PhET Interactive Simulations: Early efforts to support K-3 math

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PhET Background

Goals

To make STEM learning more ….

ENGAGING	Interact and discover key ideas.
RELEVANT	Connect to everyday life.
ACCESSIBLE	Intuitive and understandable.
EFFECTIVE	Use science and math practices. Develop conceptual understanding.
PERSONALIZED	Students direct their learning.

PhET Background

PhET Today

Over 140 interactive simulations

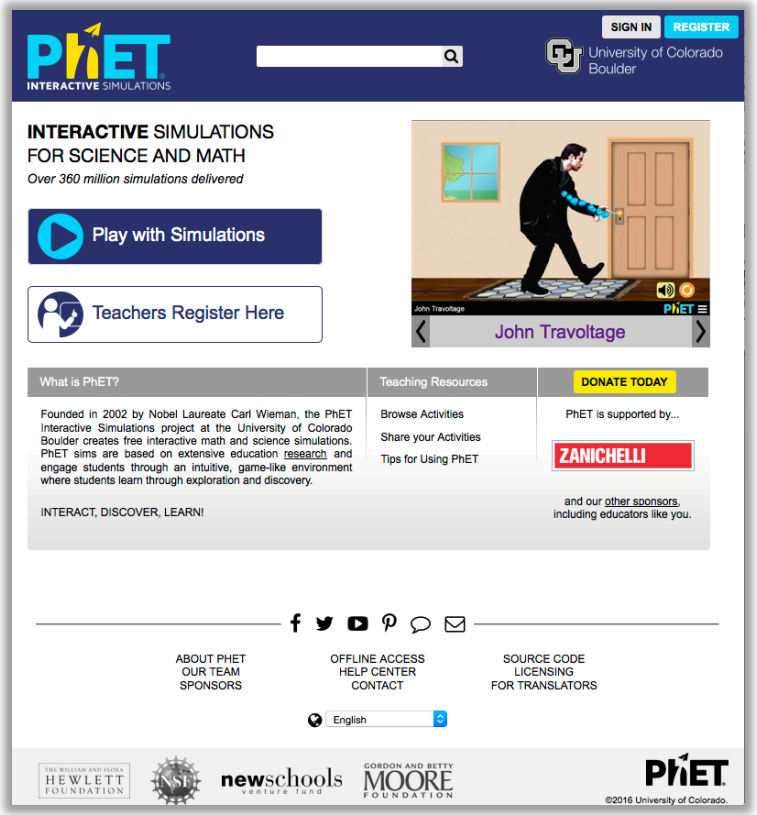
Physics, Chemistry, Math, Biology, Earth Science

K-12 and College

Open education resources (free)

Translated into 90 languages

Run online or offline (80 million times/yr)



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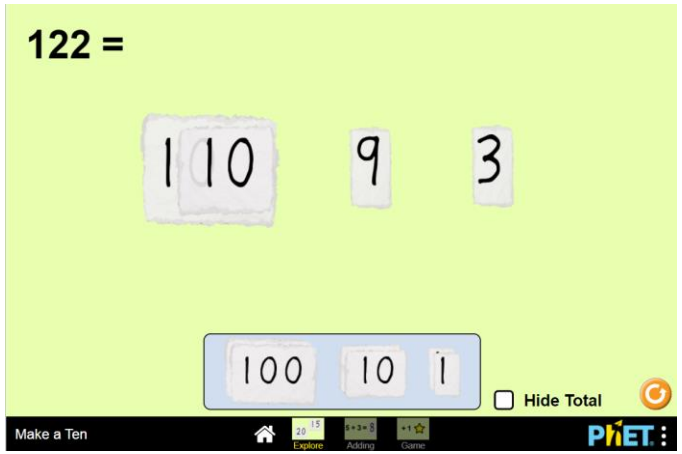
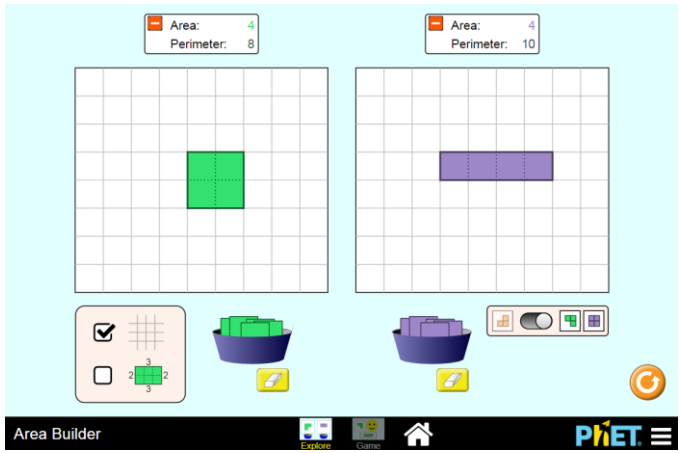
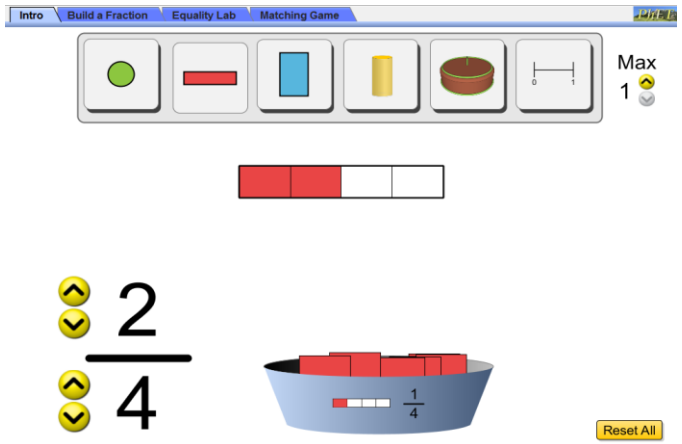
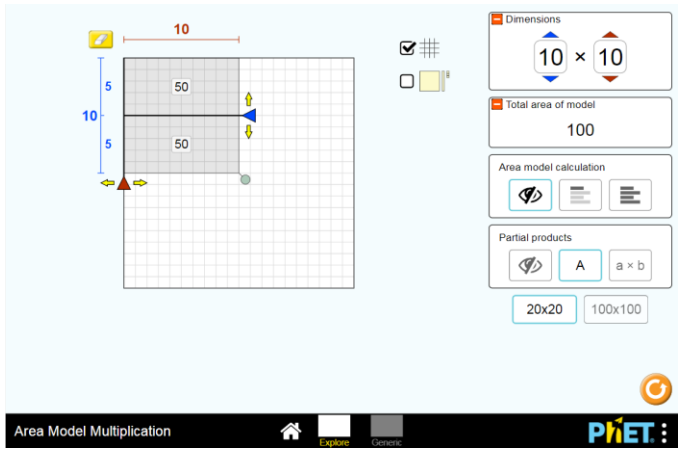
Examples



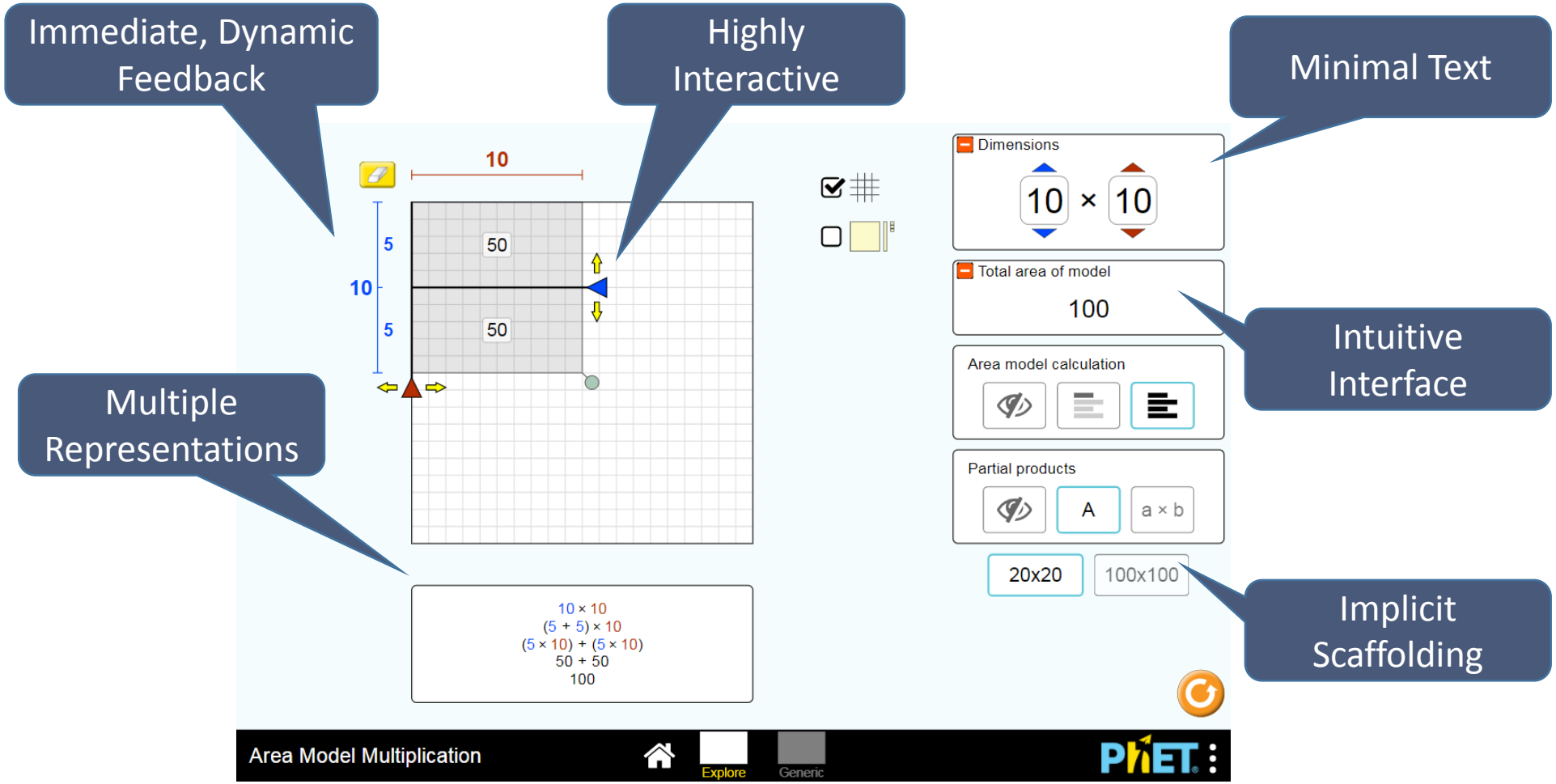






Sim Design

PhET Design Principles & Implicit Scaffolding



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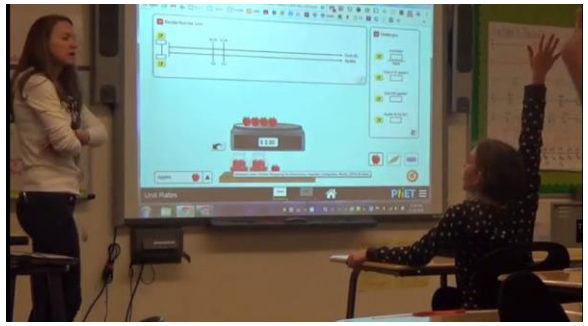
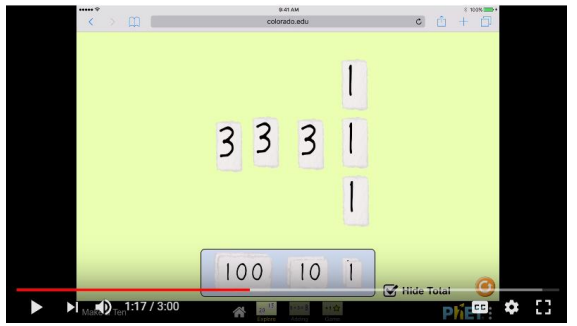
Flexible tool for teaching and learning

Individual student work



Teacher Facilitated Discussion

Student group work



Number talk videos

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Beth Stade

Meet “Juan”

- 1st grade student
- Entered not knowing “3” in English or Spanish
- Prototype sim use – “informal choice time”, whole class activity, and 1-on-1 intervention learning his numbers.

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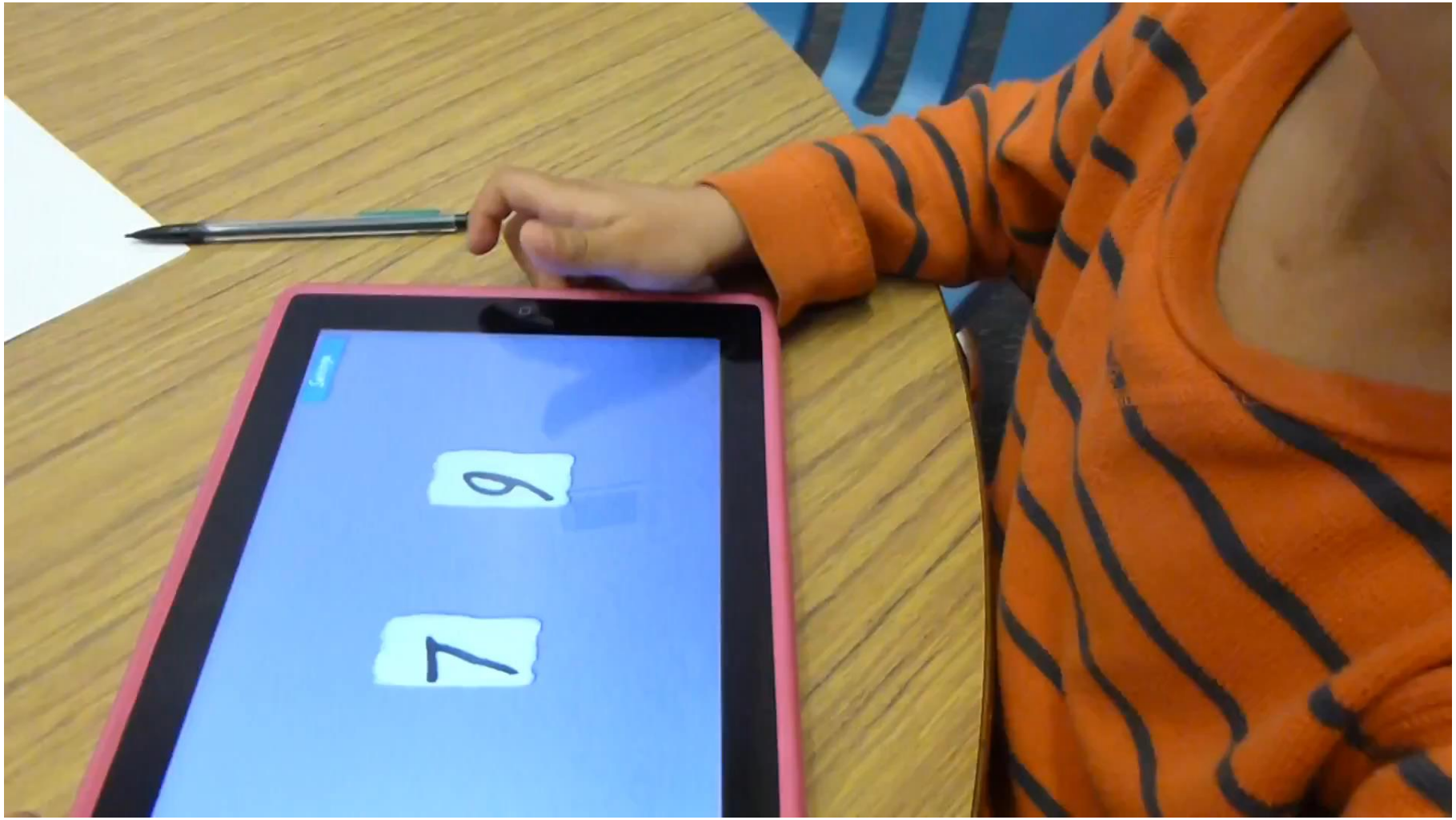
Meet “Juan” – after 1 month



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Meet “Juan” – after 1 month

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Meet “Marco”

- 2nd grade student
- Week 3 of using prototype sim 10-15 minutes everyday.
- Example of double digit addition

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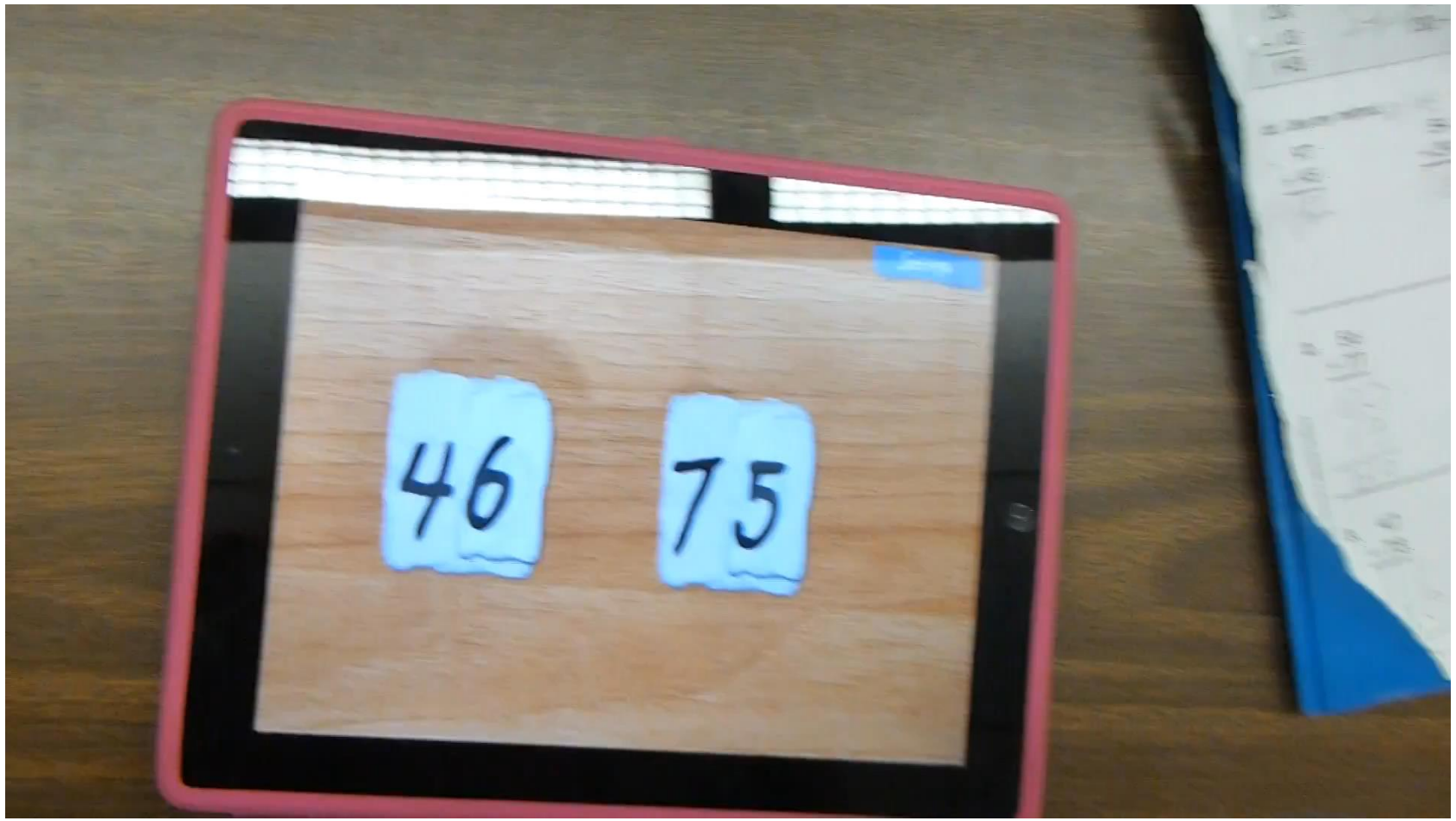
Meet “Marco”



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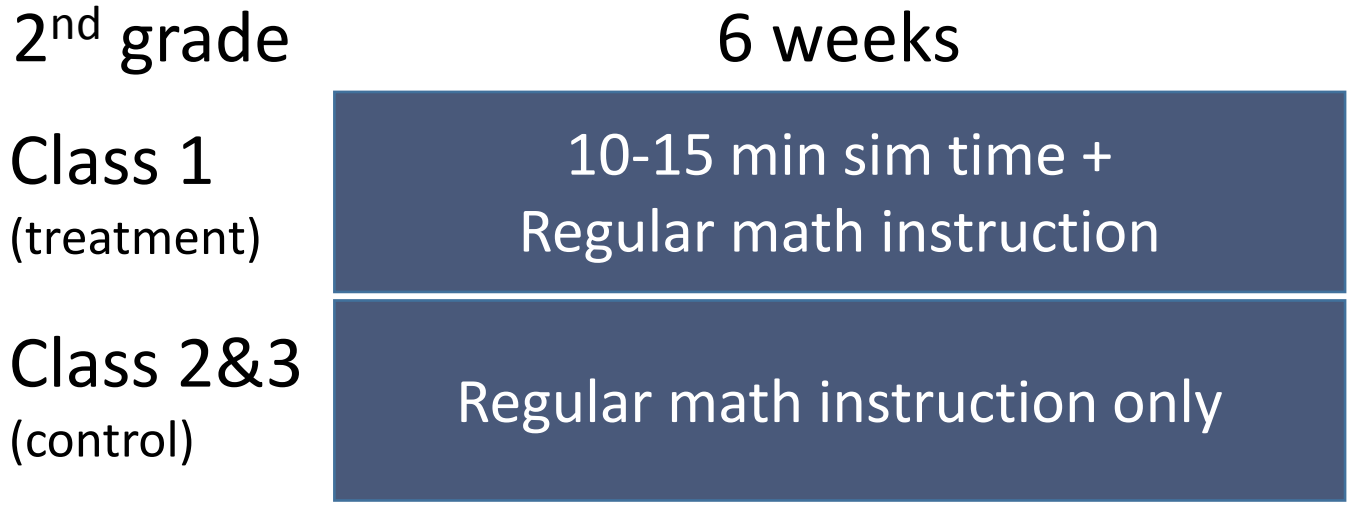
District Study: 6 weeks of 10-15 minutes/day



Measures:

Start of school screener, Unit 2 Pre-test, Unit 2 Post-test, Post-Interview

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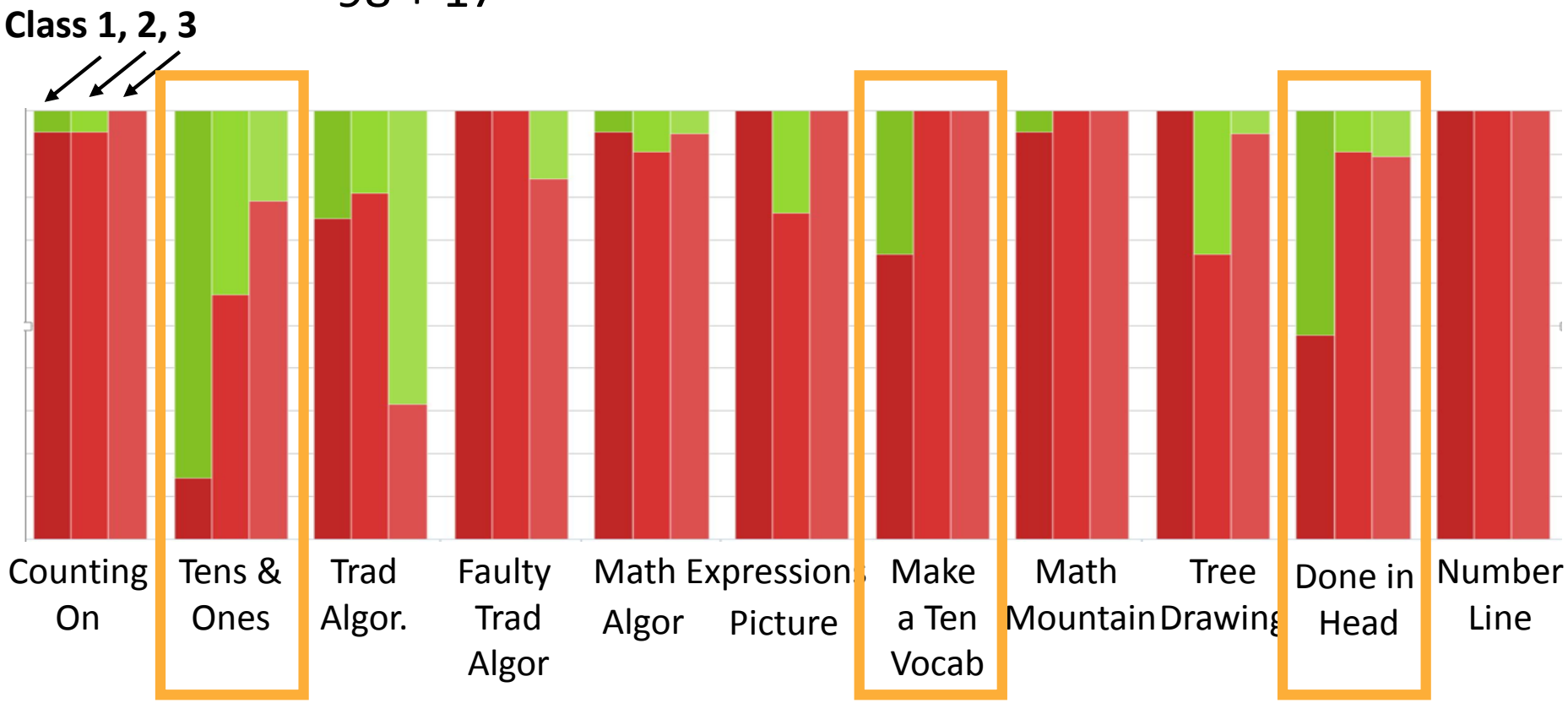
District Study: Post-interview strategies

Solve 2 sums: 46 + 28 =
98 + 17 =



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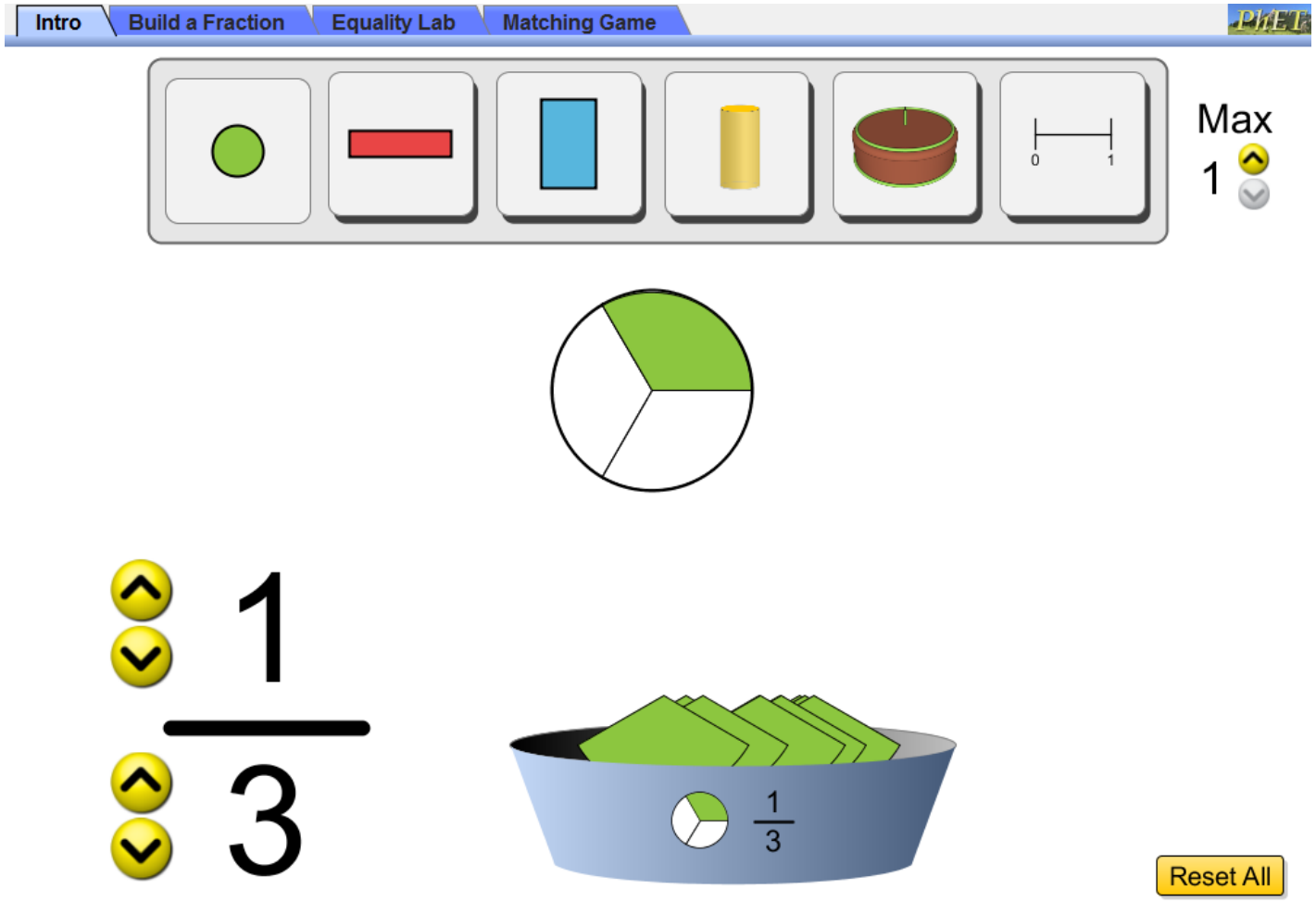
Introducing Fractions: Small group discussions



https://phet.colorado.edu/en/simulation/fractions-intro

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Introducing Fractions: Small group discussions

Next Steps

Expand K-5 math efforts
Study sim design & use strategies with K-5 ELL/DLL

Seeking feedback, discussion, concerns

Interested in partnering?

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