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Investigations in Instruction and Teaching in Undergraduate Mathematics  
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Abstract

In this presentation I will summarize the work I have conducted on instruction and teaching of mathematics at community colleges and other post-secondary institutions, work that has sought to characterize the nature of instruction and to understand the work of teaching.

My research on instruction at community colleges reveals a pattern of interaction between students and instructors that can be called “interactive lecture.” In this pattern, the instructor presents the topics, examples, and problems. The students’ role is to ask questions to clarify content. Students rarely discuss ideas among themselves and the questions they tend to answer emphasize low cognitive demand processes. This interaction pattern can be described through the norms that govern the didactical contract that for the predominant instructional situation of presenting content via examples (Mesa & Herbst, 2011) and continues to be upheld thanks to instructors’ responses to their professional obligations (Celis & Mesa, 2016; Lande & Mesa, 2016)

My research on teaching of mathematics using inquiry-based learning (IBL) reveals markedly different patterns of interaction, with different roles for teachers and students, who interact collectively around the worksheets that students solve with other students during class. The differences in how teaching is conducted, generate conflicting situations for instructors (Mesa & Cawley, 2016). Research studies suggest that this type of teaching is beneficial and thus suggest interesting areas for faculty development.

References

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