Plenary Presentation: 2017.03.17.0830.White

Notetaker Name: Brandy Wiegers Email/Phone:brandy.wiegers@cwu.edu / 530-220-0324

Speaker's Name:

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Talk Title:

Turning Conversations into Actions: Addressing Inequities in Mathematics Classrooms

Date:	03/17/2017	**Time**:	08:30 - 10:30	am

Materials:

- Presentation slides (pdf)
- Detailed notes from notetaker (pdf)
- Tracking_Simulation_LessonPlan-DYWhite (.docx)
- Group C Tracking Handout.pdf

List 6-12 key words for the talk:

Equity, Tracking, pre-service teachers, courageous conversations, genuine equity work.

Please summarize the lecture in 5 or fewer sentences:

This talk started with a group tracking activity where the conference participants were separated and asked to complete art history tasks. The post activity discussion includes must insight including connections to the presumptions our pre service teachers bring into their classrooms. From there the speaker guided the community through a discussion of her tracking dilemma, sharing the resource White helped create - leaving us with specific actions to get started in genuine equity work including courageous conversations.

Turning Conversations into Actions:

Addressing Inequities in Mathematics Classrooms

Dr. Dorothy Y. White, University of Georgia

March 17, 2017

Overview

- Inequities in Mathematics Classrooms
  - Tracking Simulation
  - Tracking in Mathematics Education
  - My Tracking Dilemma
- Difficulties in Addressing Inequities
- Actions to Improve Mathematics Education
- Questions & Wonderings

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Inequities in Mathematics Classrooms

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Equality vs. Equity

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Overview of Tracking

- Tracking or ability group is "the practice of evaluating and sorting students into categories for the purpose of providing differential instruction within or across classrooms." (Worthy, 2010, p. 273)
- Tracking is popular in many countries with tracked classses in the US taking the form of between-class grouping where students are placed in high, average, and low-ability classes. (Ansalone, 2010)

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Overview of Tracking

"By 1920, northeastern cities were experiencing a population explosion, mainly consisting of poor, uneducated, and unskilled immigrants from eastern and southern Europe and job-seeking rural youth, later joined by persons of color as southern African-Americans sought employment in the north and Puerto Ricans migrated to their new country of citizenship.

In response to the sudden need to educate unprecedented numbers of students from, diverse backgrounds, most cities formed comprehensive schools, which separated students into college preparation and vocational tracks, presumably because of their distinct needs and abilities."

(Worthy, 2010, p. 273)

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Overview of Tracking

"Some educators at the time advanced the rationale that the new schools would be the most efficient way to prepare citizens for the industrialized economy, while others asserted that tracking was a form of equal education opportunity designed to meet students' needs, abilities, and interests, which were openly seen as being based on race, ethnicity, and socioeconomic background. Not surprisingly, the children of immigrants and the poor were more likely to follow a vocational curriculum, which was called the ''basic'' track, while their middle class, mostly white peers were targeted for college preparation in either the ''regular'' or ''honor' 'track."

(Worthy, 2010, p. 273)

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A Tracking Simulation

(Adapted from a lesson by Patricia S. Wilson)

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Diagnostic Test

- Clear your desk and have one sheet of clean paper.
- Wait until I say start and you will have exactly 4 minutes.
- At the end of 4 minutes, stop wherever you are and pass your paper forward.

Sketch the following

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Instruction

Based on your sketches, you will work in 3 groups:

- Group A: Work to my Right
- Group B: Middle of the Room
- Group C: Work on my Left

You will have 7 minutes to work in your groups.

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Examination

1. List the names of three artists

2. Compare the work of Renoir and Matisse. Be specific and discuss style as well as topic.

3. Discuss the work of Pal Merse in terms of another artist of your choice. Note the details that you liked or did not like about his work.

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Simulation Discussion

- How did you feel?
- What were you thinking during the diagnostic test?
- What happened in your group during "instruction"?

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Group C
Explore & Discuss

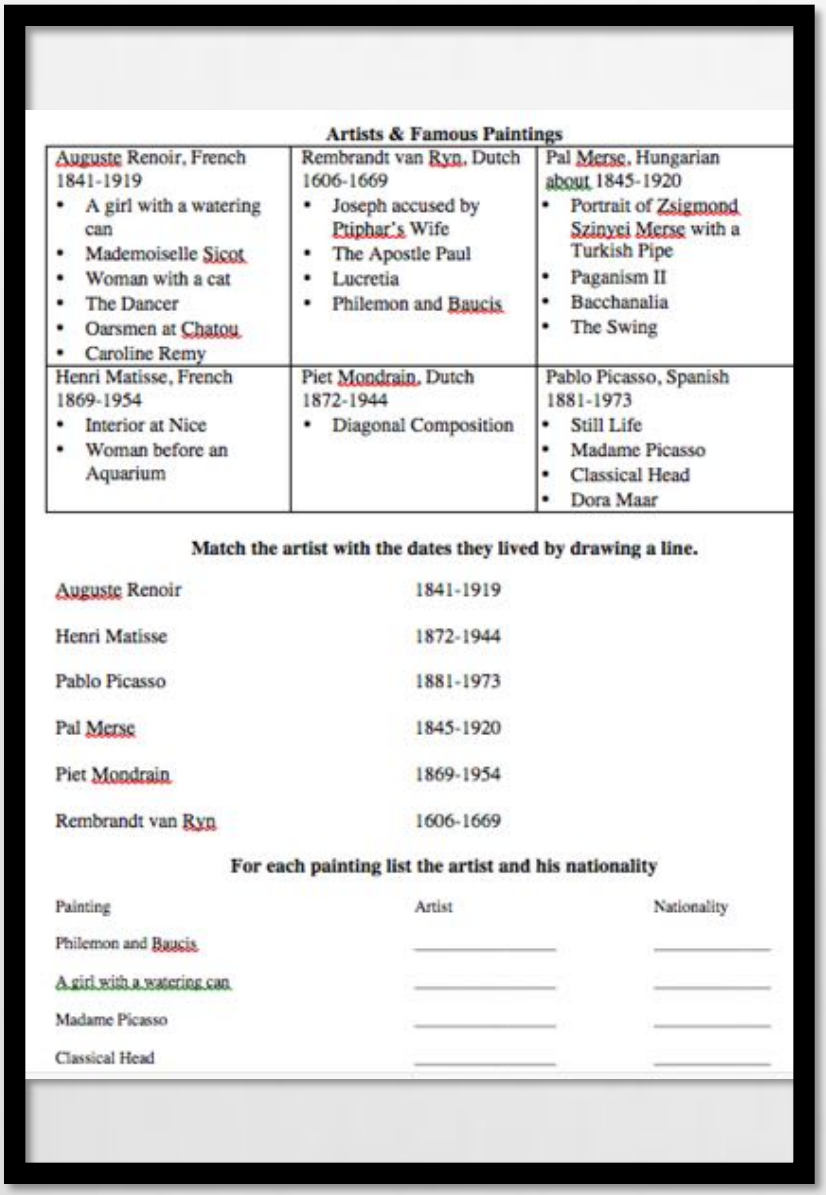
Pierre Auguste Renoir

1841-1919

France

- Impressionist movement- represent first impression of object upon viewer
- Characterized by richness of feeling and warmth of response to people and the world

A Girl with a Watering Can



Artists & Famous Paintings

Auguste Renoir, French 1841-1919 • A girl with a watering can • Mademoiselle Sicot • Woman with a cat • The Dancer • Oarsmen at Chatou • Caroline Remy	Rembrandt van Ryn, Dutch 1606-1669 • Joseph accused by Ptiphar's Wife • The Apostle Paul • Lucretia • Philemon and Baucis	Pal Merse, Hungarian about 1845-1920 • Portrait of Zsigmond Szinyei Merse with a Turkish Pipe • Paganism II • Bacchanalia • The Swing
Henri Matisse, French 1869-1954 • Interior at Nice • Woman before an Aquarium	Piet Mondrain, Dutch 1872-1944 • Diagonal Composition	Pablo Picasso, Spanish 1881-1973 • Still Life • Madame Picasso • Classical Head • Dora Maar

Match the artist with the dates they lived by drawing a line.

Auguste Renoir	1841-1919
Henri Matisse	1872-1944
Pablo Picasso	1881-1973
Pal Merse	1845-1920
Piet Mondrain	1869-1954
Rembrandt van Ryn	1606-1669

For each painting list the artist and his nationality

Painting	Artist	Nationality
Philemon and Baucis	_____	_____
A girl with a watering can	_____	_____
Madame Picasso	_____	_____
Classical Head	_____	_____

Group B

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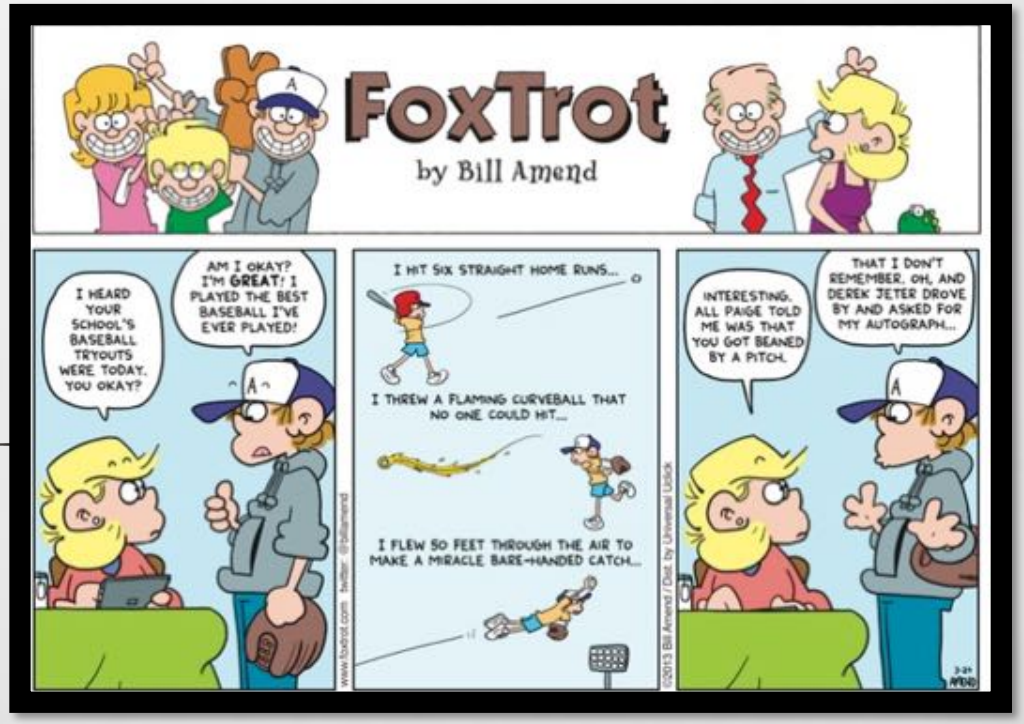
WELL, YOUR HAIRCUT IS A BIG IMPROVEMENT.
YOU LIKE WHAT IT SAYS ON THE BACK OF MY HEAD?
WHAT WHAT SAYS?
DIDN'T THE BARBER SHAVE, "I MAY HAVE A BAD HAIRCUT, BUT YOU'RE DOWNRIGHT UGLY," BACK THERE?!
GOOD HEAVENS, NO!
OK, CHARLIE, GIMME BACK THAT TIP!
Big Nate by Lincoln Peirce

Group A


FoxTrot
by Bill Amend
I HEARD YOUR SCHOOL'S BASEBALL TRYOUTS WERE TODAY. YOU OKAY?
AM I OKAY? I'M GREAT! I PLAYED THE BEST BASEBALL I'VE EVER PLAYED!
I HIT SIX STRAIGHT HOME RUNS...
I THREW A FLAMING CURVEBALL THAT NO ONE COULD HIT...
I FLEW SO FEET THROUGH THE AIR TO MAKE A MIRACLE BARE-HANDED CATCH...
INTERESTING. ALL PAIGE TOLD ME WAS THAT YOU GOT BEANED BY A PITCH.
THAT I DON'T REMEMBER. OH, AND DEREK JETER DROVE BY AND ASKED FOR MY AUTOGRAPH...

Simulation Discussion

- What were you thinking during the exam?
- What are the parallels in real mathematics classrooms?
- What trends do you notice in the students enrolled in your courses?

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Overview of Tracking

Throughout the grades, race, social class, and track assignment correlate consistently-with low-income students and non-Asian minorities disproportionately enrolled in low-track academic classes and advantaged students and whites more often enrolled in the high track.

In senior highs, low-income, African-American, and Latino students are underrepresented in college-preparatory programs, and they more frequently enroll in those vocational programs that train for the lowest-level occupations. At all levels, these groups lack equal representation in programs for gifted and talented students.

(Oakes, 1992, p. 13)

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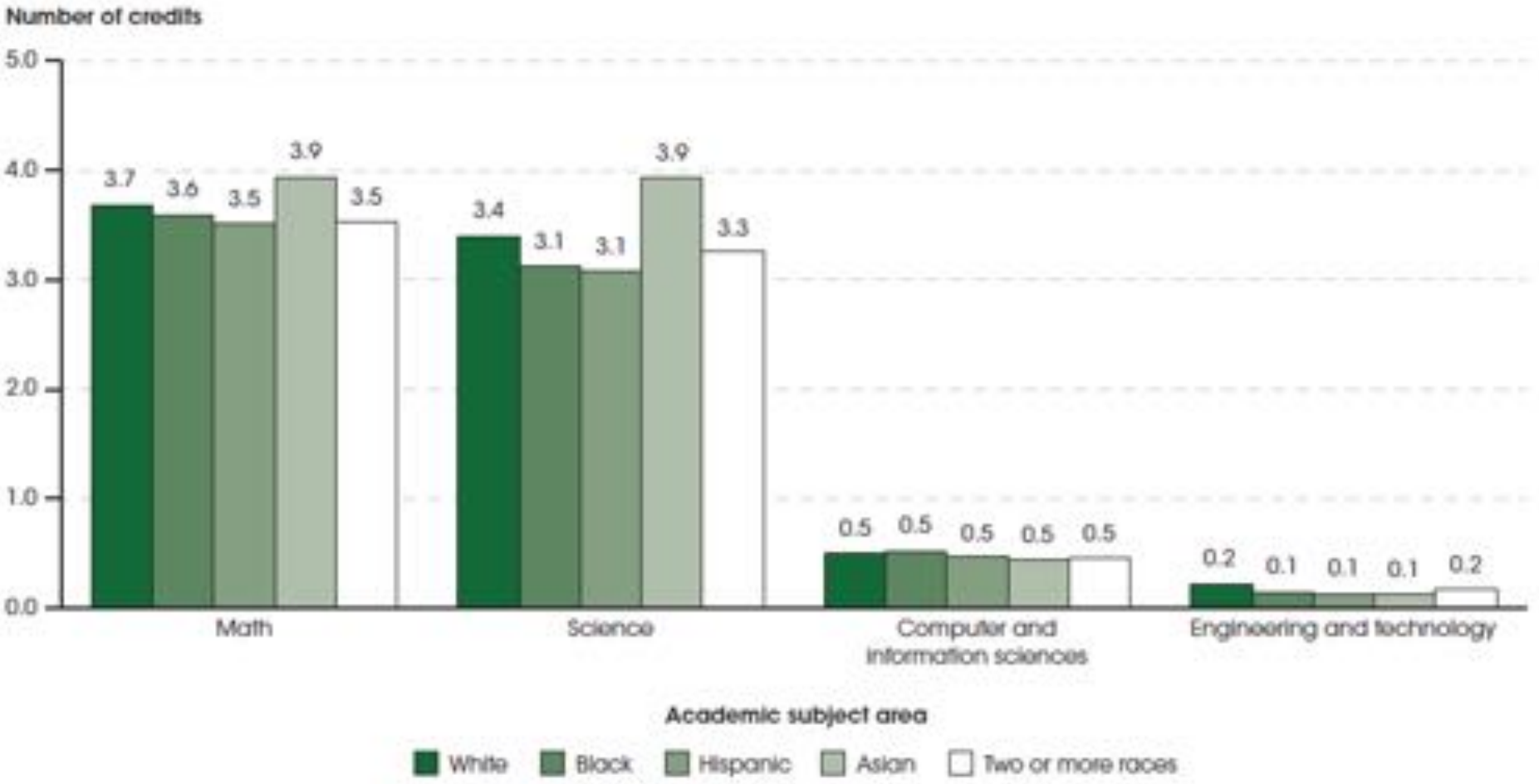
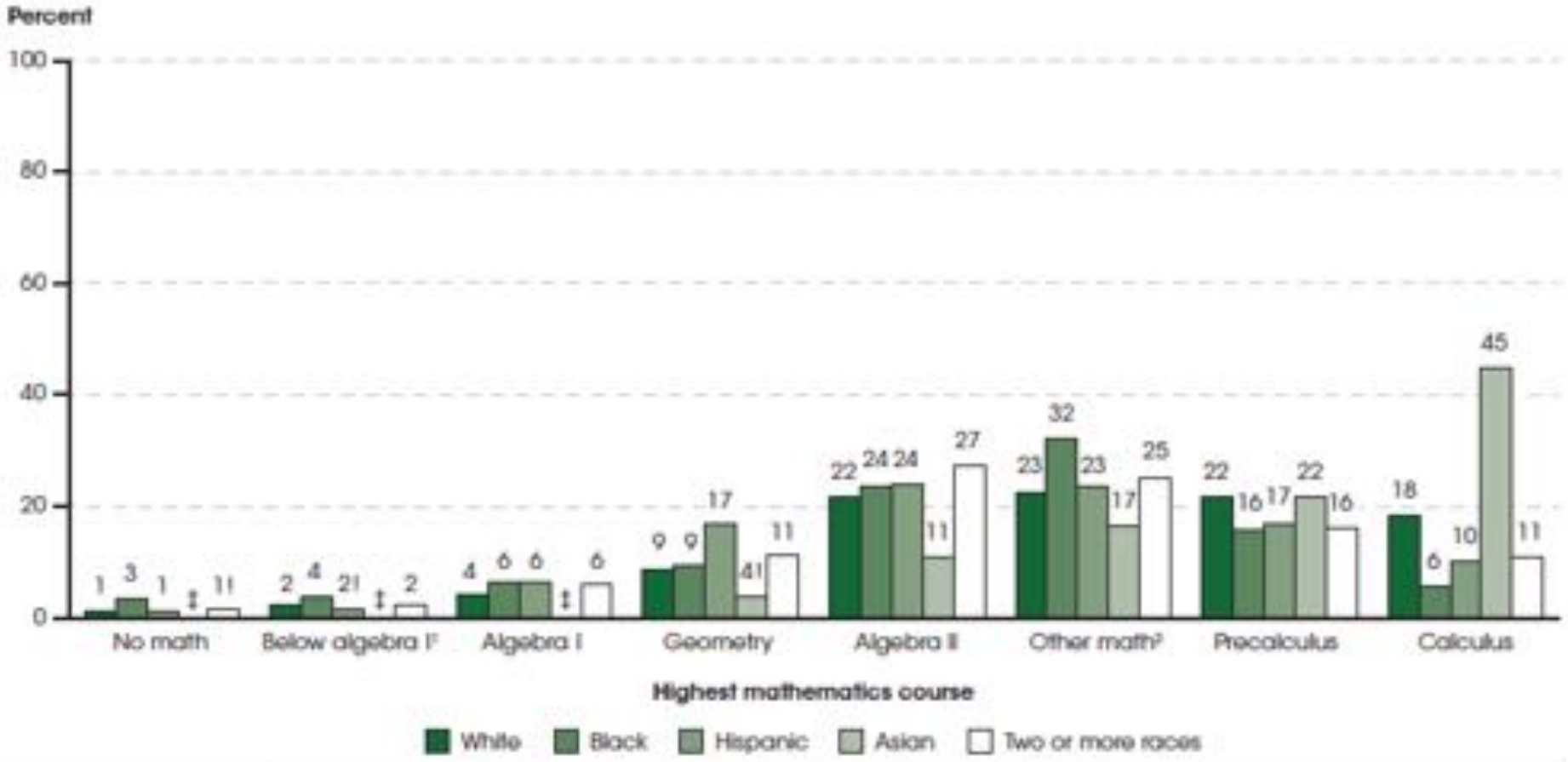
Figure 12.1. Average high school credits earned by fall 2009 ninth-graders in STEM academic subject areas, by race/ethnicity: 2013



NOTE: Race categories exclude persons of Hispanic ethnicity. Estimates include ninth-graders who dropped out or did not obtain a high school credential by 2013. STEM refers to science, technology, engineering, and mathematics.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), First Follow-up and High School Transcript Study Public-Use File.

Source: *Status and Trends in the Education of Racial and Ethnic Groups 2016* (NCES 2016-007). U.S. Department of Education, National Center for Education Statistics.

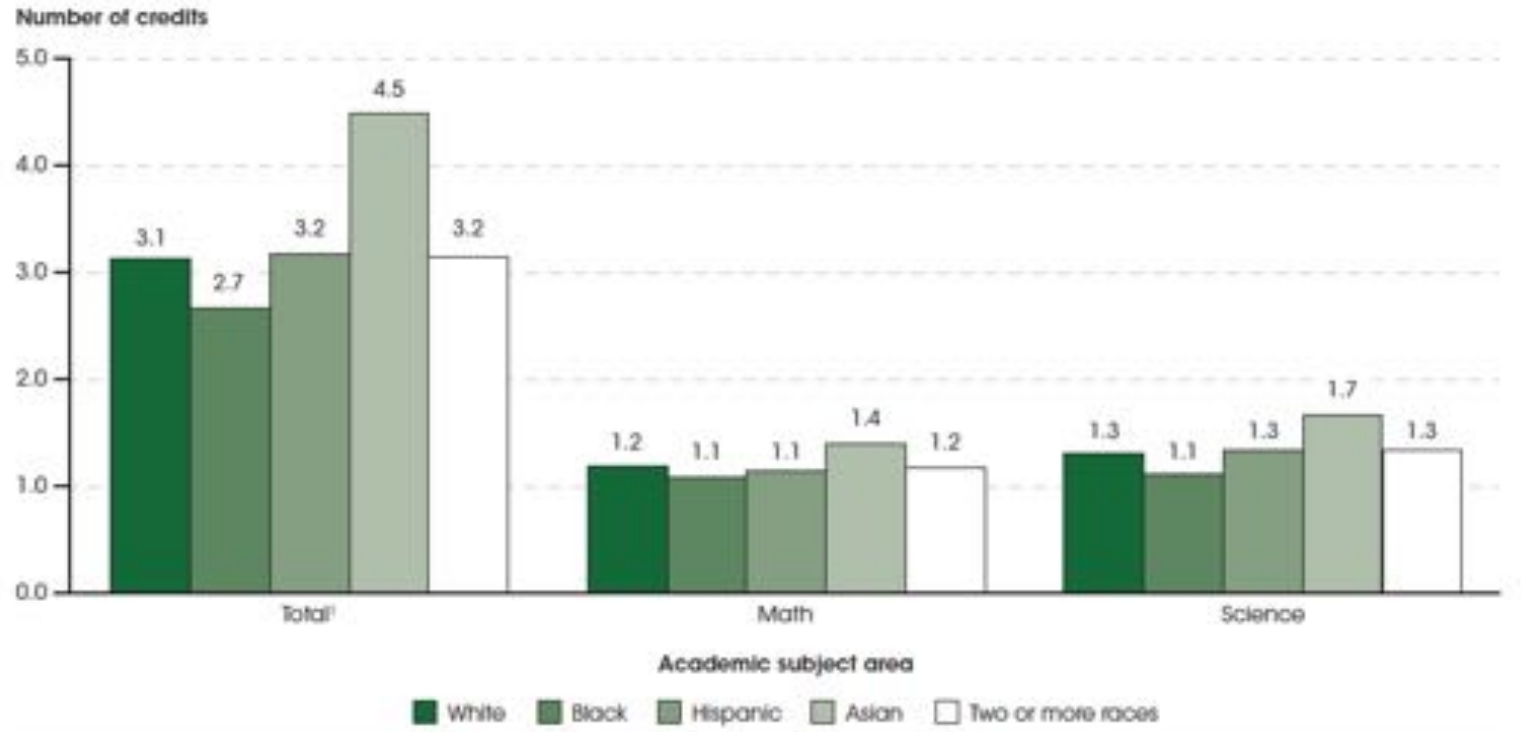
Figure 12.4. Percentage distribution of fall 2009 ninth-graders by highest mathematics course in which high school credit was earned, by race/ethnicity: 2013



! Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 and 50 percent.
‡ Reporting standards not met. The coefficient of variation (CV) for this estimate is 50 percent or greater.
² Includes basic math, applied math, other math such as history of math and mathematics–test preparation, and pre-algebra.
³ Includes integrated math, trigonometry, algebra III, probability and statistics, and noncalculus Advanced Placement (AP) or International Baccalaureate (IB) courses.
NOTE: Race categories exclude persons of Hispanic ethnicity. Estimates include ninth-graders who dropped out or did not obtain a high school credential by 2013. Details may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), First Follow-up and High School Transcript Study Public-Use File.

Source: *Status and Trends in the Education of Racial and Ethnic Groups 2016* (NCES 2016-007). U.S. Department of Education, National Center for Education Statistics.

Figure 13.2. Average high school credits earned by fall 2009 ninth-graders in Advanced Placement (AP) or International Baccalaureate (IB) courses for students who earned any AP/IB credits, by academic subject area and race/ethnicity: 2013



[1] Includes all subjects (not only math and science).
NOTE: Race categories exclude persons of Hispanic ethnicity. IB Middle Years Program courses are not included. Estimates include ninth-graders who dropped out or did not obtain a high school credential by 2013.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), First Follow-up and High School Transcript Study Public-Use File. See *HSLS:09 2013 Update and High School Transcript Study: A First Look at Fall 2009 Ninth-Graders in 2013*, table 8.

Source: *Status and Trends in the Education of Racial and Ethnic Groups 2016* (NCES 2016-007). U.S. Department of Education, National Center for Education Statistics.

My Tracking Dilemma

"Tracking in a Local Middle School: Do You See What I See?"

(White, 2016)

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- As a mathematics teacher educator, I struggled to help secondary preservice teachers (PSTs) examine how the different ways two teachers organized their classrooms, assigned mathematical tasks, and allocated class time and space resulted in differential learning opportunities for students across race and perceived academic ability.

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Context

- The second of three mathematics pedagogy courses in our teacher education program and focuses on assessment and equity.
- Math Middle enrolls approximately 575 students in Grades 6–8 with a student population of 53% Black, 30% White, and 9% Hispanic with 60% free or reduced lunch.
- Provided PSTs with opportunities to learn about students' mathematical thinking as they worked with small groups of 3–4 students.

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Two 7th Grade Teachers

Ms. Bond

- 14 students with about 80% White and 20% Black.
- Desks arranged in clusters of 4 so each student sat across from someone.
- Lesson began the lesson with Powerpoint slides she designed followed by many real-world examples on the Smartboard to motivate her students.
- Although teacher-led, the students engaged in problem-solving activities and used manipulatives.

Ms. Miller

- 30 students, with 90% Black and 10% White students.
- Students' desks paired and arranged in rows.
- Ms. Miller was lively and started each class with 4–5 warm-up problems posted on the board for students to copy and solve.
- As students worked, Ms. Miller went around the class and told each student that she loved them and expected them to say it back to her.

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Ms. Miller

- She went over the warm-up problems. If students solved the problem correctly, she praised them or gave them a treat.
- Students given a worksheet of problems to solve, but due to the arrangement of the desks, she could never get around to the back of the class.
- Many of the students did not hear the directions and began to talk and disengage. As the noise level increased, Ms. Miller turned off the lights "to calm everyone down."

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PSTs' Final Reflection

- Ms. Miller was described by the PSTs as
  - Energetic, caring, and engaging (something they wanted to emulate).
  - Telling each student she loved them was a good way to establish a relationship with them.
  - Interestingly, they found the desk arrangement as a way all students could see the board, but some also mentioned that it limited the teachers' ability to get around to each student and did not support students' working together.
  - They also liked how she accepted all students' answers and praised them after they answered questions.

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PSTs' Final Reflection

- Ms. Miller's class was most often described as
  - Chaotic, rushed, and with no classroom norms.
  - Worksheet tasks were not group worthy and why students were off task.
  - Half of the PSTs blamed the students for Ms. Miller's classroom practices because they talked too much about non-math things, did not pay attention, lacked interest or motivation, and had behavior problems with each other.
- In contrast, students from Ms. Bond's room were described as motivated, smart, calm, not too noisy, and worked well together.

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Dilemmas in Addressing Inequities

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Dilemmas in Addressing Inequities

Lack of Knowledge	Schools, Mathematics, Pedagogy, Lived Experiences of Others
Lack of Self Awareness	Personal Mathematics Education, Privileges, Biases, Stereotypes
Lack of Training	Coursework, Professional Development, Mentoring

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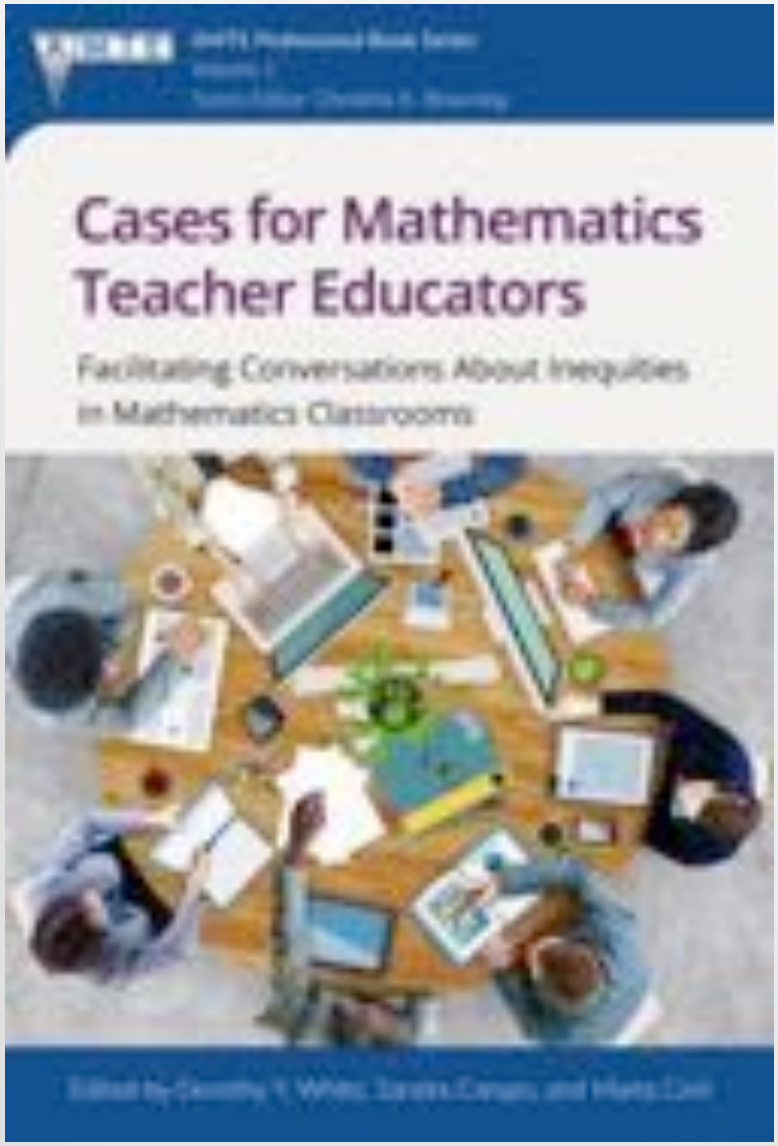

Lack of Resources

A growing number of MTEs are explicitly foregrounding equity in their research and teaching.

Serves as a resource for mathematics teacher educators to engage prospective teachers, practicing teachers, and future teacher educators in discussions about inequities, privilege, and oppression in society, in schools, and in the mathematics classroom.

Opens conversations within and across mathematics teacher education communities to work to identify and face the inequities that we want to challenge and change.

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Organization of the Book

87 authors…

- diverse and represent a variety of personal and educational backgrounds
- work in a variety of contexts and educational settings.
- share their experiences, challenges, and wonderings.

1. Conversations About Inequities in Mathematics Methods Courses:
    a. Section Editors: *Imani Goffney & Sandra Crespo*
    b. Introduction and 8 chapters
2. Conversations About Inequities Mathematics Content Courses:
    a. Section Editors: *Matt Felton-Koestler & Marta Civil*
    b. Introduction and 5 chapters
3. Conversations About Inequities in Graduate and Professional Development Contexts:
    a. Section Editors: *Joi Spencer & Dorothy Y. White*
    b. Introduction and 6 chapters

Each chapter

Each chapter includes:

- Case
  - Context for the case
  - Equity-related dilemma from their practice
  - Responses and Reflections
- 3 Corresponding Commentaries
  - Positionality
  - Interpretation of the dilemma
  - How they would handle the dilemma

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"This is nice but they need to learn to do things the US way" (Civil, 2017)

The case is situated in a content course for preservice elementary teachers.

Typical from these courses is the discussion of different algorithms for arithmetic operations.

In this case, students were asked to read an article by Perkins and Flores (2002) on notation and different algorithms that immigrant students may bring with them.

The dilemma emerges from a comment by one of the preservice teachers, "this is nice, but they need to do things the U.S. way"

The case discusses valorization of knowledge and gives further elaboration on this topic through later work with mothers of Mexican origin and their reactions to the "standard" division algorithm in the U.S.

The three commentaries that follow provide different perspectives on the case. In her commentary, the late Bia D'Ambrosio reflects on her own experience with the algorithm for division when she moved back to Brazil in 7th grade after having been schooled in the U.S. From a very personal account she moves to her concern that the Common Core State Standards may be sending the message of the need to teach the U.S. standard algorithm

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In her commentary, Eileen Murray brings up the notion of teachers' noticing and emphasizes the role of the teacher as a listener of students' thinking. She also reflects on the importance to support preservice teachers in "attending to their multicultural mathematics dispositions" (Murray, 2016, p. 235)

Randy Philipp also comments on the need for preservice teachers to understand and build on children's thinking. He then offers four possible views that preservice teachers may have as they try to make sense of why we would want them to learn about different algorithms. He uses these four views to give a glimpse of how he would address the discussion with preservice teachers.

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Actions to Improve Mathematics Education

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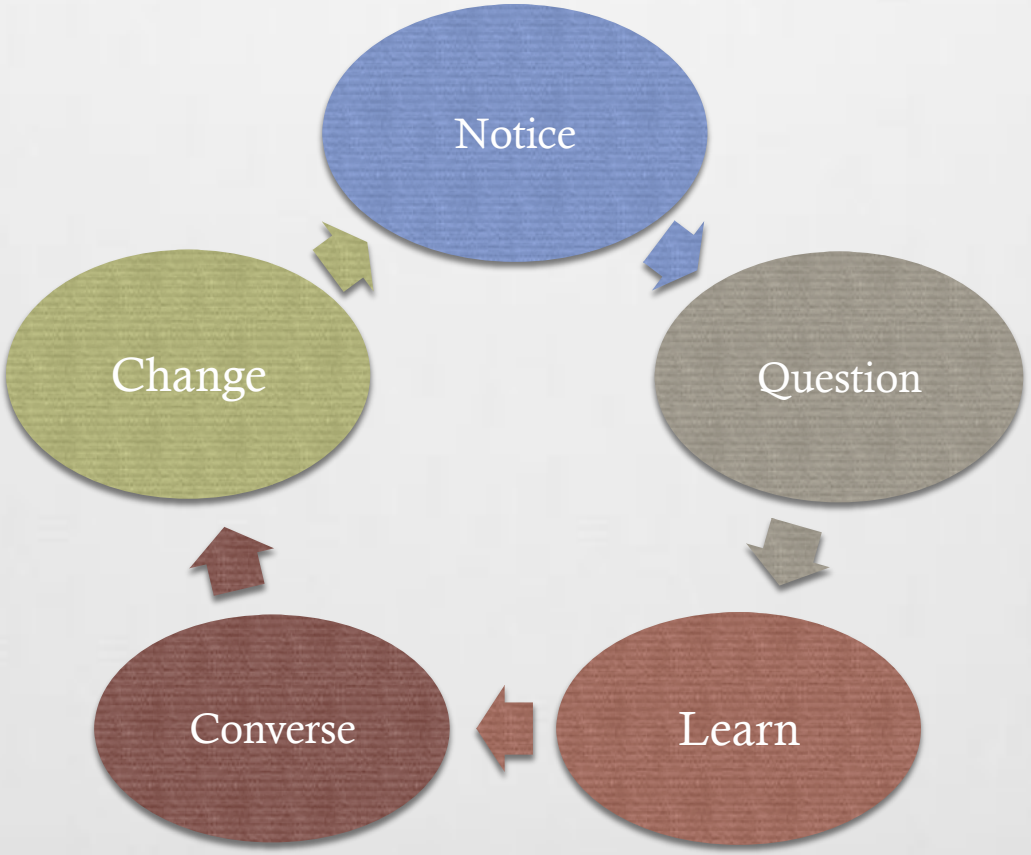
Actions



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Engage in Courageous Conversations

- We must make changes in informed and strategic ways, not on our own but with trusted colleagues.
- Singleton & Hays (2008) "strategy for breaking down racial tensions and raising racism as a topic of discussion that allows those who possess knowledge on particular topics to have the opportunity to share it, and those who do not have the knowledge to learn and grow from the experience" (p. 18).
- In this book we extend the notion of courageous conversation to all contexts of inequity that MTEs may have to confront.

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Courageous Conversations

Four Agreements of Courageous Conversations*:*

- Stay Engaged
- Expect to Experience Discomfort
- Speak your Truth
- Expect and Accept a Lack of Closure

(Singleton and Hays, 2008, p. 22)

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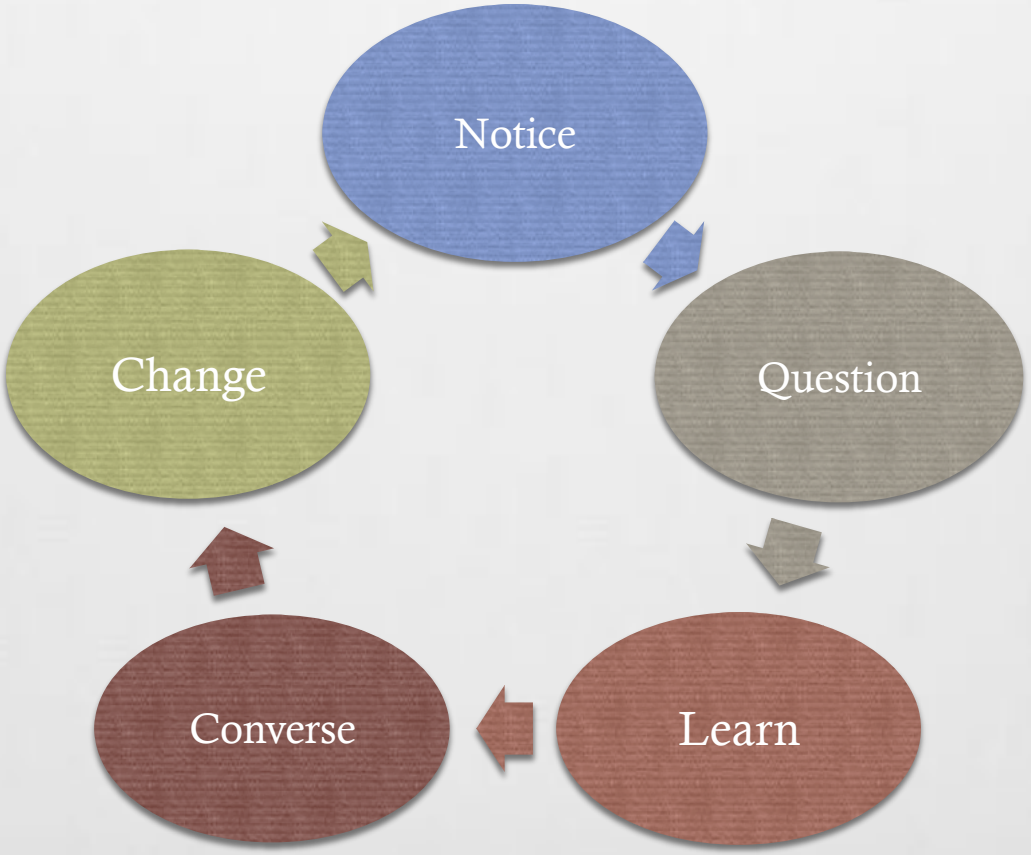

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Actions and Activities to Get Started in Genuine Equity Work

NCTM Research Committee, JRME, 2017

- Stop using deficit-oriented language in mathematics education work, and help educate others.
- Deepen one's professional knowledge base and mentoring practices.
- Acknowledge and learn about the systems from which you benefit from unearned privilege.
- Read outside of mathematics education literature.
- Cite MERs from around the world.
- Engage colleagues and friends in explicitly talking about race, class, gender, and other systems of privilege and oppressions.

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Not everything that is faced can be changed,
but nothing can be changed until it is faced.

-James Baldwin

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Thank You!

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Tracking Simulation Lesson Plan

March 17, 2017

(This lesson plan was adapted from a lesson created by Patricia S. Wilson)

I. Diagnostic Test (4 min)

Sketch a potted plant or tree. (Timed event, build tension)

Directions:

- Clear desk and have one sheet of clean paper.
- Wait until I say start and you will have exactly 4 minutes.
- Pencil down. Stop where ever you are, and pass the papers forward.

Groups are actually predetermined but adjusted by "secret" criteria:

Secret criteria: Good = bold lines, big, not much detail, stylized

Weak = timid, realistic, small

Look for secret criteria and change people if relevant

Make sure on section of people are placed into Group A.

II. Work in groups (7 minutes)

Group A. Medium-sized group clustered together to seem crowded, black/white and color comic strips, and might have tangential discussion (e.g. cartoon strips, characters, funny show on TV, etc.)

Handout Directions:

Today should be fun. I think this is something you can handle and will enjoy. See if you can read the cartoons. Reflect on what you see and compare your cartoons with the person sitting next to you. When you are done just be quiet. Don't even think about acting up or I'll send you to In School Detention.

Group B. Medium-sized group, handout with list of painters and practice tasks. (very little discussion if any, memory level)

Handout Directions:

You have a lot to get done and I want you to be ready for the test. Read over the 6 artists and complete the worksheet below. If you finish early, put your head down or work on homework from another class.

Group C. Small-sized group, handout with pictures of artists and encourage students to talk each other to share their thoughts. discussion, interaction

Handout Directions:

Welcome Group A! I am glad you are in this group. You will get a lot accomplished. Read about the six artists below and talk to your neighbors about their different styles of painting. If you like, you can go online and learn more about the artists and share them with the class.

III. **College Entrance Exam/ Employment Classification Test. (10 min)**

List artists

Brief paragraphs comparing artistic work (Renoir and Matisse).

Discuss the work of Pal Merse.

IV. **Discussion** on how this exaggerated simulation reflects actual practice.

How did you feel?

What were you thinking during the diagnostic test?

What happened in your group during "instruction"?

What were you thinking during the exam?

What are the parallels in real mathematics classrooms?

What trends do you notice in the students enrolled in your courses?

GROUP B: You have a lot to get done and I want you to be ready for the test. Read over the 6 artists and complete the worksheets below. If you finish early, put your head down or work on homework from another class.

Artists & Famous Paintings

Auguste Renoir, French 1841-1919 • A girl with a watering can • Mademoiselle Sicot • Woman with a cat • The Dancer • Oarsmen at Chatou • Caroline Remy • Pont Neuf	Rembrandt van Ryn, Dutch 1606-1669 • Joseph accused by Ptiphar's Wife • The Apostle Paul • Lucretia • Philemon and Baucis	Pal Merse, Hungarian about 1845-1920 • Portrait of Zsigmond Szinyei Merse with a Turkish Pipe • Paganism II • Bacchanalia • Mother & Child, Version I • The Swing
Henri Matisse, French 1869-1954 • Interior at Nice • Woman before an Aquarium	Piet Mondrain, Dutch 1872-1944 • Diagonal Composition	Pablo Picasso, Spanish 1881-1973 • Still Life • Madame Picasso • Classical Head • Dora Maar

Match the artist with the dates they lived by drawing a line.

Auguste Renoir	1841-1919
Henri Matisse	1872-1944
Pablo Picasso	1881-1973
Pal Merse	1845-1920
Piet Mondrain	1869-1954
Rembrandt van Ryn	1606-1669

For each painting list the artist and his nationality

Painting	Artist	Nationality
Philemon and Baucis	_____	_____
A girl with a watering can	_____	_____
Madame Picasso	_____	_____
Cassical Head	_____	_____

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3/15/17

Welcome Group C! I am glad you are in this group. You will get a lot accomplished. Read about the six artists below and talk to your neighbors about their different styles of painting. If you like, you can go online and learn more about the artists and share them with the class.

Pierre Auguste Renoir

1841-1919

France

•Impressionist movement- represent first impression of object upon viewer

•Characterized by richness of feeling and warmth of response to people and the world

A Girl with a Watering Can

Rembrandt Harmenszoon van Rijn

1606-1669

Netherlands

•One of the greatest painters and printers in European art and Dutch history

Joseph Accused by Potipher's Wife

Pál Szinyei Merse

1845-1920

Hungary

•Prominent painter from Hungary (Czechoslovakia)

•Politician- fought for modernization of art education

The Swing

Henri Matisse

1869-1954

France

•Known for use of color and fluid original draughtsmanship

•Key person in defining revolutionary developments in the plastic arts

Woman before an Aquarium

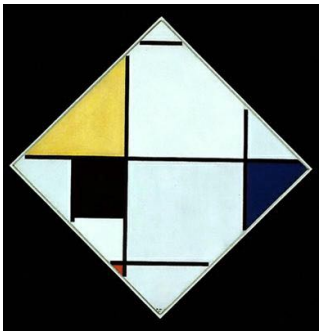
Piet Mondrain

1872-1944

Netherlands

•Important contributor to De Stijl art movement/group

•Neoplasticism- non-representational form



Diagonal Composition

Pablo Picasso

1881-1973

Spain

•Spanish painter, sculptor, printmaker, ceramicist, stage designer

•Adult life in France

•Co-founded Cubist movement, invented constructed sculpture, co-invented collage

Classical Head

Detailed Notes of Plenary Presentation: 2017.03.17.0830.White

Turning Conversations into Actions: Addressing Inequities in Mathematics Classrooms

White's goal is engage you in discussion about inequities in math classrooms, creating an Interactive session to build off the great presentations we've heard so far, in hopes that you will think about this differently than you have before.

Overview of the presentation:

- Inequities in Mathematics Classrooms
    - Tracking Simulation - engage you in a tracking simulation, be prepared to move.
    - Tracking in Mathematics Education
    - My Tracking Dilemma - wrote about in the book (D. Y. White & J. S. Spitzer (Eds.), Mathematics for every student: Responding to diversity, grades PreK -5 (pp. 23-41). Reston, VA: National Council of Teachers of Mathematics.).
- Difficulties in Addressing Inequities - There are a lot of things that we want to do but if we aren't aware of the challenges we may not be successful
- Actions to Improve Mathematics Education
- Questions & Wonderings

Start by getting everyone the needed supplies: a blank piece of paper and pen.

We're also going to laugh at ourselves. This is hard stuff, if we can't laugh at ourselves then we're taking ourselves too seriously. Join White in the conversation, turning conversations into actions. To do that we need to define terms, so we don't talk past each other.

Inequities in mathematics classrooms

In mathematics we need to define terms. Let's define the difference between equality and equity like we're in a 6th grade or pre-K classroom.

- Equality - everyone gets a pair of shoes (quantitative, equal)
- Equity - everyone gets a pair of shoes that fit (fairness and justice, injustices as well)

There is a difference in thinking about them. To talk about inequity you need to know what equality is.

Tracking: Tracking or ability group is "the practice of evaluating and sorting students into categories for the purpose of providing differential instruction within or across classrooms." (Worthy, 2010, p. 273). There is tracking that takes place across classrooms where students are sorted into different classes. There are also in-class tracking where students are placed in high, average, and low-ability groups. The problem with that is that there is always a lowest group. So while people believe that there are benefits to this grouping, there are always consequences.

Tracking is popular in most countries, it is not unique to US. In the US, we typically do between-class groupings where students are placed in high, average, and low-ability groups, resulting in some issues most especially for some students in gifted and special education classrooms.

When implementing tracking, students are often sorted based on some evaluation and the purpose is to differentiate instruction. There are good goals but it may not be working for all students.

When did tracking come to our educational system?

Tracking showed up around 1920s when northeastern cities where they had an influx of poor, uneducated immigrants:

"By 1920, northeastern cities were experiencing a population explosion, mainly consisting of poor, uneducated, and unskilled immigrants from eastern and southern Europe and job-seeking rural youth, later joined by persons of color as southern African-Americans sought employment in the north and Puerto Ricans migrated to their new country of citizenship.

In response to the sudden need to educate unprecedented numbers of students from, diverse backgrounds, most cities formed (two tracks) *comprehensive schools, which separated students into college preparation and vocational tracks, presumably because of their distinct needs and abilities.*

Some educators at the time advanced the rationale that the new schools would be the most efficient way to prepare citizens for the industrialized economy, while others asserted that tracking was a form of equal education opportunity designed to meet students' needs, abilities, and interests, which were openly seen as being based on race, ethnicity, and socioeconomic background. Not surprisingly, the children of immigrants and the poor were more likely to follow a vocational curriculum, which was called the "basic" track, while their middle class, mostly white peers were targeted for college preparation in either the "regular" or "honor' 'track."
(Worthy, 2010, p. 273)

The students in the vocational tracks had their destinies set for them, without asking them what their destinies were.

Q: This is pre-integrated school. Was there tracking schools for black african americans?

A: no. This was in northern,urban cities. In the south there was still Jim Crow laws, they were segregated (1954 was Brown v Board decision). Most integration was in the 70's. In the south, new schools started popping up to avoid being integrated - mainly private/parochial schools. The schools weren't separated with the tracking because there was a lot of one room school houses.

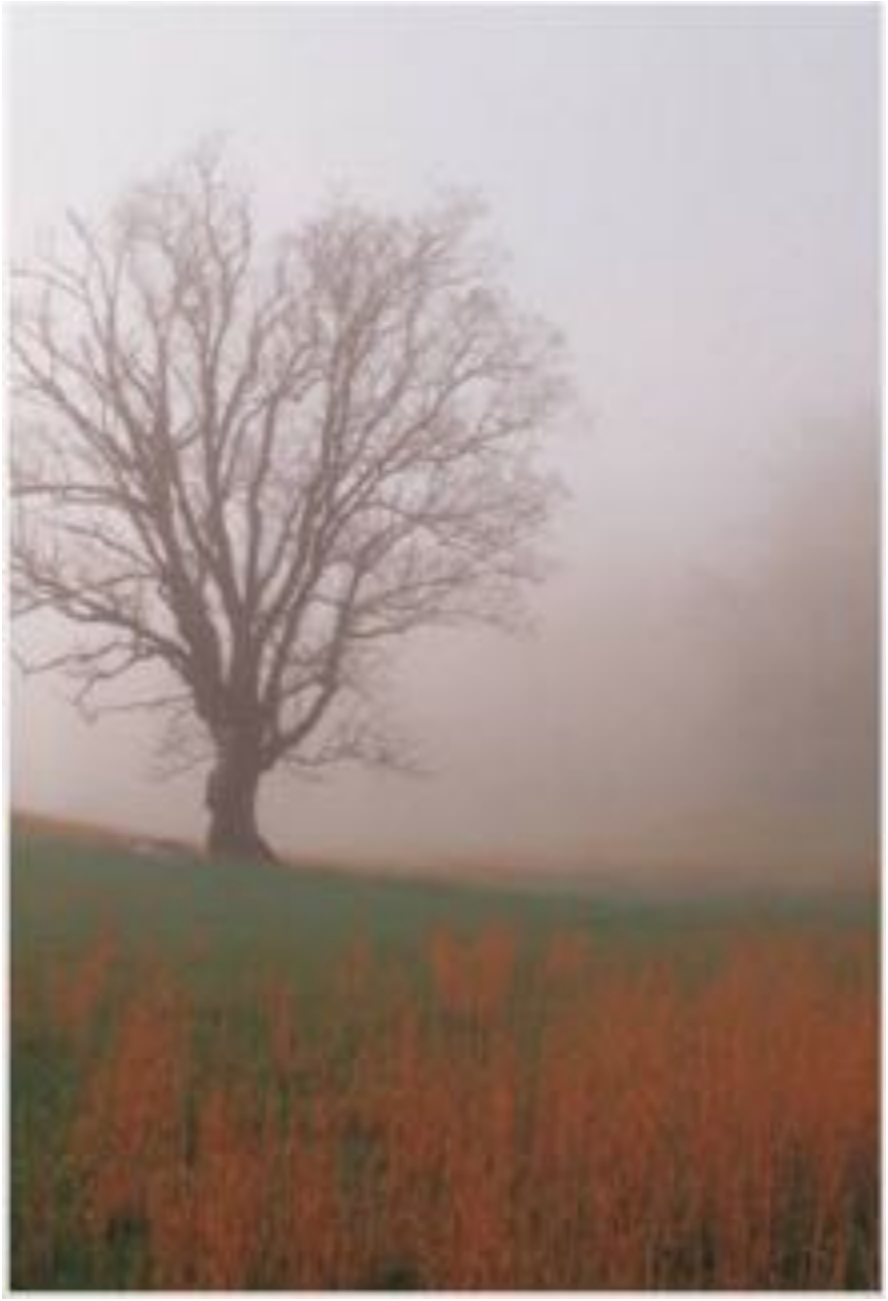
Tracking simulation(Adapted from a lesson by Patricia S. Wilson)

Instructions:

- Clean your desk and have one sheet of clean paper.
- Wait until I say start and you will have exactly 4 minutes.
- At the end of 4 minutes, stop wherever you are and pass your paper forward.

(This might have given you a flashback from earlier classroom life).

Assessment is to sketch the following in the 4 minutes.



During the diagnostic White announced time remaining.
After the time was done the drawings were collected the groups were separated into three groups. Each group then received different instruction to fit needs in order to prepare for the exam:

- Group A: Work to my Right- These students were selected based on their “neighborhoods”
- Group B: Middle of the Room - everyone that was left over.
- Group C: Work on my Left - These students were all called individually

Each group were given 7 minutes to review the instruction before the final exam.

<u>Students were given 5 minutes to complete the following final exam:</u>

1. List the names of three artists
2. Compare the work of Renoir and Matisse. Be specific and discuss style as well as topic.
3. Discuss the work of Pal Merse in terms of another artist of your choice. Note the details that you liked or did not like about his work.

These questions are a combination of the in-class work given to Groups B and Group C.

- Group A did not have any information that would help them with this exam.
- Group B could only do 1
- Group C had information for all.

Simulation Discussion:

How did you feel? What were you thinking during the diagnostic test?

Talk to the person next to you and then we shared as a group.

- Bewilderment. The primary feeling, was bewilderment. Confused at how this could be a device to sort anyone?

- (A-Group): Never more strongly felt a desire to act out as when I was assigned to "A-group". I think of myself as an A student, nice use of inversion of the alphabet. Our instructions were so condescending.

White: Don't tell them yet, that's the next question. You wanted to act out in the A-group?
It was very clear from instructions what my teachers were going to think of me.
I wanted to exceed their expectations in that regard.

White: Do you feel like your sketch was fairly evaluated?
I was pretty sure I was supposed to be in the C-group.

White: Were there others that felt like you should have been in the C group?
Many people raised their hands.
Comment: I am pretty sure they said my name wrong and I ended up in A because of neighborhood.

White: There was a sorting by neighborhood, if you notice by where people were sitting that was your 'neighborhood"

- Flashback to junior high and never could get the A in art.
- (C-Group) "Oh no, I'm terrible at art, this is going to go terribly." and then thinking about diagnostic test and thinking of which components I was going to be evaluated on. How is this going to be judged?
- (C-Group) Stressed about diagnostic but not during the final.

White: How did you feel when you were told how much time you had left? 3 minutes. 2 minutes.

- Relieved during the timing during the test, couldn't wait for it to be over.
- (A-Group) In contrast to Group- C I was not stressed out during diagnostic test, totally stressed out by final test. During the diagnostic test I had no sense why we're doing this, no sense for any criteria. I figured, like when I was in middle school I figured I would do what I'm told, see what happens and move on from there.
- (A-Group) Completely bewildered and no idea what I was doing on the diagnostic test, r I chose to act out a bit. I didn't take it seriously at all.
- (A-Group) I felt like even though I don't know how to draw at all I should put forth my best effort and then I felt disappointed that when the sorting happened that I didn't feel like like I was put in any group, sorta defaulted, you're in the way, move over there and sit down. I then felt like I didn't have to try at all. No matter what they're doing it's just not worth it. I don't have to bother, maybe I'll give it a shot.
- (A-Group) Bewilderment is a good word. Did my best on diagnostic and then put into A group, felt "huh", what is this?

What happened in your group during "instruction", did the diagnostic evaluate anything related to what you were doing and what you were going to be assessed on? Did you ability matter?

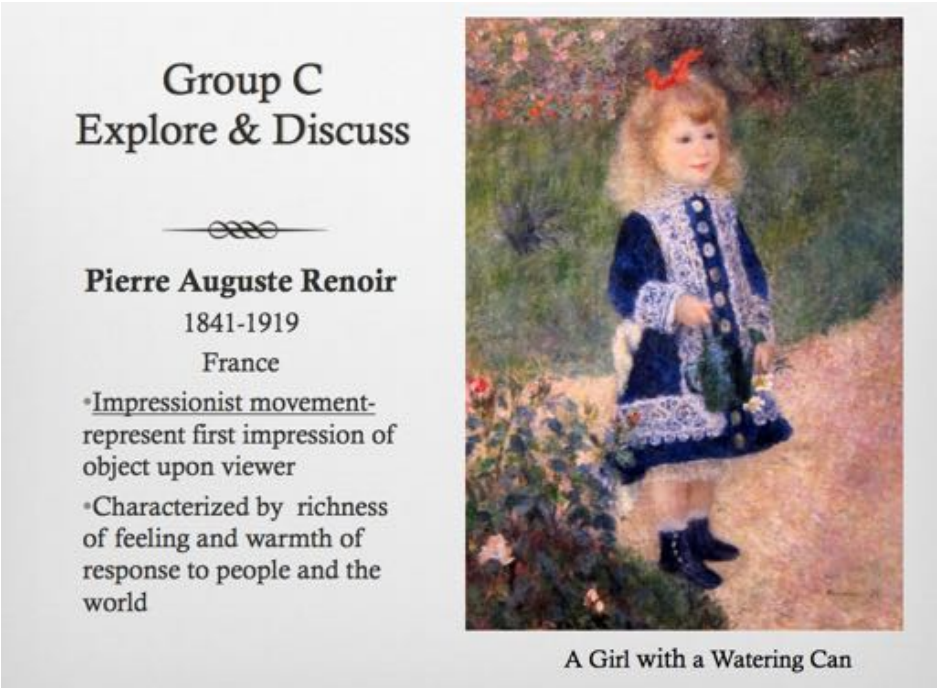
There was Three Instructional Groups

Group C- Thinkers - Could do it on their own

Instruction: The students in this group got a list of six particular artists with information (name, pictures, biography) from each. They were also allowed to go online and encouraged to explore and discuss.

- Smallest group on purpose
- They received a lot of individual attention, being called by their individual names.
- They were allowed to keep their notes and use their computer for the final exam.

Directions: Welcome to Group C. I am glad you are in this group. You will get a lot accomplished. Read about the six artists below and talk to you neighbors about their different styles of painting. If you like, you can go online and learn more about the artists and share with the class.



Experience: Overall this group was very happy - smiling, chatting.

Q: Do you feel Group C that you were prepared the the assessment at the end?

- During the instruction I was lost but once I saw the test I felt prepared, especially because I got the use my sheets.

White: In a real class you couldn't use the sheet but you would have had more time to explore and discuss.

Group B - Worker bees - You can handle doing procedural things (fill in the blanks)

Instruction: Given a worksheet with a set of artists (name, country of origin, dates, some of their famous pieces) and asked to connect the names/dates/signature art pieces.

- There wasn't enough resources for each member, everyone had to share.
- Biggest group so there was a limited number of supplies - most people in the back had 2-4 people per sheet.

Directions: You have a lot to get done and I want you to be ready for the test. Read over the six artists and complete the worksheet below. If you finish early put your head down or work on homework from another class.

Artists & Famous Paintings

Auguste Renoir, French 1841-1919 • A girl with a watering can • Mademoiselle Sicot • Woman with a cat • The Dancer • Garsonn et Chatou • Caroline Remy	Rembrandt van Ryn, Dutch 1606-1669 • Joseph accused by Potiphar's Wife • The Apostle Paul • Lucretia • Philemon and Baucis	Pal Merse, Hungarian about 1845-1920 • Portrait of Zsigmond Szinyei Merse with a Turkish Pipe • Paganism II • Bacchanalia • The Swing
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Match the artist with the dates they lived by drawing a line.

Auguste Renoir	1841-1919
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Rembrandt van Ryn	1606-1669

For each painting list the artist and his nationality

Painting	Artist	Nationality
Philemon and Baucis		
A girl with a watering can		
Madame Picasso		
Classical Head		

Experience: What are some things that you experienced or did when you were completing the instruction

- I have never been so bored in my whole life.
- When I was completing the task I felt confident, because I was able to complete it successfully. When we went to the second part (assessment) I felt there was a mis-match because I wasn't given the opportunity to think about/practice thinking about those concepts and topics the way I was asked to the assessment.
- When I did this, like a student would do, I went directly to matching/fill in blank - tried to read as little as possible and finish the worksheet.

Only one person put their head down when the rest of them finished. Most people started to talk, being bored, not talking about the worksheet.

- One student's mom called and that person was moved up to group A. Took away my partner, then I was all alone. He took the worksheet. Limited number of supplies.

Group A -

Instruction: Given a fun set of comics and asked to stay silent and stay focused.

- A -Named A and then was not the advance group, on purpose. We play these games all the time in the classroom.

- They got something that was fun: cartoons (black and white cartoon and color cartoon), not tied to the assessment.
- Subtle microaggressions: At one point someone's phone was confiscated and then their partner got in trouble.

Directions: Group A, today should be fun. I think this something that you can handle and will enjoy. See if you can read the cartoons, reflect on what you see and compare you cartoons with the person sitting next to you. When you are done just be quiet, don't even think of acting up or I'll send you to school suspension.

Big Nate by Lincoln Peirce

Experience: How did you feel when you got the assessment?

- When I read the instructions I wanted to throw spit balls.
- I tried really hard to imagine what I would have done in 1st grade, I was a student who was very aware of other people's expectations. When I saw that this had low expectations for me I loved it because that meant I could do whatever I wanted. When I got the cartoon I just goofed around and when I got the test I knew it was bs so I bs'd you back. I just tried to have fun with it with the knowledge that in the long term, later on it would have bite me in the butt but I had a good time.
- My phone got taken away for a while. Started to look up how to draw tree when we started with the cartoons and I got my phone taken away. I then noticed there were crosswords on the back of the cartoons and I started doing crosswords, punished for that… Punished for trying to learn.
- I was reading the cartoons and she got me in trouble because she made me do the crossword together.

The goal of having this shared experience is because sometimes it's hard to talk in the abstract and now that we've all experienced it we can move towards using it to think about what it means about our mathematics classrooms.

Discussion: What were you thinking during the exam?. What are the parallels in real mathematics classrooms? What trends do you notice in the students enrolled in your courses? (what tracks are they coming from?)

- Exam assessed prior knowledge from outside of classroom and not from the in-class instruction. I know a little about this, realizing that not everyone else in my class has seen these paintings before. Even if I hadn't seen those specific ones before I had seen some of their work and that gave me some of the knowledge.
- I was moved from Group B to Group C and then during the exam I was thinking about how it was unfair that in C we had pictures and in B they didn't have picture.

White: So you started thinking about those injustices in just this small example.

- I was reflecting during the exam, it's not that we weren't given resources in Group B. We were given a particular resource that wasn't particularly relevant to the exam. Then, during the exam I worried that "maybe I didn't read it well enough", this came from the illusion that we were given the appropriate resource to do the task in the final exam. This makes me think of when our students do this, when they attribute what they couldn't do to themselves rather than a lack of resources.

Q: Should students expect that what we give them actually is going to help them think and do?

- Yes, it's the implicit contract. That's a contract between parents who send their kids to school, that trust that we're going to treat their child the way we would try our child. Trust that you're going to care for them not just as a brain but as a whole person/ What can my kid uniquely do? When you're in a classroom that you're going to be provided what resources need to be able to pass the hurdles that professors put out there for you.
- The question I am asking myself, we as educators when we provide resources we assume we're going to provide the resources to help them, whether students expect that to be the case, we have the expectations.

White: To push this discussion we need to think about what it means. In this class I wanted something fun, what overshadowed all else was students having fun. What went to the wayside was content, wandering, beauty of experiencing something new and wonderous. We squandered them by giving something that was irrelevant and condescending.

- Thinking about the assessment ... if I knew a little bit about Merse, it was a nonstarter because I didn't know that artist I felt frustrated because I had things to offer but you wouldn't know that.

White: I didn't have the opportunity to show that. I didn't even reflect/bridge/connection for how these worksheet was going to make the connection. Even with group C they didn't get enough, I left them to their own devices because I assumed that they could do, that the instructions were good enough.

- (Group C): I'm in this group because of all the compliments that teacher has given me, they are going to continue to take care of me. When I saw the test and it looked like it was being spoon fed to me I felt like they are going to continue to taking care of me. I can snooze and they'll take care of me as long as I looked diligent.
- If we change the task a little bit, if Group A was asked to copy answers over and over for the test, we'd still have the issue. Good to consider the nature of what we give as test prep can also be a dead end. I work in schools where in the name of getting kids what they need they focus on practice basic facts. How do we have the conversation beyond memorizing for the test. Separate this from what students need.

White: Overtest,by the time we get to the big test we have test fatigue. Test every 2 weeks. No time to learn anything well. Oh and there are other subjects too.

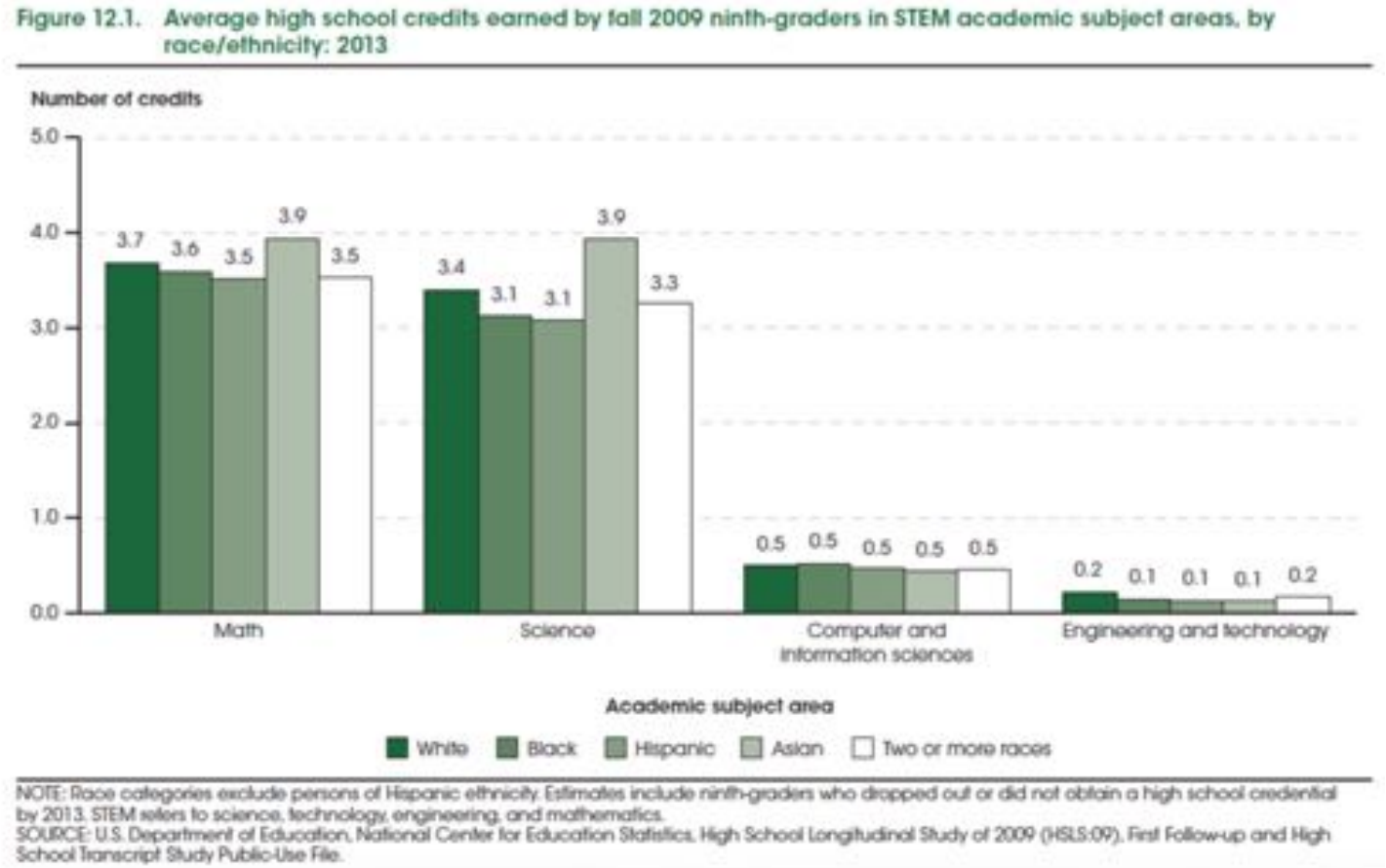
- (Group C) You gave them opportunities to do very well. How do pressures from parents and administrators, how does that impact the students, sorting and the expectations of the teachers.

White: Big impact for parents who have the social capital or understands how to navigate schools/ advocate for students. Giftedness is very subjective. There are ways we show creative giftedness. Culturally that giftedness goes with a lot of other stuff. Personal example, my child is smart, she was gifted but wasn't going to get tested. I had the social capital to be able to go to the gifted department and ask them how to navigate the situation. They asked me to tell them about my child, what does she do when she's at school or home that makes her stand out? Does she fold her laundry in a special way? Anything else? So I told them about how she had made a bridge with the inside of the garlic bread. They told me to write that down as an example of her creative nature. She was placed in the gifted class and then it was hard to get out of the gifted class. We do this too often. We start as early as kindergarten.

Throughout the grades, race, social class, and track assignment correlate consistently-with low-income students and non-Asian minorities disproportionately enrolled in low-track academic classes and advantaged students and whites more often enrolled in the high track. (Oakes, 1992, p. 13)
It's not new, it's by design. It was a way to educate masses of children. At whose cost? At what expense?

In senior highs, low-income, African-American, and Latino students are underrepresented in college-preparatory programs, and they more frequently enroll in those vocational programs that train for the lowest- level occupations. At all levels, these groups lack equal representation in programs for gifted and talented students. (Oakes, 1992, p. 13)

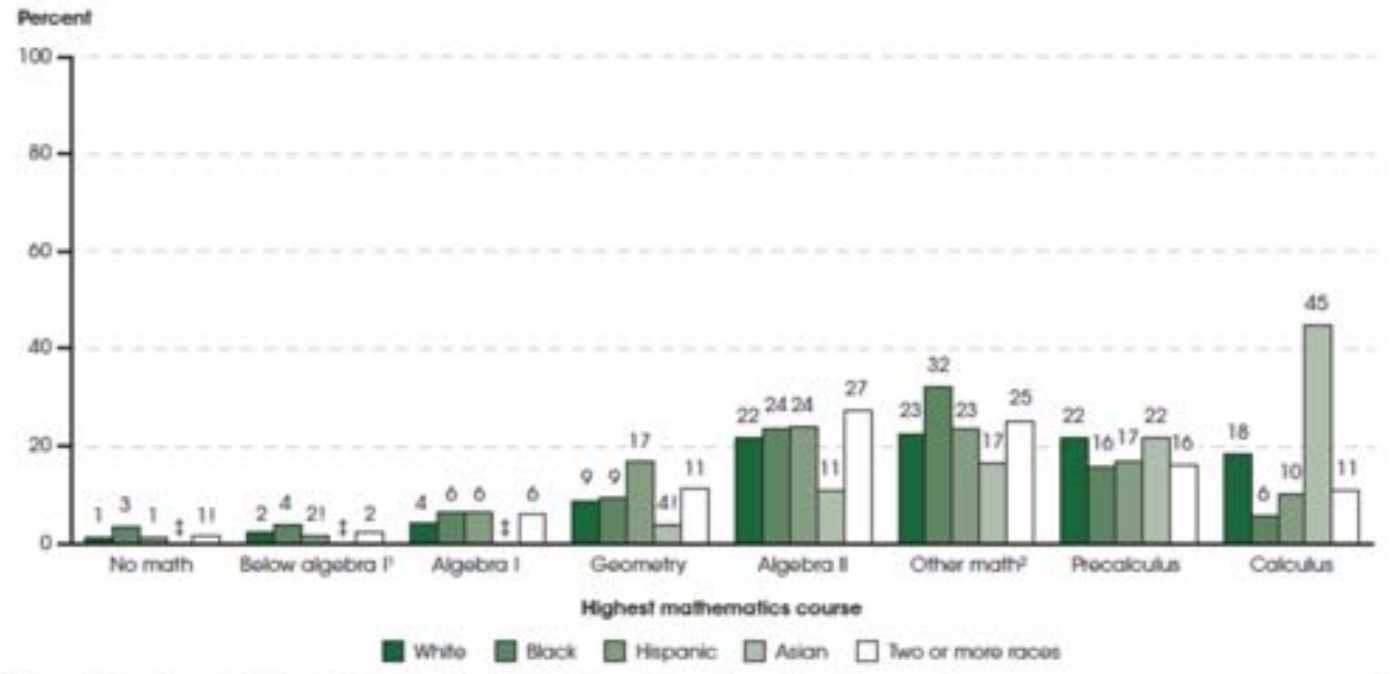
We've seen this in the data presented. Looking by race at credits earned by race. Engineering educators will say we don't have enough in engineering. What if we broaden what we think about how to get students ready for engineering.



Source: *Status and Trends in the Education of Racial and Ethnic Groups 2016* (NCES 2016-007). U.S. Department of Education, National Center for Education Statistics.

When we look at the percentages, what stands out for you?
-We have kids that have no math.
- Calculus: Extreme that we need to think about and deconstruct.
- Other math was anything that school district says don't fit into these other categories. Don't know where statistics is.

Figure 12.4. Percentage distribution of fall 2009 ninth-graders by highest mathematics course in which high school credit was earned, by race/ethnicity: 2013



! Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 and 50 percent.
‡ Reporting standards not met. The coefficient of variation (CV) for this estimate is 50 percent or greater.
[1] Includes basic math, applied math, other math such as history of math and mathematics-test preparation, and pre-algebra.
[2] Includes integrated math, trigonometry, algebra III, probability and statistics, and noncalculus Advanced Placement (AP) or International Baccalaureate (IB) courses.
NOTE: Race categories exclude persons of Hispanic ethnicity. Estimates include ninth-graders who dropped out or did not obtain a high school credential by 2013. Details may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), First Follow-up and High School Transcript Study Public-Use File.

Source: *Status and Trends in the Education of Racial and Ethnic Groups 2016* (NCES 2016-007). U.S. Department of Education, National Center for Education Statistics.

My tracking dilemma -Tracking in a Local Middle School: Do you see what I see?
Check out the book

I'm a mathematics teacher educator, I prepare teachers in elementary and middle grades program (Pre-K, -8). At one point we came to the realization that our secondary students are certified for 7th-8th and yet they weren't getting any middle school experience. The college of education partnered with the local school district and created a professional development school. I was the professor of residence at the school. I taught my class at the school. This also allowed me to do professional development with teachers at the school. We were trying to build an alignment with university and what schools are doing, bringing together those two knowledge bases.

I struggled to examine the different ways teachers in the schools organize their mathematics classrooms. For ten weeks my undergrad students rotated into classes every three weeks. The goal was for the undergrads to listen to students' mathematical thinking. Not tutoring, listening to how the other students were thinking about mathematical ideas. Learning to work with groups of students. Gradually move them in before they were student teaching. White had a lot trouble to get undergrads to see what she sees.

<u>Context</u>:

- The second of three mathematics pedagogy courses in our teacher education program and focuses on assessment and equity.

- Math Middle enrolls approximately 575 students in Grades 6–8 with a student population of 53% Black, 30% White, and 9% Hispanic with 60% free or reduced lunch.
- Provided PSTs with opportunities to learn about students' mathematical thinking as they worked with small groups of 3–4 students.

Two 7th Grade Teachers:

Ms. Bond:

- 14 students with about 80% White and 20% Black.
- Desks arranged in clusters of 4 so each student sat across from someone.
- Lesson began the lesson with Powerpoint slides she designed followed by many real-world examples on the Smartboard to motivate her students.
- Although teacher-led, the students engaged in problem- solving activities and used manipulatives.

Ms. Miller

- 30 students, with 90% Black and 10% White students.
- Students' desks paired and arranged in rows.
- Ms. Miller was lively and started each class with 4–5 warm-up problems posted on the board for students to copy and solve individually.
- As students worked, Ms. Miller went around the class and told each student that she loved them and expected them to say it back to her. 10 minutes to do this every class period.
- She went over the warm-up problems. If students solved the problem correctly, she praised them or gave them a treat (often candy - sugar high would hit).
- Students given a worksheet of problems to solve (often not a good worksheet), but due to the arrangement of the desks, she could never get around to the back of the class.
- Many of the students did not hear the directions and began to talk and disengage. As the noise level increased, Ms. Miller turned off the lights "to calm everyone down."

This is the best scenarios to have to have the pre-service teachers (PST) to see the differences.
At the end of the quarter they were asked to do a reflection. Here is what they found:

Ms. Miller (described by the PSTs):

- Energetic, caring, and engaging (something they wanted to emulate).
- Telling each student she loved them was a good way to establish a relationship with them.
- Interestingly, they found the desk arrangement as away all students could see the board, but some also mentioned that it limited the teachers' ability to get around to each student and did not support students' working together.
- They also liked how she accepted all students' answers and praised them after they answered questions.

Look over this list, is there anything that makes you pause?

- Everything stood out
- No math learning - they didn't pay attention to that
- I'm surprised that we aren't seeing anything about classroom management.
- Noticed that they focused on the kid's being able to see the board - they imagine a reception of information as opposed to a teacher who manages the classroom discourse.

White: Imagine as teacher educator, all the ways that we are investing in these PSTs, here are the realities for them when they are in schools.

- Ms. Miller's class was most often described as:

    - Chaotic, rushed, and with no classroom norms.
    - Worksheet tasks were not group worthy and why students were off task.
    - Half of the PSTs blamed the students for Ms.Miller's classroom practices because they talked too much about non-math things, did not pay attention, lacked interest or motivation, and had behavior problems with each other.

Ms. Miller's class was very associated with student behavior. They (PST's) haven't started teaching yet and already have evidence to support their views. This is a problem. Many of our PSTs come to us having only experienced Group C. They have never seen or experienced rigorous mathematics. Even though they have gone to schools with diversity but never the two shall meet. Lee Stiff talks about one of the most segregated parts of society is mathematics classroom. You can go in and see what kind of class it is by looking at the complexion of the class, the noise level, and the task.

- In contrast, students from Ms. Bond's room were described as motivated, smart, calm, not too noisy, and worked well together.

They (PSTs) didn't understand the role of the teacher, what you are here to do/ the contract of mathematics is very different in those two classrooms.

I left there feeling like I'm a loser and wondering. This is what the book is about. Having us as math teacher educators talk about situations when trying to address class focus on assessment and equity. We read things and talked about things and their experiences. They were looking for things to reinforced what they had experienced in classrooms and as mathematics. For a lot of them, even though they were in group C, they haven't experienced rigorous mathematics or an opportunity to think deeply. We aren't doing all the things we should do in our classes.

Dilemmas in Addressing Inequities

I believe teachers go to work every day trying to do the very best we can. I believe mathematicians and mathematical educators try to do the very best we can.

One of our biggest problems is lack of knowledge:

- experience with people,
- lack of what happens in schools,
- knowledge of mathematics (don't have it or shallow understanding). We need the people in this room to come together to improve this.
- Pedagogy (what are we doing in our classrooms, our PSTs are in our math classrooms before coming into PST program, what are they learning about doing and teaching mathematics).

Lack of self awareness:

- Not aware of how they personally experience mathematics. Mathematics multi-cultural disposition at play here. Self awareness, not just aware as a person,as a learner and cultural being but as who you as a mathematician and how that impacts what you think about doing, teaching and learning mathematics.
- We need to own our privileges, biases, stereotypes. Mathematicians, math educators -the M-word is our friend, own it. I'm here because of my math degree. I'm not here because I love social studies and art. I here having these conversations because I want more people like me to be here at the table, It's a privilege. Biases - we all have them. There is a difference between generalizations and stereotypes - Generalizations are making assumptions and ideas, gathering evidence. Stereotypes are staying with you even in the face of disconfirming evidence. We have to be mindful of stereotypes and loose them.
- stick with you.

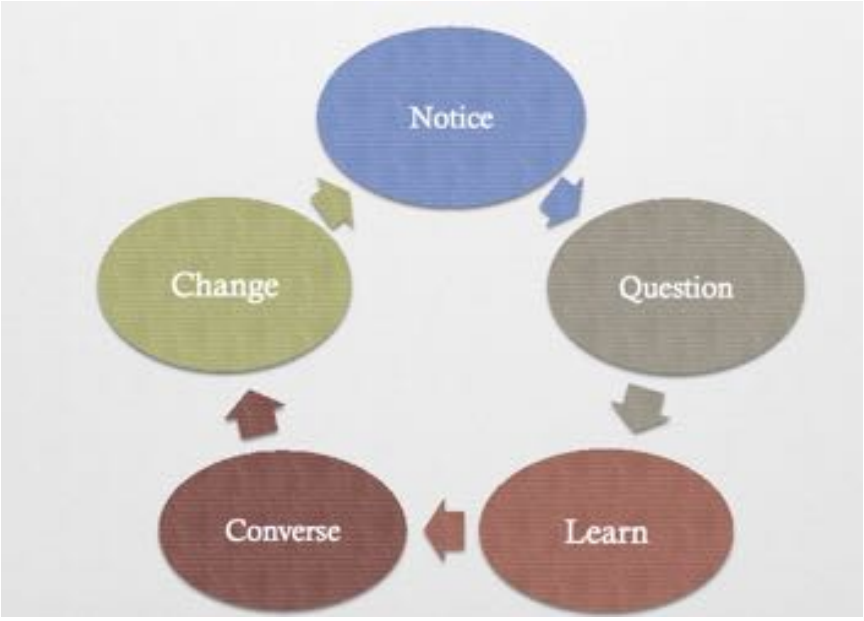
Lack of training. Coursework, Professional Development, Mentoring. Where do we learn how to do it? Conferences helps us think about this, what happens when we leave this conference? For us, for our teachers, for our colleagues, for our students, for future graduate students - we have a culture we are enculturation. These things have to be part of that enculturation process.
Lack of resources - a lot of people doing work. People don't know where to start. How to do it. The book can help.

The book…
White, D. Y., Crespo, S. & Civil, M. (Eds.) (2016). Cases for mathematics teacher educators: Facilitating conversations about inequities in mathematics classrooms. Charlotte, NC: Information Age Publishing, Inc. https://www.amazon.com/Cases-Mathematics-Teacher-Educators-Conversations/dp/1681236257

- 87 authors: diverse and represent a variety of personal and educational backgrounds, work in a variety of contexts and educational settings, share their experiences, challenges, and wonderings.
- Facilitating courageous conversations.
    - Conversations About Inequities in Mathematics Methods Courses:
        - a. Section Editors: Imani Goffney & Sandra Crespo
        - b. Introduction and 8 chapters
    - Conversations About Inequities Mathematics Content Courses:
        - Section Editors: Matt Felton-Koestler & Marta Civil
        - Introduction and 5 chapters
    - Conversations About Inequities in Graduate and Professional Development Contexts:
        - Section Editors: Joi Spencer & Dorothy Y. White
        - Introduction and 6 chapters
- Each chapter is a case of a dilemma for educator. What is the context of the case. What was your equity-related dilemma for their practice. What did you do? Then three other people who look at it and take it on. Picked other people, what is your positionality. Their interpretation.

Example: "This is nice but they need to learn to do things the US way" (Civil, 2017) . This is talking about the students that believe that the "US way" is the way until they learn that there is a whole big world, with other algorithms. What happens when they come back and ask to the do the "US way". Three commentators: Bia D'Ambrosio, Eileen Murray, Randy Philipp provide commentary on this situation.

Actions to improve mathematics education



- **Intentionally noticing** - what are we going into classrooms to see? Who has access? Who is engaging? How do we know? How are we defining things as a community. When we intentionally notice in our own spaces and then look at our space as a tourist. Think about what you notice, even in your own space. What is the culture? Notice intentionally the culture of the way you do business, who has access?
- **Question**? By virtue of what we do we wonder all the time. Take those noticings and create wonderment. What are you questioning?
- **Learn something about it**. Find out. Hit the books. Learn about yourself and others.
- **Converse with others.** Engage in courageous conversation.

  Courageous conversations: Singleton & Hays (2008) "*strategy for breaking down racial tensions and raising racism as a topic of discussion that allows those who possess knowledge on particular topics to have the opportunity to share it, and those who do not have the knowledge to learn and grow from the experience*" (p. 18).

  In the book we were not just talking about racism. We extending it to other inequities. Race is too limited, it won't get it to where we need it to be.

  Four Agreements of Courageous Conversations:
  - Stay Engaged - silence buys us nothing.
  - Expect to Experience Discomfort - this is part of learning
  - Speak your Truth - don't say what I want to hear.
  - Expect and Accept a Lack of Closure
    (Singleton and Hays, 2008, p. 22)
- **Change**. Change is important but if we don't change what we do and say

Not everything that is faced can be changed, but nothing can be changed until it is faced. -James Baldwin

Actions and Activities to Get Started in Genuine Equity Work (NCTM Research Committee, JRME, 2017)

- Stop using deficit-oriented language in mathematics education work, and help educate others.
- Deepen one's professional knowledge base and mentoring practices.
- Acknowledge and learn about the systems from which you benefit from unearned privilege.
- Read outside of mathematics education literature.
- Cite MERs from around the world.

- Engage colleagues and friends in explicitly talking about race, class, gender, and other systems of privilege and oppressions.

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