# Kindergarten Integrated English Language Development in Math: Explaining How to Solve Word Problems

## Introductory Slides (0:00-2:37)

**Narrator:** Welcome to the California Department of Education Integrated and Designated English Language Development Transitional Kindergarten through Grade 12 Video Series.

**Narrator:** Mathematics with Integrated English Language Development in Kindergarten. In this lesson, the students are applying what they have previously learned about solving math word problems and sharing explanations of how they solve them in speaking and writing. The lesson focuses on sequential connectives that signal the steps of an explanation.

**Narrator:** The California Common Core State Standards for Mathematics Driving the Lesson: The Mathematics Standard is Kindergarten, Operations and Algebraic Thinking, Standard 2, where students who demonstrate understanding can solve addition and subtraction word problems and add and subtract within 10. Mathematical Practices 6 attends to precision, where mathematically proficient students try to communicate precisely to others; in the elementary grades, students give carefully formulated explanations to each other. Watch for how these California Standards are addressed throughout the lesson.

**Narrator:** The Supporting California English Language Development Standards Used in Tandem with the Mathematics Standards. The English Language Development Standards at the Bridging Level are Kindergarten, Part 1, Standard 1: Exchanging Information and Ideas, where students contribute to class, group, and partner discussions by listening attentively, following turn-taking rules, and asking and answering questions. And Kindergarten, Part 2, Standard 2: Understanding Cohesion, where students apply understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases to comprehending texts and composing texts in shared language activities guided by the teacher, with peers, and independently. Watch how students move from early levels of proficiency toward the Bridging levels of these English language development standards throughout the lesson.

**Narrator:** Watch how the teacher prepares the students toward accurate expression of their math content knowledge by first providing opportunities for them to listen to the language. The teacher leads them to read and analyze a word problem. The teacher then provides opportunities for them to speak with their peers using learned language structures and vocabulary to solve the word problem.

## Teacher Introduces the Lesson (2:38–4:29)

**Teacher:** Good morning scholars!

**Students:** Good morning Mrs. Madden!

**Teacher:** Now I call you scholars, but you are also mathematicians, and mathematicians, we've had an essential question that we have focused our learning on. Please turn and look over here at our essential question. How do mathematicians solve word problems and explain their thinking? Today we're going to read our new word problem and you know how to solve word problems. “Mr. Madden loves to play with and eat animal crackers.” Who is the situation about?

**Students:** Mr. Madden.

**Teacher:** And there he is: Mr. Madden. He ate six animal crackers. Wait, who's “he”?

**Students:** Mr. Madden.

**Teacher:** Yes, that is who the word problem is about. “He had so much fun that he ate three more.” Three more what?

**Students:** Animal crackers.

**Teacher:** Oh, that's right. That's what the word problem is about. “How many animal crackers did Mr. Madden eat in all?” Quickly turn to your partner and tell your partner the question.

## Students Discuss in Pairs/ Small Group Discussion (4:29–4:54)

**Student 1:** How many animals did Mr. Madden eat?

**Student 2:** Umm... six.

**Teacher:** Do you agree or disagree that that is the question?

**Student 2:** Agree.

**Teacher:** I agree—that's what the word problem is asking us to solve. Thank you for sharing with me.

**Student 3:** How many animal crackers did Mr. Madden eat in all?

## Looking Deeply at Classroom Instruction (4:55–8:11)

**Narrator:** Watch how the teacher next leads the students to accurately use verbs and linguistic analysis to explain in writing the math concepts they have learned.

**Teacher:** Mathematicians, we're gonna go write our answer sentence. Thank you, Fias, he already has his bubbles in, but blow them out. “Mr. Madden ate nine animal crackers in all.” What did he eat?

**Student 4:** Animal crackers.

**Teacher:** Wait a second. He did! How many did he eat?

**Student 4:** Nine.

**Teacher:** Nice job writing “how many” so that when we reach your answer sentence we know exactly how many Mr. Madden ate. Fabulous! You also said the sounds you heard to write the word. Now can I show you something? You said Mr. Madden “eat” nine animal crackers. But then you wrote the word “ate,” because you're right, he ate them in the past, so you used the past tense verb “ate.” Mr. Madden ate nine animal crackers. Will you use the past tense verb ate and read me your answer sentence?

**Student 4:** Mr. Madden ate nine animal crackers.

**Teacher:** Nice job using the past tense verb. Can I share that with the friends today? Thank you, Amir.

**Teacher:** We said that we would have a conversation to explain our mathematical thinking. It is called a mathematical explanation, you're right. One friend will ask the …

**Students:** Question.

**Teacher:** And the other friend will …

**Students:** Explain.

**Teacher:** Now I'm gonna have you ask the questions first.

**Narrator:** Watch how the teacher then leads the students to speak with their peers using questions and the sequential connectives *first, then, next,* and *finally* to solve the word problem.

**Teacher:** I see that Belga is already pointing. We said that we would point and read. Are you ready to have a conversation?

**Students:** Yes! What did you do first?

**Teacher:** First I drew six circles to show that Mr. Madden ate six animal crackers.

**Students:** What did you do finally?

**Teacher:** Finally, I wrote a math equation, six plus three equals nine, and an answer sentence. Mr. Madden ate nine animal crackers in all. How did we do in our conversation?

**Students:** Good!

**Teacher:** Now you are going to go and have a …

**Students:** Conversation.

**Teacher:** When you have your conversation, you will take turns.

## Students Discuss in Pairs (8:12–8:25)

**Student 5:** What did you do next?

**Student 6:** Next, I put them all together to add.

**Student 5:** What did you do finally?

**Student 6:** Finally, I wrote the math equation and the math sentence.

**Student 5**: I draw three circles and I draw three more circles.

**Student 6**: What did you do next?

**Student 5:** Next, I circle it.

**Student 6:** No. Put them all together.

**Student 5:** Put them all together. I circle it all together.

**Student 6:** To add.

**Student 5:** To add.

**Student 6:** What did you do finally?

**Student 5:** Finally, I wrote the math... the math...

**Student 6:** Equation.

**Student 5:** Equation and the math sentence.

**Student 6:** What is that? What is that?

**Student 5:** Six.

## Student Independent Practice (9:35–10:08)

**Narrator:** Finally, watch how the teacher provides opportunities for the students to explain and write the mathematics concepts they have learned to solve the word problem.

**Teacher:** Take out your pencil and do the first step. Think. What are you going to do? Then... Matise what are you thinking?

**Student 7**: I'm thinking that I'm going to write three.

**Teacher:** Yes, because Mr. Madden ate three more animal crackers.

## Reflection and Closure (10:08–10:59)

**Narrator:** Reflection and Discussion. Reflect on the following questions: First, how did you observe the following focal content standards and supporting English language development standards being implemented in this kindergarten integrated English language development lesson? Operations and Algebraic Thinking, Standard 2; English language development Part 1, Standard 1: Exchanging Information and Ideas; and Part 2, Standard 2: Understanding Cohesion. Second, what features of integrated English language development did you observe in the lesson? Now pause the video and engage in a discussion with colleagues.

## Closing Slides (11:00–11:17)

**Narrator:** The California Department of Education would like to thank the administrators, teachers, and students who participated in the making of this video. This video was made possible by the California Department of Education in collaboration with WestEd and Timbre films.

California Department of Education

September 2020