

Electronic Seminar on Mathematics Education

Quantitative Reasoning and Intellectual Need as Design Principles for Instructional Materials

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We will describe the ideas of quantitative reasoning and intellectual need, and describe how we have used these ideas as design principles for creating instructional videos and related materials for introductory calculus. These ideas have implications for courses beyond calculus and for instructional materials beyond videos. We will show how important it is for students to think about calculus concepts in terms of quantities and share examples from our materials that demonstrate imagery that supports this quantitative reasoning. We will describe how we have used intellectual need to envision calculus concepts in terms of a series of perturbations and resolutions, and how these ideas have been translated into instructional materials.



Noon ET, October 27, 2020

Zoom link: <https://cornell.zoom.us/j/92078267146>, passcode esme

For more information on ESME: <http://math.mit.edu/seminars/esme/>