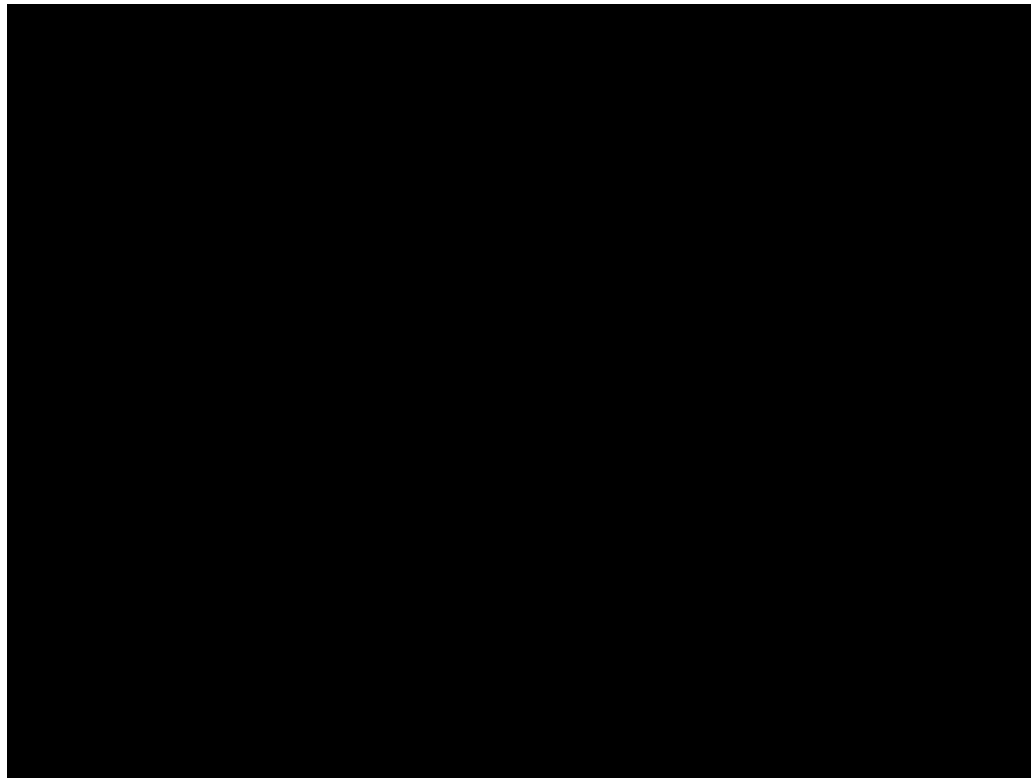
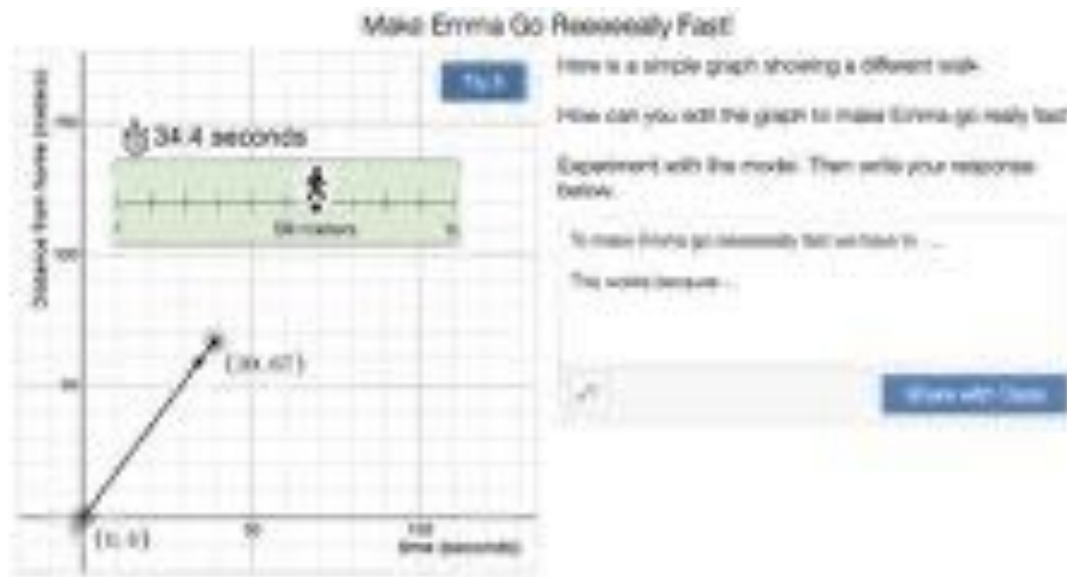

Video Example: Pre-Intervention



Video Example: Redesign

How can you edit the graph to make Emma go fast?



Video Example: Redesign

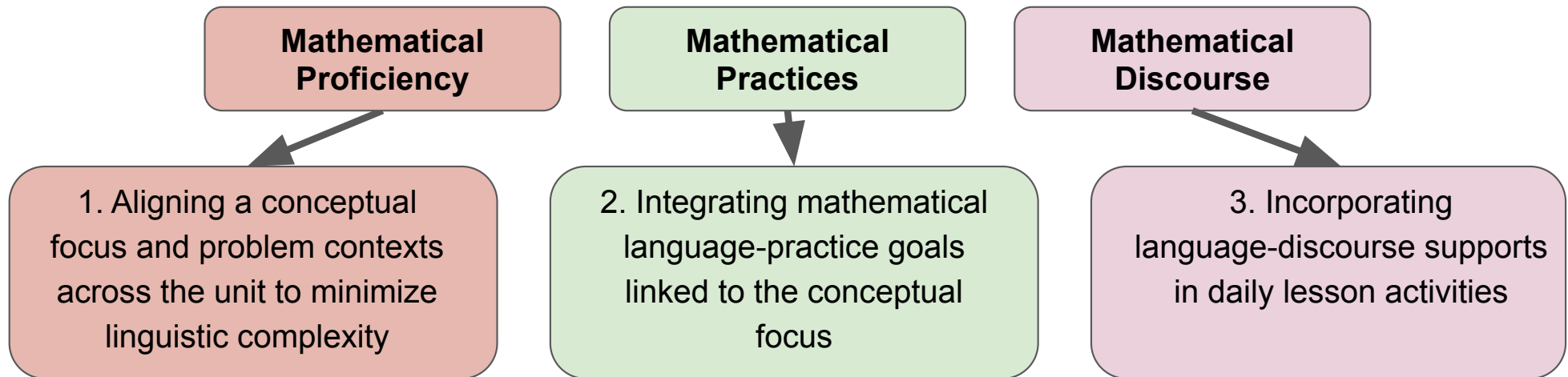


What did you notice & wonder?

I noticed...

I wonder...

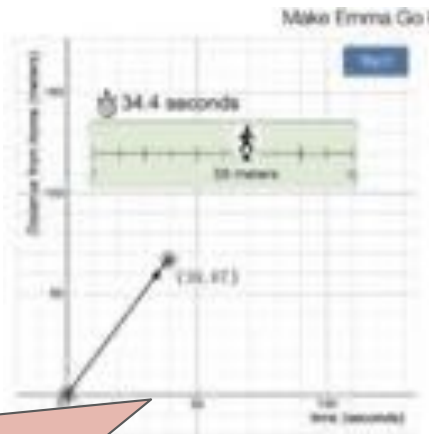
Changes Linked to Design Principles



Changes Linked to Design Principles

Mathematical Proficiency

1. Aligning a conceptual focus and problem contexts across the unit to minimize linguistic complexity



“Slope as a measure of rate of change” (Lobato & Thanheiser, 2002)

- Focused on **slope as rate of change** throughout the unit
 - Original unit focused on 3 different meanings for slope
- Used **Context of Running Races** as main story / context for most problems in the unit
 - Original unit had more than 12 problem contexts in 3 sections

Changes Linked to Design Principles

Emma's Walk: Introducing Distance-Time Graphs

<p>Mathematical Goals</p> <ul style="list-style-type: none"> Identify meaning of variables on a graph in distance-time relationships. Start practicing the measurement of space and duration with the assistance of time apparatus or electronic distance-time graphs. Write the equation for straight-line distance-time graphs. Review this in connection with a similar problem. 	<p>21st Century Science</p> <ul style="list-style-type: none"> Understand the scientific method. Identify the scientific method for scientific discovery. Use the scientific method to solve a problem. Use the scientific method to solve a problem. <p>21st Century Science</p> <ul style="list-style-type: none"> Use the scientific method to solve a problem. Use the scientific method to solve a problem. Use the scientific method to solve a problem.
<p>Mathematical Language Goals</p> <ul style="list-style-type: none"> Use language to describe and generate data. Use language to describe and generate data. Use language to describe and generate data. Use language to describe and generate data. 	<p>21st Century Science</p> <ul style="list-style-type: none"> Use the scientific method to solve a problem. Use the scientific method to solve a problem. Use the scientific method to solve a problem.
<p>Student Learning Goals</p> <ul style="list-style-type: none"> Use the scientific method to solve a problem. Use the scientific method to solve a problem. Use the scientific method to solve a problem. 	

Mathematical Practices

2. Integrating mathematical language-practice goals linked to the conceptual focus

- Each lesson included detailed goals for mathematics, **language**, and practices
- Specific activities / problems linked to specific **language** goals
 - E.g., explain prompts

Changes Linked to Design Principles

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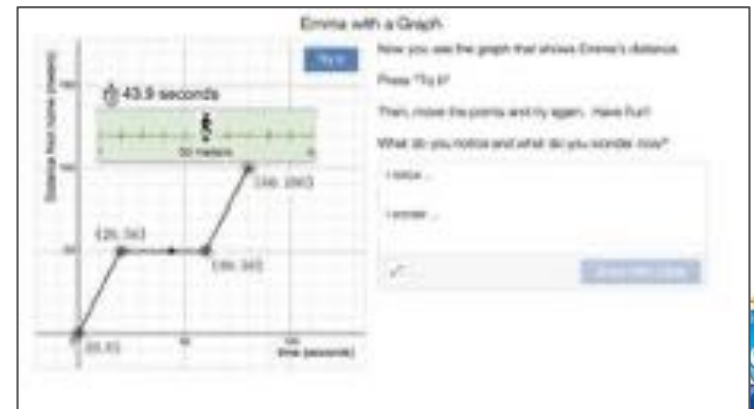
Changes Linked to Design Principles

- Each lesson included
 - **whole-class and small group work**
 - **Dynamic technology**, and
 - **mathematical language routines**



Mathematical Discourse

3. Incorporating language-discourse supports in daily lesson activities



How does this Promote Equity?

