Mathematics Identity and Belonging in an Undergraduate General Education Terminal Mathematics Course

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Keywords: Inclusive course design, inclusive instruction, mathematical identity, sense of belonging

This study directly follows from Homp et al., where inclusive instructional practices, like Open Educational Resources and biographies from mathematicians currently doing research from historically minoritized backgrounds, were implemented in a general education terminal undergraduate mathematics course from a large, predominantly White, land-grant based, public university in the midwestern United States. Homp et al. found a statistically significant increase in students' sense of belonging, illustrated from pre- and post- course survey data. Gutiérrez (2012), developed a framework for conceptualizing equity in mathematics through the axis of identity and power, and the axis of access and achievement. Building off this research, Riley (2022) utilized the Gutiérrez framework to perform thematic analysis on *Testimonios* (2022). In this study we thematically analyze student artifacts from one out of five sections of the course in Homp et al.'s research to understand why the feeling of belonging improved within the students across the duration of the semester.

This poster explores artifacts collected from students after being shown biographies of current, historically minoritized mathematicians three times throughout the semester, analyzed using a codebook derived from Gutiérrez's framework. The themes presented in the two axes, power, identity, access, and achievement were coded both as they related to the chosen mathematician and to the student. The frequencies of each code within each of the three artifacts were compared. Students at the beginning of the semester primarily focused on the achievement of the mathematician in the chosen biography, with little to no mention of the mathematician's identity, access, or power. As the semester went on, students chose to write about more than just the mathematician's success– focusing on the identity of the mathematician, the power they have to make societal change, and the access they have to education. Students also incorporated more aspects of their own identity within the later artifacts.

Many students indicated they had little to no knowledge on the various topics mathematics researchers study. Perhaps by introducing the students to mathematicians that share aspects of their own identities, students are able to relate more to complex topics like disease spread and gerrymandering, which many do not associate with mathematics. This analysis appears to show that students were able to form a connection to mathematics beyond the presented course material– allowing them the ability to feel they could belong in the mathematical community.

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