



Early Math Fluency with Immigrant Families

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Early Math Conference



- **Envision someone who does math well. Do you consider yourself to be good at math?**
- **Personally, I am a mother in recovery from struggling with math anxiety.**
- **Why would I be involved in an early math fluency initiative with immigrant parents in Chicago?**



Emergent Bilinguals and Immigrant Families

- 1/3 of Chicago preschoolers are Emergent Bilinguals
- 1/4 of Chicago Kindergartners are Emergent Bilinguals
- 1/3 of all Chicago Public School students *are or were* an Emergent Bilingual



How did we reach immigrant families?

- Article 14C of the Illinois Bilingual Mandate and Bilingual Parent Councils
- Chicago Public Schools has a significant and long-standing relationship with its Bilingual Parent Councils. They were a key partner of the Forum to reach parents and schedule workshops.
- Early morning or evening workshops for 90 minutes. Range of parents 20 to 300
 - **Forum's reach: 2,800 parents**



Why was this work successful?

- Tapped into existing Bilingual Parent Councils yearning for strong workshop material in Spanish and English
- Myth busting regarding innumeracy
- Relating to participants' home country experiences with math
- Exposing families to practical linguistically and culturally relevant math skill building and game ideas



The Hamburger Conundrum





US Math Knowledge

- Study of adults ages 16 to 65 in 20 countries: US ranks in the bottom 5 for understanding numeracy
- Example: Third Pounder ($\frac{1}{3}$) hamburger vs. McDonald's Quarter Pounder ($\frac{1}{4}$)
- 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



Linguistically and Culturally Relevant Math Games

- Subitizing (*subito en español*)
- Pathway games and their benefits
- Guessing number between 2 and 71
- Games in the car
 - Counting cars that pass
 - Add numbers on the signs
 - Gas price rounding
 - License plate totals
- Dominos
- Card games – importance of family time



Why language and culture matter

“If you talk to a man in a language he understands, that goes to his head. If you talk to a man in his own language, that goes to his heart.” – Nelson Mandela



Examples of Spanish Cognates for Fractions Unit

<i>English</i>	<i>Spanish</i>
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



Impact and Future Needs

- Hard to measure impact
- Generic survey from Chicago Public Schools
- Tried for funding – and there is still hope 😊



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