

Moving Prospective Mathematics Teachers From Instruments of Inequity Towards Agents of Change

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Today's Session

Project History

Description of Module

Overview of Research and Initial Findings

Small Group Discussions

Next Steps

Questions

Project History

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Stance

A socio-political perspective to teaching elementary mathematics methods and understand that teaching mathematics is a political act and notions of mathematics neutrality need to be challenged.

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Inspiration

“A Possessive Investment in Whiteness”: Access to Mathematics (Battey, 2013)

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The Outcome

Development of social justice mathematics learning module for elementary mathematics methods courses

Social Justice Mathematics Learning Module

Module Objectives

Enhance mathematical knowledge as PSTs analyze real world data

Communicate how mathematics can serve as powerful material to ‘demonstrate how mathematics serves as a gatekeeper to citizenship’ (Moses, 2001, p. 14)

Describe role of teachers as “Agents of Change” or “Instruments of Inequity”

Collaboratively develop social justice mathematics lessons connected to their students

Module Goal:

to “challenge and ultimately transform structures and systems of inequity” (AMTE, 2015)

Research Prongs

Module/Impact

What is the impact of a social justice mathematics learning module on PSTs beliefs and understandings of equity in mathematics teaching and learning?

Role of MTE

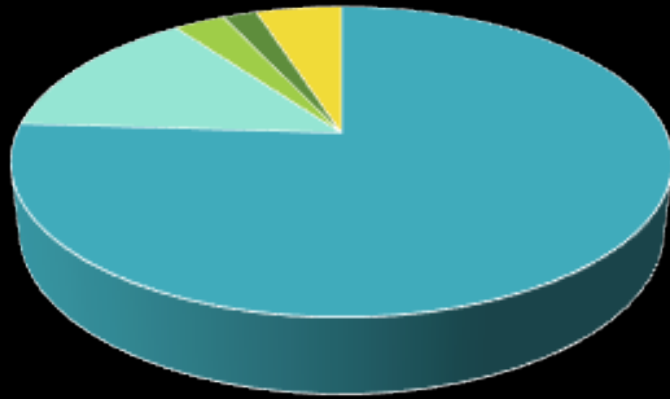
What is the role of MTEs in developing awareness and agency regarding issues of equity for PSTs in the mathematics classroom?

Stories and Futures

What is the role of privilege in the histories and futures of PSTs from two diverse contexts?

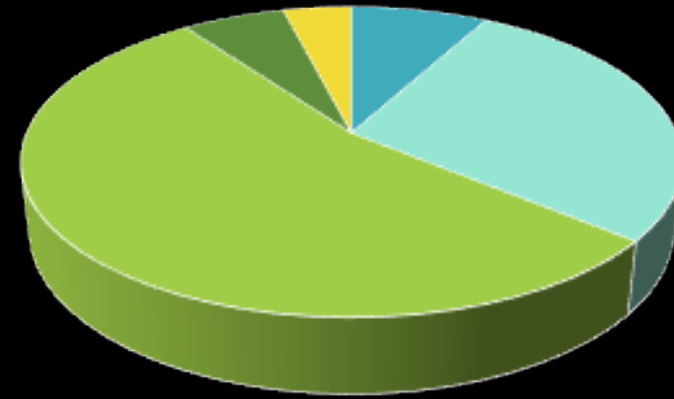
Two Large Public Universities

University of Mississippi



- White
- Black or African American
- Hispanic/Latino
- Asian
- Other

Lehman College, CUNY



- White
- Black or African American
- Hispanic/Latino
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- Other

Data Sources

Mathematics Teacher Efficacy Beliefs (MTEBI) Instrument (Enochs, Smith & Hunker, 2000) Pre/Post

Course documents including MathHistories, Draw a Mathematician, Roles & Responsibilities Chart, MTE reflections

Select semi-structured interviews (9 total)

Draw a Mathematician



Roles and Responsibilities Chart

Roles/Responsibilities of a Mathematics Teacher

Many of you will become elementary school teachers and in that role you will most likely be responsible for teaching mathematics. What are your duties/responsibilities as a teacher of mathematics?

<p>Date 09/08/15</p> <ul style="list-style-type: none">→ I believe that one of the many responsibilities that I will have as a Math teacher will be to know each student i.e., know their strengths & weaknesses in this subject→ Additionally, it will be my responsibility to make sure that all my students understand the material/course work→ Also make math classes creative, fun & give realistic examples to my lessons→ In addition, I establish a good rapport with them so they will feel open to inquire any doubts	<p>Date 09/08/15</p> <ul style="list-style-type: none">- Caring is imperative in order to influence our students positively- Making a difference in the students' lives- Accepting & embracing differences in regards to culture & learning styles.	<p>Date:</p>
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Fill in the Grids Activity

Group 1 Coloring Guide

Color the grid the identified number of squares with the indicated colors in the table

Red	Blue	Orange	Green	Grey
2 squares	9 squares	13 squares	28 squares	48 squares

Group 2 Coloring Guide

Color the grid the identified number of squares with the indicated colors in the table

Red	Blue	Orange	Green	Grey
15 squares	38 squares	19 squares	17 squares	11 squares

Group 3 Coloring Guide

Color the grid the identified number of squares with the indicated colors in the table

Red	Blue	Orange	Green	Grey
2 squares	11 squares	19 squares	28 squares	40 squares

Group 4 Coloring Guide

Color the grid the identified number of squares with the indicated colors in the table

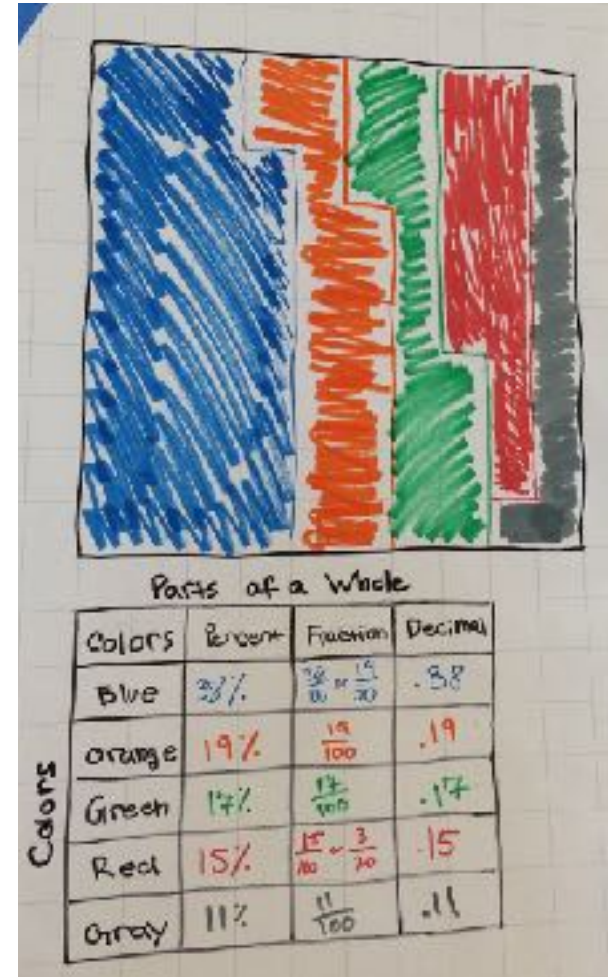
Red	Blue	Orange	Green	Grey
3 squares	11 squares	14 squares	33 squares	39 squares

Group 5 Coloring Guide

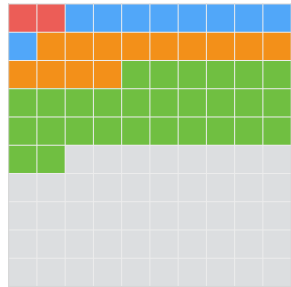
Color the grid the identified number of squares with the indicated colors in the table

Red	Blue	Orange	Green	Grey
7 squares	23 squares	19 squares	31 squares	20 squares

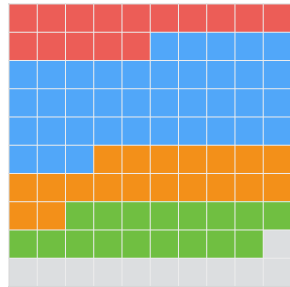
Colored Grids



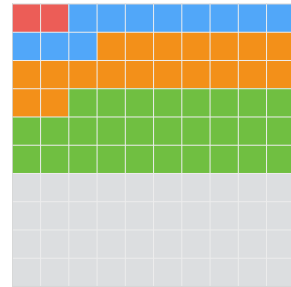
Group 1



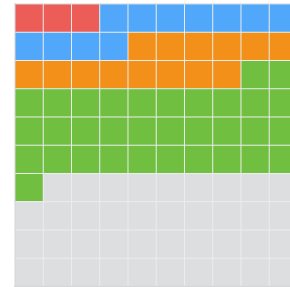
Group 2



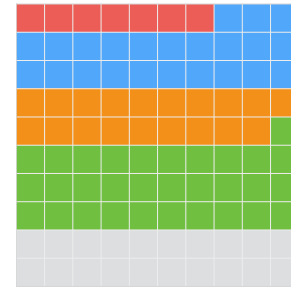
Group 3



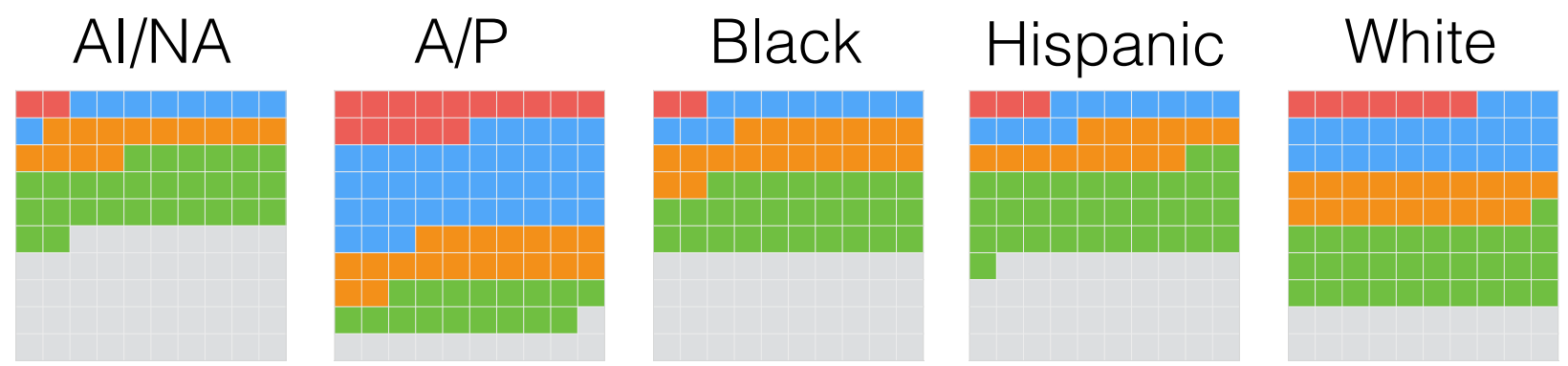
Group 5



Group 6

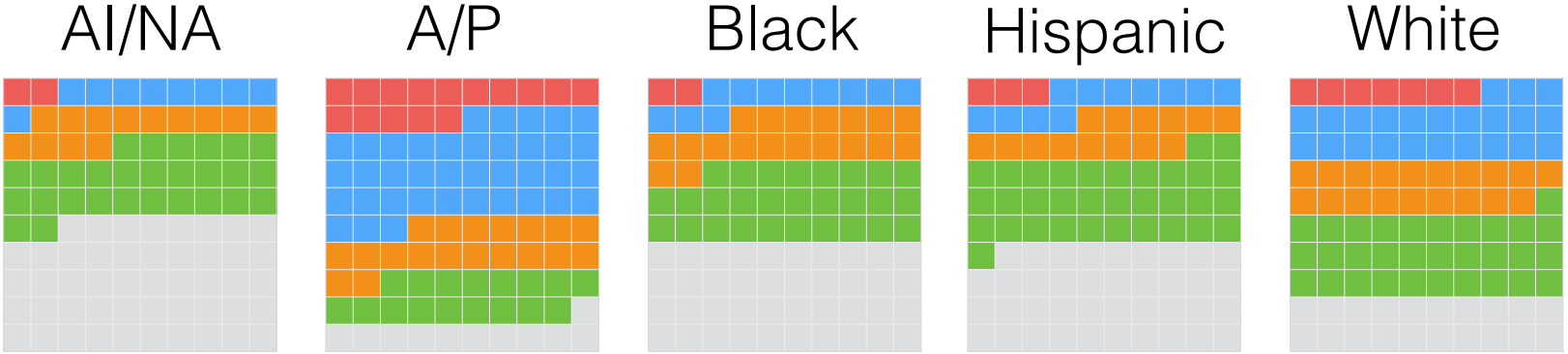


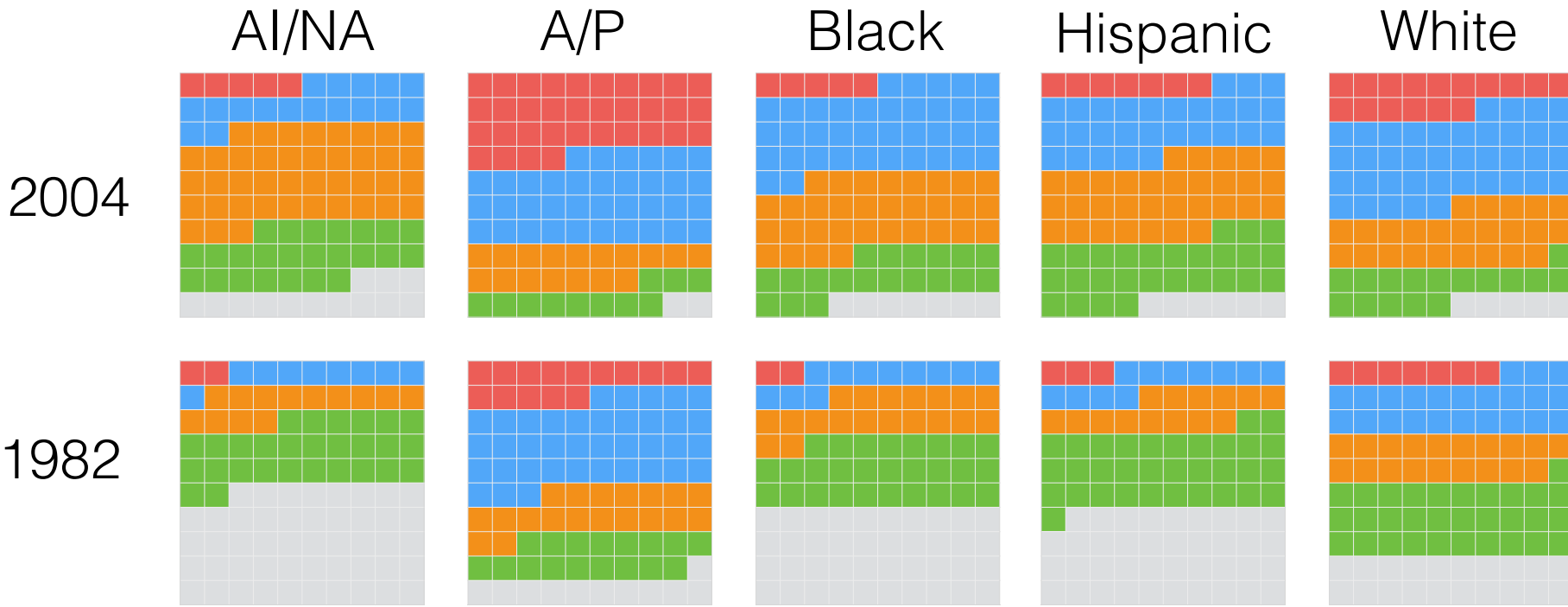
1982





1982





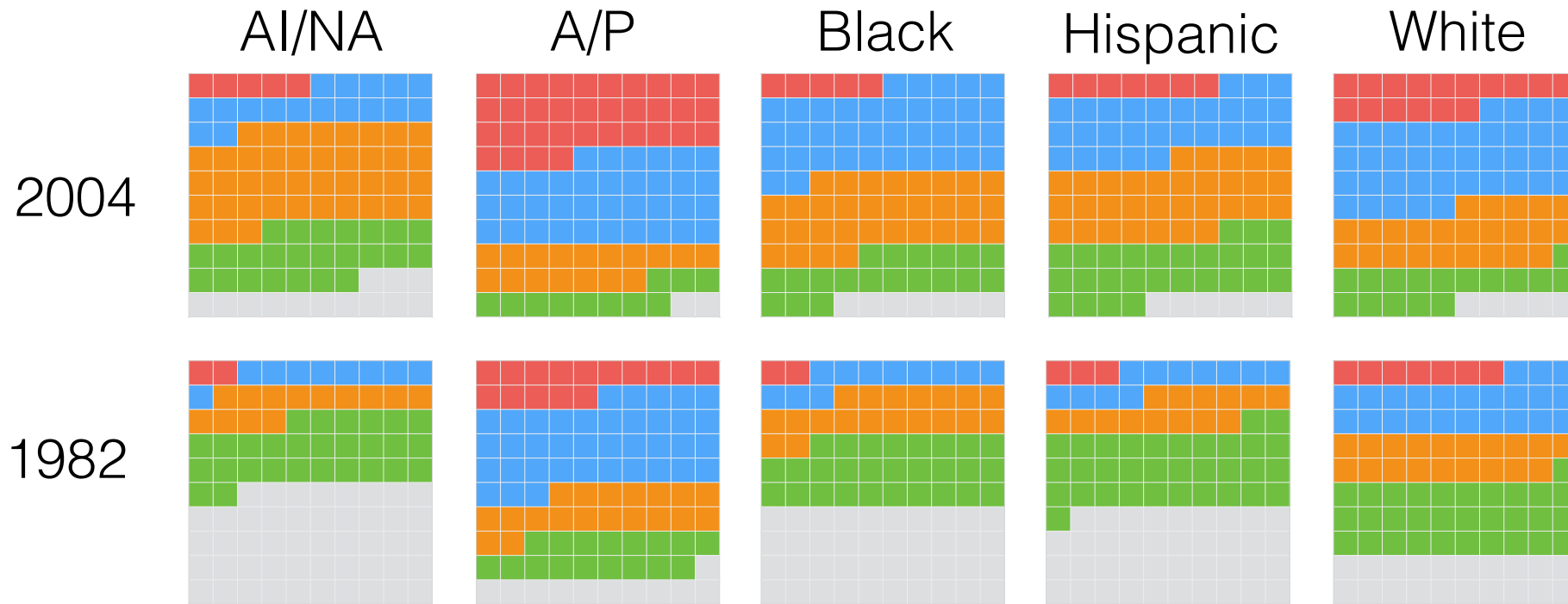
Definition of Equity

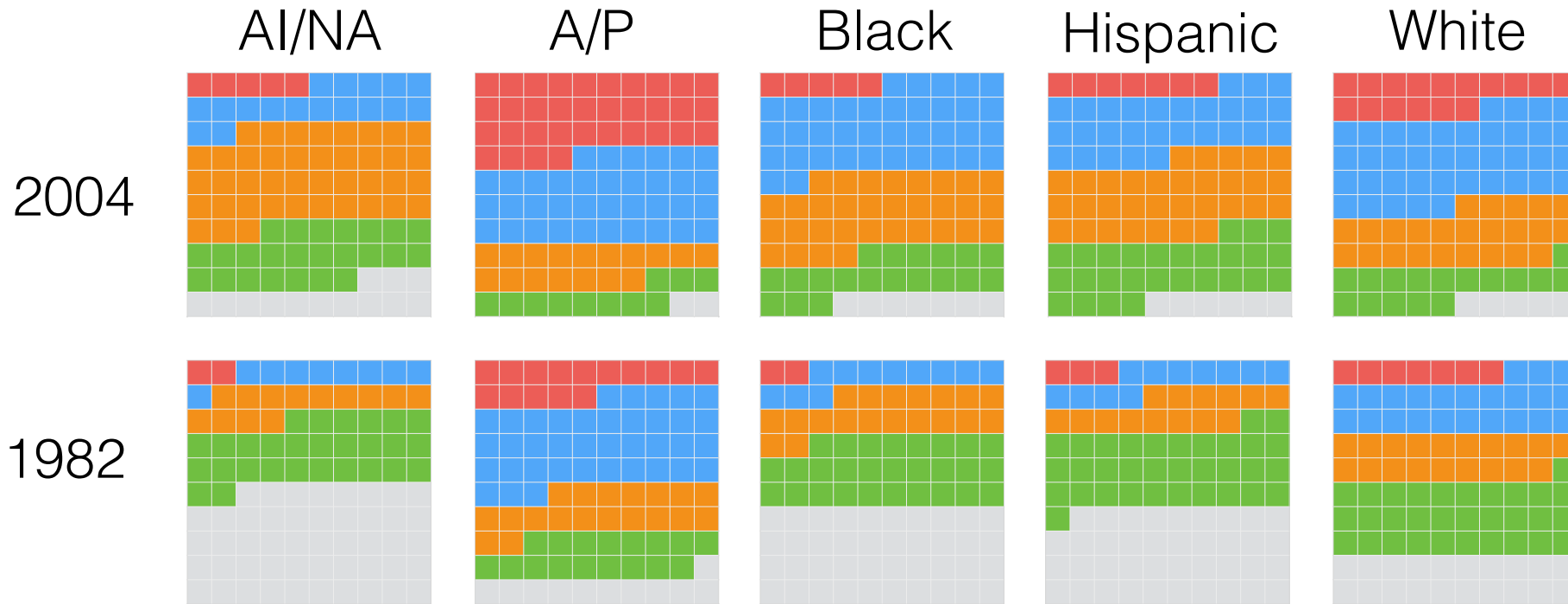
“...being unable to predict student patterns (e.g., achievement, participation, ability to critically analyze data/society) based solely upon characteristics such as race, class, ethnicity, gender, beliefs, and proficiency in the dominant language.”

-Rochelle Gutierrez

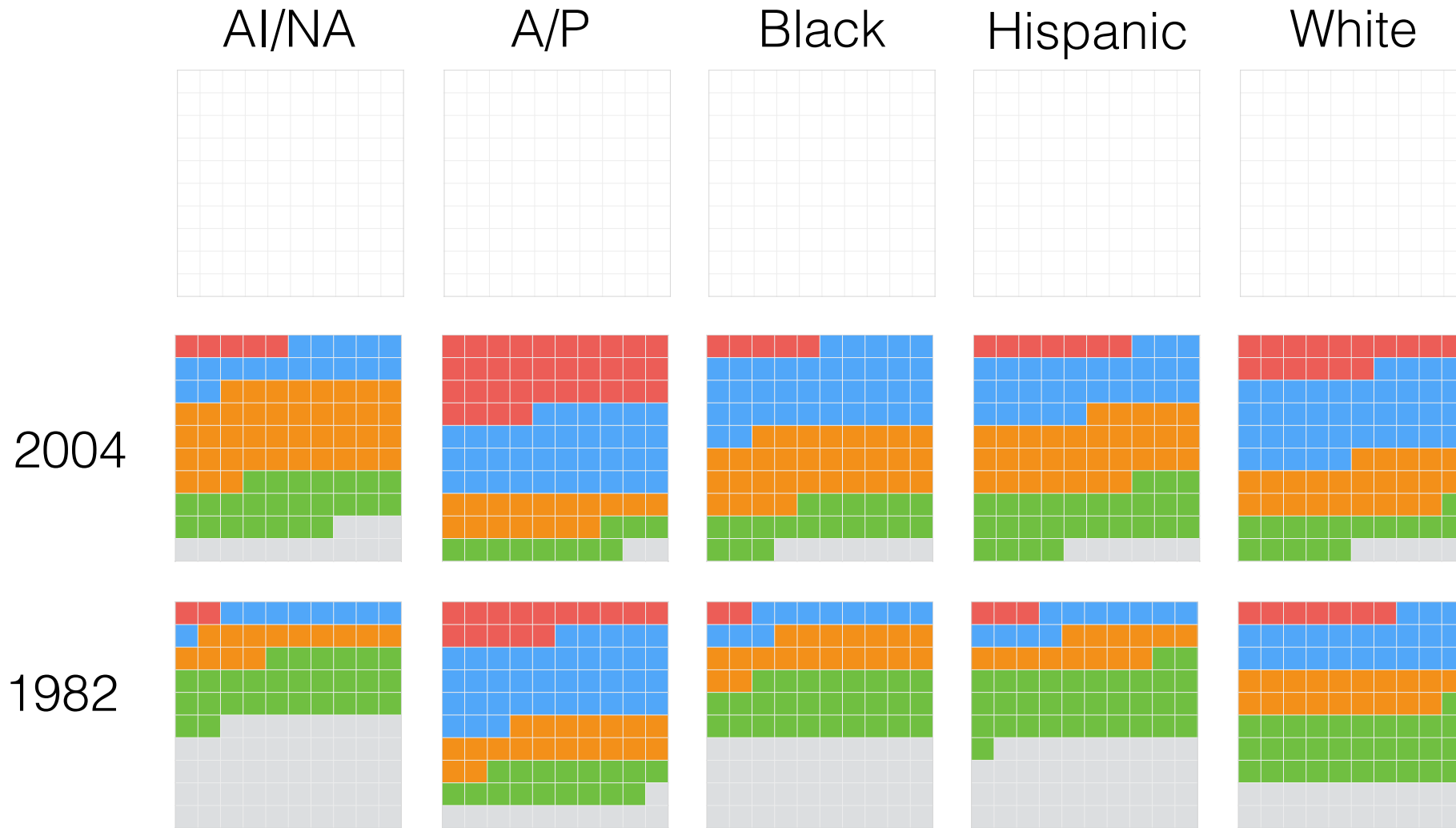
Try It!

Using *Gutierrez's* definition of equity, what would the grids look like in an equitable world?





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Questions to Consider

How did you color your graph(s)?

Why did your group choose to color your graphs the way you did?

What commonalities exist between graphs? Differences?

How does reasoning/justification factor into this activity?

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What is the role of envisioning an equitable future in preparing teachers of mathematics?

Pictures of grid coloring

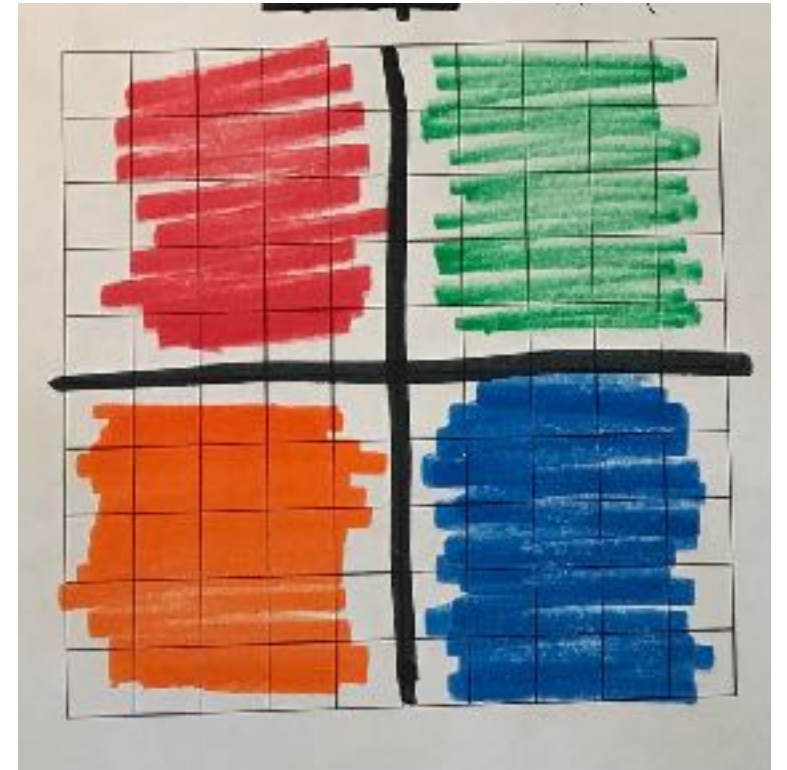
Pictures of grid coloring



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Pictures of grid coloring



What Comes Next...

Teachers Matter

Series of Centers that examines the role of the teacher through selected readings, data selections, and their own MatHistory.

What Now

Jig Saw Activity that explores teaching with, for, and about social justice.

Initial Findings

Focus coding of interviews on what was “learned” as a result of engaging in the module

Code examples:

Learned difference between equity and equality

Learned to have the same high standards for all students

Learned that inequity exists in school/math education

Learned that how I teach needs to match how students learn

Other themes that emerged

“I’ll Try”

Contradictory language

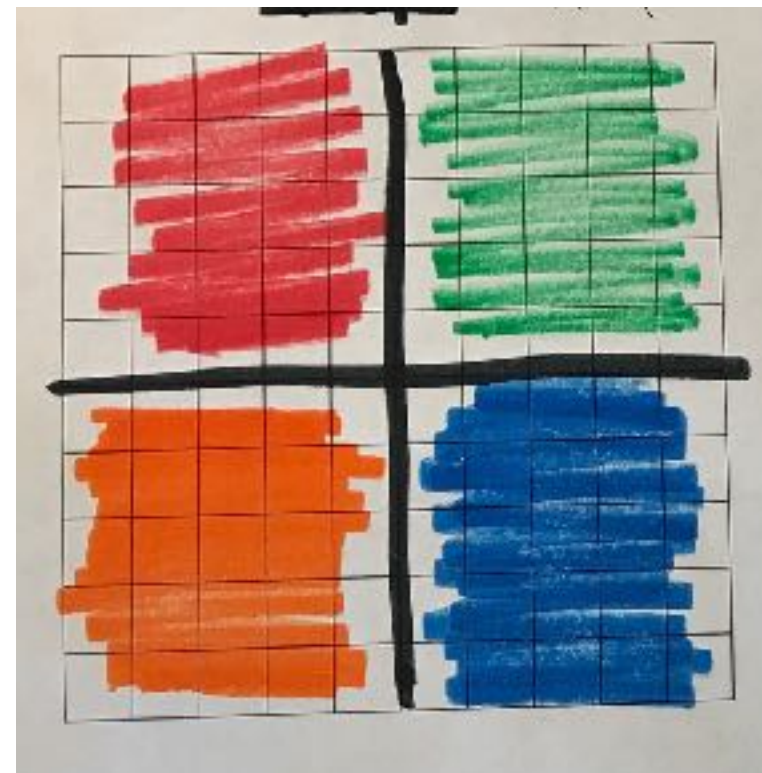
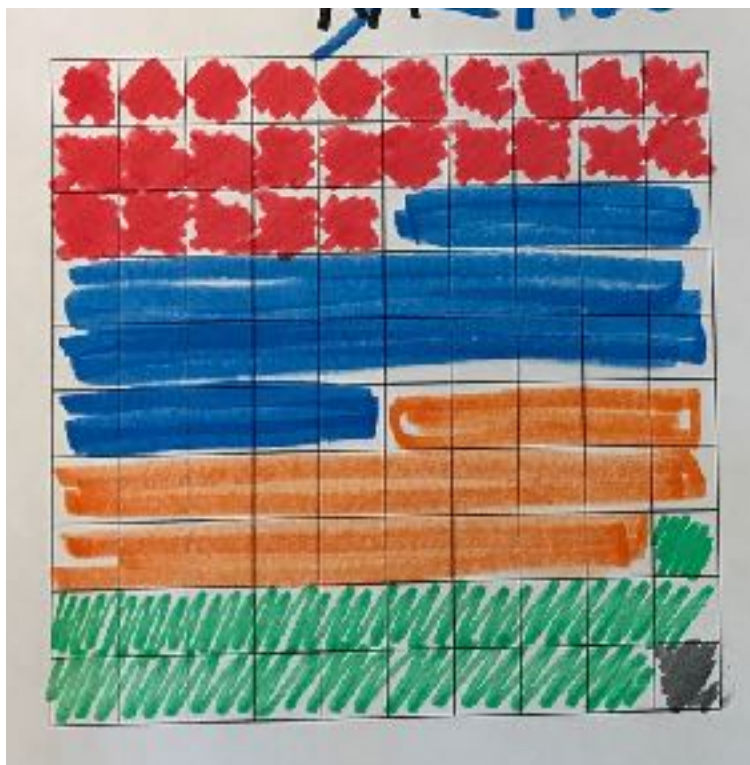
Equity = Differentiation/Personalization (easier for PSTs to talk about differences in learning rather than address issues of race/ethnicity)

Next Steps

The results from this study will provide empirical evidence that will measure the extent to which participation with an equity-focused mathematics methods learning module impacts elementary prospective teachers' beliefs about issues of equity in mathematics teaching and learning.

We intend to develop a network of like minded MTEs some of which may be recruited as collaborators for an edited book of social justice mathematics lesson designed specifically for MTEs aimed to transform their PSTs to become agents of change.

Questions?



Thank you!

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