

Powerful Moments in Math Class

- Book: "Power of Moments" Dan & Chip Heath
- Elements of Defining Moments

Elevation-Peak End Rule (Peaks & Pits) We judge the experience by the beg and end, along with the highest peak. The first 2-3 minutes is the time when you capture the audience. The end is where it sticks. We typically start a lesson with a homework review and end with homework time. We need to start and end stronger with engagement (a higher peak). Doesn't have to be everyday.

3 Part Recipe Building a Peak:

Boost Sensory Appeal (more senses the more it stands out)

Raising the Stakes (investment)

Break the Script (disrupt the expectations of what the lesson should be like)

Levels of Inquiry: (Gradual Release)

Confirmation: (question, method, result (answer)-Propeller Exercise

In Math Class: Lecture/Direct Instruction

Structured Inquiry: (question, method, no answer)-Propeller Exercise (changed

The folding of the A & B.) The spin was opposite from the first drop.

In Math Class: Textbook, Worksheet, Homework

Guided Inquiry: (Question only) Adding weight to the object by using a paper clip(s).

In Math Class: word problems, don't line them up, etc. (Example: Cycling Shop-How many combinations can you make with 8 wheels?)

Open Inquiry (Students come up with the questions, method, and results)

In Math Class: Show a visual pattern and ask, "What questions could we ask?" Show the students a picture and have them ask a question.

Math Make-over: Get it down to wor- problem without a question. BE CAREFUL...it must make sense.

*The more autonomy they are given the more engaged they are.

Oddball Effect: Surprise effects time. (Shoe Slide over and over, but then change the shoe to a flower and the brain begins to build a story again.) This goes with Break the Script. Avoid autopilot in mathematics. Example: The number 29. All the ways you can make 29, but make limitations such as two operations, only addition, using exponents, order of operation, etc. (Class Designed Constraints) Starting a lesson with a peak: Example: Would you rather have \$500 a week or a million dollars? Find a way to get students interested in the lesson.

Grades 5-8 Maybe bring in an idea that is reflecting a current issue we are facing (i.e. news).

Pride—Successful, showed courage, capture us at our best, moments of Achievement. Zombie Video Answer: 1 & 2, 1 comes back, then 5 & 10, 2 comes back, then 2 & 1

Recognition Gaps: The biggest factor in job satisfaction is recognition for work done. Supervisors feel they recognize their staff more than the staff feels they are recognized. This happens in math class as well. How do we let students know they can be good in math?

Recognize Others: Effective recognition is personal not programmatic. Praise the work over the answer. Make it special/personal. Personal note. Redefine what it means to be good in math. Recognition and Math identity go hand in hand. Go back and forth between all three of the islands. Value you all three islands.

Concrete Thinking:

Representational Thinking: Pictorial, Blocks, etc

Abstract Thinking: formula/algebra

Insight Defining moments rewire our understanding of ourselves and mathematics Stretch for Self-Insight-Productively struggle.

Cognitive Connections: You have to have schema or a connection to memorize long term. Learning works when there is a connection. Rules are short term (example: neg times a neg is a positive.) Conceptual Understanding: Show with models, words, contexts, equations, and pictures. Slide The Chef's Hot and Cold Cubes.

Connection: Create shared meaning. People will welcome struggle when it's their choice in terms of how to participate, when they're given autonomy to work.

Design a synchronized moment that:

Invites shared struggle
connects to meaning

Deepen Ties:

Perceived Partner Responsiveness: Understanding, validation, and caring.

What is Math Leadership?

Two ways to change: Force and Persuasion

Force=resistance and sabotage.

Why do some inexperienced people feel they are qualified to make decisions?

The Culprits of change resistance

The apprenticeship of observation: people believe teaching is easy because they have observed teachers for over 10,000 hours in their lifetime and feel that they can do that too.

Dunning-Kruger Effect: inflative sense of ability without experience. AKA: Peak Of Mount Ignorance. Just because you can "do" math doesn't mean you can teach math. You have to send them down to the valley of despair

Core beliefs about math
Survival Instincts

What is math leadership?

Advocacy persuading people who matter to care about your idea.

Influence

Actions

Behind the Scenes

Out in front

Levels of Advocacy

Individual

Interpersonal

Organizations

Community

Policy

Advocacy Roles

Agitator: raises awareness/problem brought to the surface

Innovator: solves the problem

Orchestrator: Follow through (makes things happen)

You need to know your audience.

Advocacy and inquiry intersect at the question, "Why?"

Look at Advocacy/Inquiry Slide with low/high/boxes.

How to make that change?

Influence: What is in it for them? WIIFT

(See the worksheet slide WIIFT)

Want to make an impact or influence:

Simple

Concrete

Credible

Emotional

Stories

*Tap into a person's schema: pop culture,
metaphors, graphics, etc.

Jack Mezirow's 10 Phases of Transformative Learning-research this or look at slide.

What hits people in the feels?

Use the 5 Whys to find the root cause. If your answer lands on a person, ask why again.
NO BLAMING!

Categories of Resistance

1. Lack of confidence or lack of knowledge
2. Lack of Time
3. Tradition
4. Comfort
5. Another new initiative
6. Administrative
7. Exhaustion
8. Lack of Agency (no say in it)
9. Lack of belonging
10. Apathy (least common cause of resistance)

DAY 2

Connecting Yesterday to the rest of our time together

“The Tipping Point” by Malcolm Gladwell

*******Conceptual understanding**: why did you do those steps? Students must be able to answer the why or they do not understand the math.

See slide with flow chart...Establish mathematics goals to focus learning

Teach them how to think, not do. Students need to productively struggle. Ask a question rather than telling them what to do. Help them become critical thinkers.

Framework Slide:

Advocate
Design
Empower and Nurture
Monitor

8 Mathematics Teaching Practices

NOTES in slide show presentation Day 2 Shifts