Simulations for Teacher Preparation: Improving Pedagogical Content Knowledge and Literacy in Mathematics

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Simulation Development

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- Developed by Lockheed Martin Corporation
- Designed in collaboration with district and university personnel
LMCO Simulation
Pedagogical Content Knowledge

• Details knowledge teachers need for teaching mathematics conceptually
• Includes disciplinary literacy
• Addresses knowledge of curriculum
• Informs instructional decision making
• Identifies error patterns and misconceptions
• Considers assessment as well as instruction
Example from Algebra I

• A new company called TextForFun (or TFF for short) is offering 2 new plans. Plan A is $50 a month for unlimited texts. Plan B costs $25 a month, plus 15 cents per text. If you average 200 text messages per month, which plan should you choose?
David is training for a marathon. He writes down the time and distance for each training run and then records the data on a scatter plot. He has drawn a line of best fit on the scatter plot.

Which statement best expresses the meaning of the slope as a rate of change for this line of best fit?

A. The slope represents the number of miles he will have to run to finish the marathon.

B. The slope represents the average speed, in miles per hour, of his training runs.

C. The slope represents the number of hours he will need to finish the marathon.

D. The slope represents the distances, in miles, that he ran while he was training.
Simulation for PCK in Mathematics

• Includes multiple content areas in mathematics
  – Calculating slope
  – Solving linear equations
  – Graphing quadratic functions

• Also includes science content areas
Project Team

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