Social Dynamics and Math Discussions:

Practical Strategies to Have Students, "Construct Viable Arguments and Critique the Reasoning of Others"

Common Core Mathematical Practice Standard 3

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Goals: Participants will...

1) Identify and investigate challenges to creating meaningful student-to-student interactions

2) Create norms, structures, and routines that will promote mathematical discourse in ***their*** classroom

Please write your name on the notecard and hand it back

Warm Up

1) On a scale of 1-10, how important is it for students to talk to each other about math?

2) On a scale of 1-10, how hard is it to make this happen effectively?

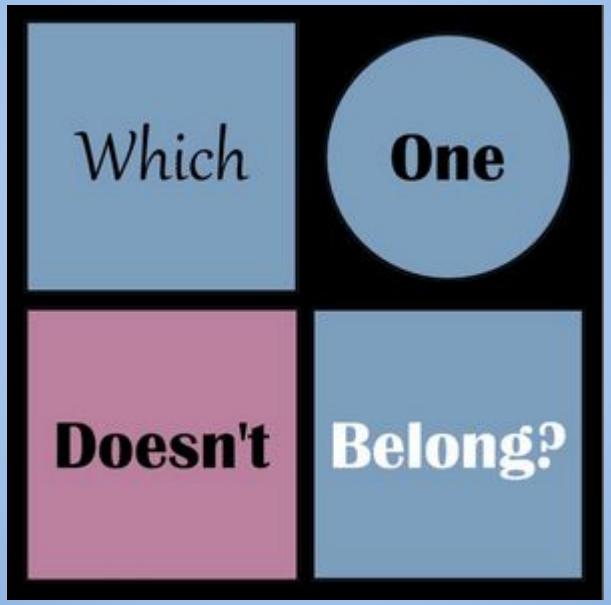
3) Write at least one challenge to creating effective student discourse in the classroom.

Brainstorm

What are the biggest hurdles that prevent students from having meaningful discourse in your classroom?

Random Groupings!

What is an ideal student response to this question?



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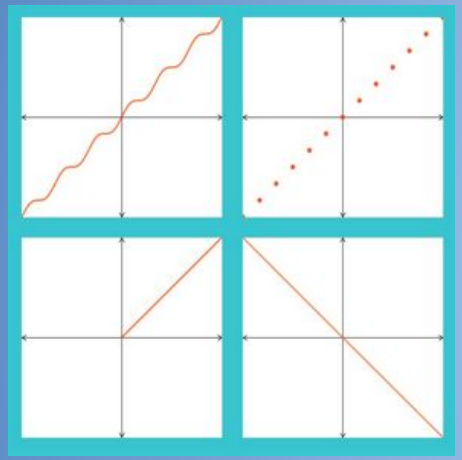
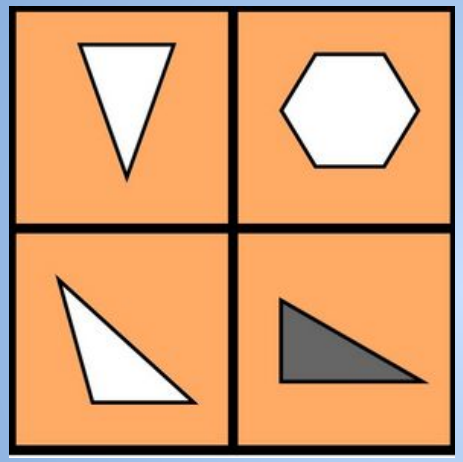
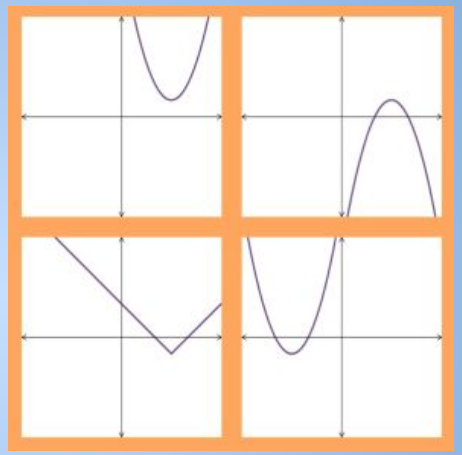
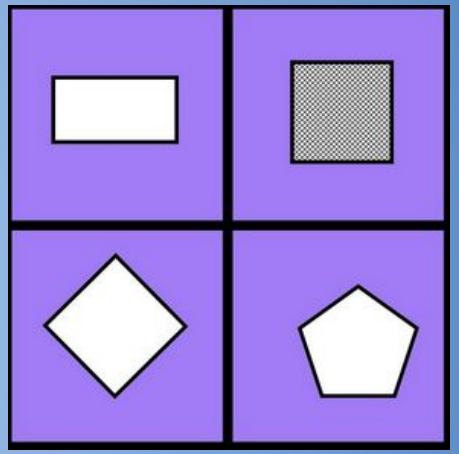
Choose **ONE** image from each set that does not belong. Be prepared to explain and justify your choice.









Source:
http://wodb.ca/

Convince yourself
Convince a friend
Convince a skeptic

Vignette

What do you think Ilana Horn means by “benign dominance”?

How does it affect student learning?

*"**Status** is the perception of students' academic capability and social desirability."*

"The word *perception* is key to this definition….Perception involves our expectations of what people (including ourselves) have to offer."

What are some ways that status can inhibit classroom discourse?

- Horn, Ilana (2012). *Strength in Numbers: Collaborative Learning in Secondary Mathematics* (p. 21). Nashville, TN: NCTM.
- Also available on Ilana Horn's blog teachingmathculture.wordpress.com: https://teachingmathculture.wordpress.com/2014/03/05/status-the-social-organization-of-smartness/

Status Interventions

1. Establishing and Maintaining Norms

- Classroom norms communicate ***how students learn***, not (only) how they should behave.

- What are some classroom norms that facilitate student discourse by promoting the idea that ***every*** student has something to offer?

Status Interventions

1. Establishing and Maintaining Norms

Possible classroom norms:

- *Take turns.*
- *Listen to others' ideas.*
- *Disagree with ideas, not people.*
- *Be respectful.*
- *Helping is not the same as giving answers.*
- *Confusion is part of learning.*
- *Say your "becauses."*

- Horn, Ilana (2012). *Strength in Numbers: Collaborative Learning in Secondary Mathematics* (p. 28). Nashville, TN: NCTM.
- Also available on Ilana Horn's blog teachingmathculture.wordpress.com: https://teachingmathculture.wordpress.com/2014/03/24/recognizing-smartness-and-addressing-status-in-the-classroom/

Status Interventions

1. Establishing and Maintaining Norms

- **Reflect:** How could you use “Which One Doesn’t Belong?” to highlight and ***reinforce*** specific classroom norms to help mitigate status issues?

Status Interventions

2. Assigning Competence

"Assigning competence is a form of praise where teachers catch students being smart. The praise is public, specific to the task, *and* intellectually meaningful."

Mathematical competence is **multidimensional**. What qualifies as being "smart at math?"

- Horn, Ilana (2012). *Strength in Numbers: Collaborative Learning in Secondary Mathematics* (p. 31). Nashville, TN: NCTM.
- Also available on Ilana Horn's blog teachingmathculture.wordpress.com: https://teachingmathculture.wordpress.com/2014/03/24/recognizing-smartness-and-addressing-status-in-the-classroom/

Status Interventions

2. Assigning Competence

public, specific to the task, intellectually meaningful

"The *public* part of assigning competence means that this praise is not an aside to an individual student or a communication with the parent. It takes place in the public realm of the classroom, whether in a small-group activity or whole-class discussion."

- Horn, Ilana (2012). *Strength in Numbers: Collaborative Learning in Secondary Mathematics* (p. 32). Nashville, TN: NCTM.
- Also available on Ilana Horn's blog teachingmathculture.wordpress.com: https://teachingmathculture.wordpress.com/2014/03/24/recognizing-smartness-and-addressing-status-in-the-classroom/

Status Interventions

2. Assigning Competence

public, specific to the task, intellectually meaningful

"It needs to be *specific to the task* so that students make a connection between their behavior and their mathematical contribution. Simply saying, 'Good job!' is not enough. Students need to know exactly what they did that is valued."

- Horn, Ilana (2012). *Strength in Numbers: Collaborative Learning in Secondary Mathematics* (p. 32). Nashville, TN: NCTM.
- Also available on Ilana Horn's blog teachingmathculture.wordpress.com: https://teachingmathculture.wordpress.com/2014/03/24/recognizing-smartness-and-addressing-status-in-the-classroom/

Status Interventions

2. Assigning Competence

public, specific to the task, intellectually meaningful

"The praise must be *intellectually meaningful* so that it contributes to students' sense of smartness. Praising a student for a 'beautiful poster' does not qualify as assigning competence, because making a beautiful poster does not display mathematical intellect. In contrast, if a teacher praises a student for a clear representation on a poster that helps explain an idea, that is intellectually meaningful because it is tied to mathematics."

- Horn, Ilana (2012). *Strength in Numbers: Collaborative Learning in Secondary Mathematics* (p. 32). Nashville, TN: NCTM.
- Also available on Ilana Horn's blog teachingmathculture.wordpress.com: https://teachingmathculture.wordpress.com/2014/03/24/recognizing-smartness-and-addressing-status-in-the-classroom/

Status Interventions

2. Assigning Competence

Look back at the vignette with Jonah and Violetta.

What could the teacher say in this example to assign competence?

Status Interventions

3. Random Groupings

Audio:
http://ilanahorn.tumblr.com/post/59496627217/one-of-the-most-common-questions-i-get-why-group

- How do you **feel** about random groupings?
- **Remember:** kids recognize their "role" (smart, dumb, etc.) in an intentional group and will fill it.
- It is okay to change random groupings for **social** (not academic) reasons (e.g.: "I know you two tend to be goofy together, so I'm going to switch your group.").

- Horn, Ilana (2012). *Strength in Numbers: Collaborative Learning in Secondary Mathematics* (pp. 29-30). Nashville, TN: NCTM.
- Also available on Ilana Horn's blog teachingmathculture.wordpress.com: https://teachingmathculture.wordpress.com/2014/03/24/recognizing-smartness-and-addressing-status-in-the-classroom/

Summary

***Status** is the <u>perception</u> of students' academic capability and social desirability.*

- Horn, Ilana (2012). *Strength in Numbers: Collaborative Learning in Secondary Mathematics* (p. 21). Nashville, TN: NCTM.

Summary

Status often prevents students from listening to each others' ideas and can negatively impact the formation of their mathematical identities.

Three status interventions:

1. Establishing and maintaining norms
2. Assigning competence
3. Random groupings

Closing Reflection

What are concrete steps you can take to promote effective student discourse in ***your*** classroom?

Suggestions for further reading

- Horn, Ilana “Strength in Numbers: Collaborative Learning in Secondary Mathematics”. NCTM, 2012
- Ilana Horn’s blog teachingmathculture.wordpress.com

- Good Info on Sequencing Student Responses in Whole-Class Discussions
  - Smith, Hughes, et al. “Orchestrating Discussions: Five practices constitute a model for effectively using student responses in whole-class discussions that can potentially make teaching with high-level tasks more manageable for teachers.” Mathematics Teaching in the Middle School, Vol. 14, No. 9. NCTM May 2009