

Las Matemáticas en Nuestras Aulas: Bilingual Strategies in Secondary Classrooms

M. Alejandra Sorto, Rachel Bower with Enes Akbuga,
Layla Guyot, Zhaochen Song, and Brittany Webre

2017 Annual NCTM Conference

San Antonio, Texas

April 6th, 2017



CAREER Grant DRL-1055067





Mathematics for ALL

7th Grade Chinese Classroom

Share your experience

- What mathematics were you able to follow?
- What did the teacher do to facilitate the access to the mathematical concept?
- What frustrations did you experience?

3rd Grade Classroom in French

Share your experience

- What mathematics were you able to follow?
- What did the teacher do to facilitate the access to the mathematical concept?
- What frustrations did you experience?

7th Grade Latin-American Classroom

Share your experience

- What mathematics were you able to follow?
- What did the teacher do to facilitate the access to the mathematical concept?
- What frustrations did you experience?



CAREER: Mathematics Instruction for

Emergent Bilinguals

**Research
Findings**

We collected video of 3 mathematics lessons from 34 middle grade teachers.

Quality of linguistically diverse teaching is positively correlated with student learning outcomes when controlling for other factors.

Quality of Linguistically Diverse Teaching

Connections of mathematics with students' life experiences

Connections of mathematics with language

Meaning and multiple meanings of words

Use of visual support

Record of written essential ideas and concepts on the board

Discussion of students' mathematical writing

6th Grade American Classroom with Emerging Bilingual Students

Panel Questions

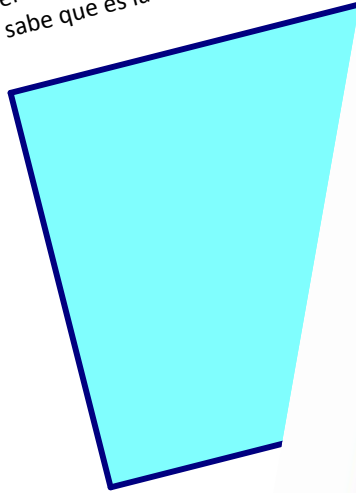
- Describe your experience learning mathematics in a second language.
- What strategies did you use to be successful in an English math class?
- Some consider mathematics to be a "universal language" that a non-native speaker can pick up quickly. Do you agree or disagree with this statement?
- What is your experience learning conversational English compared with academic English?
- What are the differences in doing math in English and your native language in terms of mathematical symbols/definitions/terminologies?

Mathematical Task

Desarrollando Argumentos de Congruencia

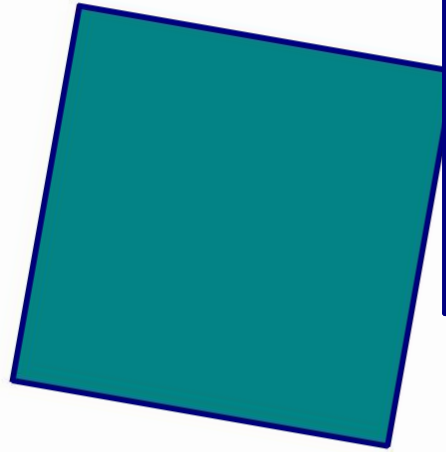
Problema 1

Corte el cuadrado presentado abajo. Haga dobleces de tal manera que se construya un nuevo cuadrado con exactamente la $\frac{1}{2}$ del área del cuadrado original. Explique como usted sabe que es la $\frac{1}{2}$ del área.



Prepared for 2017 NCTM Annual
M. Alejandra Sorto, Texas Star

任务 1
剪下下面的正方形。通过折叠，构建一个面积是原正方形 $\frac{1}{2}$ 的正方形。请解释为什么新的图形是一个正方形，积是原正方形的 $\frac{1}{2}$ 。



Prepared for 2017 NCTM Annual Conference, San Antonio, Texas, April 5-7,
Zhaochen Song, Texas State University, zs1044@txstate.edu

Développer la notion la congruence

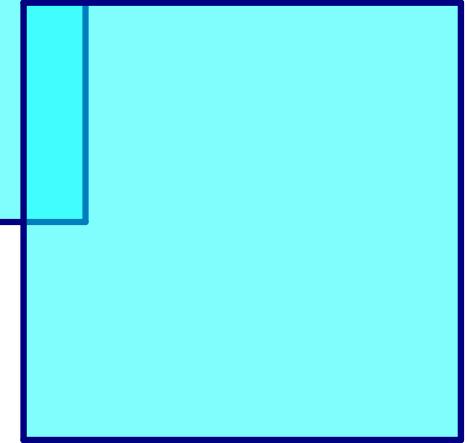
OBJECTIF 1

En coupant ou pliant le carré ci-dessous, construire un nouveau carré qui a une aire égale à $\frac{1}{2}$ de l'aire du carré de départ. Expliquez comment vous savez que l'aire du nouveau carré est $\frac{1}{2}$ de l'aire du carré de départ.

EŞİTLİKLE İLGİLİ ARGÜMAN GELİŞTİRME

GÖREV 1

- Aşağıdaki kareyi kes.
- Katlayarak bu karenin alanının tam olarak $\frac{1}{2}$ si kadar olacak bir şekilde yeni bir kare oluşturun.
- Bu yeni figürün neden kare olduğunu ve önceki karenin alanının yarısı olduğunu açıkla.



Thanks! Gracias!
Merci! 谢谢
teşekkür ederim!