Segment 1: The Teacher-Group-Student Approach for Modeling

In this video, the teacher models the use of math manipulatives for the class and provides opportunities for group work and student demonstrations.

In this lesson on algebraic patterns, manipulatives make abstract concepts more concrete and provide a visual representation for students who may not be fluent in English. The students work in groups to solve problems using the methods and manipulatives that the teacher modeled for the class.

Teacher: Okay. So everybody should have the warm-up. You might also find in your basket, you guys have little baggies full of funness. So inside your baggy, and there should be two for every group, so Chase and Mateo can share, and Jesus and Kara can share. So you're going to use those to represent the problem for the warm-up. You can also check yourself with your calculator. So I want you to represent it with the green and white little proportion rods, but you can also have your calculator out to share it. And so this one says use a light green proportional rod and represent one cup. So this is one cup, and you can see if you put these next to it that, what do you think that one of these white ones represents?

Student 1: That's a third.

Teacher: One third. Right. So this is one and this is one-third. So how would you represent two-thirds?

Student 1: Two of the white ones.

Teacher: Yeah, two white ones. So you use these to help you work this problem.

There's probably enough that Dave can have some and Jenny can have some.

Narrator: The teacher has arranged the opportunities for ELL students to use English to demonstrate learning. The teacher calls on students to explain how the group solved the problem to the entire class.

Jesus: At the party, each of the eight children in attendance was served 203—two-thirds cup of punch.

How much punch was served in all? Use the light green proportion—proportional rods to represent one cup.

Teacher: Thank you, Jesus. Kara's gonna come up there and help you work that problem out with the proportional rods.

Kara: So these—each of the greens represent a whole and a whole is three because that's on the bottom, so your denominator. Okay. So you have to times this because each child got two-thirds of a cup. So when each child got two-thirds of a cup, you multiply it times eight and get five and three remainder of three repeating. We put that to a fraction and it becomes 16 over—16 over 3.

Teacher: Can you show us how you would represent the eight children having their punch? How would you do that?

Kara: Something like that for each child.

Teacher: They have two-thirds of a cup, so each kid is gonna have how many little proportional rods? Are they gonna have green ones or are they gonna white ones?

Kara: It'd have to be two of them.

Teacher: Two-thirds of a cup, obviously, you're right. They're gonna have two white ones, so you're gonna have eight kids with white ones, so can you show us how you would set it up. You have eight kids with two white ones, right? So we don't have any green ones yet, so you can take the green ones off. And I think you have to scoot it up just a little bit, Kara, if you check how it shows up on the monitor. Thanks. Okay. Then you have to get them in groups of what to represent one green one? Three. So if you get those all into groups of three, then you can start replacing them with green ones, so why don't you guys do that. So the three that you're taking off, Jesus, what are you replacing it with?

Jesus: The green one.

Teacher: Why?

Jesus: Because the green ones represent three.

Teacher: Yeah. Okay. So that's how you got your five and one left over, so what should your answer be?

Jesus: Five and one-third.

Teacher: Five and one-third. Thanks, guys.

Segment 2: Class Discussion

Discussion with peers and/or the teacher enable ELL students to acquire, internalize, or use new academic language.

[Papers shuffling]

Student 1: This is fun. Looking for non-polygons and polygons.

Student 2: We can put all of them, but this one has a circle inside.

Student 3: Yeah, that would be good.

Student 2: Is it good? Or it doesn't matter.

Student 3: It's good, because it shows—I think you should get out . . .

Student 2: Most of them?

Student 3: Yeah, you should.

Student 2: Oh, okay.

Student 3: I was thinking for a definition, enclosed 2D figure.

Narrator: Structured peer interactions establish a non-threatening environment where ELL students can provide and receive feedback.

Student 1: [speaks in Spanish].

Teacher: Perfect.