

Transcript – Misconceptions and Errors

As we noted earlier, the third element in the definition of a learning progression states that the learning progressions will define significant intermediate steps in the skill development that most children might be expected to pass on the way to proficiency, which includes awareness of students' common misconceptions and errors. In the process of making sense of mathematics, students will often generalize ideas in the wrong ways.

When teachers are aware of these misconceptions and errors, they can guide the development of their students' reasoning. Using the ESTAR/MSTAR Learning Progressions, teachers will have access to and become aware of the common errors and misconceptions that students have made and use this information to inform their instruction for the class as a whole. Teachers can also use the information about the misconceptions to modify their instruction.

This first example shows a student who holds the misconception that everything after the equal sign is the answer. Instead of solving the problem for x , he or she assumes the answer is x equals 18. The second example shows a student who makes an error when combining like terms. That student does not distinguish between variables and constants and assumes they can be combined. Both of these responses reveal a misconception or an error in students' understanding of variables and expressions. Teachers can use this information about their misconceptions and errors to plan supplemental instruction or activities.

Take a look at this sample of student work. This question comes from sub-level RN.C.10.1, which says, "The student finds the product of two fractions (or two decimals) or a decimal and a whole number using common algorithms." One of the sub-level errors for this states that the student is unable to take the fraction algorithm and apply it to multiplication of whole numbers. Instead of writing the problem as one-fourth times seven over 1 and multiplying across, the student made the error of multiplying both the one and the four by seven to produce seven twenty eighths. The student also made an error when using division to simplify the answer by placing the larger number inside the division bar.

This information gathered from the students' response can help to guide supplemental instruction. What information does the students' work provide about their misconceptions? What would supplemental instruction look like for this student based on learning progressions? Write down your thoughts on page thirteen of your learning portfolio.