Beyond the Numbers: Shaping Student Success through Math Narratives

Day 1

To access internet:

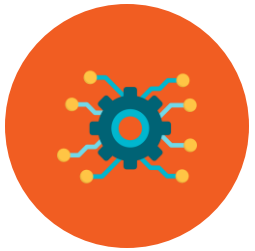
WIFI Network: JW-Conference
Password: charlotte

Welcome

BranchED

Agenda

Welcome and Framing



Connector

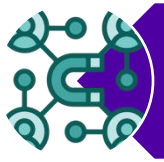
Data & Silent Walk

Closing

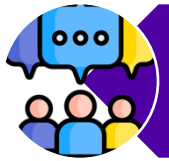
Icons: www.flaticon.com

Who is BranchED?

Norms of Engagement



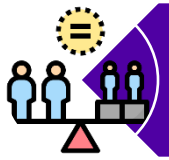
Be Present and Present



No Spectators

Assume Positive Intent

Share the Air



No “yeah, buts” “we can’t” “they won’t” “It’ll never”

Images from Flaticon.com

The Power of 0

Purpose

- To explore how math narratives can inspire and empower students, helping them build confidence and proficiency in mathematics.
- To gain valuable insights and strategies to make math more accessible, meaningful, and engaging for all learners.

Materials and Resources

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IACET CEUs

International Association for Continuing Education and Training

International Accrediting Body

- Indicator of accomplishment that can be shared with your networks
- Aligned to specific competencies
- Requires successful completion of the action plan

Learning Objectives

1. Examine our own math identity
2. Define math narratives
3. Apply math narratives in secondary math classrooms to enhance student engagement and academic success using Mixed Reality Simulation
4. Explore how the observation tool can assess and strengthen the use of math narratives in secondary math classrooms
5. Apply the observational tool by analyzing real classroom footage to identify effective instructional strategies using the Teacher Video Library

My Current Reality as a Literary Genre

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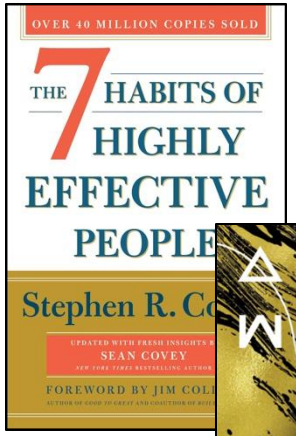
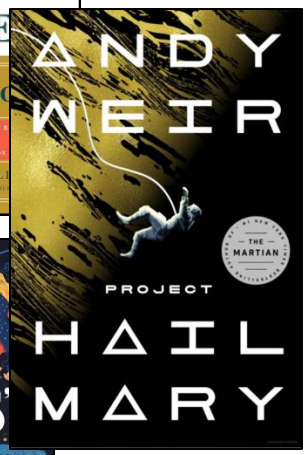
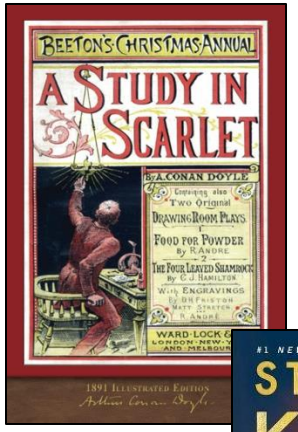
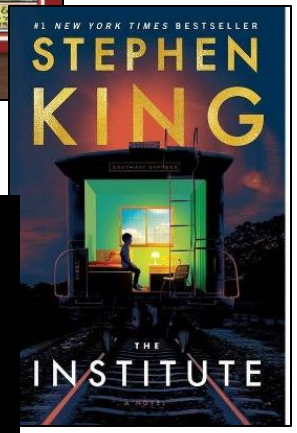
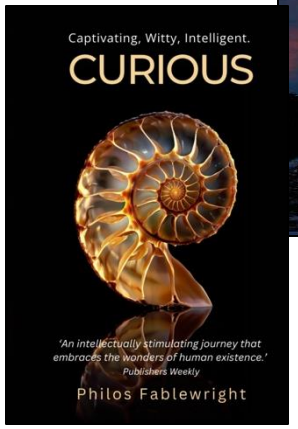




Action	Fantasy	Horror
Mystery	Adventure	Suspense
Drama	Fairy Tale	Humor







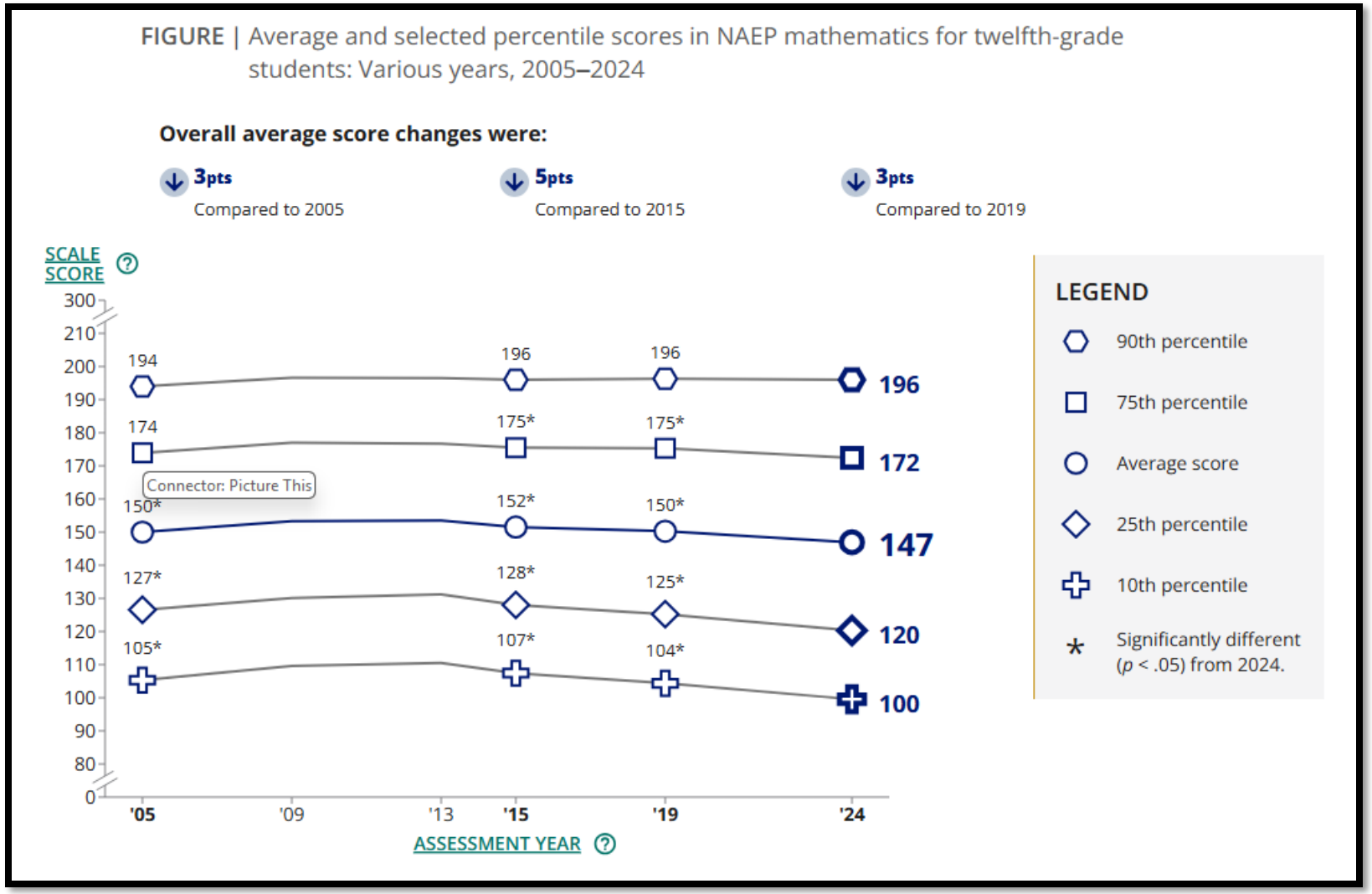
Musical Chairs Share Out

- When the music stops turn to the person closest to you.
- Share your current reality as a literary genre.
- We will do this for multiple rounds
- In the last round, you will introduce your partner to the group.

From unique stories to shared patterns

Setting the Stage

12th Grade Math Performance



(NAEP, 2024)

Current State of Secondary Math

- 12th graders have achieved **lowest math and reading scores since 2005**
- **Nearly half** of high school seniors are **testing below basic levels** in math and reading
- More students are performing **below the basic benchmark** than ever before
- **Long term effects** of COVID on learning

(Education Recovery SCORECARD, 2022; NAEP, 2024)

Role of Emotions in Learning

Emotions & Learning are Inseparable

- They can **enhance or interfere** with learning.
- They are **contagious.**
- **Positive** learning **emotions**
  - Curiosity, wonder, passion, creativity, engagement, and joy
- **Negative** learning **emotions**
  - Anxiety, stress, disinterest, disengagement, worry, and fear

(Osika, MacMahon, Lodge, & Carroll, 2022)

Relational Aspect of Learning Math

- There is a **significant relationship** between **teacher attitude** and **student attitude** toward Mathematics.
- 17% of the population has math anxiety, which may cause avoidance of math activities and overloading and disrupting working memory during math tasks.
- **Math anxiety results** from **negative experiences** related to math (e.g., poor performance on math assessments; negative feedback about math performance).

(Dowker, Sarkar, & Looi, 2016; Farran, 2019; Lockett, 2022; Okyere, 2019; National Research Council, 2009; Schaeffer, Rozek, Maloney, Berkowitz, Levine, & Beilock, S. 2020)

Quite Write

Write 3-5 sentences that describe your assumptions, values, and beliefs about teaching and learning secondary mathematics.

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Mental Model Drawing

Individually

Take 3-5 minutes to draw a picture based on your quick write responses

Collectively

In small groups at your table, share your drawings and discuss similarities and differences

Connecting our Mental Models

- **Espoused Theory:** Beliefs, worldview, and values that people believe guide their behavior
- **Theory-in-Use:** Beliefs, worldview, and values reflected in the behaviors that drive action
- **Critical Reflection:** Allows us to raise our own awareness of gaps between **Espoused Theory** and **Theory-in-Use**

(Argyris & Schon, 1974; Savaya & Gardner, 2012)

Espoused vs Theory-in-Use

Our Autobiographies

- Speak to our experiences as learners that are likely to have a profound, long lasting influence on our practice
- Foundation for Critical Reflection
  - Focus on previous experiences to become aware of the assumptions and reasoning that frame our work
  - Examine gaps in espoused theories and theories-in-use
  - Reveal areas of pedagogy that may need adjustment or strengthening

Critically Reflective Practice

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Self

Our Autobiographies as Learners

Students

Our Students' Eyes

Peer

Colleagues Experiences

Scholarship

Theoretical Literature

(Brookfield, 1995)

Self

Our Autobiographies as Learners

- Knowing what and how to teach is not sufficient to make one's teaching thoughtful.
- Knowing one's self is as important as or even more important than traditional ideas of professional knowledge.
- Professional growth and development should include initiatives that reflect teachers' identities and foster self-questioning and reflection

(Fairbanks et al., 2010; Cole & Knowles, 2000)

Silent Walk

Goal: To explore who we are as math learners and how past experiences have shaped this sense of ourselves.

- Imagine that a publisher has invited you to write your story as a math learner in three chapters. What would the titles be?
- Is there a metaphor or central theme that runs throughout your story?
- What influenced your journey to become a math educator?
- How has your own math identity changed over the years?
- How did you see or not see equity and social emotional learning centered in your own experiences as a math learner?

https://pixabay.com

Table Talk
and
Popcorn Share Out

Students at the Center

Remembering our Why: Students

3-minute Partner Talk:

- Name that student
- Describe their secondary experiences with mathematics

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