Building on Instructional Practice: Focus on Discourse – Day 1

Rev 5/24/23 (ce)

Opening

Building on Discourse, Day 1

"Our job is to create rooms filled with students' voices. Not to be the main voice."

—Pernille Ripp

Sign in, and make a name tag.

Pick a card from the Uno deck. Choose one of the tables that match your color.

CPM

More Math For More People

Building on Discourse
Day 1

name
name@cpm.org

CPM

More Math For More People

Welcome

Equity Principles

- The goal of teaching is to help all students transition from dependent to independent learners.
- Relationships are of vital importance.
- Student uniqueness is an asset, not a deficit.
- Reflection is a crucial part of growth.

CPM uses these principles to guide our vision and mission of More Math for More People.

Math Task

Inspirations & Ideas: Lesson 4.7, Problem 4-17

Student math goal:
Demonstrate your understanding of ratios by applying strategies to the problem, “How Far Did She Run?”

Team collaboration goal:
Share ideas with the team and be willing to try multiple strategies.

Math Task

Assigning Team Roles

Student

Assign team roles: Add up the digits in your birthday.

(ex: June 18, 1981 = 6 + 1 + 8 + 1 + 9 + 8 + 1 = 34)

Facilitator – the person with the greatest sum

Resource Manager – the person with the second greatest sum

Recorder/Reporter – the person with the third greatest sum

Task Manager – the person with the least sum

Math Task

Connect to the Math Lesson and Set Up

Team task:

Task Manager: **Guide** your team to set up supplies in the time allowed, and **pick up** the handout, *"How Far Did She Run?"*

Facilitator: **Check** that everyone has paper, pencil, or a digital workspace.

Resource Manager: **Pick up** additional resources from the supply table.

Recorder/Reporter: **Lead** your team in ***(insert your choice of physical activity from agenda)*** after they are all set up and ready to begin the lesson.

Did you know exercising increases your brainpower and your ability to focus and learn?

Math Task

Launch – How Far Did She Run?

Independently read "*How Far Did She Run?*" using the ***Three Reads protocol***. Each time you read the problem, you will be reading for a different purpose.

1. **First read:** What is this about? Who is involved? What is the situation?
2. **Second read:** What math is being done? What mathematical vocabulary is being used?
3. **Third read:** What strategies might I use to solve this? How might I begin solving this? What might the answer be?

Math Task

Learning Agreements

We value sharing ideas, even when our ideas are unfinished.

We believe that listening to our classmates' ideas help us understand math better.

We believe questions and discussion deepen mathematical understanding.

Math Task

Explore – How Far Did She Run?

Teammates Consult

Team task:

1. **Facilitator: Lead a Teammates Consult** to discuss the problem and agree on a strategy.
2. After the team agrees on a strategy, go to your Vertical Non-Permanent Surface (VNPS).
3. As a team, use your strategy to solve Problem 4-17.

Math Task

Closure - Student Connections

Selected Team Presentations:

As teams share their presentations, think about the following questions:

How is this team's approach similar or different from your team's approach?

What questions do you have for the team?

Does their approach help clarify your own thinking?

Math Task

Closure - Team Discussion

Discuss in your teams:

Now that you have **listened** to the different strategies teams used in order to find the missing value, **reflect** on the following question:

How are the different ways of finding the missing value connected?

Math Task Closure

Reflection on Learning Target and Success Criteria

Whiparound

Learning Target:
Consider how a teacher's decisions and actions affect meaningful math discourse.

1. How does discourse contribute to an effective learning environment?

2. What role does listening and speaking play in a collaborative learning environment?

Opening

Housekeeping

- Bathrooms
- 8:00 AM – 4:00 PM
- Breaks scheduled and as needed
- Lunch
- Parking Lot poster
- Supply/resource table

Opening

Day 1 Outcomes

Together we will:

- Experience the Effective Mathematics Teaching Practices through the design of the *5 Practices*.
- Better understand how facilitating meaningful mathematical discourse develops an equitable, student-centered classroom.
- Identify the traits of a rich task.
- Understand how mathematical goals drive meaningful mathematical discourse.

Opening

Agenda

Morning

Math Task

Opening

Building on Discourse

Selecting Rich Tasks

Afternoon

Lunch

Establishing Math Goals

Anticipating Student Responses

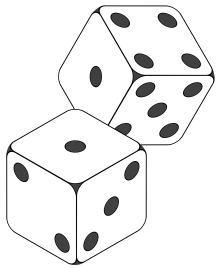
Session Closure & Homework

Opening

Home Team Icebreaker

Teacher

Dice-Breaker



1. **Facilitator** starts by rolling the dice at your table.
2. Add the numbers on your dice, and find the question that corresponds to the sum.
3. Read the question aloud, and provide all team members time to answer.
4. Pass the dice to the person on your right and repeat the process.

Building on Discourse

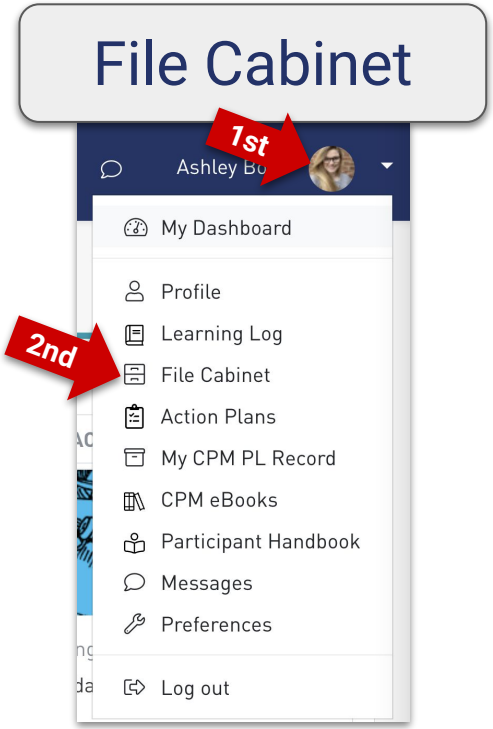
Focusing Learning

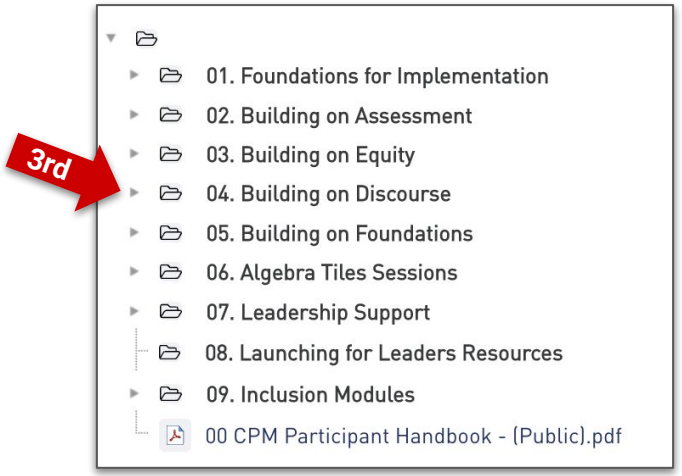
Learning Target:

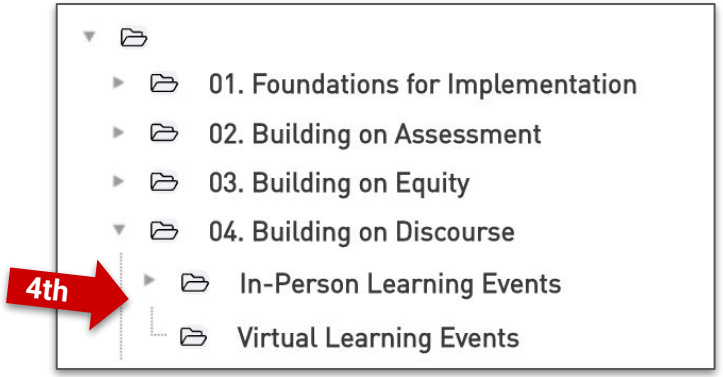
Analyze the traits of effective discourse.

Building on Discourse

Tech Tip - Getting Session Resources







Building on Discourse

Research on Discourse with Students

Successful or Superficial? Discussion in David Crane's Classroom

File Cabinet (Portal):

In the upper right dropdown menu, click on **File Cabinet**.
Next choose **Building on Discourse.**
Select the tab **In-Person.**
Select the tab **Day 1.**
Click on the document **Successful or Superficial? Discussion in David Crane's Classroom.**

Building on Discourse

Research on Discourse with Students

Your task:

1. **Read** the article while you consider:

   How does this connect to your classroom?

   What challenges your thinking in the analysis section?

2. 

Whiparound in your team.

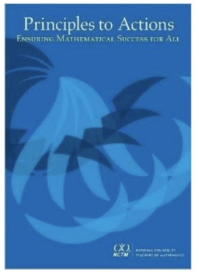
   Share your connections, challenges, and “aha” moments.

Building on Discourse

What is Discourse?

Facilitate Meaningful Mathematical Discourse

+ *Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments.*
+ *Discourse is the mathematical communication that occurs in a classroom. Effective discourse happens when students articulate their own ideas and seriously consider their peers' mathematical perspectives as a way to construct mathematical understandings.*

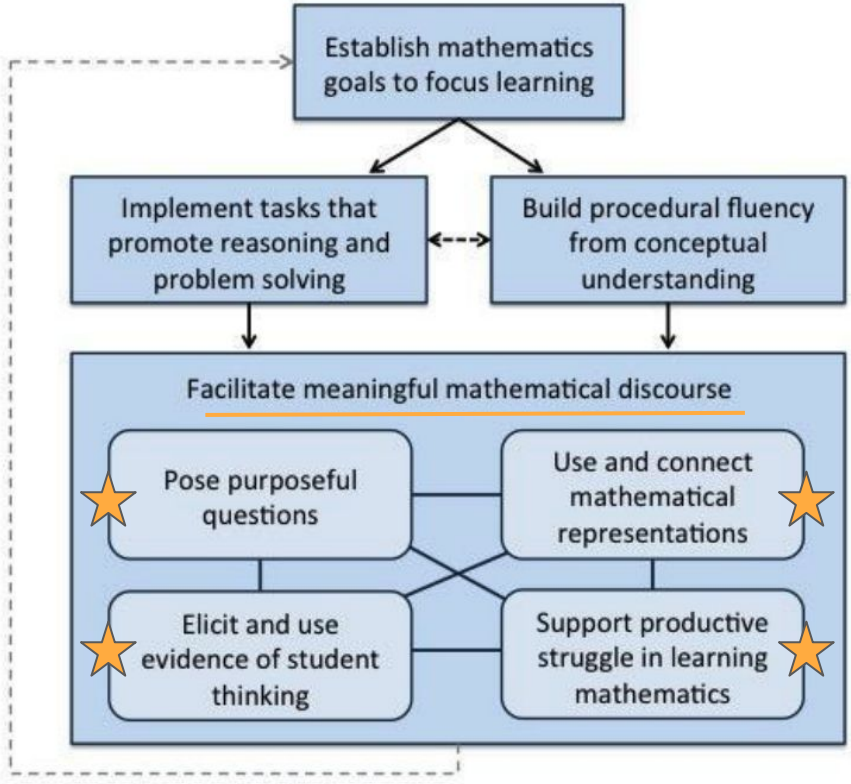


Building on Discourse

Effective Mathematics Teaching Practices in Action

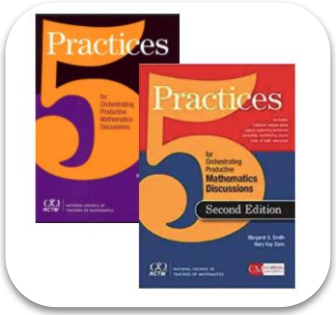
A framework for mathematics teaching that highlights the relationships between and among the eight effective teaching practices.

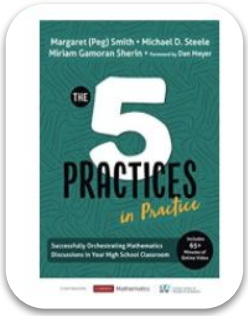
(NCTM,*Taking Action*, 2017)

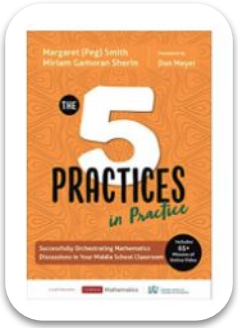


Building on Discourse

5 Practices – Resources







What are the *5 Practices*?

- Anticipating
- Monitoring
- Selecting
- Sequencing
- Connecting

(Smith, Steele, & Sherin, 2019)

Building on Discourse

Reflection on Learning Target and Success Criteria

Learning Target:
Analyze the traits of effective discourse.

Success Criteria:
Name traits of effective, meaningful discourse.

Take a break

Please sit together in teams of 4 with teachers of the same course.

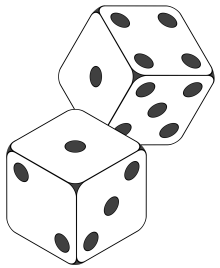
Option: Co-Teachers → Join the team of the course you teach or support.

Selecting Rich Tasks

Dice-Breaker, Round 2

Teacher

Dice-Breaker



1. Assign roles based on the placemat on your table.
2. Someone starts by rolling the dice at your table.
3. Add the numbers on your dice, and find the question that corresponds to the sum.
4. Read the question aloud, and provide all team members time to answer.
5. Pass the dice to the person on your right, and repeat the process.

Selecting Rich Tasks

Focusing Learning

Learning Target:

Understand the traits of a rich task.

Selecting Rich Tasks

Effective Mathematics Teaching Practice

Implement Tasks that Promote Reasoning and Problem Solving

"Effective teaching of mathematics engages students in solving and discussing tasks that promote mathematical reasoning and problem solving and allow multiple entry points and varied solution strategies."

*(*NCTM, *Principles to Actions*, 2014*)*

Selecting Rich Tasks

What is a Rich Task?

A rich task should:

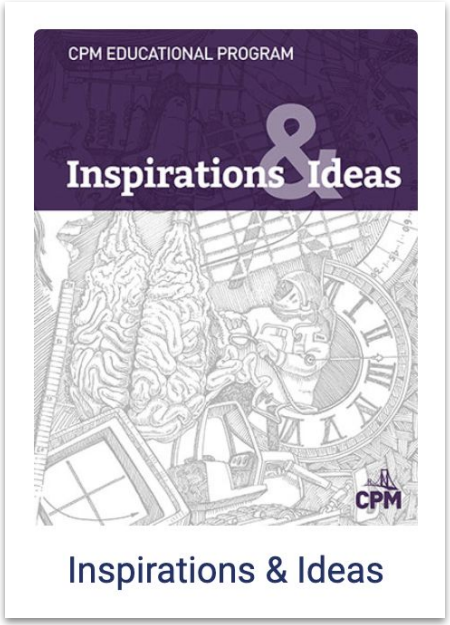
- build on students' current understanding.
- engage in exploration.
- allow for multiple entry points.
- require justification or explanation.
- make connections.
- provide opportunities to look for patterns, make conjectures, and/or form generalizations.

Selecting Rich Tasks

Finding Rich Tasks in Your Textbook

What do you notice about the math task from Inspirations & Ideas, Lesson 4.7?

What is modified? Why?



Selecting Rich Tasks

Identifying Rich Tasks - Your turn

Team Task: Identify a rich task:

1. Preview lessons from your course together as a team.
2. Choose one problem that meets the criteria for a rich task.
3. **Task Manager:** Make sure everyone in your team agrees.
4. Solve the math problem independently.
5. Share your strategies, and brainstorm other possible strategies as a team.
6. Consider ways to increase the richness of the task.

Selecting Rich Tasks

Justify Your Choice

Teacher

Swapmeet

1. **Choose one person** to represent your team and travel**.**
2. **Share** the following with other teams.
    a. *Which lesson did you choose and why?*
    b. *How might you adjust the lesson to make the task richer?*
3. **After the visiting person shares**, the home team asks clarifying questions.
4. **Home team shares** their rich task, and the visiting team asks clarifying questions.
5. **Report back** home to **revise your rich task** as needed.

Selecting Rich Tasks

Reflection on Learning Target and Success Criteria

Learning Target:
Understand the traits of a rich task.

Success Criteria:

1. Identify a task from your course that has the traits of a rich task.
2. Consider how a potential task can be modified to be made richer, either through removing scaffolds or shifting the focus.
3. Identify how the traits of a rich task promote an equitable classroom culture.

Selecting Rich Tasks

Action Plan

Title: Implement Rich Mathematical Tasks

I will use this practice to create discourse in an equitable, student-centered way by _____.

Action Plan (Portal):

In the upper right dropdown menu, click on **Action Plans.**
Select **Discourse Action Plan.**
Find the box titled **Implement Rich Mathematical Tasks.**
Click in the box to record your thoughts.

Lunch Time

Opening

Agenda

Morning

Math Task

Opening

Building on Discourse

Selecting Rich Tasks

Afternoon

Lunch

Establishing Math Goals

Anticipating Student Responses

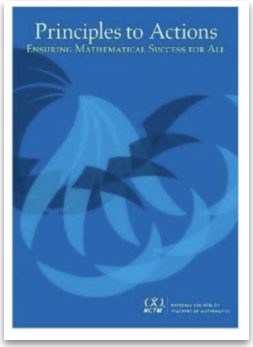
Session Closure & Homework

Establishing Math Goals

Effective Mathematics Teaching Practice

Establish Mathematics Goals to Focus Learning

"Effective teaching of mathematics establishes clear goals for the mathematics that students are learning, situate goals within the learning progressions, and use the goals to guide instructional decisions." (NCTM, Principles to Actions, 2014)



Establishing Math Goals

Focusing Learning

Learning Target:
Understand how a learning goal focuses students' learning while maintaining the richness of the task.

Establishing Math Goals

Learning Goals: What are they?

Independently think about the following questions.

What is the intent of a learning goal?

How do you currently set goals for your lessons?

Establishing Math Goals

Lesson goal

Learning Intent

Learning Target

Content Standards

Objective

“I can” statement

Success Criteria

Learning Goal

SWBAT (Students will be able to…)

Establishing Math Goals

Establishing the Learning Goal

*"The learning goals **explicitly state** what students **will understand about mathematics** as a result of engaging in a particular lesson. The learning goal needs to be stated with sufficient specificity such that it can **guide your decision making** during the lesson."*

(Smith and Sherin, 2019)

Establishing Math Goals

Connecting The Lesson to the Learning Goal

Establishing Math Goals

Determining the Learning Goal

What will students understand about math?

What would we see students doing or saying?

What might students need to solve the problem?

What connections would we want students to make?

Establishing Math Goals

Determining the Learning Goal: Math Task

What will students understand about math?

Doing/Saying:

Part-to-part, Part-to-whole, Using multipliers, Explaining how to keep the proportion equivalent

Need:

Blocks
Colored pencils
Giant One
Prior work with ratios

Connections:

Equivalence between representation and to the given ratio

Establishing Math Goals

Learning goals - Team Sort

Team Task:

1. **Read** through each goal with your team.
2. **Discuss** with your team if the goal is considered to be a strong, clear goal. **Justify** your reasoning.
3. **Share** out your team's responses in whole group.

Establishing Math Goals

Possible Learning Goals

Learning Goal Option #1:
Use multipliers to find equivalent ratios.

Reasoning for not selecting this as our goal:

- Focuses on procedural
- Too narrow
- Removes the multiple strategies of the task

Establishing Math Goals

Possible Learning Goals

Learning Goal Option #2:

CCSS.MATH.CONTENT.6.RP.A.3
Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

Reasoning for not selecting this as our goal:

- Too broad
- Doesn't help the teacher focus the lesson

Establishing Math Goals

Possible Learning Goals

Learning Goal Option #3:

Students will recognize that a proportion consists of two equivalent ratios: part-to-part or part-to-whole. They will be able to explain multiple ways to determine the missing value, found by the same multiplier.

Reasoning why we selected this as our goal:

- Helps the teacher focus on the “look fors”
- Lets students make connections

Establishing Math Goals

Audiences

Learning goal:

Students will recognize that a proportion consists of two equivalent ratios: part-to-part or part-to-whole. They will be able to explain multiple ways to determine the missing value, found by the same multiplier.

Student math goal:

Demonstrate your understanding of ratios by applying strategies to the problem, “How Far Did She Run?”

Establishing Math Goals

Establishing the Learning Goal

“Formulating clear, explicit learning goals sets the stage for everything else.”

(Hiebert et al., *Preparing Teachers to Learn from Teaching*, 2007, p.57)

Establishing Math Goals

Connecting The Learning Goal To The Lesson

Establishing Math Goals

Voice and Agency

Pairs Chat

What did you experience during the learning goal activity that made space for your voice and agency?

Establishing Math Goals

Reflection on Learning Target and Success Criteria

Learning Target:

Understand how a learning goal focuses students' learning while maintaining the richness of the task.

Success Criteria:

1. Write a learning goal for your task that focuses on what students will understand about mathematics.
2. Consider how the learning goal will support students in making mathematical connections and how the goal will support teachers' instructional moves.

Establishing Math Goals

Action Plan

Teacher

Title: Set Clear Mathematical Goals

I will use this practice to create discourse in an equitable, student-centered way by _____.

Action Plan (Portal):

In the upper right dropdown menu, click on **Action Plans**.
Select **Discourse Action Plan.**
Find the box titled **Set Clear Mathematical Goals.**
Click in the box to record your thoughts.

Take a break

Anticipating Student Responses

Data Chat Launch

Teacher

Individual Task:

Write and respond to the following questions.

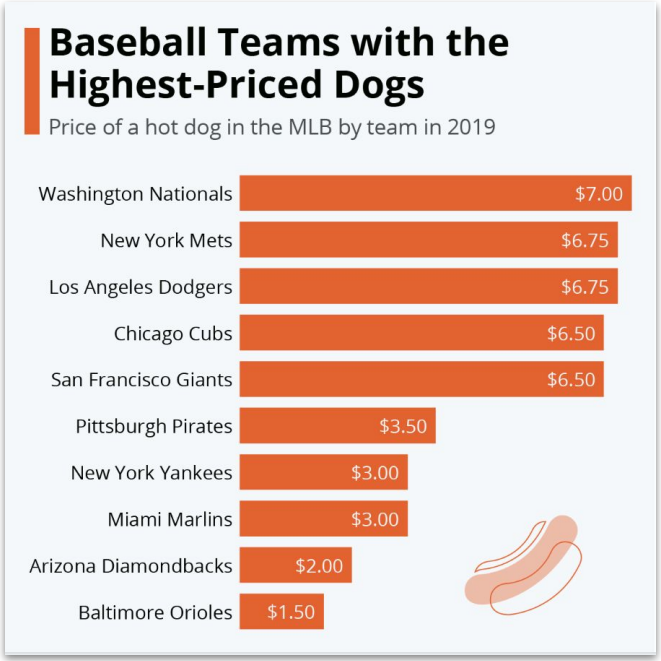
Team Task:

Talk and discuss the graph on your table with your team.

How many prices are displayed on this graph? Why do you think this many are displayed?

What is the mean hot dog price of the data shown? What does this number tell you?

Why are the data displayed as a horizontal bar graph? Could the data be represented using a different type of representation? If so, what kind?



Anticipating Student Responses

Focusing Learning

Learning Target:
Determine different entry points and paths through the rich task.

Anticipating Student Responses

Anticipate

Your Task:

1. **Individually** work through the rich task your team selected for your learning goal. Reflect on the questions below, and find multiple ways to solve it.
    a. *How would you solve the problem? How might students solve it?*
    b. *What common misconceptions might students have?*
2. As a team, at your VNPS station, **collaboratively write** your strategies and **discuss** anticipated student mistakes.
3. Be **prepared to share** your anticipated responses and strategies for your chosen rich task.

Anticipating Student Responses

Getting Inside the Problem

Hosted Gallery Walk

Your Team Task:

1. **Share** your thinking with the visiting teams.
2. **Discuss**:
   - ★ What are the entry points to this problem?
   - ★ What did you need to know to solve this problem?
   - ★ What might be challenging for students?
   - ★ What strategies do you want to look for as students solve this problem?

Anticipating Student Responses

An Ongoing Process

*"This practice involves taking a close look at the task to identify the **different strategies** you expect students to use and to think about **how you want to respond** to those strategies during instruction."*

—The 5 Practices in Practice, pg. 37

This work will be used again tomorrow, so please **save** your work.

Anticipating Student Responses

Reflection on Learning Target and Success Criteria

Learning Target:

Determine different entry points and paths through the rich task.

Success Criteria:

1. Find multiple solution strategies for your rich task.
2. Consider how students will approach this problem, including where they might struggle.

Anticipate Student Responses

Action Plan

Title: Anticipate Student Responses

I will use this practice to create discourse in an equitable, student-centered way by _____.

Action Plan (Portal):

In the upper right dropdown menu, click on **Action Plans**.
Select **Discourse Action Plan.**
Find the box titled **Anticipate Student Responses.**
Click in the box to record your thoughts.

Closure

What have we learned?

Closure

Focusing Learning

Learning Target:
Consider how the *5 Practices* support effective teaching and equitable classroom culture.

Closure

Selecting Tasks, Setting Goals, & Anticipating

0. Selecting a rich task and writing a lesson goal:

- Select a rich task.
- Identify specific lesson goals.
- Select and plan the activity.

Learning Event Module in the Portal:
Open up the learning event module.
Scroll down to Day 1.
Open Day 1 Feedback.
Complete the Feedback form.

1. Anticipating:

- Anticipate student strategies.
- Do the problem in many *different* ways.

(Smith, Steele, & Sherin, 2019)

Closure

Reflecting on Building on Discourse and the *5 Practices*

Teacher

Carousel: Station Rotation

Team Task:

1. **As a team,** discuss the question posed on your VNPS.
2. **Write 1-2** responses on the poster for others to view.
3. **Read and review** other teams' suggestions.

Closure

Classroom Culture

*"Research shows that when schools **fully integrate** social, emotional, and academic development into K-12 education, academic **performance improves**, students are **more engaged** in school, and as a result, they are **more likely to graduate** from high school and attend and graduate from college."*

—Aspen Institute, 2019

Closure

SEAD Themes

Social Emotional and Academic Development (SEAD)

Agency

Combines identity (who we are) with what we can do

Belonging

Sense of fitting in or feeling like you are an important member of a group

Discourse

Ways of representing thinking, talking, agreeing, and disagreeing

Identity

Deeply held beliefs about our ability to participate and perform and use math effectively in our lives

Closure

Reflection on Learning Target and Success Criteria

Learning Target:

Consider how the *5 Practices* support effective teaching and equitable classroom culture.

Success Criteria:

1. Name teacher moves that address Practices 0 and 1.
2. Critique the effect of classroom culture on meaningful mathematical discourse.

Closure

Action Plan

Teacher

"Our job is to create rooms filled with students' voices. Not to be the main voice."

—Pernille Ripp

Go back through your rough draft thoughts and **revise and finalize** your Day 1 Action plan. Consider adding teacher moves from your Index Card Carousel into your action plan.

Action Plan (Portal):

In the upper right dropdown menu, click on **Action Plans**.
Select **Discourse Action Plan.**
Click in the box to record your thoughts.

Closure

Outcomes

Together we will:

+ Experience the Effective Mathematics Teaching Practices through the design of the *5 Practices*.
+ Better understand how facilitating meaningful mathematical discourse develops an equitable, student-centered classroom.
+ Identify the traits of a rich task.
+ Understand how mathematical goals drive meaningful mathematical discourse.

Closure

- Parking Lot
- Attendance

  Either scan the QR code

  OR

  Enter passcode in the portal

  XXXXXX

Insert Scan Code here

- Suggested Next Steps:
  - Finish compiling several student responses for your selected rich task for tomorrow's activities.

CPM

More Math For More People

Text Font: Roboto

Title Font Size: 24

Subtitle Font Size: 18

Color coding:

- **Teacher Lens**: 006DAB
- **Learning Log**: 006DAB
- **Student Lens**: 41AD49
- **Housekeeping**: 233368
- **Content Module**: 006D41
- **Thread**: 006D41

Text should be primarily black or dark blue (#233368)

Note: Drop zones of icons on layouts are not moveable.

HOUSEKEEPING

ANCHOR PAGE

WELCOME

PUZZLE

TEAM GOAL

TEACHER LENS

LEARNING LOG

THREAD

CONTENT MODULE

MATH GOAL

STUDENT LENS

EQUITY LENS

ASSESSMENT

PRODUCTIVE STRUGGLE

RESEARCH PILLARS

MSP

COLLABORATIVE LEARNING

PBL

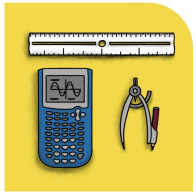
STUDY TEAMS

LEARNING TARGET

TASK CARD

TEAM ROLES ALL

RESOURCE MANAGER



TASK MANAGER

REPORTER RECORDER

FACILITATOR

IMPLEMENTATION ACTION PLAN

TEAM ROOMS

IMPLEMENTATION PROGRESS TOOL

STTS