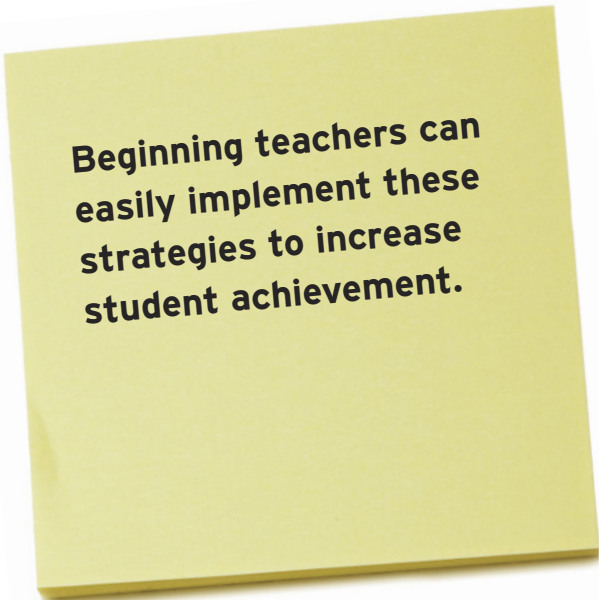




Beginning teachers can easily implement these strategies to increase student achievement.

FORMATIVE ASSESSMENT:

Easy as 1, 2, 3

Consistently implementing meaningful assessment that supports student learning is challenging for any teacher (NCTM 2014) but especially for beginning teachers who already have so much on their plates! From our collective experiences—which range from teaching eighth-grade students to supervising and teaching methods courses for preservice teachers—we have found several assessment strategies for improving students’ learning of mathematics to be particularly effective and easy for beginning teachers to implement.

EXIT TICKET

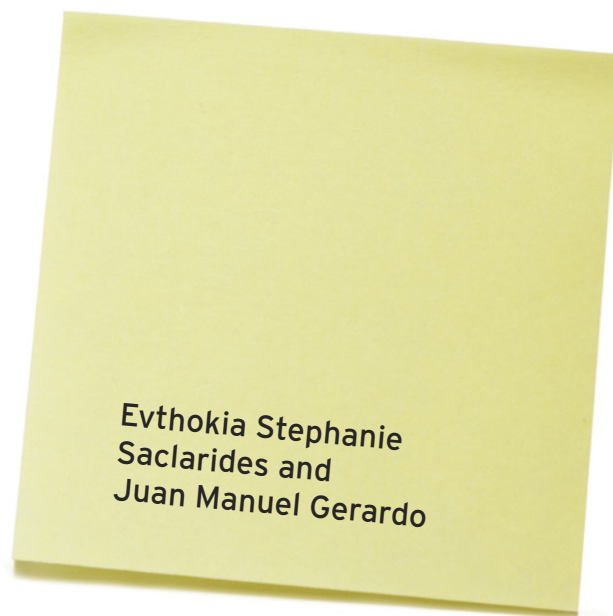
One example of formative assessment is the exit ticket. At the end of class, pass out sticky notes, notecards, or scraps of paper and ask students to put their names at the top. Write two or three problems on the board that align with the content you taught and ask students to solve independently. After class, review the exit tickets and group them on the basis of student mastery. For example, if students learned to apply the Pythagorean theorem to solve for the missing side of a right triangle, create three groups of student work: from students who (1) correctly applied the theorem and correctly solved, (2) applied the theorem incorrectly by, for example, substituting the hypotenuse length for a leg, and (3) correctly applied the theorem but made computational errors. These exit tickets inform future instruction; you might decide to reteach the lesson if most students did not master the objective, or you may decide to work in a small group the following day with the handful of students who need extra support.

ENTRANCE TICKET

Although an entrance ticket looks similar to an exit ticket, the implementation of this formative assessment is different. Give an entrance ticket at the beginning of class the day after new content is introduced so that students have additional time to practice on their homework. Engage in a process similar to the exit ticket and examine the data after class has ended. Or sort through the entrance tickets on the spot to address misconceptions and computational errors immediately or highlight an interesting strategy. For example, if students were asked to find the area of a composite figure, select two students’ solutions that decomposed the figure differently yet arrived at the same solution. Facilitate a whole-group discussion by first asking the two students to explain their strategies and then asking if other students have questions about the presented strategies.

TAKING NOTES ON STUDENT STRATEGIES

When students engage in meaningful practice, the teacher is inevitably circulating, examining students’ work, listening to students’ conversations, and asking questions to move students forward in their thinking. During this time, carry a clipboard with a roster of students’ names and a space next to each name to record notes (Van de Walle, Karp, and Bay-Williams 2004). Every day, choose to observe five students (likely a more manageable number than the entire class for a beginning teacher) and record notes about how each student is engaging with the content next to his or her name. For example, if students were practicing



graphing linear functions, note which students were comfortable using point-slope and slope-intercept forms and which students needed to create a table of coordinates before graphing. By the end of the week, you have notes about all students in your class. At this time, review your notes holistically to determine any patterns in students' misconceptions and/or strategies.

TWO NOTES OF CAUTION

Incorporating a variety of formative assessments into classroom instruction is one way to help increase student achievement (Black and William 2010). Specifically, exit tickets can help teachers pointedly target and address students' learning needs (Baron 2016). Notes on student strategies enable teachers to look for patterns in their students' mathematical understanding (Accardo and Kuder 2017). However, when implementing these assessment strategies, please keep two key points in mind. First, these are formative assessment strategies and are not meant to be formally evaluated and entered into the grade book. Instead, they should be reviewed and used to guide future instruction, which relates to the second point (Van de Walle, Karp, and Bay-Williams 2004). This assessment data must be *used* to guide future instruction. You now have great insight into student thinking—how will it change what you do?

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