

Discourse Workshop 2

Going Deeper: Facilitating Productive Classroom Talk

OVERVIEW

The purposes of Quality Talk (QT) Discourse Workshop 2 are to (a) continue to think about *teacher moves*—discourse tools for facilitating productive classroom discussions, and (b) explore argumentation in mathematics, including three main parts of arguments: claims, evidence, and reasoning. Argumentation is a means through which people dialogically explore ideas using claims supported by evidence and reasoning.

Discourse Workshop 2 also includes a section in which preservice teachers are shown examples of how argumentation may be presented in an elementary classroom, including different ways of practicing the use and understanding of arguments. The workshop concludes with a practice in which PSTs identify different parts of arguments from a transcript of discourse.

OBJECTIVES

At the end of this lesson, students will be able to:

- ◆ describe and identify the use of teacher moves in the classroom;
- ◆ explain what argumentation is;
- ◆ identify the claim, evidence, and reasoning within an argument.

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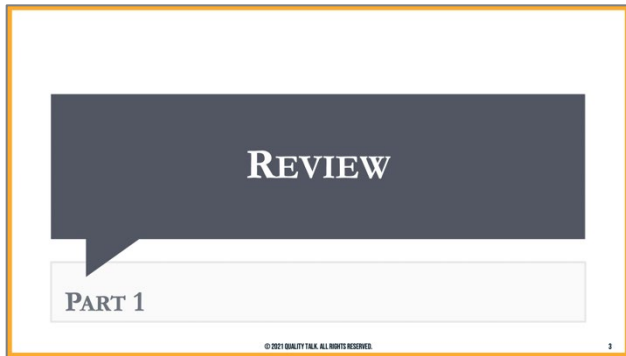
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MATERIALS

- ◆ QT Workshop 2 PowerPoint Slides
- ◆ QT Workshop 2 Worksheet
- ◆ QT Teacher Move Worksheet

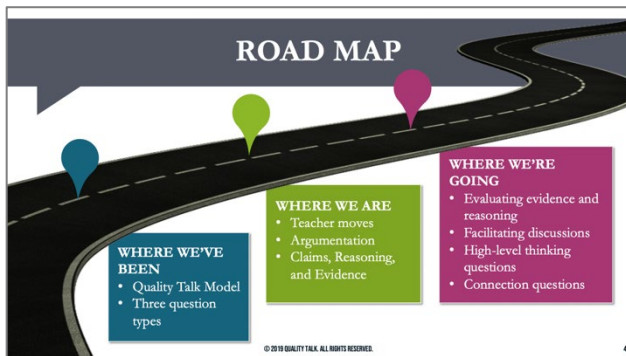
Part 1. Review

1.1 Road Map



Display **Slide 3**.

Inform preservice teachers (PSTs) that the discourse workshop will begin with a review of what they have learned so far as well as an overview of what will be covered in this and future workshops.



Display **Slide 4**, which shows what the PSTs have learned so far, what they will be learning during this lesson, and what they will learn in future lessons.

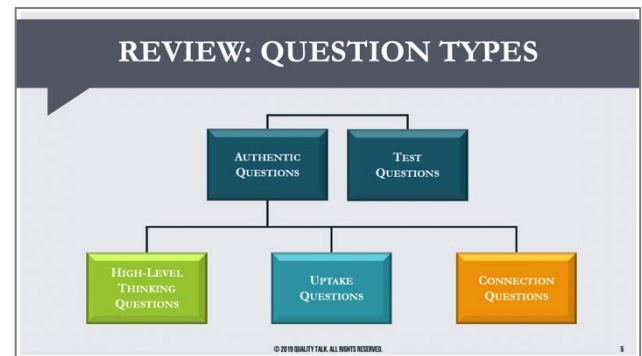
Remind PSTs that in the first Quality Talk (QT) lesson, they learned about the importance of talk in mathematics and about aspects of the QT model, including pedagogical principles for supporting productive talk. They also learned about and practiced writing and the first three question types (i.e., Authentic Questions, Test Questions, and Uptake Questions).

In this lesson, PSTs will continue to learn about teacher moves and will explore argumentation,

including claims, evidence, reasoning, elaborated explanations.

In future lessons, PSTs will learn how to evaluate evidence using the ARC test and how to determine the strength of the reasoning used in an argument, as well as explore some new question types and continue to work on becoming more skillful discussion facilitators.

1.2 Review

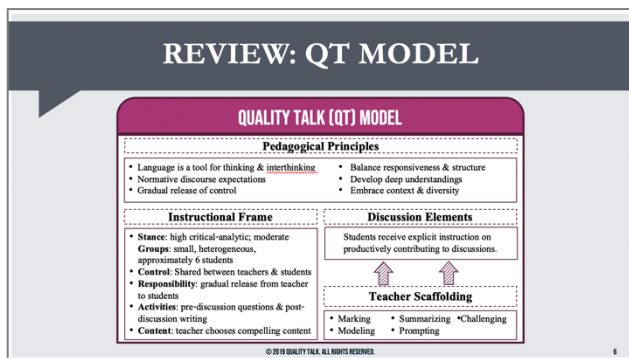


Display **Slide 5**, which shows the question types.

Remind PSTs that authentic questions are open-ended questions where there are multiple possible answers that come from thinking about the mathematics of the task, while test questions are questions that generally have only one correct answer and are not open to argument or discussion. Uptake questions are a type of authentic questions about something that someone else said previously and are often used to elicit a more detailed explanation of someone's thinking.

Tell the PSTs that they will learn about the two other types of authentic questions in a future lesson.

Part 1. Review



Display **Slide 6**, which reviews the QT Model. Inform the PSTs that the graphic on this slide represents the four parts of the Quality Talk model, which includes:

- ◆ Pedagogical principles
- ◆ Instructional frame
- ◆ Discourse elements
- ◆ Teacher scaffolding

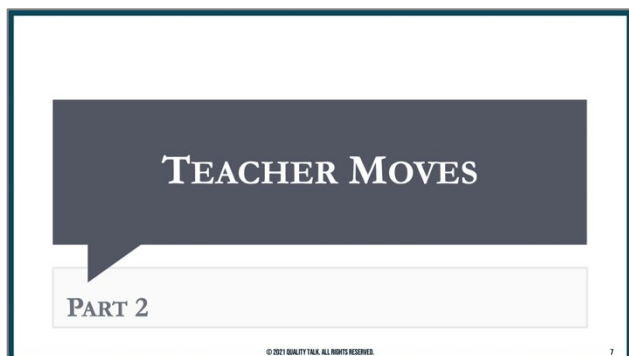
Remind the PSTs that the pedagogical principles are a set of core ideas about teaching and learning requisite for stimulating productive talk about text and content that can facilitate a dialogically rich, safe space for discussions in the classroom. The second part of the QT model, the instructional frame, outlines how Quality Talk should be employed in practice, encompassing a variety of situations, settings, and specifications.

Third, the discourse elements include types of questions and responses that are both indicators of critical-analytic thinking and tools that students can use to engage in critical-analytic thinking.

The fourth part of the model is teacher scaffolding, often called *teacher moves*. Inform PSTs that they will learn more about teacher moves during this workshop.

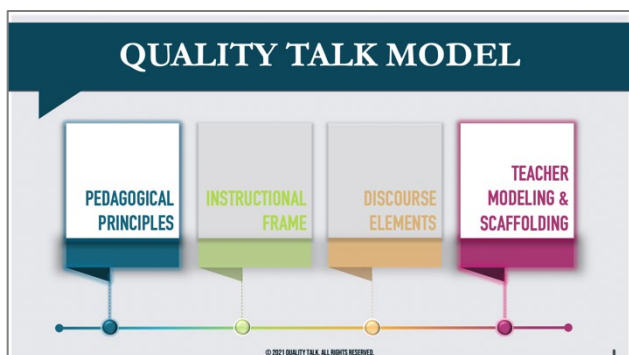
Part 2. Teacher Moves

2.1 Teacher Moves



Display **Slide 7**.

Inform PSTs that they will be learning about teacher moves during this section of the discourse workshop.



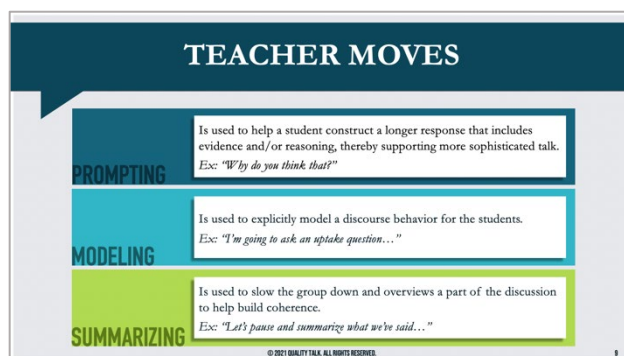
Display **Slide 8**.

Remind PSTs that, as reviewed previously, teacher modeling and scaffolding is the fourth part of the QT model. In addition to learning about this part of the model, they will also learn about the pedagogical principles that underlie the teacher moves.

Explain to PSTs that **teacher moves** are a set of discourse moves shown to promote students' critical-analytic thinking that teachers can use to facilitate a discussion.

Explain that they will be learning about five types of teacher moves that are useful during class discussions. They will also be introduced to some ways of managing the discussion which

are not considered teacher moves because they do not support high-level thinking.

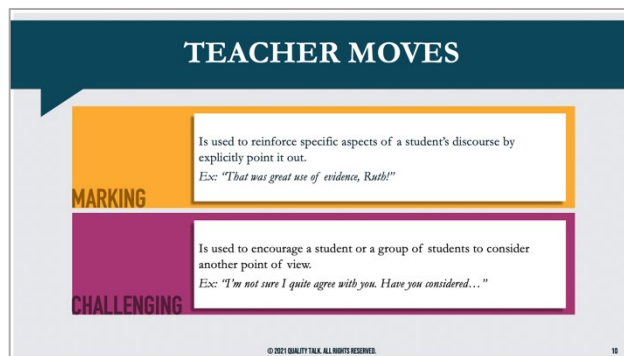


Display **Slide 9**, which shows the definition and an example of three of the five teacher moves: prompting, modeling, and summarizing.

Inform PSTs that **prompting** is used to help a student construct a longer response or a response that includes evidence from the text, thereby supporting more sophisticated talk. An example of prompting is: "Why do you think that?"

Next, explain that **modeling** is used to explicitly model a discourse behavior for the students. An example of modeling is: "I'm going to ask an uptake question..."

Finally, explain that **summarizing** is used to slow the group down or overview part of the discussion to help build coherence. An example of summarizing is: "Let's pause and summarize what we've said ..."

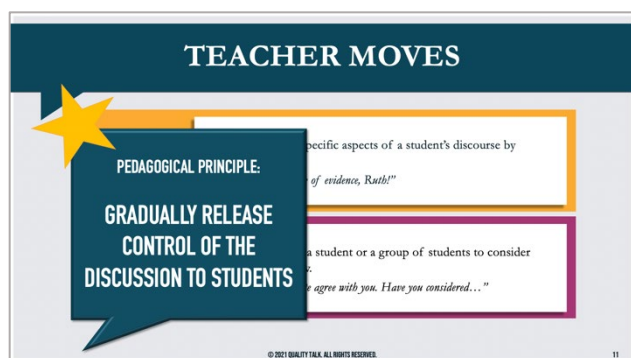


Part 2. Teacher Moves

Display **Slide 10**, which shows the definition and examples of the remaining two teacher moves: marking and challenging.

Explain to PSTs that **marking** is used to reinforce specific aspects of a student's discourse by explicitly pointing it out. An example of marking is: *"That was great use of evidence, Ruth!"*

Last, explain that **challenging** is used to encourage a student or group of students to consider another point of view. An example of challenging is: *"I'm not sure I quite agree with you. Have you considered ..."*



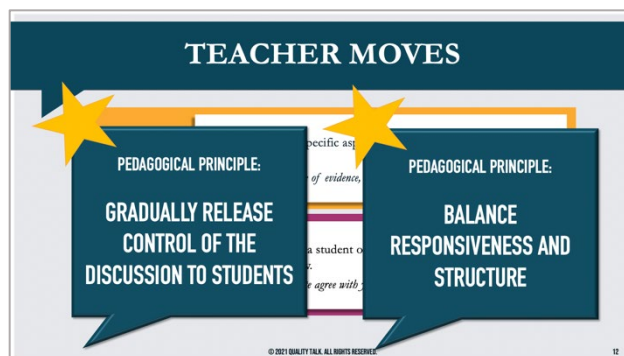
Display **Slide 11**.

Inform PSTs that the first pedagogical principle related to the teacher moves is:

Gradually release control of the discussion to students.

Explain to PSTs that when participating in QT discussions, students may need more support from the teacher at first. However, as students grow more knowledgeable about how to participate in productive discussion, the teacher should allow students to take control over the flow of the discussion. Over time, teachers should also allow students to take on interpretive authority of the mathematics content, as opposed to consistently positioning themselves as the authority of what is "right" or "wrong" during a mathematics discussion.

Teacher moves provide support for the teacher throughout this process. At first, they provide ways for the teacher to actively support students' learning about discussion. For example, in early discussing, teacher may use modeling to demonstrate to students how to ask good questions or marking to point out good uses of evidence and reasoning. As students gain more control over the discussion, the teacher moves provide teachers with a way to continue facilitating the discussion in a way that supports students' critical-analytic thinking without taking control back from the students.



Display **Slide 12**.

Inform PSTs that the second pedagogical principle related to the teacher moves is:

Balance responsiveness and structure.

Explain that this principle means that students will naturally deviate from just talking about a mathematics task and will make connections around and with a problem. Facilitating small-group discussion requires teachers to balance between allowing students freedom to openly contribute to the discussion with the structure needed to promote productive learning.

Once again, the teacher moves provide support for the teacher by outlining productive ways to stimulate students' thinking and keep them on track while still allowing them the freedom to explore mathematical ideas.

Part 2. Teacher Moves

2.1 Teacher Move Exemplars



Display **Slide 13**, which contains the first video clip.

Inform the PSTs that they will be watching a series of video clips in which a teacher uses one of the QT teacher moves during a discussion. After each clip, they will try to figure out what teacher move the teacher is using. They can use the QT Teacher Move Worksheet as a reference while identifying the teacher moves used in the videos.

Explain to PSTs that in the first video, first-grade students are working on a task in which they are trying to determine how many bicycles and tricycles there are in all, when the problem only tells them the number of wheels and seats.

Play the video clip. When it is finished, ask PSTs, “What teacher move did you observe in this clip?” When PSTs offer an answer, ask them to justify their response (e.g., Why do you think so?).

Explain to PSTs that the students were beginning to pursue adding all the seats and wheels, which was not likely to be productive. The facilitator reminds them what they have already determined in their discussion. The teacher engaged in **summarizing** by saying, “We know that you got 17 wheels if you did 4 bikes and 3 trikes. What is another combination you could do?”

Point out that the teacher in this video summarizes what the students have said in order to help them focus on what they do and do not know.



Display **Slide 14**.

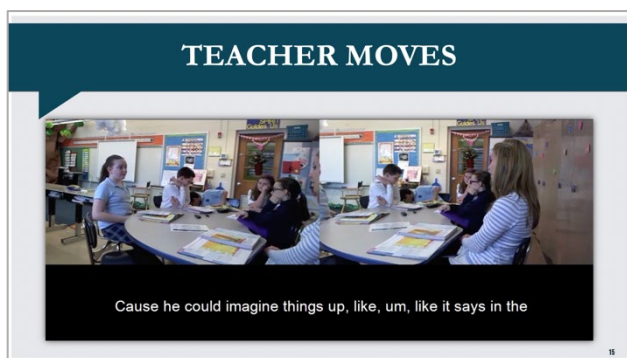
Explain to the preservice teachers that this is a video of other preservice teachers with their discussion facilitator. In this clip, they are working on a task in which they are determining the missing side lengths of an area made up of rectangles. At this point in the discussion, one of the PSTs has already asked about the relationship between area and perimeter. The facilitator is the person on the far left of the screen.

Play the video clip. When it is finished, ask PSTs, “What teacher move did you observe in this clip?” Ask PSTs to justify their responses.

Explain to PSTs that the teacher in the video engaged in **modeling** by saying, “So here is an uptake question ... since you both mentioned perimeter, what is the relationship between perimeter and area, and could we use that to help us solve the task?”

Explain that when the teacher modeled an uptake question for the students, they were able to hear what a good uptake question sounds like and are more likely to ask similar questions in the future. Also point out that the question led to productive discourse among the students in the group.

Part 2. Teacher Moves



Display **Slide 15**.

Before playing Clip 3, explain to PSTs that the students in the video have read a story, *The Skunk Ladder*, about two friends who dig a hole and then have to try to get a skunk out of it without getting sprayed. They are discussing the question: “How would you describe Eddie, a character in the story?”

Play the video clip. When it is finished, ask PSTs, “What teacher move did you observe in this clip?” Ask PSTs to justify their responses.

Explain to PSTs that the student in the video is providing information from the story they read to support her ideas. The teacher then **marks** this by saying, “He’s imaginative? I love the evidence that you found to support that.”

Note that **marking** should be as specific as possible. Here the teacher points out what she likes about the student’s answer, and specifically states that the student does a good job of using evidence.



Display **Slide 16**.

Inform PSTs that in this video, fifth graders who were working on a problem involving multiplication and division. One student asks the authentic question, “What was the easiest way to find the numbers in your mind?”

Play the video clip. When it is finished, ask PSTs, “What teacher move did you observe in this clip?” Ask PSTs to justify their responses.

Explain that the student who is responding initially says, “Two thousand three hundred times 1.” The teacher then asks an uptake question, “Now, why do you say that?” The student responds that she knows that “one times anything else is going to be the same number.”

Explain to PSTs the teacher **prompted** her by saying, “Now why would you say that?” The question then led to a more thorough explanation from the student about the identity property. Thus, the teacher prompt helped the student construct a more sophisticated response to the original question.



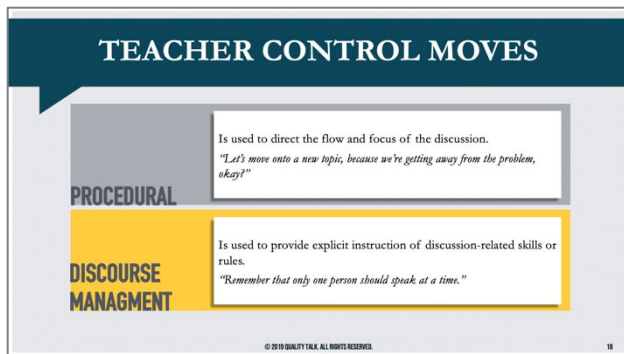
Display **Slide 17**.

Inform PSTs that we will now look at an example of the teacher move called **challenging**. In this clip, preservice teachers are discussing their solution strategy and there is some confusion about the difference between a fact family and the factors of a number. The discussion facilitator addresses this by challenging. She asks, “Where are we using factors here?”

Part 2. Teacher Moves

Explain to PSTs that challenging is an excellent way to prompt students to reconsider their ideas without using direct instruction or test questions.

2.3 Teacher Control Moves



Display **Slide 18**, which shows two teacher control moves. These moves, when utilized by the teacher, keep the teacher in control of the discourse.

Procedural moves are used to direct the flow and focus of the discussion. An example of a procedural move is: "Let's move on to a new topic, because we're getting away from the text, okay?"

Discourse management moves are used to provide explicit instruction of discourse-related skills or rules. An example is: "*Remember that only one person should speak at a time.*"

Inform PSTs that these types of moves can be useful during a discussion, particularly when students are still learning the normative rules for participation. However, use should be limited, as these types of moves have not been shown to promote students' critical-analytic thinking.

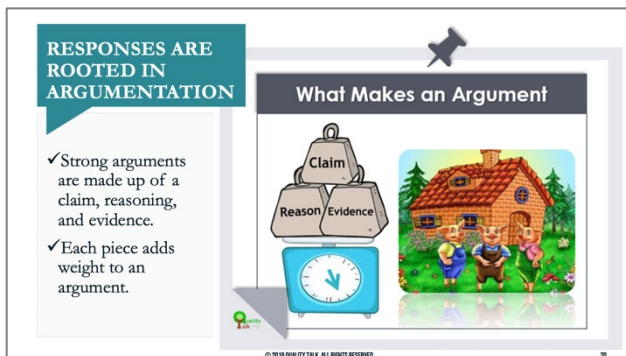
Part 3. Argumentation

3.1 What Is Argumentation?



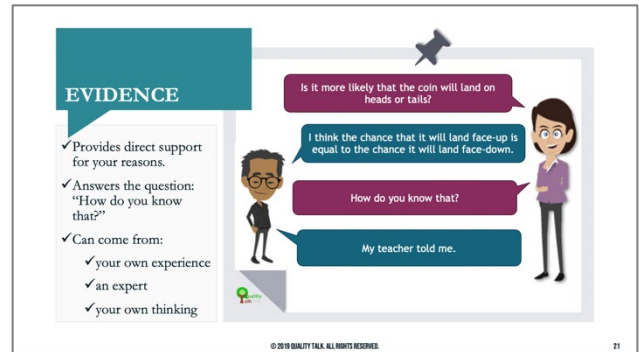
Display **Slide 19** to introduce Part 3 of the lesson.

Explain to PSTs that the purpose of an argument is for a group to explore different ways of answering an authentic question. Point out that argumentation does not involve “arguing” as in fighting. Argumentation requires students to think about their own claims as well as the claims of others in the group, and to support or refute those claims using evidence and reasoning.



Display **Slide 20**, which explains that responses are rooted in argumentation. Inform PSTs that when they are involved in or facilitating a discussion, they should construct or listen for strong arguments, which are made up of a claim, reasoning, and evidence. Each piece adds weight to an argument and makes it stronger.

3.2 Evidence



Display **Slide 21**, which shows a definition and example of evidence.

Explain that **evidence** provides direct support for your claim and answers the question: “How do you know that?”

Inform PSTs that evidence can come from:

- ◆ their own experience
- ◆ an expert
- ◆ a calculation or mathematical drawing
- ◆ their own thinking

Read PSTs the example of a student providing evidence along with their claim and reasoning:

Teacher: Is it more likely that the coin will land on heads or tails?

Student: I think the chance that it will land face-up is equal to the chance it will land face-down.

Teacher: How do you know that?

Student: My teacher told me.

Inform PSTs that when we teach students about evidence, we emphasize that they must cite the source of that evidence. In this example, the student refers to something his teacher – someone he considers an expert – told him about the chance that a coin will land on heads is equal to the chance it will land on tails.

Part 3. Argumentation

3.3 Reasoning



Display **Slide 22**, which shows a definition and example of reasoning.

Inform PSTs that **reasoning** helps us explain the links between evidence and a claim. It often answers the questions “Why do you think so?” This can take many forms and is dependent on the specific context. In mathematics, both in this course and in the elementary classroom, reasoning often arises from use of mathematical principles and definitions. Remind PSTs that this is also one of the normative discourse expectations in Quality Talk, “We give reasoning to explain our ideas.”

Read PSTs the example of a student providing a reasoning for their claim:

Teacher: Is it more likely that the coin will land on heads or tails?

Student: I think the chance that it will land face-up is equal to the chance it will land face-down.

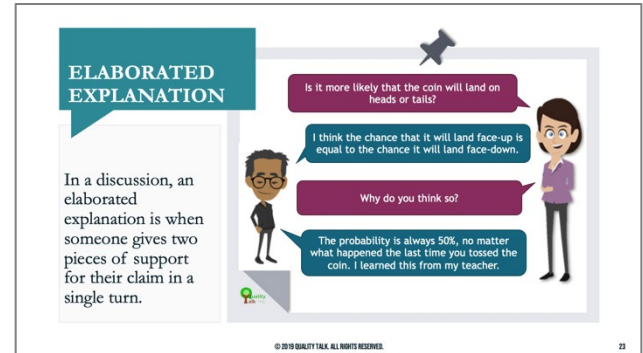
Teacher: Why do you think so?

Student: The probability is always 50%, no matter what happened the last time you tossed the coin.

Inform PSTs that the student’s last turn of talk, “the probability is always 50%, no matter what happened last time you tossed the coin” is an example of reasoning. The student demonstrates that he knows that the outcome of

each flip is independent from the outcomes of all the other tosses.

3.4 Elaborated Explanation



Display **Slide 23**, which shows the definition of an elaborated explanation.

Inform PSTs that in a discussion, an **elaborated explanation** is when someone gives two pieces of support for their claim in a single turn. This support can include:

- ♦ two pieces of evidence
- ♦ two instances of reasoning
- ♦ evidence and reasoning

Read the example of an elaborated explanation for the PSTs:

Teacher: Is it more likely that the coin will land on heads or tails?

Student: I think the chance that it will land face-up is equal to the chance it will land face-down.

Teacher: Why do you think so?

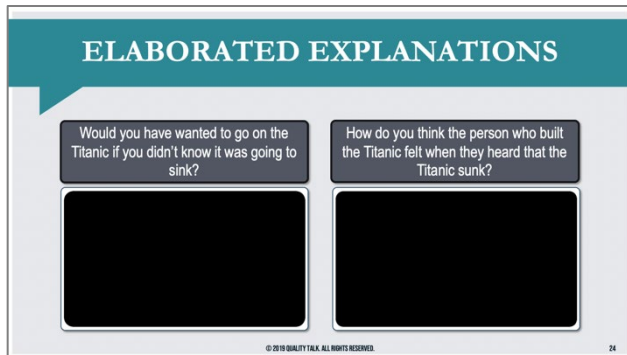
Student: The probability is always 50%, no matter what happened the last time you tossed the coin. I learned this from my teacher.

Point out to PSTs that this student uses what he learned as from his teacher as a source of evidence, and his reasoning connects a principle about probability to his claim that the

Part 3. Argumentation

likelihood of the coin landing on heads is equal to the likelihood of it landing on tails.

Explain to PSTs that an elaborated explanation must be given by one student in a single turn. For example, if a student makes a claim with one supporting reason and then the teacher prompts them to provide evidence, this would not count as an elaborated explanation. Teachers should emphasize the normative discourse expectation that students always provide evidence and reasoning when they make a claim.



Display **Slide 24**, which contains two examples of elaborated explanations. Both examples are from a discussion about the story, *The Unsinkable Wreck of the RMS Titanic*.

Inform PSTs that in the first video, the student is answering the question: “Would you have wanted to go on the Titanic if you didn’t know it was going to sink?”

Play the first video.

Explain to PSTs that the student gives the following claim, with two pieces of support:

Claim: “I would [want to go on the Titanic if I didn’t know it was going to sink].”

Support 1: “It’s super fancy and there is fancy stuff.”

Support 2: “My dream is to go on a cruise, so if it was unsinkable then it is like the best kind of cruise in the world.”

Inform PSTs that in the second video, the student is answering the question: “How do you think the person who built it felt when they heard the Titanic sunk?”

Play the second video. Explain to the PSTs that the student gives the following claim, with three pieces of support.

Claim: “I don’t think you can really blame it on the person who built it.”

Support 1: “There’s so many, a lot of conducting things where people blame it on one person which they shouldn’t be because there are so many people in this.”

Support 2: “The person who was steering should have saw the iceberg and should have turned ahead or seen it before then.”

Support 3: “The person who built it should have had to make it like, better radar.”

Inform PSTs that they will be participating in an activity to identify claims, evidence, and reasoning in a mathematics discussion, and to think about what teacher moves could promote critical-analytic thinking.

Explain that in mathematics, evidence can come from various sources. These might include a text or an expert source, or a sketch of a problem solution or calculation.

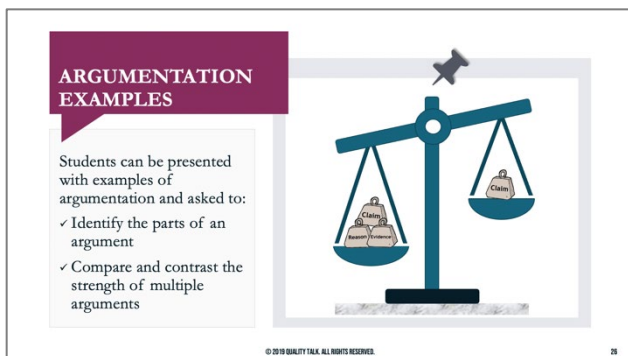
Also remind PSTs that reasoning is what connects evidence to a claim.

Part 4. Quality Talk in the Classroom

4.1 Argumentation: Examples



Display **Slide 25**, which introduces the application and practice portions of the lesson.



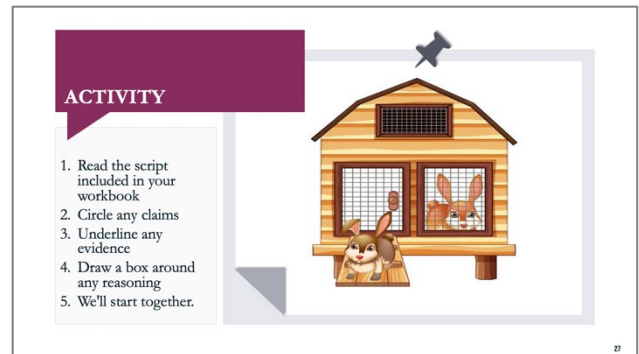
Display **Slide 26**, which provides an overview of how PSTs could teach their students about argumentation.

Explain that students can be presented with examples of argumentation and asked to:

- ◆ identify the parts of an argument
- ◆ compare and contrast the strength of multiple arguments

We will go further into weighing the strength of arguments in our next workshop.

4.2 Practice: Identifying the parts of an argument

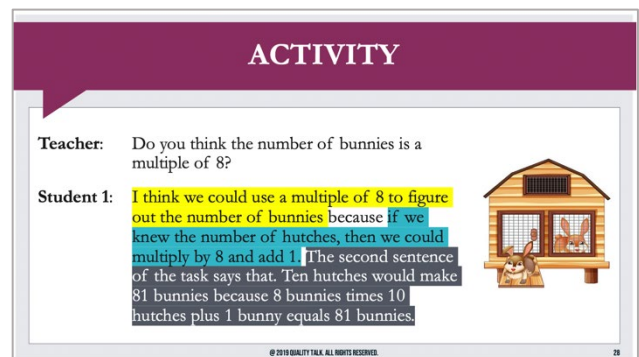


Display **Slide 17**.

Ask PSTs to turn to the script handout and complete the following tasks by themselves:

1. Read the script included in your workbook.
2. Circle any claims.
3. Underline any evidence.
4. Draw a box around any reasoning.

They should try to get at least the first two student turns of talk completed, but can keep going if they have time. Once PSTs have completed this task, they will check their understanding.



Display **Slide 28**, which shows the first part of the script. Ask the students, "Which statement in Student 1's first response is a **claim**?" then wait for students to respond. (The text highlighted in yellow is the claim).


Part 4. Quality Talk in the Classroom

Next, ask “Where is the **evidence**, and wait for students to respond? (The statement highlighted in gray text is evidence.). Ask students to explain their responses.

Explain that the text highlighted in blue is an example of reasoning because it explains why Student 1 thinks the evidence supports the claims.

ACTIVITY

Student 3: Yeah, but it seems like we should think about multiples of 11 instead of 8. The task tells us that there could be exactly 11 bunnies in each hutch except one completely empty hutch.



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Display **Slide 29**, which shows what Student 3 says next. Ask, “Which statement represents a claim?” then wait for students to respond. Ask students to justify their response. (The statement in magenta is a claim.)

Ask, “Which piece of an argument does the rest of the talk on this slide represent?” then wait for students to respond. Ask students to justify their responses. (The rest of the statement is evidence for the magenta-colored claim, because Student 3 is using the problem as evidence that they should think about multiples of 11.)

Encourage PSTs to review the full answer key posted on Canvas to ensure that they are all able to correctly identify the parts of an argument.

Conclude the workshop by telling the PSTs that they can practice recognizing claims, evidence, and reasoning in their own and others’ talk in our discussions.