The Development of a Video Coding Instrument for Assessing Instructional Quality in Community College Algebra Classrooms

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This poster presents the evolution of a video coding protocol for mathematics classroom instruction. We highlight challenges encountered while analyzing 18 hours of pilot data from six community college algebra classrooms, entailing calibration of over 150 episodes.

Keywords: community colleges, algebra, instruction, student success, video coding protocol

Community colleges prepare many students for STEM and other mathematics-based career options. Specifically, in 2010, more than 585,000 students were taking intermediate or college algebra in community colleges (Blair et al., 2013). It is shown that there is a relation between quality of instruction and student learning based on the instructor's knowledge of teaching, content knowledge, and instructional practices in K-12 education (Hill, Rowan, & Ball, 2005). However, there is limited information regarding characteristics of instruction that inform community college student success. Throughout 2016-2017 while working on a federally funded research project (Watkins, Duranczyk, Mesa, Ström, & Kohli*, 2016)*, we attempted to establish a protocol to codify instruction so that we can identify the conditions under which instruction in community college algebra courses associate well with student learning gains and performance. As we began to consider important features of mathematical instruction in community colleges, we looked to research in K-12 mathematics classrooms to identify features of quality instruction. We started by reviewing the Mathematical Quality of Instruction (MQI) (Learning Mathematics for Teaching Project, 2011), a video analysis tool for mathematics instruction in grades K-6. We then adapted the Quality of Instructional Practices in Algebra (QIPA) (Litke, 2015), a tool developed for 9th grade Algebra lessons, to add features that we could not capture with the MQI. Modifications in both protocols were warranted given that the tools (MQI and QIPA) did not clearly provide distinctions or delineations of practices we observed in the community college classroom associated with quality instruction. By adapting these two protocols, we created, developed, and refined a new protocol, Evaluating the Quality of Instruction in Post-secondary Mathematics (EQIPM) that addresses the complexity of community college mathematics instruction. The videos were segmented into 7.5-minute episodes and distributed among five teams. The teams (at least one community college faculty member per team) using an iterative process of review and calibration coded 18 hours of algebra instruction. We shifted from a 4-point scale with 21 codes to a 5-point scale with 15 codes to record components of quality instruction. This poster will chart our development process and seeks feedback from our peers.

References

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