



# PLEASE CHALLENGE ME!

Developing Rich Tasks to  
Support Productive Struggle

Alexandra Weyforth-HCPSS

Zac Stavish-HCPSS





# DEVELOPING A CLASSROOM CULTURE

# Day 1

---

When you were a student what did you do on your first day of school?

- Syllabus
- Procedures
- Ice breakers

# Starting Block

Through developing a classroom culture like this you are:

- Empowering Students
- Encouraging Risk Taking
- Fostering Mathematical Practices





# Questions

---

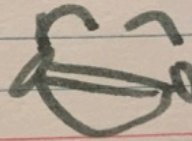
- You will need a marker.
- Look at the visuals around the room and post your mathematical questions.
- What do you observe? Notice? Feel?

# Turn to a partner

---

- How do you think your students would respond to the following questions:
  - ▣ How do you know when your struggle is productive?
  - ▣ Unproductive?

# Productive

When I feel like  
my brain is about  
to explode and  
I'm not whining 

~~When~~ I just don't  
do it quick )  
Still take my time

# Productive

I knew my struggle is productive  
when I make progress/learn from  
my mistakes

1. When you finish you feel  
great. Slowly learning but you  
get there

# Unproductive

When I'm unproductively struggling, I'm moving backwards or not moving at all. Or it's a continuous loop.

When I'm not persevering and not knowing what is happening and am getting frustrated as I keep going on.



# Unproductive

I know when it was unproductive when  
I don't remember it the next day.

**Unproductive Struggle**  
I know when I am listening  
to others and I don't understand  
what they are saying and  
I am not doing any work.

# Unproductive

When you begin to feel less and less confident and begin to question your math knowledge that you know is correct.

## Unproductive

- Feel inclined to give up
- Becoming stressed
- Don't see any progress
- Unfocused



# INCORPORATING STUDENT INTERESTS



# Gathering Information

---

How would you go about gathering the interests of your students?

Turn to a partner and identify the three top interests of your students.

# Interest Survey

**When to implement: Beginning of the year**

**How it helps: Allows you to get a general sense of likes and dislikes for classroom activities**

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

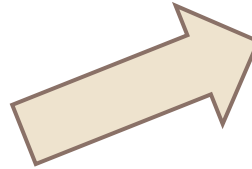
## Interest Survey

- If I had one wish, it would be:
- I have \_\_\_\_ brother(s)/ \_\_\_\_ sister(s). They are \_\_\_\_\_ years old.
- What I like to do at home:
- Hobbies:
- School would be better with:
- If I had a million dollars, I would:
- One thing I am really good at is:
- I do my best thinking when:
- This is what one of my teachers did last year that I liked the most:
- This is what one of my teachers did last year that I liked the least:
- Something else about me:
- Favorite:
  - Candy:
  - Movie:
  - Song:
  - Musical group:
  - Food|
  - Color:
  - Professional athletic team:
  - TV show:
  - Outdoor activity:
- Someone I admire is \_\_\_\_\_, because:
- Something I am curious about is:

# Pass the Animal

When to implement: During a brain break or last few minutes of class.

How it helps: Allows you to stay up to date on changing interests and hobbies



Meet Tommy V Jr.



# Warm-Up Questions

**When to implement:** During the beginning of class routine

**How it helps:** Allows you to read through more detailed interests and hobbies

- What are your plans for the weekend?
- Name 1 fun thing you did over break.
- What is your favorite thing to do outside of school?

# Grit Journal

**When to implement:**  
Periodically throughout the year. (Possibly bi-weekly)

**How it helps:** Allows you to read through more detailed interests and hobbies

**Grit Journal** ✓

Describe a time you have recently shown perseverance. What were you doing? What pushed you? How did you feel while you were trying to accomplish it? Did you think you might not? Why or why not?

I was snorkeling in the ocean and I was really nervous (I'm slightly claustrophobic). But my mom and dad helped me get in the water. I was really happy I got in, because my sister and I saw all these cool things! I thought I wasn't going to go in because I was really scared. But, when I did, I saw all these fish! And A LOBSTER! And these fish were playing with me! And then I saw that fish love Doritos. I was really happy I went snorkeling.

# Interest in tasks

## CD Task

You and your friend are taking a trip this weekend. You both decide to create a CD to listen to on the trip. A blank CD can hold 80 minutes of songs.



### Extension Questions:

1. Explain how you know your songs fit on your CD. Create a different strategy you could have used to determine your answer.
2. One song costs \$0.99 per song on iTunes. If you have a \$25 gift card for iTunes, will you have enough money for each of the songs you purchased for the CD? If so, how much money is left? If not, how much more money is needed to purchase the songs?

# Interests in Tasks

## Who can Rap the Fastest?

Rapping refers to "spoken or chanted rhyming lyrics". The art form can be broken down into different components including "content", "flow" (rhythm and rhyme), and "delivery". Rapping is distinct from spoken word poetry in that it is performed in time to a beat. Three famous rappers of 2013 include Nicki Minaj, Busta Rhymes, and Twista, but who raps the fastest?



Artist	Rap Rate
 Nicki Minaj	2,303 words in 7 minutes
 Busta Rhymes	1,700 words in 5 minutes
 Twista	3,350 words in 10 minutes

Determine which artist raps the fastest using the rates above. Then justify your answer using mathematical reasoning.

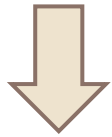
---

---

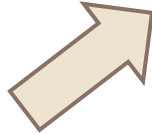
---

# Process

Continuously gather information about student interests



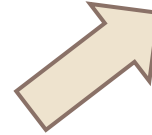
Strategically utilize interests in tasks



Students feel connected to the math material



Entry points are created



-Perseverance  
-Productive Struggle  
-Success







# INCORPORATING CHOICE

# How does choice impact your learning?

---

- How might having choices impact student learning and behavior?
- How do students respond to choice?

# Profit, Profit, Profit

- What affects how much someone makes?
- Choose someone or a place that makes money to research their profit.
  - They looked at ways they make money, how they spend, filled out an organizer
  - Ways they could represent
  - Represent it in multiple ways
    - Function table
    - Graph
    - Equation using function notation
  - Created their own rubric
  - Gallery walk – one student would stay and explain

# Debate Project

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

**Directions:** Based on the topics that we discussed in class for the debate project, place a **1** next to the topic that is your top choice and a **2** next to your second choice.

- |   |  |
|---|--|
| <input type="checkbox"/> FOR gender-based classes                     | <input type="checkbox"/> YES time of class affects performance |
| <input type="checkbox"/> AGAINST gender-based classes                 | <input type="checkbox"/> NO time of class affects performance  |
| <input type="checkbox"/> PRO high schools should start at later times |  |
| <input type="checkbox"/> CON high schools should start at later times |  |

# Debate Project

---

- Choose a side
- Background research
- School-wide data collection
- Create rubric and organizer
- Debate!

# Debate Project

[http://home.uchicago.edu/~npope/morning\\_afternoon.pdf](http://home.uchicago.edu/~npope/morning_afternoon.pdf)

<http://www.greenfieldnow.com/news/44787532.html>

Data Pool stuff

People who prefer afternoon classes- 298

People who prefer morning classes- 122

Morning A and B grades-168

Morning C or lower grades-85

Afternoon A and B grades-129

Afternoon C or lower grades-57

4.0 GPA in morning-37

4.0 GPA in the afternoon-37



# Adapting Tasks



What are your top  
three

“Go To” sites for tasks?



# Deflate gate


- Integers
- Introduction to opposites and absolute value
  - ▣ Used two balls
  - ▣ Bag of footballs - 12.5 to 13.5 PSI
  - ▣ What are the chances we get caught?

# Babysitting Task

- Introduction to Exponential Functions
- Which family should they babysit for?
- Construct a viable argument (rubric)
- Toolbox
- Follow-up

# Pancake Video





- 
- “What you didn’t feel, we didn’t feel. I honestly think you were singing to us but not necessarily singing for yourself first. I want your answer to be, ‘I felt amazing’ and you’ll notice, because we turned our chairs around because we felt it too.”

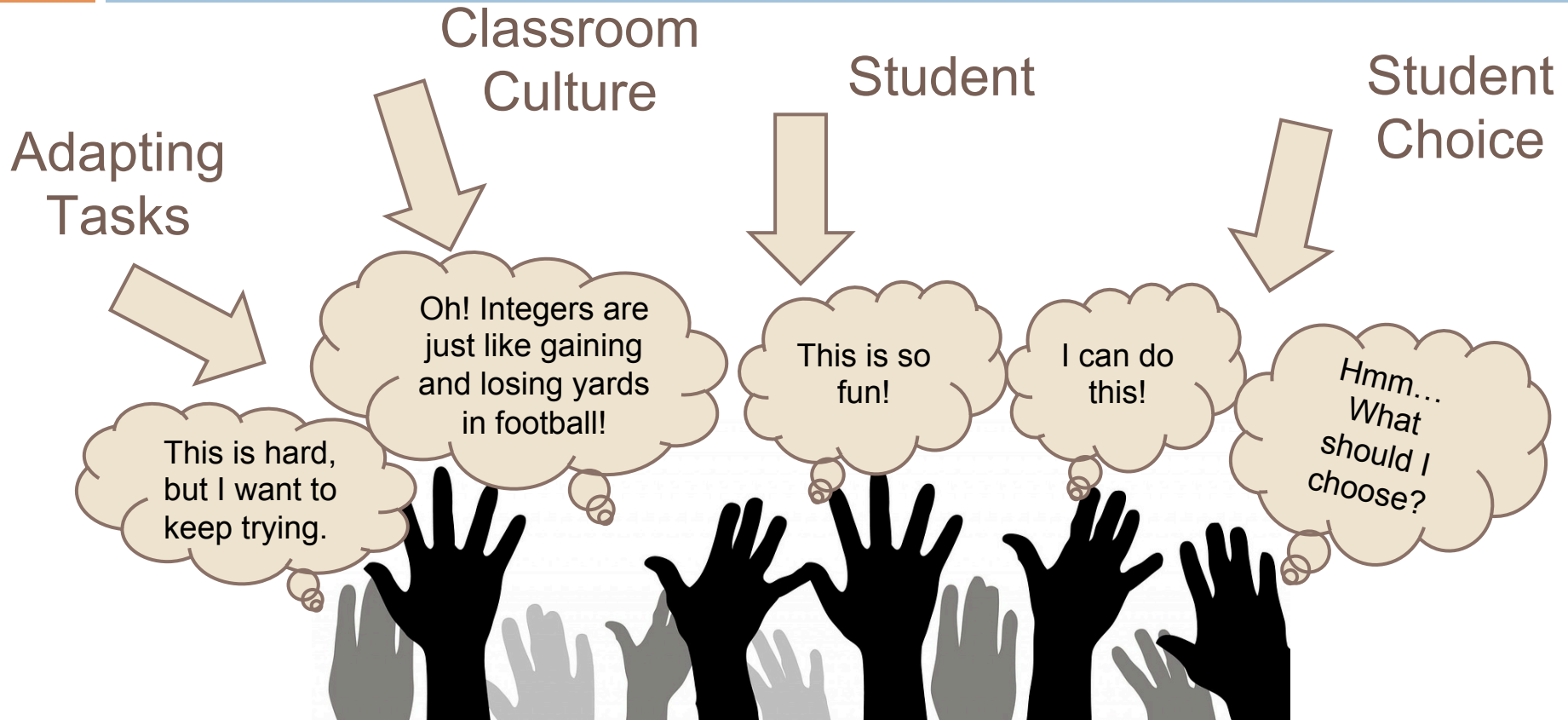
Pharrel Williams

# Task Development Organizer

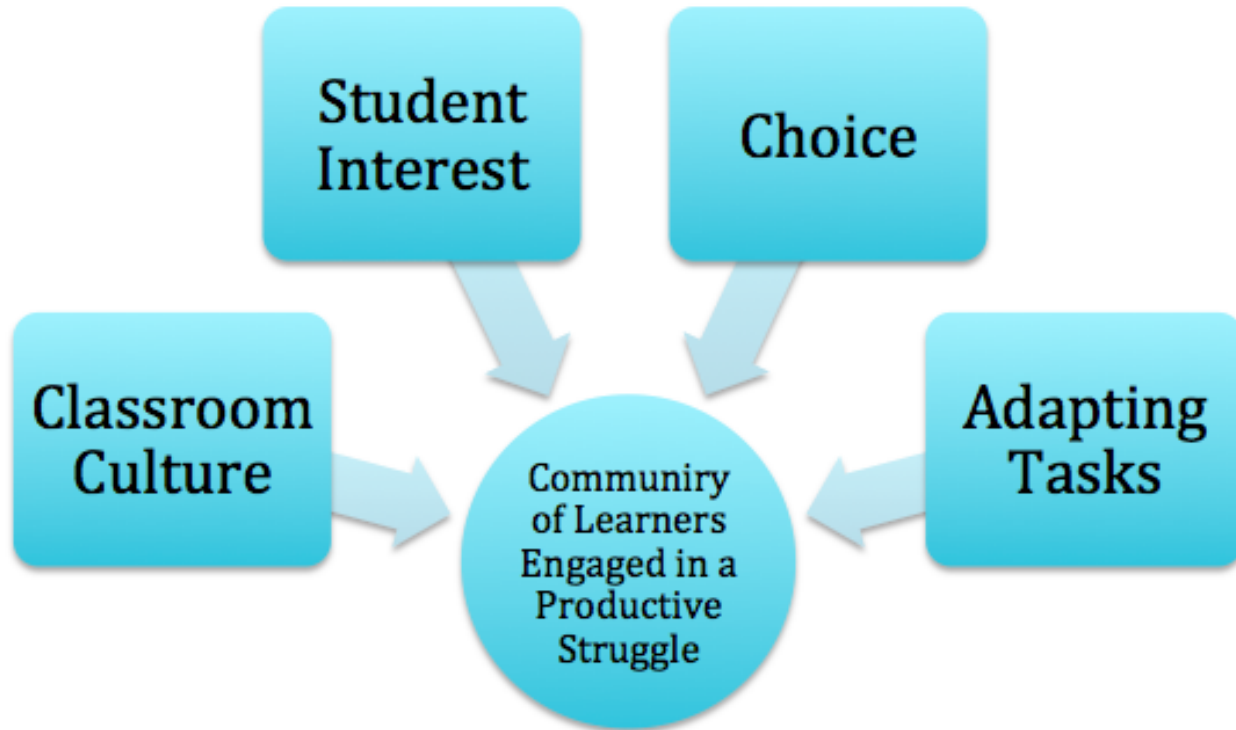
## Task Generator Template

<b>Content Standard(s):</b>		
		
<b>Students Interest:</b> <i>(What are your students interested in? What real world problems can they relate to?)</i>	<b>Choice</b> <i>(How might we provide choice? Technology? How can we teach to an information-based society? How can we encourage curiosity?)</i>	<b>Arts</b> <i>(What elements of the arts might be used to stimulate curiosity, make mathematical connections, and explore meaningful content?)</i>
		
<b>Entry Point (s):</b> <i>(How will you motivate? How will you enter into this concept?)</i>		

# The results...



# Putting it all Together!



# Questions?





Thank you!

---

michael\_stavish@hcpss.org

alexandra\_weyforth@hcpss.org