

"I AM NOT A MATH PERSON" IDENTITY AND ITS IMPACT ON MATH SUCCESS

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Nicole Bridge

Learning Targets

- I can define "math identity" and how it develops
- I can recognize my role in helping to develop students' math identities.
- I can begin to identify strategies to help nurture a positive math identity in my students.

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Who Are You?

Are you a "math person"?

- How do you know? (Who told you that you were/were not a math person?)
- What does that mean TO you?
- What does that mean ABOUT you?

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What is Identity?

- Personal identity refers to self-knowledge that comes from an individual's unique attributes
- Social identity is the individual's self-concept derived from perceived membership of social groups. (Hogg and Vaughan, 2002)
- An individual does not have one "personal self," but several selves

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What is Identity? (cont.)

Just a few examples...there are MANY more...

- Gender
- Sex
- Race
- Ethnicity
- Sexual Orientation/Attractionality
- Religion/Spirituality/Faith
- Social Class
- Age
- (Dis)Ability
- Nation(s) of Origin/Citizenship
- Tribal or Indigenous Affiliation
- Body Size/Type

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Identity and Privilege

Privilege – a special right or advantage awarded to a person or group of people. Often times, these are **unlearned, unconscious, and unasked for.**

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Identity and Privilege (cont.)



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Identity and Privilege (cont.)

one in every four children attending
inx population will more than double
n U.S. schools! Hence, the question
tion growth in the United States of
of those who professionally work in

This is not your world.

Source: "Academia, Love Me Back," Tiffany Martinez, <https://vivatiffany.wordpress.com>, 2016 Nicole Bridge (2016)

Identity and Privilege (cont.)

My professor assumed someone like me would never use language like that. As I stood in the front of the class while a professor challenged my intelligence I could just imagine them reading my paper in their home thinking *could someone like her write something like this?*

At this moment, there are students who will never understand the desolation that follows an underlined "not." **There are students who will be assumed capable without the need to list their credentials in the beginning of a reflective piece.** How many degrees do I need for someone to believe I am an academic?

Source: "Academia, Love Me Back," Tiffany Martinez, <https://vivatiffany.wordpress.com>, 2016 Nicole Bridge (2016)

Identity and Privilege (Summary)

- Our identities are **complex**
- Our identities are **not static**
- Our identities can **give us privilege (or not)** in different situations.

- Our **students** come to us with all sorts of identities...**just like us.**
 - How do we make space for these in our classrooms and help them see that **they can be many things at once?**

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STOP and REFLECT

- What is **1 thing that you are thinking** right now?

- What is **1 thing that you are wondering** right now?

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Defining “Math Identity”

I have posted a definition of “math identity” to the page for this session and also tweeted it out ([#identityNCTM](#)).

Read it and reflect on quietly on the following questions:

- What words or phrases in this text jump out at you?

- How do those words or phrases relate to your own experience as a math learner and user?

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Defining “Math Identity” (cont.)

Mathematics identity refers to the dispositions and deeply held beliefs that individuals develop about their ability to participate and perform effectively in mathematics to change the conditions of their lives.

A mathematics identity encompasses a person’s self-understandings and how they are seen by others in the context of doing mathematics.

Therefore, a mathematics identity is expressed in narrative form as a negotiated self, is always under construction, and results from the negotiation of our own assertions and the external ascriptions of others.

(Martin, D. (2006a). Mathematics Learning and Participation as Racialized Forms of Experience: African American Parents Speak on the struggle for Mathematics Literacy, Mathematical Thinking and Learning, 8, 197-229.)

Nicole Bridge (2016)

Defining “Math Identity” (cont.)

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Defining “Math Identity” (cont.)

Math identity...

- Goes deep
- Is shaped by the perceived opinions of others
- Is a story that is constantly being written

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Why Does It Matter?

- **How we see ourselves determines our efforts**

“He simply identified himself as an African American man “who could succeed, who could meet and overcome obstacles”; he looked at himself as one who could meet a challenge head on, able to succeed against any odds that came his way.” (Stinson, p. 15)

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Why Does It Matter? (cont.)

- **Power and privilege are connected to identity**

- What kind of power and privilege does someone who identifies as a “Math person” have?

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How are Math Identities Shaped?

- **At Home**

- “I was never any good at math either.”
- “...doing well in mathematics and academics in general was not a choice but just a precedent-set expectation, set by his father, mother, and two older brothers.” (Stinson, p. 15)
- “In this family, we do Math.”

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How are Math Identities Shaped?

- From societal messages



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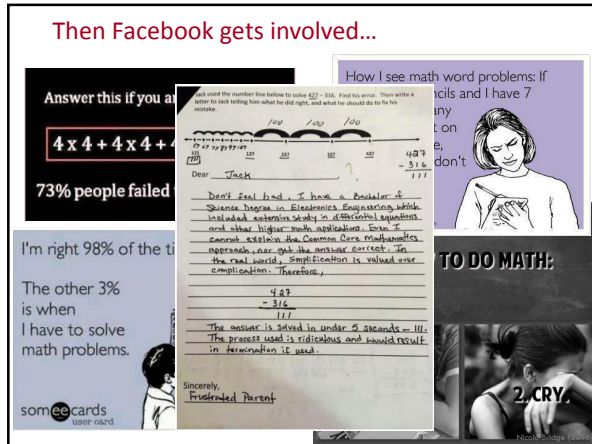


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Then there's this...

An advertisement for a backpack. The top left shows a person writing on a green chalkboard with math equations. The top right shows a pink t-shirt with 'ALGEBRA = TO = ALGEBRA' printed on it. The main part of the ad features a purple and black patterned backpack. Text on the ad includes 'light as a feather, tough as long division' and 'Guaranteed. Period!'. At the bottom, there are four columns of product details for different backpack models.

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How are Math Identities Shaped?

- From us (teachers)

Name	Date				
Example:	<table border="1"> <tr> <td>Two-Digit Divisor Division (Easy Divisors)</td> <td></td> </tr> <tr> <td>402 ÷ 91</td> <td>724 ÷ 12</td> </tr> </table>	Two-Digit Divisor Division (Easy Divisors)		402 ÷ 91	724 ÷ 12
Two-Digit Divisor Division (Easy Divisors)					
402 ÷ 91	724 ÷ 12				
Classroom Practice:					
NEW WORK:	<table border="1"> <tr> <td>712 ÷ 98</td> <td>627 ÷ 25</td> </tr> </table>	712 ÷ 98	627 ÷ 25		
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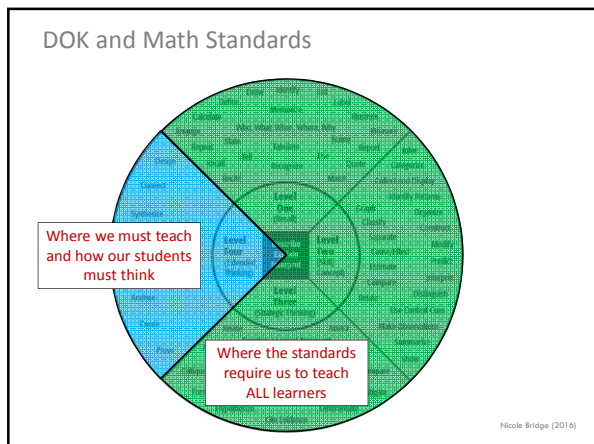
Two-Digit Divisor Division (Easy Divisors)

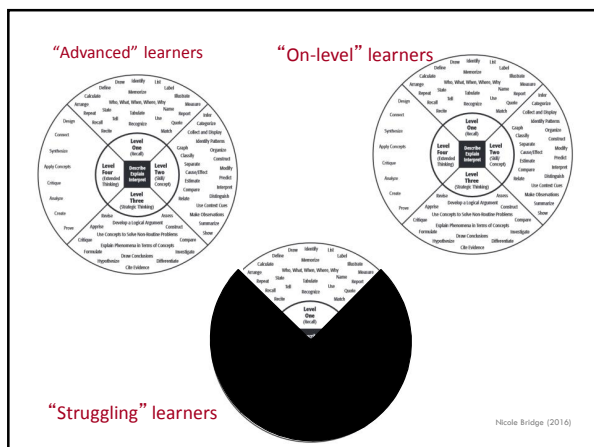
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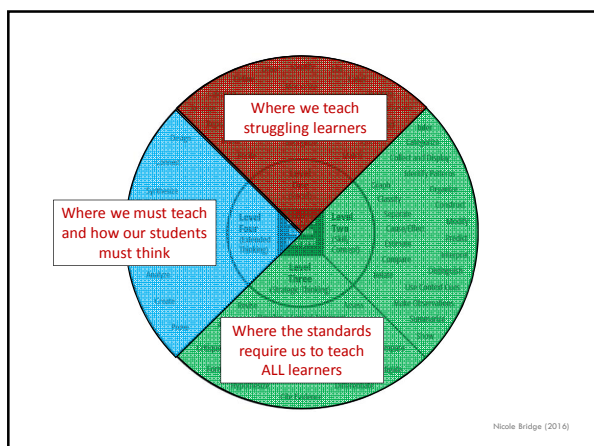
How are Math Identities Shaped?

- Thoughts from Jo Boaler
 - "Most math classrooms offer **math as a performance subject**, not a learning subject."
 - "It is very hard to have a growth mindset about math if you **think it is a fixed subject**."
 - "We urgently **need to dissociate math from speed**, and stop dissuading any child who thinks slowly or deeply that they can do well in math."
 - "**Timed tests** are the cause of early onset of **math anxiety**."

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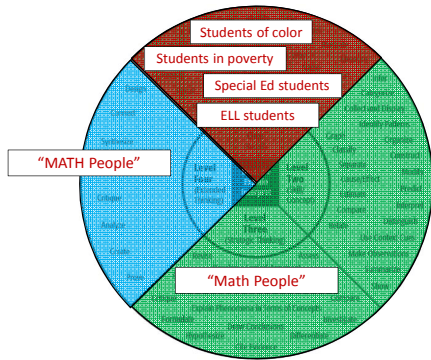


Who are our struggling learners?

- Students of color
- Students in poverty
- Students who do not speak English
- Students with disabilities

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How we shape Math identity...



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How are Math Identities Shaped?

- When my lesson is "here is the example, now repeat..."
 - Math people...
 - Know the steps
 - Know EXACTLY what to do
 - Think THIS way
 - Have neat work
 - Do not struggle
 - Do not make mistakes
 - Are white
 - Are middle class

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STOP and WRITE

- Take a moment to react to our discussions today.
 - What are you **thinking/feeling** right now?
 - What is **1** thing that you **agree with**?
 - What is **1** thing that you have a **question** about?
 - What is **1** thing that you are **challenged by**?

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Defining “Math Identity” (Revisited)

Math identity...

- Goes deep
 - It is informed by a long history
 - Change is not fast and easy
- Is shaped by the perceived opinions of others
 - Expectations matter
- Is a story that is constantly being written
 - It CAN change!

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The Good News?

We help to shape students’ Math identities...and **identities CAN change!**

“We all have our [math] story and we all have the potential to change it.” – Rosamund Eise-Mitchell

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Narrative Under Construction

My story...

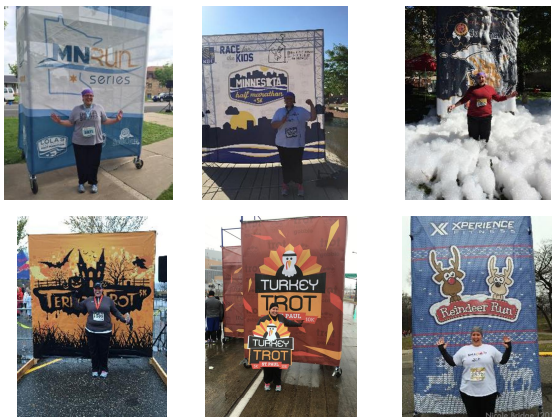


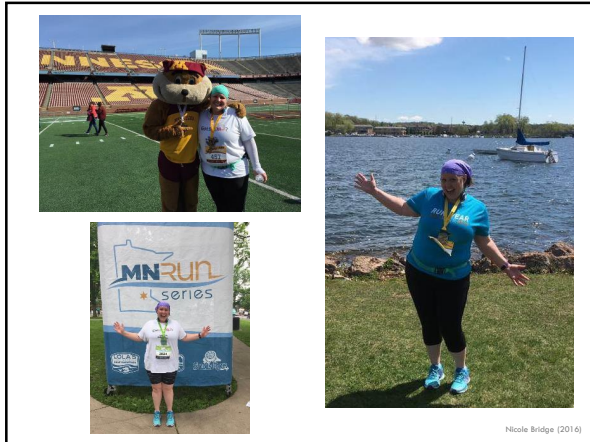
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Narrative Under Construction



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Narrative Under Construction (cont.)

What did Pat, Tiffany, and Meghan do to help me change my identity?

- They gave me challenging tasks.
- They reminded me that I could do it AND supported it with evidence.
- They got to know ME and made decisions/recommendations based on what they knew about ME.

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They gave me challenging tasks.

"If a child can be successful without having to think and reason, then the lesson isn't good enough" – Marilyn Burns

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What Can We Do to Shape Math Identity?

- Go deep with Mathematics
 - Open up ALL levels of DOK to ALL students
 - *Do not assume lack of Level 1 means that Level 4 is inaccessible*
- Leverage multiple Mathematical competencies
 - Multiple entry points
 - Multiple ways of solving
 - Honor mistakes as learning opportunities

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They reminded me that I could do it AND supported it with evidence.

"If I believe that we can all grow from where we are, why would I not decide that I am worth the work?" – Emily Diehl

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What Can We Do to Shape Math Identity?

- Affirm Mathematical learners' identities
 - Praise student effort, not ability
 - *"When you are feeling stressed or scared you should congratulate yourself because it means you are doing something hard." – Emily Diehl*
 - Remind students of their past successes and growth
 - Connect students' work with what "Math people" do
 - *"This is what a structural engineer does, and YOU just did it! Being an engineer is not out of your reach."*

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They got to know ME and made decisions/recommendations based on what they knew about me.

"I got my philosophy of education from my grandmother: I am going to listen to you and see you for who you are and where you are." – Marilyn Burns

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What Can We Do to Shape Math Identity?

- Challenge spaces of marginality
 - EVERYONE does math in this room
 - Honor student experiences and knowledge as spaces to explore Mathematical ideas
 - Mathematical authority is interconnected and shared, not owned by the teacher
- Drawing on multiple resources of knowledge (Math, culture, language, family, community)
 - Honor and allow space for students' identities
 - Challenge stereotypes
 - Build on previous Math knowledge
 - Makes connections with everyday life and experiences

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To Put It Another Way...

Mathematics						
Know and believe in your students.		Redefine mathematical success.		Prioritize student voice.		Monitor identity formation.
Instructional Practice						

Source: "Developing Mathematics Identity" (K. Allen & K. Schnell, *Mathematics Teaching in the Middle School*, 2016)

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Narrative Under Construction (Reprise)

When Pat, Tiffany, and Meghan...

- Gave me challenging tasks...
- Reminded me that I could do it AND supported it with evidence...
- Got to know ME and made decisions/recommendations based on what they knew about ME...

I got to know me and reframe/define who I was.

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Teachers Shape Identity

How will we **help our students get to know who they** are as math people?

How are we helping them **reframe/define who they are?**

What **discomfort and learning** am I willing to experience for this?

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Want to Learn More???

The Impact of Identity on K-8 Mathematics: Rethinking Equity-Based Practices

(Julia Aguirre, Karen Mayfield-Ingram, Danny Martin, NCTM, 2013)



Articles/Excerpts:

- **Academia, Love Me Back** (Tiffany Martinez, <https://vivatiffany.wordpress.com>, 2016)
- **Mathematics Learning and Participation as Racialized Forms of Experience: African American Parents Speak on the Struggle for Mathematics Literacy** (Danny Bernard Martin, *Mathematics Thinking and Learning*, 2006)
- **Negotiating the "White Male Math Myth": African American Male Students and Success in School Mathematics** (David W. Stinson, NCTM 2010)
- **Developing Mathematics Identity** (Kasi Allen & Kemble Schnell, *Mathematics Teaching in the Middle School*, 2016)

THANK YOU!!!

Thank you so much for stopping by today!

We recognize that you have a choice in workshops, and we appreciate you workshopping with us!

Please feel free to contact me with any questions that you have.

Nicole Bridge

Email: nicole.t.bridge@gmail.com

Twitter: @NicoleBridge1

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Final Thoughts

“If we want them to feel powerful as mathematics learners, we must develop their agency, and it starts with their identity.” – Harold Asturias

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