

# Cut to the Chace

## A summary of the ideas that intrigued me this week (3-18-23)

**Titles and links to the works I am summarizing:**

- 1) [Neil De Grasse Tyson Explains Why Math is Important](#)
- 2) [NCTM Journal Article on “Building Equitable Math Talk Classrooms”](#)
- 3) [Illustrative Mathematics Blog Post on “Strategies for Instituting Equitable Math Instruction.”](#)

**Below each summary is a commentary on how this work connects to equity\* in mathematics and how I have applied these ideas at my school. Please see “About Cut to the Chace” at the end of the document for details.**

**1. Summary of “[Neil De Grasse Tyson Explains Why Math is Important](#)”:** In this 41 second video from TikTok, De Grasse Tyson explains his response to the common math class question, “When am I ever going to use this?!” He shares, “The act of learning how to do the math establishes a new kind of brain wiring in your mind, a kind of problem solving, brain wiring. So, it is not about what you learned. It’s about what methods, tools, and tactics you had to develop in order to solve the problem that you may never see again for the rest of your life. But you will see other problems where these methods and tools will become immensely valuable to you.”

**Connection to Equity:** De Grasse Tyson is a black astrophysicist. A [survey](#) done in 2012 found that between 1955 and 2012 only 40 African Americans (2.47%) had earned a doctorate related to astrophysics. Providing students the opportunity to hear from members of marginalized groups on the importance of mathematics aligns with being “Critically Conscious” (the first “C” in the [ICUCARE Equity Framework](#)) as it works to break down negative stereotypes about marginalized groups in STEM.

**School Connection:** I showed this video clip to a group of grade 7 students, none of whom recognized Neil De Grasse Tyson. They were very interested to hear about him (What does he do? How did he become famous? Why is he talking about math?). I also shared how rare it is for a black man to earn his PhD in astrophysics. The 7<sup>th</sup> grade science teacher was in the room, and he told the students he would be more than happy to discuss De Grasse Tyson during science class. This made the video a nice cross-curricular experience for them.

**2. Summary of “[Building Equitable Math Talk Classrooms](#)”** by Karen C. Fuson and Steve Leinwand. The article begins by stating that Number Talks done right “can open teachers’ eyes to how their students talk about their own thinking and can help students see themselves as mathematical thinkers” (p. 164). [If you would like a refresher on “Number Talks”, [here](#) is a good blog post summarizing them.] However, the authors note some concerns they have about Number Talks. Specifically, they point out that most Number Talks only occur in the class openers, focus almost exclusively on mental math strategies, leave the teacher in charge of recording ideas, and tend to gradually disappear as students leave elementary school and move to middle and high school mathematics courses. They write, “Given these common observations and concerns, our hope is to stimulate an expansion of the Number Talk techniques throughout the grades and into high school, to broaden the use of Number Talk techniques into core lesson instruction, and to relax some of the strictures considered by some to be ‘the right way’ to do Number Talks so that students can more frequently do their own recording and, when appropriate, can use whiteboards or pencil and paper to support their thinking, and can use multiple representations” (p. 165).

The authors provide several valuable resources to get educators started in creating a “Math Talk Classroom”. First, they provide a table (Table 1. Levels and Components of Math Talk Learning Communities, p. 167) that shows the progression from teacher centered instruction to student centered discussions. Second, another table (Table 2. Building on the Foundations of Number Talks, p. 168) shows how key aspects of Number Talks can be transferred to create “Math Talk Classrooms”. The article also contains ideas on how to adapt lessons to focus on creating “Math Talk” opportunities. For example, the authors provide the following Grade 7 Number Talk prompt: “Solve for  $x$  in the proportion  $12/20=x/35$ ” (p. 170). The proportion is deliberately designed to make cross multiplying difficult, encouraging alternative strategies. However, the authors suggest the following change to allow for even more student strategies: “It costs \$12 to buy 20 bananas. Sarah needs 35 bananas. How much will Sarah have to pay for the bananas she needs?” When asked to present their work to this question on whiteboards it “further opens the door to alternative approaches, multiple representations, and extensive discussion about the connections between and among the approaches and the representations” (p. 171). They also provide seven examples of different student responses to this question.

**School Connection:** I presented a small group of 7<sup>th</sup> graders with the prompt from the article mentioned above, [“It costs \$12 to buy 20 bananas. Sarah needs 35 bananas. How much will Sarah have to pay for the bananas she needs?”] and asked them to work in pairs on a solution they could share with the class. [See [this blog post](#) for more details about the group’s discussion.] This task did produce more discussion than usual. One reason may be that although only one student found the correct answer, more than half the students were very confident in their solutions before the discussion began. I will look for another Number Talk prompt to turn into a short word problem to see if it also encourages more mathematical discourse!

**Connection to Equity:** This activity covered many equity practices, but I would like to focus on how it affirmed “mathematics learners’ identities” because it promoted the idea that “mistakes and incorrect answers are sources of learning (from the “[Five Equity-Based Practices](#)”). Only one student found the correct answer on the first try, but by reasoning through that student’s work, other students found strategies (such as estimating the \$24 for 40 to know \$56 for 35 was too high) that will help them in the future. Furthermore, this activity included others as experts (the “I” in the [ICUCARE Equity Framework](#)). The student who presented her table was a special education student who often struggles in discussions, but by highlighting her work and strategy it gave her confidence that she can make valuable contributions in math class too!

**3. Summary of “[Strategies for Instituting Equitable Math Instruction](#)” by Dionne Aminata and Rolanda Baldwin.** In this blog post, the authors demonstrate how the [Illustrative Mathematics](#) (IM) curriculum aligns with [UnboundEd’s](#) mission “empowering educators to actively work together to dismantle systemic racism by providing grade-level, engaging, affirming, and meaningful (GLEAM™) instruction.” Specifically, “according to UnboundEd’s GLEAM hypothesis, engaging, affirming, and meaningful grade-level instruction happens when teachers both know the grade-level academic standards, and consider those standards within the context of their students’ cultures.” The authors then explore how the IM curriculum, “is designed in such a way that teachers can implement it with integrity while adapting it to meet the academic and cultural needs of their students.” It then summarizes how the IM curriculum applies the GLEAM framework by providing specific examples of IM lessons that are on grade-level, ensure engagement, affirm all learners, and make math meaningful.

**School Connection:** The district uses IM as its Middle School (grades 6-8) math curriculum. This blog post was a good reminder that using “high-quality instructional materials” is not enough to create equitable math instruction. It is incumbent on the teacher to adapt the scenarios to align with students’ lived experiences. One idea that comes immediately to mind is to have the students offer suggestions on how a lesson might be redesigned to be more engaging to them.

**Connection to Equity:** The [GLEAM framework](#) shares significant overlap with both the [ICUCARE Equity Framework](#) and the [Five Equity-Based Practices in Mathematics Classrooms](#), so as the title suggests, the post does provide examples of how implementing IM with fidelity leads to equitable math instruction. While this blog post does not provide much new information for teachers who are familiar with the IM program, I believe it is worth sharing with

other stake holders: It provides a very cogent argument for the district's assertion that IM is a high-quality program that promotes equity in mathematics.

## About “Cut to the Chace”

I started a [website](#) as a place where Springfield Public Schools' math educators could collaborate and share ideas around equitable math practices\*. While I still think the website is important, I realized something else would be needed to jump start engagement. I decided that a weekly newsletter containing summaries of equitable instructional strategies (and my initial experience implementing them) would model a way to share ideas. I hope this less formal setting will encourage other educators to share their experiences and resources which can be curated and posted on the website. The more voices we have sharing positive experiences implementing equity-based practices in SPS classrooms, the better chance we have of creating a positive mathematics experience for all our students!

\*As defined by Pamala Seda's "[ICUCARE Equity Framework](#)" and the "[Five Equity-Based Practices in Mathematics Classrooms](#)" from the book, "The Impact of Identity in K-8 Mathematics Learning and Teaching" (see citations below).

Aguirre, J. M., Mayfield-Ingram, K., & Martin, D. B. (2013). "Part 2 Rethinking Equity-Based Practices". In *The Impact of Identity in K-8 Mathematics Learning and Teaching: Rethinking Equity-Based Practices*. Reston VA, USA: The National Council of Teachers of Mathematics, Inc.. Retrieved Feb 25, 2023, from <https://pubs.nctm.org/view/book/9780873538565/pt02.xml>

Seda, P. (2008). *The ICUCARE Equity Framework*. sedaeducationalconsulting. Retrieved February 25, 2023, from <https://www.sedaeducationalconsulting.com/icucare>