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Using a Model-Eliciting Activity to Teach Exponential Growth: An Investigation of Student Conceptions and Affect.

Exponential functions form an important component of calculus courses and they provide useful models for understanding real-world phenomena, such as population growth, compound interest and radioactive decay. Yet research has shown that students who have successfully completed calculus hold impoverished notions of multiplicative growth and decay. To facilitate students' conceptual understanding, research suggests that model-eliciting activities may provide opportunities for promoting students' local conceptual development in mathematics. Drawing on this research, a model-eliciting activity was designed to promote the emergence of exponential growth by creating intellectual need for an exponential growth model, in a context designed to evoke a positive affective response. Analysis of data from a group modeling activity and post-interviews with three students reveals students' developing understanding of exponential growth and students' affective response to the activity. Early data supports that this activity shows promise, with additional refinement, for promoting development of ideas of exponential growth and for evoking positive affective response in students. (Received September 15, 2008)