How Calculus Students at Successful Programs Talk About Their Instructors

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**Motivation**

- According to the PCAST report (2012) increasing the retention rate of the students who enter college intending to major in a STEM field has the potential to significantly decrease the gap between the number of STEM degrees produced and the projected number of STEM degrees needed to keep the United States position in the global market.
- There is a growing body of research that suggests that intending STEM students are switching out of STEM fields due to experiences in their introductory mathematics courses (Ellis, Kelton, & Rasmussen, 2014; PCAST, 2012; Rasmussen & Ellis, 2013), including experiencing poor instruction (Bressoud, Mesa, & Rasmussen, 2015; Seymour & Hewitt, 1997).

**Research Question**

To this end, we seek to better understand student experiences in successful Calculus courses by answering the question:

**How do students in successful Calculus programs talk about their instructors?**

**Project Background**

Characteristics of Successful Programs in College Calculus (CSPCC)

- **Phase 1:** National survey given to calculus students and their instructors at the beginning and end of the term (3,187 students; 231 instructors)
- **Phase 2:** Case studies at institutions deemed to have successful calculus programs (interviews with instructors, focus group interviews with students, collected class materials, observed classes)

**Indicators of Successful programs:**
- Student persistence on Calculus II, change in student confidence, interest, and enjoyment in mathematics

**Relevant Student Focus Group Questions**

- **What would you say is your instructor’s attitude towards students?**
- **Students often spoke of their instructors’ concern for their understanding of foundational concepts in the Calculus.**

**Conceptually driven**

- Students often talked about their instructors as accessible, available, and approachable both inside of class and outside of class; students at all institution types commented that their instructors were often available and responded in a timely manner.

**Available & Timely**

- Students in successful Calculus programs felt their instructors cared about their learning.

**Mathematically Diverse**

- Students often perceived their instructors as being helpful, in offering multiple strategies to a single problem. It is an alternative way to think about the problem or an alternative approach in problem solving, students often mention diversity in their instructors’ mathematical approaches.

**Creating an atmosphere**

- Students reported on a kind of positive atmosphere fostered by their instructors where students feel comfortable doing mathematics. Even if students go further to suggest that this type of learning community not only increases their enjoyment, but it can even have a positive effect on their attitude and behavior.

**How are instructors and students talking about their instructors?**

- Students in successful Calculus programs express their perceptions of instructors in an overwhelmingly positive way. Students speak positively about their instructor’s character, methods, and the learning environment the instructor creates.
- The data referring negatively to an instructor is present. However, the negative of remarks in this study is significant enough to warrant the conclusion that students in successful Calculus programs talk about their instructors in a positive way.

**References**


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