The Real Deal: Patterns and Connections in Game Show Contexts

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Connections Standard

Instructional programs from prekindergarten through grade 12 should enable all students to:

- Recognize and use connections among mathematical ideas;
- Understand how mathematical ideas interconnect and build on one another to produce a coherent whole;
- **Recognize and apply mathematics in contexts outside of mathematics.**

National Council of Teachers of Mathematics (2000). *Principles and standards for school mathematics*. Reston, VA: The Council.

Mathematical Sense Making via Patterns

Patterns facilitate sense making by:

- Leading from the specific to the general or concrete to abstract;
- Encouraging conjecturing and testing of conjectures (maybe proof?);
- Connecting algebraic symbols to physical or geometric representations.

National Council of Teachers of Mathematics (2009). *Focus in high school mathematics: Reasoning and sense making*. Reston, VA: The Council.

Common Core

Mathematical Practices, include:

- Look for and make use of structure;
- Look for and express regularity in repeated reasoning.

National Governors Association (NGA) Center for Best Practices and Council of Chief State School Officers (CCSSO) (2010). *Common Core State Standards for Mathematics*. Washington, DC: NGA Center and CCSSO. http://www.corestandards.org

Principles to Actions

Eight mathematical teaching practices include:

- Implement tasks that promote reasoning and problem solving;
- Use and connect mathematical representations.

National Council of Teachers of Mathematics (2014). *Principles to Actions*. Reston, VA: The Council.

What contexts lend themselves to motivation and engagement?

- Students want to move, touch, try, do
- Their world has a high level of stimulus, interactivity, instant response
- They are attuned to media, including internet, Facebook, Twitter, Snapchat, Instagram, texting, YouTube
- Here is an idea . . .

Game show: Minute to Win it

NBC 2010-2011, GSN 2013-present

MTWI: Paper Scraper

- Paper Scraper: Blueprint; Sample solution
- Let's try it!
- What are some mathematical questions that could be asked about this scenario?
- What's the connection between the number of cards used and the number of levels completed?
- What other patterns do you see in the activity?

MTWI: Stack Attack

- ***Stack Attack***: Blueprint (Also called sport stacking)
- Let's try it!
- What are some mathematical questions that could be asked about this scenario?
- Watch these video solutions:
  - A Traditional Stack Attack (Lily)
  - A Young Stack Attack (Sofia - 4.5 years)
  - A Fast Attack! (Daniel)
  - Even Faster!! (Jeanie)

MTWI: A Bit Dicey

- A Bit Dicey: Blueprint
- Let's try it!
- What are some mathematical questions that could be asked about this scenario?
- Video: Sample solution (Michael)

How else can mathematics be drawn out of MTWI?

- Breakfast Scramble – “Assemble the front of a cereal box that has been cut into 16 even pieces.”
- Candelier – “Stack 5 levels of cans, starting with 1 on the bottom and 5 on the top, with a paper plate in between each level.”
- Separation Anxiety – “Player must separate a pile of 50 multicolored chocolate covered candies into 5 separate containers in a set color order.”

How else can mathematics be drawn out of MTWI?

- Cantagious – *"Start with a stack of 3 empty cans in 1 hand, 3 full cans in the other. Without setting them down, transfer stacks into opposite hands."*

GSN website:
http://gsntv.com/shows/minute-to-win-it/blueprints/

YouTube:
http://www.youtube.com/user/ThatBlueprintGuy

More ideas?

- What are your favorite contexts that lead to mathematical questions and offer opportunities to motivate and engage students?
- Other resources/game shows/hobbies?

Final Thoughts

- Motivation: Exciting contexts pique everyone's interests
- Mathematics: Numeric and geometric patterns are everywhere, just put on your mathematics-colored glasses to see them
- Connections: Mathematics is a powerful tool for describing the world precisely and quantitatively

Thanks for participating!

Have a great rest of the conference and safe travels home.

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