

Program Agenda: Research on Non-university Tertiary Mathematics

ICME 13-Discussion Group

Primary Organizers:

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2. John Smith, Pellissippi State Community College: jtsmith2@pstcc.edu
3. Irene Duranczyk, University of Minnesota: duran026@umn.edu

The focus of this group will be mathematics education research within the non-university tertiary context, with a particular focus on questions related to what happens inside mathematics classrooms in these institutions. Students enrolled in these institutions are more likely to belong to groups that have traditionally been both underrepresented in mathematics (and in higher education more generally) and that are at higher risk of college dropout: they are often the first in their families to attend college, they tend to be older, have work and family responsibilities, and on average have weaker pre-college preparation.

However, despite the high numbers of students enrolled in these types of institutions, and the unique needs related to teaching and learning mathematics in this environment, very little educational research currently focuses on this context. Most of the scholarship on community college mathematics education to date has been conducted by higher education scholars, and it concerns the costs of developmental mathematics education or student retention and success, with success somewhat narrowly defined either as passing courses or as completing a college degree. This scholarship leaves unexplored the one aspect that may most determine students' success: their experiences in the mathematics classroom. It is essential for the mathematics education research community to participate in research on community college mathematics and to help drive the discussion about what research questions and methodological approaches matter in this context.

The aims of the proposed discussion group are threefold: 1) to increase awareness of the need for focused research on non-university tertiary mathematics education among researchers and policymakers in education and mathematics education; 2) to set an agenda to guide researchers in this area towards research questions which are most critical for addressing both gaps in current research literature and the needs of policymakers and practitioners; and 3) to connect researchers and practitioners from around the world with an interest in non-university tertiary mathematics education, so that they are able to collaborate on vital research and grant projects, both within and across national borders and cultural contexts.

Key questions and issues for the Discussion Group to consider

The discussion group will consider the following questions:

1. What supports and structures are needed for non-university tertiary faculty to successfully conduct mathematics education research at non-university tertiary institutions?
2. What types of mathematics education research questions are currently most pressing in the non-university tertiary context?
3. To what extent do the answers to these first two questions vary within different national, cultural, and geographic contexts?
4. What aspects of current mathematics education research findings conducted in the primary, secondary, and university settings are likely to be generalizable to non-university tertiary settings?
5. Which aspects are likely not generalizable?
6. What kinds of research designs might effectively test these hypotheses?

Anticipated structure

First session:

- Introductions (10 min)
- Presentations giving an overview of some successful research projects in mathematics education at non-university tertiary institutions. Discussion of the benefits and challenges of non-university tertiary faculty conducting educational research. Speakers include: April Strom, Claire Wladis, John Smith (45 min)
- Discuss and agree on what the goals of the discussion group should be, and organize smaller groups based on the interests of the participants. There are several possible goals: developing collaborative research and/or grant proposals among researchers of similar interests; preparing a conference or symposia on non-university tertiary mathematics education; advancing a special issue of a research journal focused on non-university tertiary mathematics education; using the discussion group time for a more structured discussion of the key questions listed above. Identify smaller groups that might want to meet/collaborate before the next discussion group session. (35 min)

Second session:

- Work in smaller groups (e.g. developing collaborative research and/or grant proposals among researchers of similar interests; preparing a conference or symposia on non-university tertiary mathematics education; advancing a special issue of a research journal focused on non-university tertiary mathematics education), depending on the interest of the participants as identified during the first discussion group session. (60 min)
- Report from subgroups and plan collaborations to be undertaken after the conclusion of the discussion group session. (30 min)