The Impact of Near-Peer Mentors' Interactions Within Lower-Division Mathematics Classrooms

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A near-peer mentor (NPM) is a general term for an undergraduate student who supports other undergraduate students' learning, typically in STEM courses. NPMs are associated with increased student performance and retention in STEM courses (Alzen et al., 2018; Barrasso & Spilios, 2021) and additionally help promote active learning techniques, reduce barriers to student help-seeking, and foster community within the classroom and throughout campus (Bronstein, 2008; Knight et al., 2015; Sellami et al., 2017) . However, there is a gap in the literature regarding exactly *how* NPMs have these impacts in classes. This study aims to address that gap – using positioning theory (Harré et al., 2009) as a theoretical framework – by examining the *positions*, *acts*, and *storylines* that structure NPM-student interactions. Additionally, the framework of Bloom's taxonomy (Bloom, 1956), which categorizes a hierarchy of cognitive learning (ranging from recalling to innovating), will inform the ways that NPMs encourage student learning through their interactions. This study is guided by the research question: "**How do NPMs impact both students and themselves through their in-class practices in lower-division mathematics classrooms?**"

This study will take place at Sageview University (SU), which is a mid-sized public university in the Mountain West region of the United States that serves roughly 27,000 undergraduate and graduate students. This study focuses on two developmental math course sections supported by NPMs: MATH 101 - Elementary Algebra and MATH 110 - Intermediate Algebra. MATH 101 focuses on academic success and self-efficacy in mathematics and is designed to prepare students for all other future math courses at SU. MATH 110 is intended to support students in their transition to college algebra as well as fulfill general education requirements. Both of these courses incorporate small-group activities and individualized work time during class, which provide opportunities for NPMs to interact with students. Data sources for this study include classroom observations of NPM-supported and non-supported sections, focus group interviews with NPMs and students, and student success metrics (grades, test scores, and pass rates). All titles used are pseudonyms to maintain anonymity.

In-class interactions between NPMs and students will be analyzed by identifying how questions that NPMs ask align with the six categories in Bloom's taxonomy, which will help identify how the NPMs are guiding students through their learning processes. Focus group data will be analyzed using positioning theory to identify themes that arise from student and NPM perspectives about their interactions in class. Their shared perspectives in conjunction with the classroom observation data will reveal patterns (*storylines*) that emerge from the *acts* and *positions* observed in class and discussed in focus group interviews.

Data collection for this study is ongoing during the Fall 2025 semester, but we anticipate that findings will highlight how NPM roles shape classroom culture and engagement. This research will additionally contribute to understanding how peer mentorship structures can strengthen student success in introductory mathematics and inform training for NPM programs.

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