Understanding the complexities of student motivations in mathematics learning.

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Abstract

Student motivation has long been a concern of mathematics educators. However, commonly held distinctions between intrinsic and extrinsic motivations may be insufficient to inform our understandings of student motivations in learning mathematics or to appropriately shape pedagogical decisions. Here, motivation is defined, in general, as an individual's desire, power, and tendency to act in particular ways. We characterize details of motivation in mathematical learning through qualitative analysis of honors calculus students' extended, collaborative problem solving efforts within a longitudinal research project in learning and teaching. Contextual Motivation Theory emerges as an interpretive means for understanding the complexities of student motivations. Students chose to act upon intellectual-mathematical motivations and social-personal motivations that manifested simultaneously. Students exhibited intellectual passion in persisting beyond obtaining correct answers to build

understandings of mathematical ideas. Conceptually driven conditions that encourage mathematical necessity are shown to support the growth of intellectual passion in mathematics learning.

Keywords

Agency; Collaboration; Motivation; Problem solving

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