheet

Slim Expo Markers

Tissue for erasing

Dice (1 or 2 dep. on grade level)

Rekenreks

Part-Whole Bingo:

Bingo Boards

Unifix cubes

Dice (1 or 2 dep. on grade level)

Recording Sheet (optional)

Tens Go Fish:

Playing Cards, 2 decks, Ace through 9
(Uno cards, Ten Frame cards, or other
Cards 1 – 9 or 0 – 10)

How Many More to 10 or 20?

How Many More to 10? Cards

Ten frames

slim expo markers

dice—6-sided &/or 20-sided