

Helping Your Child with the New Common Core Math: A Focus on Preschool to 3rd Grade

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*The Erikson Institute's Early Math Collaborative provided critical content expertise to this workshop.

Who Is the Latino Policy Forum



- The agency conducts analysis with Latino perspective to inform, influence and lead
- Its four issue areas:
 - Early care and education
 - Housing
 - Immigration
 - Civic Advancement
- It convenes sectors of the community to engage in policy advocacy and training through our *Acuerdo* model
- It believes advancing Latinos advances a shared future

Today's Objectives

- Overview of Common Core State
 Standards—Illinois Learning Standards
- What the new standards mean for learning math
- What can you do as a parent to support your child's learning

Section 1

Background to changes in math instruction



What are the Common Core State Standards?

- Illinois adopted the new standards in 2010, introduced them in 2012, and the assessments begin 2014-2015
- An estimated 46 states adopted Common Core State Standards; now it looks different
- The standards apply to public schools, including charters and magnets
- Today we can discuss opportunities and challenges with the new standards



Why have standards in education?

- All students held to same high standards
- All students have access to high-quality educational content and opportunities
 - Students who meet the standards will not need remedial course work after high school graduation. Right now = 1/3 need it in college
- Compare student progress across states
- Better assessments to measure what students know





- Envision someone who does math well.
- Envision someone who does <u>not</u> do math well.



US Math Knowledge

- Study of adults ages16 to 65 in 20 countries: US ranks in the bottom 5 for understanding numeracy
- Example: Third Pounder (1/3) hamburger vs.
 McDonald's Quarter Pounder (1/4)
- We suffer from innumeracy (not understanding math concepts) – the mathematical equivalent of not being able to read
- Why a child might write 1002 vs. 102



What is different about math?

- US: Covering many topics
- Other countries: Covering less topics with more depth
- US: The *right* answer is most important vs. understanding
- Other countries: How you get to the answer is just as important as the answer itself



What is different about math (cont.)?

- US: Memorizing formulas and multiplication tables
- Other countries: Discovering procedures and proofs – critical thinking

- US: Past state exams valued the answer
- Other countries: No multiple choice; partial credit on the process



What is different about math (cont.)?

- US: Less emphasis on connecting previous learning
- Other countries: Connect prior knowledge to current lesson



Research on how brain functions

- "New brain science tells us that no one is born with a math gift or a math brain and that all students can achieve in math with the right teaching and messages."*
- "Think about your intelligence, talents, and personality. Are they just fixed or can you develop them?"**
- How you start out is not necessarily how you finish.
- All students can achieve.

*Jo Boaler, 2015, *Memorizers are the lowest achievers and other common core math surprises.* **Mindset On-line 2015, http://mindsetonline.com/whatisit/about/





How teachers are teaching today



Mathematical Practices Aligned with the Standards, K-12

- Understand the problem; and persevere in solving it.
- Provide flexible ideas for how to solve problems.
- Create possible solutions; explain why yours is good.

Adapted from Principles to Action. Ensuring Mathematical Success for All. (2014) NCTM



Mathematical Practices Aligned with the Standards, Cont.

- Use appropriate tools.
- Be precise.
- Look for and make use of structure and patterns.

Adapted from Principles to Action. Ensuring Mathematical Success for All. (2014) NCTM



Big Ideas About Number Sense

- Numbers are used in many ways, sometimes to add, subtract, multiply, and divide and other times they are names.
- There is a need to understand when numbers are being used to name a specific quantity.
- The quantity of a small collection can be intuitively perceived without counting.

Adapted from *Big Ideas of Early Mathematics.* What Teachers of Young Children Need to Know. (2014) The Early Math Collaborative. Erikson Institute.



Developing meaningful sense of quantity

- Need to create a connection between the number <u>words</u> and understanding their <u>numerical meaning</u>.
- Connect counting to quantities
- Children are able to better understand ideas of more or less
- It also helps children estimate quantities and measurement.

*Big Ideas of Early Mathematics. What Teachers of Young Children Need to Know. (2014) The Early Math Collaborative. Erikson Institute.



What can you see quickly?

Some dots will flash on the screen *briefly* – try to see how many without counting.

































• How did you know it was 3 or 4 dots?

• You "just know."

• Let's try some more "quick looks" ...































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- Benchmarks of 5 and 10 important in the number system.
- Visual number sense is important because when you can visualize a quantity you can compose and decompose for a task. This becomes easier vs. just looking at numbers.

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Section 3

Ideas for building math at home

Pathway Games

Research on Benefits of Path Games

- Number line estimation?
- Magnitude comparison?
- Numeral identification?
- + x or divide does any of this happen?

*Loski and Siegler (2013); Ramani, Siegler, and Hitti (2012); Ramani and Siegler (2011)

Importance of feedback – continuously improving math knowledge

- You provide directions and follow rules of game
- How might you?
 - Stretch learning?
 - Facilitate communication?
 - Build children's language skills?
 - "Good job" benefits; socio-emotional benefits?

Games you can play with your child

- Number between 2 and 71
- Dominos
- Card Games important family time
- Handout

Math Talks at Home

- 1) Tortillas for the family dinner
- 2) Making rice
- 3) Make a grocery list together
- 4) For older kids, any recipe with fractions in it
- 5) \$\$\$ how much money to buy gum?

Examples of Spanish Cognates for Fractions Unit

English	Spanish
Convert	Convertir
Denominator	Denominador
Double	Doble
Equivalent	Equivalente
Fraction	Fraccion
Mixed	Mixto
Multiple	Multiple
Numerator	Numerador
Package	Paquete
Quadruple	Cuadruple
Rational	Racional
Triple	Triple

*Excerpt from Ernst-Slavit, Gottlieb and Slavit (2013) "Who Needs Fractions?" Academic Language in Diverse Classrooms. Promoting Content and Language Learning. p.93

Future Steps to Promote Mathematical Learning

- Commit to one thing you will do today
- Develop a relationship with your child's teacher
- Your challenge: Promote a family math night or other school-related math activities
- Ask the school to provide resources, including suggestions for books focused on math, for families on their website.

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El Foro de Política Latina agradece al Consejo Nacional de La Raza for hacer este trabajo posible.