Putting Students at the Center
February 28, 2013 | Volume **8** | Issue **11**
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Developing Self-Regulating Learners

The Critical Role of Feedback

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All teachers wish for their students to become engaged, successful, and enthusiastic learners, and teachers often make observations such as this: *I want students to take responsibility for their own learning. I want my students to be active learners*.

Teachers and researchers alike recognize that students who can monitor and regulate their own learning are more effective learners (Butler & Winne, 1995). Yet teachers may not know how to help their students learn to take charge of their own learning process.

Formative assessment is an instructional approach that seeks to develop the kind of ownership and self-regulation that promotes the development of successful learning (Heritage, 2010; Wiliam, 2011). Classrooms that engage in formative assessment practices are ones in which teachers are explicit about expectations for learning and both teachers and students monitor students' work in terms of progress toward those expectations.

The shared practice of reflecting on students' understanding in the context of clearly identified goals helps students learn to monitor their progress, receive feedback intended to promote further learning, and incorporate the feedback into subsequent work.

Three Central Questions for Regulating Learning

Teachers can help students learn to receive and incorporate feedback, and therefore monitor and adjust their learning, by helping them address the following three questions (Sadler, 1989; Hattie & Timperley, 2007; Wiliam & Thompson, 2007):

1. What are the goals for my learning?
2. Where am I right now in relation to my goals?
3. If I haven't yet met my goals, what do I still need to do?

The first question sets the stage for students' self-monitoring by helping them understand and articulate the criteria against which their work should be gauged. The second and third questions support students in the monitoring process itself.

Here are some suggestions for how teachers can help students address these three critical questions, with examples from teachers who have participated in the Formative Assessment in the Mathematics Classroom: Engaging Teachers and Students (FACETS) project, a professional development and research project for middle school mathematics teachers.

Question 1: What Goals Am I Aiming for in My Learning?

In FACETS, we refer to the overarching learning focus as *learning intentions* (LI) and the criteria for achieving the learning *success criteria* (SC). Learning intentions articulate the important mathematical concepts that drive the lesson. Success criteria articulate the evidence teachers and students will use to assess whether students' work reflects achievement of the learning intentions. Self-regulating learners use success criteria as the standards against which to evaluate their own work.

It's not enough, however, for a teacher to simply state the success criteria at the beginning of a lesson and move on. At a minimum, teachers will want to check in with students about their interpretations of the criteria. Sharing and clarifying learning intentions and success criteria can quickly become a comfortable part of daily lesson routines. Consider, for example, the way coteachers Tracy and Tom introduce a lesson to their 6th grade class.

Tracey and Tom draw attention to the LI and SC they've posted on the whiteboard:

LI: Through modeling, I will understand that dividing a whole number by a fraction means finding how many of the fractional parts are "in" the number.

SC 1: I can model the division of whole numbers by fractions.

SC 2: I can explain how modeling problems can help me determine how many fractional parts are in the number.

Tracey gives everyone in the class a minute to silently read the LI, and then reads the two criteria aloud. She asks if anyone has questions about them. Although no one asks for clarification, she asks for volunteers to provide examples of models in mathematics, to be sure that students understand the terminology.

Recommendation 1: Use an established routine to share learning intentions and success criteria with students.

Sharing and clarifying the success criteria at the start of a lesson offers students an initial view of how they should be gauging their work for the day.

Nonetheless, it is important to build in opportunities to revisit the success criteria throughout the lesson to continue to build students' understanding of what it looks like to meet the criteria. For example, Tracey and Tom typically return to their success criteria during class discussions.

After they review the LI and SC about division by fractions, students work individually on the problem: "How many people can we feed if we have 7 sandwiches and we give everyone half a sandwich?" Tracey and Tom move around the class to see how students approach the problem.

When they pull the class together for discussion, Tom asks Vanessa to share her solution with the class because he feels that her work is helpful in moving toward meeting the SC. As Vanessa explains her solution, Tom points to each of the criteria, highlighting how her work relates to them.

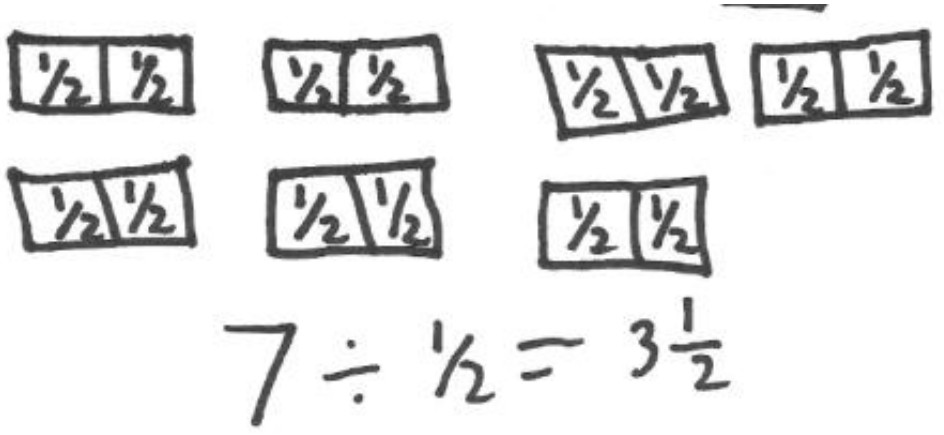
Recommendation 2: During the lesson, build a shared understanding of what meeting the success criteria looks and sounds like.

When teachers help students develop an understanding of the learning intention for the lesson and the criteria for judging achievement of that intention, they are providing students with the foundation for monitoring their own learning.

Question 2: Where Am I Currently in Relation to Those Goals?

One way to help students learn to self-assess is by assessing the work of peers; students may find it easier to be objective about work that's not their own.

Tracey continues the class discussion of the sandwiches problem by sharing a solution that used a different model than Vanessa's. Tracey then presents a *third* solution, since she wants the students to also consider work that does not meet the SC. This solution is based on a mistake she noticed on several students' whiteboards.



The class discusses whether the diagram accurately models the situation (it does), how the model relates to the corresponding number sentence (they are not equivalent), and how the work relates back to the SC.

Recommendation 3: Set the expectation that students will assess their own (and their peers') understanding relative to the stated success criteria and provide adequate class time for their assessments.

As students learn to gauge their work and the work of their peers in terms of success criteria, the responsibility for interpreting the evidence no longer falls solely on the teacher.

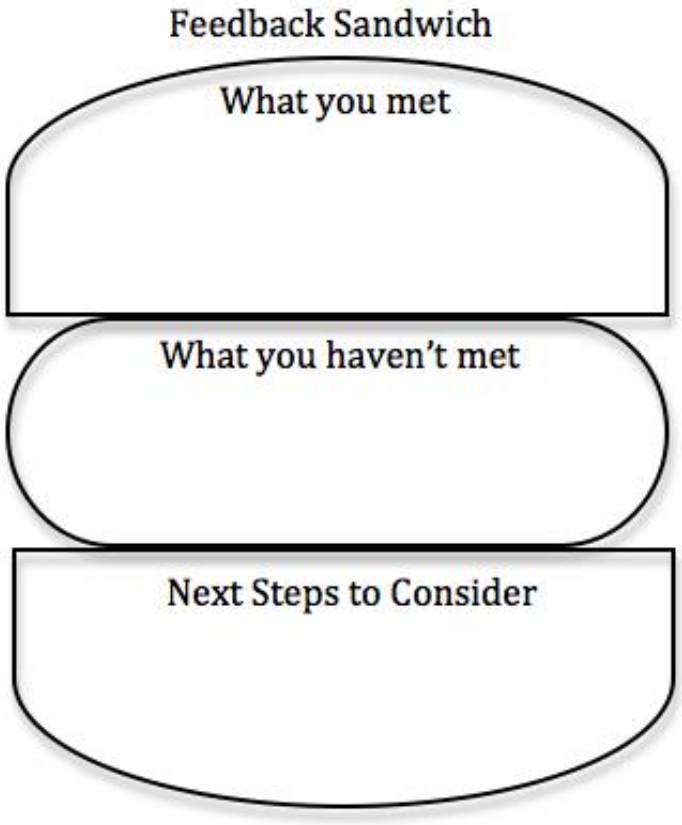
Question 3: If I Have Not Yet Met the Goals, What Do I Do Next?

Formative feedback helps students troubleshoot their own performances and take specific action to improve the quality of the work. Dylan Wiliam notes that formative feedback "should cause thinking. It should be focused; it should relate to the learning goals that have been shared with students; and it should be more work for the recipient than the donor" (2011, p. 132).

Nancy developed a feedback handout to help students focus on where they had met success criteria and where they still had work to do. She attached the handout to students' work:

- You met Success Criterion #_____ when you did _____ because_____.
- You haven't yet met Success Criterion #_____ because _____. Consider trying _____.

She also created a whimsical feedback "sandwich" template that serves as both a tool and a shared point of reference for reminding students to reflect on the three big questions.



In the beginning of the year, while her students are getting used to identifying and responding to learning intentions and success criteria, Nancy provides most of the feedback herself. As the year progresses, she asks students to provide the "bread" and the "filling" for the sandwich for one another's work, as well as for their own, work.

Students' initial efforts at giving feedback to peers may not be of the best quality. For many, providing substantive feedback is a new experience, and students need time and guidance to learn how to do so. Teachers' own comments can provide students with models for formative feedback, and teachers can also explicitly teach feedback skills by analyzing examples of feedback with students and together brainstorming ways to improve them.

Recommendation 4: Provide opportunities for students to both give and receive feedback.

Peer feedback serves two important purposes:

1. increasing the learning resources in a classroom by having students, not just the teacher, provide formative feedback; and

2. helping students learn to apply processes of analyzing work with respect to their own self-assessment.

Acting on Formative Feedback

The purpose of formative feedback is to provide guidance for students' continued learning. It is therefore crucial that students work to understand and act on feedback instead of simply receiving it and setting it aside. Again, the teacher plays an important role in helping students learn how to engage with feedback productively.

During one of their lessons on data and probability, Sharon's 6th grade students create bar graphs. After the lesson, Sharon collects the papers and reviews them that evening. She starts math class the next day with this observation: "I noticed several common issues in your work that relate to our success criteria for the lesson. We'll talk about these for a few minutes before I return your work."

On the overhead projector, she lists the lesson's SC and records the issues, illustrating them with examples from students' papers. Sharon repeats the process for each SC, filling in the table in Figure 1 below on the overhead projector.

Figure 1. LI: I will understand how a bar graph is constructed to represent a data set.

Success Criteria	Issues
SC 1: Given a data set, I can find the range in values and determine the scale.	Not starting at 0 Too large a range
SC 2: I can create a bar graph using an appropriate scale.	Labeling intervals in spaces rather than lines No labels/missing labels
SC 3: I can explain how parts of a bar graph relate back to a data set.	Not including all the parts (categories and scale)

Sharon then returns the papers, instructing the students to "use the table we just made to determine what you did correctly and what issues you may need to consider while revising your work to meet each of the SCs." As students review their work, she checks in with certain students about how and why they plan on revising their graphs.

Recommendation 5: Provide opportunities for students to use formative feedback.

Teachers can help students by modeling and having students practice strategies for responding, such as revising an explanation or problem, asking for clarification about feedback, and asking for additional feedback on revised work. As teachers introduce new strategies, they can post them on a Strategy Wall to serve as a reference for the repertoire of strategies that students can draw on when considering their next steps.

Teachers can make headway in promoting their students' purposive learning by helping them consider the three central questions we highlight in this article. These are questions that, with appropriate scaffolding, even the youngest students can practice asking and answering. In providing this scaffolding, teachers help students develop the focus and discipline needed to monitor and adjust their work—to become self-regulating learners.

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