READING WRITING IN THE DISCIPLINES

Writing for Mathematics Understanding Video Transcript

Stephanie Brown:
The purpose of this assignment is that you guys are going to be working together to construct viable arguments. You're going to be looking at the reasoning of other members in your group and critiquing them: is it good reasoning, is it solid, or is it weak? Because what you're going to be doing is you're going to be working with your groups to produce a better collective solution to those that you produced individually.

Student:
90 plus 2z plus z equals 180.

Brown:
What is that called when you take these values and put them in?

Student:
Substitution.

Brown:
There you go. You know the writing process in English? What do you call that very first paper that you write?

Students:
A rough draft. This is your rough draft.

Brown:
We're going to be looking at a total of five different ways to prove the Pythagorean Theorem, and I told them on Friday, they're going to have a quiz. And I called it a quiz because I wanted to up their level of concern so they actually studied for it.

On Friday, I gave you something called a quiz, and do you remember what I told you about how I was going to grade it? (students murmuring) Am I going to put a score on it?

Students:
No.

Brown:
Research shows that once you assign a grade to it, the kids who believe that their math abilities are fixed will just look at the grade and just say, "That's what it is," and they won't even bother. And I see it all the time. They won't even open to the next page and even bother to look at why they got problems wrong.

So I want you to read the comments that I wrote, and while you're reading the comments that I wrote, I want you to try to connect it to what I actually read that caused me to write that comment. Because you might know the answer to the comment that I wrote, but it just wasn't expressed here on the paper. So as we begin to become more clear in our writing, based on the feedback that I'm giving you, your writing's going to get stronger.

I called it a rough draft because I told them I'm not going to put a grade on it. You're not going to see a numerical value assigned to your work. What I'm going to do is I'm going to give you some feedback, and the reason that I gave them some feedback is because I want them to know that their learning hasn't stopped; I want them to know that there's still more that they need to understand and be able to do.

What I want you to do right now is I want you to respond to the comments that I wrote. I'm going to give you guys about five minutes to do that.

Student:
I don't know how to put this into words. Since they share the side AB, the center of the small square is A minus B. Yep. Okay. "Since they share the side AB..."

Student:
I have never done this much writing in a math class, but I like it because it helps me understand it more.

It's Y, Z and X, but they're all in the same angle on each.

Brown:
So I did not see the system of equations, and that's where I'm leading to. Okay.

Alexis:
She does a lot of quizzes to see where everybody's at, so if someone's behind somewhere, then she helps us and she makes sure we understand it.

Brown:
Do you know how to prove whether or not it's a square?

Student:
No, not really.

Brown:
To be a square, all sides must be congruent and all angles must be 90 degrees. I just want to see something in your writing to prove why that angle right there is 90 degrees. Do you think you can write that?

Student:
Yeah, I can.

Brown:
Yeah, that, you didn't label it. Explain to me why the distance between this point and this point is A minus B.

Student:
To get this... The side length. The side length, you have to subtract those...

Brown:
So you're going to take A and subtract B to find the difference of the length of that side.

Student:
Okay.

Brown:
Can you explain that in writing?

Student:
Yeah. Okay.

Brown:
From there, I wanted them to take their individual work and make it stronger collectively by redrafting what they wrote.

You guys are going to work together on producing another draft, a better draft, because you're going to put your heads together and come up with one together. Some big ideas here. Some of you guys struggled with this. How do you prove unknown sides and angles? That was not explicitly stated in your work. It was like an assumption. It was like, "Come on, Mrs. Brown, you know why that angle

is 90," or "You know why that inner polygon is a square." I need you to explain that in your writing to make it clear.

I'm pretty confident that a lot of kids understood the areas that they had some missteps where they didn't flesh out the explanation.

Student:
Yeah, because I did that, and she told me, like, I assumed because I didn't do the system of equations first.

Brown:
They're still in progress with working on these proofs, and they're still trying to understand what I'm expecting from them.

Student:
What else did she tell you guys?

Student:
On mine, she just wanted me to explain how I knew, like, the large polygon and the small one were squares.

Student:
You can do this by using a system of equations. And I wrote the equation that we used, the x plus y plus c equals 180, and I put, "Now that we know this is a square, we can find the area." To find the area of a square, we must use the area formula, A equals b times h.

Student:
I didn't do that. I just kind of put, um, "The area of the triangle's not like... square."

Student:
A minus B...

Student:
Oh yeah, and these were given too.

Student:
And this one would be the same thing, because it would be A. And you have another, so this would be supplementary with this, so right angles, you got me? And so it would be the same thing as this one on the inside.

Student:
And that's how we know it's a square. Yeah. Okay.

Brown:
I don't want them to look to me for the answer because there's multiple ways to express it. Bring your voice forward and you try to explain it, and then I'll let you know if it's clear. Your group will let you know that it's clear.