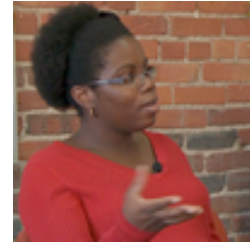


Talk Science

Professional Development

Transcript for Talking Point: What is Productive Talk?



1. Introduction: Characteristics of Productive Talk

What is productive talk? Productive talk is talk that promotes learning. When you walk into a classroom in which student talk is promoting learning, what do you see? What do you hear? First, you see students listening closely to their peers. They are able to see, hear, and understand what is being said, and when they can't hear, they speak up.

They often sit in a circle, so that everyone can see one another. You notice that they are working hard to explain their own thinking. They take risks, go public with their ideas, oftentimes doing this before their ideas are fully formed. They delve deeply into ideas. They reason with evidence, and they pay close attention to data, and to establish scientific fact.

You see students connecting their ideas to the ideas of others. Students take each other seriously, building on or challenging the ideas or evidence of their peers. They link their own thinking to the thinking of others, agreeing and disagreeing respectfully, and challenging ideas, rather than people. You notice that students pose questions, and ask each other for clarification, because they are intellectually curious, and because they are listening carefully and seriously to what everyone says.

You notice that everyone participates, perhaps not in every discussion, but over time. The discussion is not dominated by a few good talkers. Everyone participates, because they know their ideas are important to building collective understanding. Finally, you see students revising their ideas based on input from others, because the culture encourages revisiting one's own thinking in the light of new information.

When you see students engaged in productive talk in the classroom, it might seem effortless, but their teachers are not simply sitting back and letting them talk. They are actively working to support a culture of trust and risk-taking where there is equitable opportunity to contribute, and where students do the heavy lifting of explaining ideas and building reasoned arguments with evidence. Teachers are facilitating the conversation by asking students to say more, to dig deeper in their reasoning, to clarify their explanations, and to think together.

In the classroom video that follows, you will see fourth grade students and their teacher engaged in a well-structured science discussion. The children are discussing an investigation

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they have completed. They have been working with two metal cubes, one of copper and one of aluminum. The two cubes have identical volumes but different weights. They have been asked to predict what will happen when the cubes are submerged in water. Will the water level rise more with the aluminum cube or with the copper cube? Or will it rise the same with both? Most students thought that the water level would rise more from the copper cube, because it is heavier. After making their predictions, they carried out the investigation in small groups and shared their results in their groups.

Now, with their results in hand, they come together on the rug to discuss what made the water level rise. Is it the weight or the volume of the cube? As you view the clip, take note of what characteristics of productive talk look like in action. Watch to see students listening, explaining their ideas with evidence, connecting their ideas to others, asking for clarification, participating, and revising their thinking.

2. Classroom Discussion

- Teacher: If I think about just that first part of my investigation, and I think about the question I need to .. answer, what do you think caused water level to rise [knocks twice on whiteboard] in this case? With that aluminum and that copper cube right there? Mathais, you want to talk to the group about the conclusion you came up with? Let's make sure everyone's looking at Mathais to show that we are listening to him.
- Mathais: Well, my group- we came up- w- we found out that um, that l- well, we found out that the- we thought becau- it was because of the volume, because um we found that the s- the s- the volume in the water level were the same, but the weight was different. And I thought that if-- if the weight, was um there's more weight um, in the copper cube, than the um, the um, aluminum cube, then I think it just should depend on the volu- on the volume because the weight if it was more, the- the copper cube is more, then it would have more volume. If it w- really depended on the weight.
- Teacher: OK, does anyone want to respond to that? Who wants to respond and can prove that they listened to Mathais' explanation and can, kind of respond with their own ideas or can add another idea to it? Flevor, go ahead.
- Flevor: um...
- Teacher: Talk to Mathais about how you feel about what he said.
- Flevor: I--I um I agree with what you said because this for example like if you put-- if you had big um, can-

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like if you got a big cup of water and you put a- an eraser in there, like a- a ah, ... like the eraser over there [points], if you put something like that in a big cup of water, the water level would rise a lot, and, if you put in a copper cube, and it's not even - it's not going to rise that much, even though that copper cube would weigh more, than a eraser.

Teacher: Ahh, and can someone explain or repeat for us what Flevor thought would happen if I put an object *this* big in water? Jamal, what did he think would happen if I put an object *this* big into a cup of water?

Jamal: He said that if you, if you had like a big bowl, like a big bottle of like water, and you put the eraser in it, then it would probably like rise a lot. Then -

Teacher: Why? What would make that water level rise a lot? What is it about *this* object that would make the water level rise a lot more than, say, the copper cube or the aluminum cube?

Jamal: Because that has a different volume than the copper cube.

Teacher: Alicia, do you want to share with the group some of your thoughts?

Alicia: Well, I kind of disagree, because like-

Teacher: With who?

Alicia: With Flevor, because...

Teacher: Talk to him and tell him why *you* disagree with him.

Alicia: I disagree with you, because like, the eraser could soak up the water.

Teacher: Aisha, you want to add something?

Aisha: I have a question for you Flevor. Um, what if the object had like buoyancy, like it's, able to float?

Teacher: Ohh...I think that's a good group- question for the whole group. But go ahead, Flevor.

Flevor: Then it would be a different story, because, if- if it w- if it had buoyancy then it wouldn't really be taking up much space, s- so but, I w- I wouldn't know if, um, so some things that have buoyancy it would- it wouldn't do sinking like I was talking about.

3. Listening

Carrie: I was thinking when I was watching it the second time that they're definitely developing listening skills.

Sarah: Yes, nobody, nobody fidgets, they're looking at him.

Carrie: They pay attention- to see the engagement like you

said, they have full attention and you can tell they're listening because of the responses, the questions, the challenges. I just think that's important for them to have opportunities to develop listening skills, and not just hear the teacher.

Sarah: And you know one thing that made a big difference in this classroom, because I watched this teacher go through 14 sessions and, at a certain point, she said, "talk to each other." Look at -- you hear her -- even she's reminding them now, and they started to reorient from -- they had been really looking at her and talking to her -- and she would be saying, "okay, do you agree or disagree?" She'd be helping them, but she said, "talk to him," and they just did it. They started -- looked right at each other, "I disagree with you" or "I agree with you" as opposed to "him."

4. Explaining

Carrie: I think they also are working on their ideas as their speaking. It's great that their ideas are based on their experiences, what they saw, their data, what he noticed about the two cubes. And then it's taken a step further because the more they talk and share the more they're having a chance to work out what they actually think, to solidify their conclusions. I love the way another student asked the buoyancy question, because that child you can see him adjusting his thinking, and taking in what she said, like you said, it's very responsive.

Sarah: Yeah, so like when she said, what about an object that has buoyancy, and he says, "oh that would be a whole different story," and then he says, "I don't know" -- I mean you can see the wheels turning. He's actually thinking through, oh my goodness, the example I gave, what if it floated and then... So you're right, there's thinking on the fly that you're giving an opportunity for. Kids are rethinking and changing their view.

5. Connecting

Sarah: It seems another important thing that you sort of see when productive talk is happening is that the kids are not just orienting to the teacher who has the right answer.

Carrie: I just was thinking that -- it was a student-driven conversation. It wasn't the teacher moving the kids forward. It was children responding to children, and responding to what they shared and what they noticed in their science work. So it was nice to see that it wasn't teacher-centered, it was definitely student-centered.

- Sarah: Yeah. So she gets them going, but then she trusts them --
- Carrie: To continue.
- Sarah: Yeah, to have enough of their own evidence from what they've done, and enough confidence in their own ideas to do the heavy lifting.

6. Questioning and Clarifying

- Sarah: We have to be talking about the same thing to make progress. If I'm reporting data from a slightly different experiment and you're reporting data, we have to know what's the same and what's different. And when we have a difference, it's important that we can clarify that and figure out: is this a difference that makes a difference, or not? Because we could have gotten different results for some very important reason.
- Carrie: Right. And that's something that comes up a lot. I mean it comes up a lot when the results are very different. Well let's go back to what we did. Maybe we need to redo this. Why is that? That doesn't come up as much in the other subject areas.

7. Participating

- Sarah: So I could imagine people looking at this clip and saying two things. One, they could say, well only a few kids talked. And that is true. This is a short clip and only a few kids talked. But one thing strikes me is, kids are listening, who are not talking, and there's a kind of silent participation. You can even see it. And then when they question each other there's evidence that they really, really were listening. But at the same time you could say, that included a back and forth between -- and that one child spoke for a minute -- that there were long turns and that there was a kind of "turn depth." After the first kid talked and the other boy talked, somebody asked a question and that boy talked again. There's a kind of repeated chance to talk. So I think the notion of full participation involves both -- kind of everyone is **in** the conversation, but also you give the time and the space to **develop** and **go deep**.
- Carrie: Also the first child who spoke, he said, "in our group, this is what we saw." So I think that even though a few children are talking, they were almost reporters of their group experiences -- their group ideas -- and I'm sure that they had talked during their group work.
- Sarah: But that one child animates the entire group, that he is speaking for them, that they are presented as

people who got some data. That's a really interesting point. So the notion of participation and who's speaking is a little bit more complicated than just tick mark -- this kid, this kid, this kid.

Carrie: Right, right, definitely.

8. Revising

Sarah: Do you ever find that they realize that they are confused when they talk?

Carrie: Definitely. I'm trying to think of an example. They do. They'll say sometimes, almost like we saw on the video, they'll say, "wait a second," [laughter] or they will pause and definitely as they are forced to communicate what and why and how, and to talk about what they saw, what they experienced, they adjust their thinking. I mean kids all the time will say, "wait a second, I made a mistake" or "I want to change what I said" or, so --

Sarah: To me that's an indicator that a culture is being built -- a culture where the kids can take risks where they can be wrong, where they can rethink, where they have enough trust in the group, but also enough confidence in themselves or the right to rethink. "I'm a scientist, I changed my..." You know, when the evidence changes, you change your mind.