SCIENCE

Participatory Action Research: Undergraduate Researchers Engaging Secondary Students in Social Justice Mathematics

Student researchers: Isabelle Miller, Alexis Grimes, and Camryn Adkison, Seniors

Many secondary mathematics classrooms focus on procedures and memorization. Social justice mathematics requires students to explore mathematical concepts and social justice issues simultaneously. Students can strengthen their mathematical abilities and learn about issues relevant to their lives and communities.

As the participants in this critical participatory action research project, we are reflecting on our experiences as three white female preservice mathematics teachers carrying out social justice mathematics lessons within our secondary classrooms across Indiana. Our research is ongoing, and our conclusions are ever-evolving. Using thematic analysis, we identified several preliminary themes, including our efforts to (a) create safe learning environments by fostering relationships with our students for them and us to feel more comfortable discussing social justice issues in the mathematics classroom, (b) motivate our students, and (c) purposefully select social justice topics.

Not only are we reflecting on our personal teaching experiences, but we are also drawing on our students' experiences with social justice mathematics lessons to inform our teaching. At the beginning of our student teaching semester, students were given a presurvey for us to gather their understanding of social justice and its relationship to mathematics. The same survey will be

given out at the end of the semester for us to reflect on how to better engage our secondary students in social justice mathematics tasks.

Moving forward, we will engage in additional rounds of thematic analysis to further narrow our themes, continue facilitating rigorous standards-aligned social justice mathematics tasks, and continually revise and adjust our teaching plans.

Research advisors Jill Newton and Michael Lolkus write: "We are honored to work with Isabelle Miller, Alexis Grimes, and Camryn Adkison on this project exploring their experiences teaching social justice mathematics. They have demonstrated the urgency for connecting recommendations from research into their instructional practices and for opening minds for sharing and gathering feedback from scholars and practitioners in the mathematics education field."

From left to right, mathematics education seniors Alexis Grimes, Isabelle Miller, and Camryn Adkison.