

TSG 48 Agenda

TSG __48: Mathematics Education in a Multicultural Environment

Class: _B___ (Class A for TSGs with odd numbers; Class B for TSGs with even numbers)

****Please prioritize the sessions in “core-time” (from 19:30-23:00, Beijing time, i.e. Session 2, 3 for Class A and session 1, 2 for Class B) as they are friendly to most of the time zones in the world.**

Session 1 July 13 1930 - 2100 No papers scheduled based on author's preferences.

Session 2 July 16 21:30 - 23:00 Beijing time

Time: 21:30 - 21:35 *Live Session*****

Title of the Paper:

Welcome to TSG 48 and overview of engagement.

Author(s)

TSG organizers: Florence Glanfield

Institution(s) (to school/department/research center) and Country/Region:

University of Alberta, Canada

Time: 21:35 - 22:05 *Live Session*****

Title of the Paper:

Conceptualizing a framework for a new (disruptive) form of culturally responsive pedagogy in mathematics/teacher education

Author(s) (with the presenter name in BOLD if more than 1 name here)

Kathleen Nolan

Institution(s) (to school/department/research center) and Country/Region

University of Regina, Canada

Short abstract of the paper (20 lines maximum):

The research described in this paper explores the question of how school mathematics and mathematics teacher education might be reframed through critical and culturally responsive pedagogies. By synthesizing perspectives offered by Ethnomathematics (EM), Critical Mathematics (CM), Indigenous Education (IE), Language Diversity (LD) and Equity-based (E-b) approaches to research in mathematics education, this research conceptualizes a new (disruptive) form of culturally responsive pedagogy (CRdP). As discussed in this paper, CRdP is pedagogically informed by the EM-CM-IE-LD-E-b collective; it is theoretically informed by Nancy Fraser's three-dimensional approach to social justice and participatory parity; and it is methodologically informed by discourse analysis.

Time: 22:05–22:25 *Live Session*****

Title of the Paper:

Preservice teachers engaging with traffic stop data to examine issues of bias

Author(s) (with the presenter name in BOLD if more than 1 name here)

Anthony Fernandes

Institution(s) (to school/department/research center) and Country/Region

The University of North Carolina Charlotte, USA

Short abstract of the paper (20 lines maximum):

Police traffic stops are a common occurrence in the United States. Racial minorities, especially African Americans, are stopped at rates that are higher than other races. This study reports on how ten preservice teachers, who were mostly White, engaged with local city traffic stop data to examine issues of racial bias. As data become more prevalent in society globally, it is important for teachers to be able to analyze and interpret large data sets. At the same time, teachers need to be familiar with issues that affect students they are going to teach. In the United States students of color are becoming a majority in schools, while their teachers come from different backgrounds and have different life experiences. An analysis of the pre- and post-reflections demonstrates that the preservice teachers associated the disproportionate traffic stops to actions of individual police officers rather than acknowledge racial bias in policing. The study shows that even though studying data can be an important tool to understand structural inequities, a more comprehensive approach to changing dominant beliefs is needed.

Time: 22:25–22:45 *Live Session*****

Title of the Paper:

Intersections of Indigenous Knowledge Systems and Mathematics Education

Author(s) (with the presenter name in BOLD if more than 1 name here)

Florence Glanfield

Institution(s) (to school/department/research center) and Country/Region

University of Alberta, Canada

Short abstract of the paper (20 lines maximum):

In what ways might Indigenous knowledge systems shape mathematical understanding and mathematics teaching practices? This paper describes Indigenous knowledge systems and the ways that mathematics exists within Indigenous cultures. This paper will illustrate the ways in which Indigenous knowledge systems have the potential to contribute to establishing and building inclusive, and equitable, classrooms. For example, one such aspect of many North American Indigenous knowledges is “we are all related.” This aspect points to the ways in which teachers can build on student, family, and community strengths for any classroom that is filled with multi-cultures, not just Indigenous cultures.

Time: 22:45–23:00 *Live Session*****

Title of the Paper:

Discussion of the Papers

Author(s): TSG Organizers

1. Peter Kajoro
2. Qin Jin
3. Anthony Fernandes
4. Florence Glanfield

Institution(s) (to school/department/research center) and Country/Region

1. Aga Khan University (Institute of Educational Development, East Africa), Tanzania
2. Tsinghua International School, China
3. The University of North Carolina at Charlotte, USA
4. University of Alberta, Canada

Session 3 July 17 14:30 - 16:30 Beijing time

Time: 14:30 - 14:35 *Live Session*****

Title of the Paper:

Welcome to TSG 48 and overview of engagement.

Author(s):

TSG organizer: Anthony Fernandes

Institution(s) (to school/department/research center) and Country/Region:

The University of North Carolina Charlotte, USA

Time: 14:35 - 15:05 *Live Session*****

Title of the Paper:

Taking a strengths based approach to Learning and teaching Mathematics

Author(s) (with the presenter name in BOLD if more than 1 name here):

1. Marta Civil

2. Roberta Hunter

Institution(s) (to school/department/research center) and Country/Region:

1. The University of Arizona, USA

2. Massey University, New Zealand

Short abstract of the paper (20 lines maximum):

Although there has been a substantial increase in literature around teaching and learning of mathematics in multicultural settings we still have a way to go to gain equitable outcomes for all learners. In this paper we draw on research with teachers, students and parents to show how strength-based approaches can support culturally sustaining practices in mathematics classrooms. We illustrate how repositioning teachers from a traditional role as listened to, to that of being listeners, causes dissonance from which comes change towards culturally sustaining pedagogy. We show how authentic two way conversations between parents and teachers provide opportunities for learning with and from each other, not just about mathematics but also about their values and ways of being.

Time: 15:05–15:25 *Live Session*****

Title of the Paper:

Developing concepts for mathematics teaching units with a focus on migrant and minority students

Author(s) (with the presenter name in BOLD if more than 1 name here)

1. Andreas Ulovec

2. Jarmila Novotná

3. Hana Moraová

Institution(s) (to school/department/research center) and Country/Region

1. University of Vienna, Austria
2. Charles University Prague, Czechoslovakia
3. Charles University Prague, Czechoslovakia

Short abstract of the paper (20 lines maximum):

The multicultural nature of society influences education in many countries. Teachers are usually not sufficiently prepared to deal with a multicultural classroom context. Particularly mathematics teachers feel the need for materials supporting them in teaching in multicultural classrooms. Also their pupils with a migrant background often encounter more difficulties than their native classmates in acquiring basic mathematical skills. Many projects have created mathematics teaching materials in different settings, though these did not take multicultural classrooms into consideration. A very few have created concrete mathematics teaching materials for migrants, but these were rather closed materials, not concepts and strategies to be further developed by teachers. A Czech-Austrian project team worked on designing concepts for teaching units based on the analysis of various research studies, examples of concrete teaching units based on these concepts, and guidelines on how to use these concepts. These materials will give mathematics teachers a tool that allows them to create their own teaching units fitting their own classroom needs.

Time: 15:25–15:45 *Pre-recorded Session*****

Title of the Paper:

The use of dominant Discourse Practices in Secondary multilingual Mathematics classrooms: A comparison of lessons given by two teachers

Author(s) (with the presenter name in BOLD if more than 1 name here)

Michael Alexander

Institution(s) (to school/department/research center) and Country/Region

University of the Witwatersrand, Johannesburg Wits School of Education, South Africa

Short abstract of the paper (20 lines maximum):

In this paper, I explore some of the dominant Discourse practices used in multilingual Mathematics classrooms by comparing two teachers' Mathematics lessons on trigonometry in a Nigerian Secondary school. I start with an introduction, after which I outline a theoretical perspective on the nature of classroom interactions which informed the study. The research questions are: What dominant Discourse practices were used by teachers as plainly demonstrated in their language (verbal and non-verbal) in multilingual Mathematics classrooms? How do teachers use language (verbal and non-verbal) to enact practices as reflected in their Discourses in the teaching and learning of Mathematics

in multilingual classrooms? Data gathering techniques for this study included video observations in the classrooms, and written field notes. The data gathering process covered a period of six months. A total of 6 lessons were observed. Exploration of these practices leads me to discuss a number of the relationships between teaching and learning of Mathematics in multilingual classrooms. The analysis showed that teacher G used language to make his identity visible, as well as re-voicing and gesturing mathematically while teacher S used language not only to make his identity visible but also stabilise it during the Discourses.

Time: **15:45–16:30**

Title of the Paper:

Discussion of Themes Across TSG 48

Author(s) (with the presenter name in BOLD if more than 1 name here)

TSG Organizers:

1. **Qin Jing**
2. Peter Kajoro
3. Anthony Fernandes
4. Florence Glanfield

Institution(s) (to school/department/research center) and Country/Region

1. Tsinghua International School, China,
2. Aga Khan University (Institute of Educational Development, East Africa), Tanzania
3. The University of North Carolina at Charlotte, USA
4. University of Alberta, Canada