Preschool/TK/K

Answer Key for Observing M^5 in Action: Addition and Subtraction

This handout provides sample responses that help facilitators discuss each of the M5 teaching practices observed in the video clip. It includes questions that apply across ages. Use the questions that work best for the video you have chosen. The video clip may or may not include examples related to each question.

Video:

Adding and Subtracting During Snack (3–5 years)

Adding and Subtracting During Snack (3–5 years) - Audio Descriptive Version

In this video, children and their educator add and subtract crackers during snack time. Children use counting strategies.

Mutual Learning

- What did (or might) the educator learn about each child during this experience?
- In what ways was the educator responsive to individual children? Consider children's interests, languages, cultures and lived experiences, abilities, and emerging skills and knowledge.

Possible Responses

- The educator learned about children's different abilities to count, add, and subtract. For example, many children were able to count into the teens and could add and subtract within sums greater than 10.
- The educator was responsive to children's emerging skills. She paid attention as children were counting and was responsive to their discoveries. For example, a child noticed that taking 1 cracker away from a set of 15 resulted in 14 crackers. The educator said, "Fifteen take away 1 makes 14!"

Meaningful Investigations

- In what ways was the experience based on children's questions, interests, or real-world situations?
- In what ways was the experience open-ended? How did this support children to experiment with different approaches to solving a problem or answering a question?
- In what ways did the educator support children's thinking and problem-solving related to addition or subtraction?

Possible Responses

- The experience was based in a real-world context—having a snack.
- The experience was open-ended. The educator invited children to explore the quantity of their crackers. She asked whether the children thought they all had the same amount. As children counted their crackers, some added crackers and some subtracted crackers. The educator did not direct children to use a specific strategy to add or subtract. This allowed children to use strategies based on their current ability. For example, one child subtracted 1 from 15. Another child used a counting-all strategy to add 3 to 14.
- The educator used open-ended questions to support children to think and problem-solve. For example, she asked, "How did you make 17?"

Materials and Learning Environment

- What did you notice about the materials and learning environment?
- In what ways did the materials and learning environment offer opportunities for children to use addition or subtraction?

Possible Responses

- The materials included concrete objects that children could manipulate to add and subtract (crackers).
- A child and the educator also used hands and fingers to support adding.

Math Vocabulary and Discourse

- What addition or subtraction vocabulary did the children or educator use?
- In what ways did the educator encourage children to notice and communicate about addition or subtraction (for example, by asking open-ended questions)?
- In what ways did the educator encourage children to participate in math discussions related to adding or subtracting? Some ways children might participate in math discussions include questioning, describing, comparing, or explaining.
- In what ways did the educator support multilingual learners to communicate about adding and subtracting?

Possible Responses

- The children and educator used number words to communicate about adding and subtracting. They also used language like “add” and “take away” to describe adding and subtracting.
- The educator used open-ended questions to support children to communicate about adding and subtracting. For example, she asked, “How did you make 17?”

Multiple Representations

- What opportunities did the educator offer children to use addition or subtraction in different ways?
- What other learning experiences or materials might the educator offer to continue to build children’s understanding of addition or subtraction?

Possible Responses

- The educator might encourage children to add and subtract in different ways and by using different concrete objects. For example, children might add and subtract blocks during cleanup, or they might add and subtract by using their fingers during a playful song.