

Neurodiversity Access, Agency, and Accommodation in Mathematics Education for Undergraduate Students

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In recent years, there has been greater emphasis on creating diverse, equitable, inclusive, and accessible spaces for underrepresented students in mathematics. However, neurodiverse students have largely been left out of this conversation. There is evidence that students who are privileged to have access to diagnosis may not disclose their diagnosis or seek accommodations in college due to stigma or lack of information about resources (Borsotti et al., 2024; Edwards et al., 2022) and that even equity-oriented undergraduate faculty often feel under-prepared to teach neurodiverse or disabled students, or treat them only as separate groups rather than creating pedagogies that are accessible to all students (Cotán et al., 2021; Hitch et al., 2015; Moríña, 2022). There is also little research specifically on disabled student accommodations in online and hybrid formats (Edwards et al., 2022). The NAME US (Neurodiversity Access, Agency, and Accommodation in Mathematics Education for Undergraduate Students) project aims to begin this conversation and provide more research into the ways all students can be supported in a mathematics classroom.

This poster will present on the initial results from a pilot study focused on a teaching experiment that applies principles of Universal Design for Learning (UDL) (Fornau & Erickson, 2020) to an undergraduate mathematics course at an institution that serves high number of students in demographically at-risk groups for underdiagnosis of neurodivergence and learning differences such as women, first-generation college students, and non-white students (Cunningham, 2021; Lockwood Estrin et al., 2021; Martin, 2024; Moody, 2016; Shi et al., 2021). Our specific research questions are:

1. In what ways does applying the principles of UDL to increase flexibility in learning and assessment modalities in introductory mathematics courses improve student outcomes as measured by grades and course evaluations?
2. What evidence is there of under-diagnosis of learning differences or under-disclosure of diagnosed learning differences in students in introductory mathematic course?

The teaching experiment was conducted within two in-person sections of Precalculus I and two online sections of Contemporary Mathematics. All sections of both courses were taught by the same instructor. The control sections were taught using the same materials and course structure the instructor had used previously for these courses. The experimental sections utilized the same textbook, homework assignments, and exams, but UDL inspired changes in content delivery and assessment such as greater flexibility of exam conditions (headphones with white noise or music and fidget toys explicitly allowed) and more accessible presentation of material (more accessible and larger font for textbook and other resources, explicit orientation to accessibility aids within the learning systems).

Our poster will present the initial findings from both the courses and the survey conducted to measure the potential amount of underdiagnosis of neurodiverse conditions and underutilization of campus resources for those with a formal diagnosis. We look forward to discussing the project with the RUME community as a whole and are excited to share our plans for moving forward.

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