

ability to solve geography problems with global information system (GIS) software and explain their problem-solving strategies. The self-assessment group outscored a comparison group of students who did not self-assess on three different measures: the task of creating a map using the GIS software, a test measuring knowledge of the software, and—the largest difference—a report explaining their problem-solving strategies.

The ability to use self-assessment information to regulate one's own learning and behavior is a strong predictor of future academic and professional success (Bandura, 2008; Ormrod, 2011b). The good news is that self-assessment and self-regulation skills can be learned.

THREE GUIDING QUESTIONS AND THE FORMATIVE ASSESSMENT PROCESS

Most researchers and professional developers (Brookhart, 2010a; Chappuis & Chappuis, 2008; Educational Testing Service, 2009; Hattie & Timperley, 2007; Heritage, 2010; Sadler, 1989) center their work with teachers on the questions we have already described:

- Where am I going?
- Where am I now?
- How can I close the gap between where I am now and where I want to go?

These questions guide the formative assessment process and focus everything that happens in the classroom: what the teacher does, what the students do, and what the teacher and students do together.

Most important, students who become skilled at using this process “learn how to learn” (James et al., 2006). It all starts with students understanding where they are going—their learning target. In this chapter, we focus on student goal setting and self-assessment, processes that depend on students' understanding of both the target and the process of working toward it.

USING A FORMATIVE LEARNING CYCLE TO DEVELOP ASSESSMENT-CAPABLE STUDENTS

When classroom lessons consist of do-or-die tasks or assignments—one-time-only chances to demonstrate mastery—students have little chance or reason to learn

how to assess their own work and to value the process. In sharp contrast, the formative learning cycle teaches and encourages students to improve their work as part of today's lesson. A basic formative learning cycle (see Figure 1.6 on p. 22) begins when the teacher models and explains the lesson's learning target and criteria for success—where students are headed in the lesson, how they will know when they get there, and how they will demonstrate their learning.

After the teacher explains the learning target, the students engage in guided practice, with the teacher scaffolding students' understanding of the success criteria and their ability to use the criteria to gauge the quality of their work. Next, students engage in the performance of understanding without teacher guidance, trying out their new learning to see where they are in relation to the success criteria. Immediately following students' independent performance, the teacher provides formative feedback to help them accurately assess what they did well and what they should do to improve their performance. The teacher's feedback also helps students select a strategy to use on their next attempt. Then students are given a chance to perform again, informed by new strategies and mindful of what they need to do to approach mastery of the learning target.

This informed second chance yields powerful motivational factors that strengthen students' views of themselves as assessment-capable. Whereas do-or-die assignments say to students, "This is how well you will ever do this" and promote a low sense of self-efficacy, teaching students to self-assess and use the information they gather to improve their subsequent work fosters a belief in their own ability to succeed. Students begin to understand mastery as a progressive learning process that is under their control and become optimistic about their ability to think and behave in increasingly intelligent ways (Cornoldi, 2010; Ormrod, 2011b).

USING LEARNING TARGETS TO SUPPORT STUDENT SELF-ASSESSMENT

In our professional development work with teachers and principals across the United States, we encourage them to apply a simple litmus test to gauge what is happening in their classrooms. Every student should be able to answer these two questions for today's lesson: "What am I learning [the learning target]? How will I know when I've learned it [the success criteria]?" And every teacher should be able to answer the

parallel set of questions: “What is important for my students to learn and be able to do in this lesson? How will I know whether they’ve learned it?”

In this section, we present some strategies that scaffold student self-assessment at each stage in the formative assessment process. We also encourage you to design your own tools and strategies for the range of students and learning targets you teach.

Where Am I Going?

When many people hear the term *self-assessment*, they envision students assessing the quality of *current* work (“Where am I now?”). But sowing the seeds of self-assessment begins right at the beginning, with sharing the learning target and criteria for success. It is therefore crucial to share learning targets in a way that supports student self-assessment. Here are several strategies that will help.

HELP STUDENTS ENVISION SUCCESS CRITERIA BY ORGANIZING THEM AS STUDENT-FRIENDLY RUBRICS, CHECKLISTS, OR DISPLAYS. When students have a hand in creating rubrics, they develop a deeper understanding of them. For learning targets in which students already have some experience—for example, writing a report—students can co-create the rubrics. For learning targets in which students have very little experience, students can put teacher-made rubrics into their own words. These activities familiarize students more deeply with the criteria and help them understand what to look for in their own work.

PROVIDE EXAMPLES OF WORK AT ALL LEVELS AND TIME FOR STUDENTS TO SORT EXAMPLES BY SUCCESS CRITERIA. Students can take the rubrics they have organized or co-created and apply them to examples of work at different levels. This activity is good practice for later applying the rubrics to their own work.

USE GOAL-DIRECTED LANGUAGE TO EXPLAIN HOW LEARNING SUCCESS IN TODAY’S LESSON FITS INTO THE LEARNING TRAJECTORY. Students need to conceptualize the learning target as something to aim for. That makes a whole lot of sense if the students understand that the lesson really is going somewhere. For example, a teacher might say, “Today we are learning to read the symbols on a weather map. This is important, because weather maps can help us predict weather. By the end of the week, we should be able to use the weather maps in the newspaper or on the Internet to predict our own weather and the weather in parts of the country where we have friends and relatives.” The learning target becomes a mini-goal for the lesson that constitutes one more step on the way to students’ longer-term learning goals.

Where Am I Now?

When you have shared the learning target and criteria for success, assessing the current quality of work follows naturally. In other words, once students know where they are headed, they will want to know, “Are we there yet?”

Different learning targets need different performances of understanding and, therefore, different self-assessment strategies. The following sections should help you develop a repertoire of self-assessment strategies for students based on the kind of learning target involved.

FOR LEARNING TARGETS INVOLVING CONCEPTS, USE SELF-REFLECTION STRATEGIES OR INDICATOR SYSTEMS. Self-reflection sheets usually state a goal for students (or ask them to state it) and have them reflect on the quality of their work on one or more performances of understanding. Figure 5.1 gives an example of a self-reflection sheet for one assignment. Students identify the performance of understanding (the assignment) at the top and then reflect on their strengths and weaknesses. Teachers can use the weightlifting imagery as a way to help students talk about how they developed their strengths and decide what “exercises” they should do to improve their weaknesses.

By *indicator systems*, we mean “traffic light” color-coding, happy/sad faces, or any other coding system through which students can indicate their level of confidence in their work or their level of understanding of the concepts they are working with. Individual students can use indicator systems on their own work—for example, putting a green sticker on an assignment they have reviewed and decided they understood and succeeded on, a red sticker on an assignment they have decided is of poor quality but do not know how to improve, and a yellow sticker on an assignment they are not sure about. Grimes and Stevens (2009) teach 4th grade students to self-assess using the metaphor of an automobile windshield: the indicator categories are “glass” (I can see clearly), “bug” (I can see partly), and “mud” (I can’t see anything).

These indicator systems help students in two ways. First, students’ self-reflection itself furthers their awareness of the learning target and their work in relation to it. Second, they help students see where their next steps should occur. The symbols also enable teachers to give appropriate, helpful feedback focused on student-identified needs.

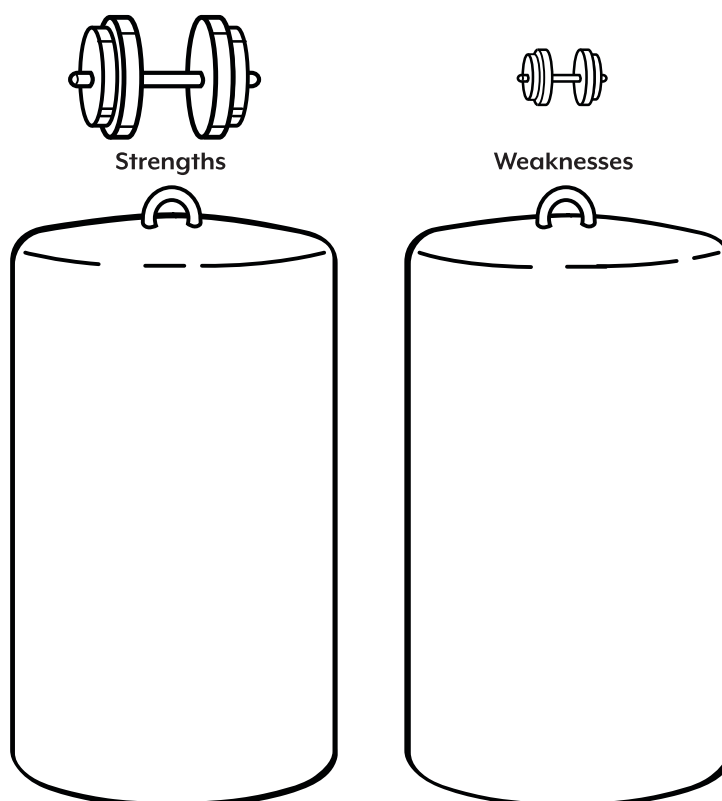
Whole classes can also use indicator systems for simultaneous self-assessment that the teacher can observe with a visual sweep of the classroom. For learning targets involving simple concepts or problems, students can “vote” the answers to questions by responding to a question with a thumbs-up or thumbs-down or other hand

signals (for example, holding up one to five fingers to indicate a level of understanding from “none” to “complete”). Younger children can move more dramatically (for example, “Stand up if you think oil and water will mix when we stir them together”). For multiple-choice questions, students can hold up response cards with letters (*A*, *B*, *C*, or *D*) or use electronic response systems (“clickers”). Students can answer short constructed-response questions (for example, writing simple sentences or solving simple math problems) on whiteboards.

5.1 A Tool for Self-Reflection on One Assignment

STRENGTHS AND WEAKNESSES STUDENT TOOL

Assignment: _____



Source: From *Formative Assessment Strategies for Every Classroom: An ASCD Action Tool* (2nd ed., p. 248), by S. M. Brookhart, 2010, Alexandria, VA: ASCD. © 2010 by ASCD. Used with permission.

FOR LEARNING TARGETS INVOLVING WRITING, USE SELF-REFLECTION AND SELF- OR PEER-EDITING. The writing process is a classic example of the formative learning cycle. Each stage—prewriting, drafting, revising, proofreading, and publishing—provides an opportunity to self-evaluate and decide on strategies for improvement. Similarly, for any performance of understanding that asks students to write something over time—a report, for example—you can build in self- or peer-editing opportunities along the way.

FOR LEARNING TARGETS INVOLVING FACTS, USE TRACKING METHODS. Students can use graphs or charts to keep track of their progress toward learning targets involving facts, such as mathematical facts, vocabulary words, lists of states and capitals, or elements and their properties. For example, they might use a line graph or bar graph to display their scores on weekly math quizzes. After students make each entry in the graph, ask them whether they were satisfied with their performance—if so, elaborating on how they accomplished it, and if not, what they plan to do differently before the next quiz. Use these graphs carefully; when used indiscriminately, they can imply to students that the score matters more than the learning.

Another type of tracking method is a category system, which helps students learn by categorizing and grouping facts. For example, a student might print her 8-times facts on index cards and file each in a recipe box under one of three tabs—“fast,” “slow,” and “not yet”—to assess which answers she can give quickly (fast), which ones she doesn’t know quite as well (slow), and which ones she cannot yet answer (not yet). She refiles the cards as they all make their way toward the “fast” category.

FOR LEARNING TARGETS INVOLVING CONTENT FROM SUBJECT-AREA TEXTBOOKS, USE SUMMARIZING AND SELF-TESTING METHODS. Students can summarize reading in their own words and evaluate how confident they are that they have understood the main points and details. Suggest that they discuss their summaries with peers. Students can also write their own lists of factual and inferential questions based on the text and try to answer them. They can also list vocabulary and concepts that they believe they understand as well as words and ideas they find difficult. All of these methods engage students in processing the material, not just memorizing it.

FOR LEARNING TARGETS INVOLVING COMPLEX PERFORMANCES, USE SELF-ASSESSMENT WITH RUBRICS. Complex performances require students to demonstrate more than one learning target. For example, students might solve a

problem and explain their reasoning. Or they might prepare a report on a historical event, using research, historical analysis, and writing skills. Complex performances are good occasions to use co-created or student-transcribed rubrics on examples of work across a range of quality levels and then on students' own work.

One way to do this is to have students use highlighters with rubrics. To use this method, students *must* have a clear understanding of the learning target. To compare their work against a rubric, students need to read and understand the performance descriptions for all the levels of each criterion. Only then can students accurately highlight key phrases in the rubric from the level that they think describes their work. As their "evidence," they can use the same-color highlighter to mark elements of the writing in their drafts that show they have met the highlighted standard. For example, if a student highlighted "clearly states an opinion" in a rubric for a persuasive essay, that student would highlight his or her opinion in the draft in the same color (Andrade, Du, & Wang, 2008). Using a different color of highlighter in the rubric, students can identify any quality criterion that they do not believe their work met. These "other color" descriptions become qualities that the student will aim to develop next in the work.

Figure 5.2 (p. 88) provides examples of how teachers can organize learning targets and success criteria as a metacognitive tool to promote student self-assessment, goal setting, and self-regulation. Teachers and students can use the framework separately and then engage in formative conversations about students' growing competence.

DISCUSS THE ACCURACY AND FAIRNESS OF STUDENT SELF-ASSESSMENTS BY COMPARING THEM AGAINST SUCCESS CRITERIA. Self-assessments using rubrics or other tools are even more effective when they become vehicles for student-teacher discussion on the accuracy of students' self-judgments. Teach students to self-assess accurately by working on two different aspects of student self-judgment. First, make sure students truly understand the learning target and the success criteria; students can be accurate judges of the quality of their work only to the extent that they understand the learning target and success criteria deeply, and only when they share a similar understanding of quality with their teacher (Sadler, 1989). Second, recognize that some students will look at their work through "rose-colored glasses," evaluating it as they wish it to be, not as it actually is, while other students will just rush through the self-evaluation without thinking much about it. Providing feedback on the accuracy and fairness of their self-assessments is the best way to strengthen students' self-assessment skills.

5.2 Three Examples of Learning Targets and Success Criteria Organized as a Metacognitive Tool

High School Example

Learning target: *Use information from maps, charts, and graphs to identify distinguishing factors of different Western European countries.*

This means I can:	Not yet	On my way	Got this
• Use maps to compare and contrast different landforms.			
• Create a graph that compares the average wealth of citizens of three Western European countries.			
• Map the natural resources of the Western European countries.			

Rate your mastery of the learning target. Remember your rating can change over time. → → → → →

Middle School Example

Learning target: *Explain how maps provide information about direction, location, and distance.*

This means I can:	Not yet	On my way	Got this
• Draw a map of the playground and label north, south, east, and west.			
• Use a map of our school to give directions from the cafeteria to the principal's office using the phrases <i>right turn</i> and <i>left turn</i> .			
• Create a key for my playground map with symbols for swings, slides, and the baseball diamond.			

Mark where you are on your way to the learning target. Then select a strategy you will use to improve. → → →

Elementary School Example

Learning target: *Follow a treasure map to a hidden bag of pennies in my classroom.*

This means I can:	Not yet	On my way	Got this
• Follow the "paces" on the treasure map by counting my steps.			
• Demonstrate two paces north and then four paces east.			
• Use the treasure map to give one set of directions (walk two paces north) to my group's "treasure hunter."			

Here is where I am on my way to my learning target. I can watch myself learn and grow. → → → → →

PROVIDE DESCRIPTIVE, NONJUDGMENTAL FEEDBACK THAT MODELS ACCURATE ASSESSMENT OF STUDENT STRENGTHS AND NEEDS BY FAIRLY COMPARING THE STUDENT'S WORK AGAINST THE SUCCESS CRITERIA. Students learn how to evaluate their work against criteria by watching their teachers model the process, by talking about it, and by seeing the difference it can make in the eventual quality of their work. For your part, model accurate assessment and fair comparison against the criteria, then provide an immediate opportunity for students to use that feedback and observe the results. These strategies contribute to a learning culture in the classroom by demonstrating that teacher feedback and student self-assessment are two sides of the same coin, that both are “safe,” and that both contribute to learning.

How Can I Close the Gap Between Where I Am Now and Where I Want to Go?

Self-assessing without making an action plan for improvement is like reading a recipe without actually preparing the dish: it's nice to think about, but it doesn't help get dinner on the table. Helping students identify their next learning move and follow through with it is potentially the most important step in the self-assessment process.

HELP STUDENTS SET REALISTIC AND ACCURATE GOALS BY COMPARING THEIR WORK AGAINST THE SUCCESS CRITERIA. Frame rubrics as maps to success by sharing them with students before the lesson, using their language to explain the lesson, and helping students apply the rubrics' criteria to drafts of their work. Realistic goals can be derived from rubrics' performance-level descriptions. If a student's work is at level 2 on a rubric, for example, an obvious goal would be to raise his or her performance to level 3. That's a performance goal, not a learning goal, but if the rubric is well constructed, the student can *make* the performance goal a learning goal by using the performance-level description associated with performance at level 3. For some learning targets, the performance of understanding can be literally tracked as rings on a target (see Figure 5.3, p. 90).

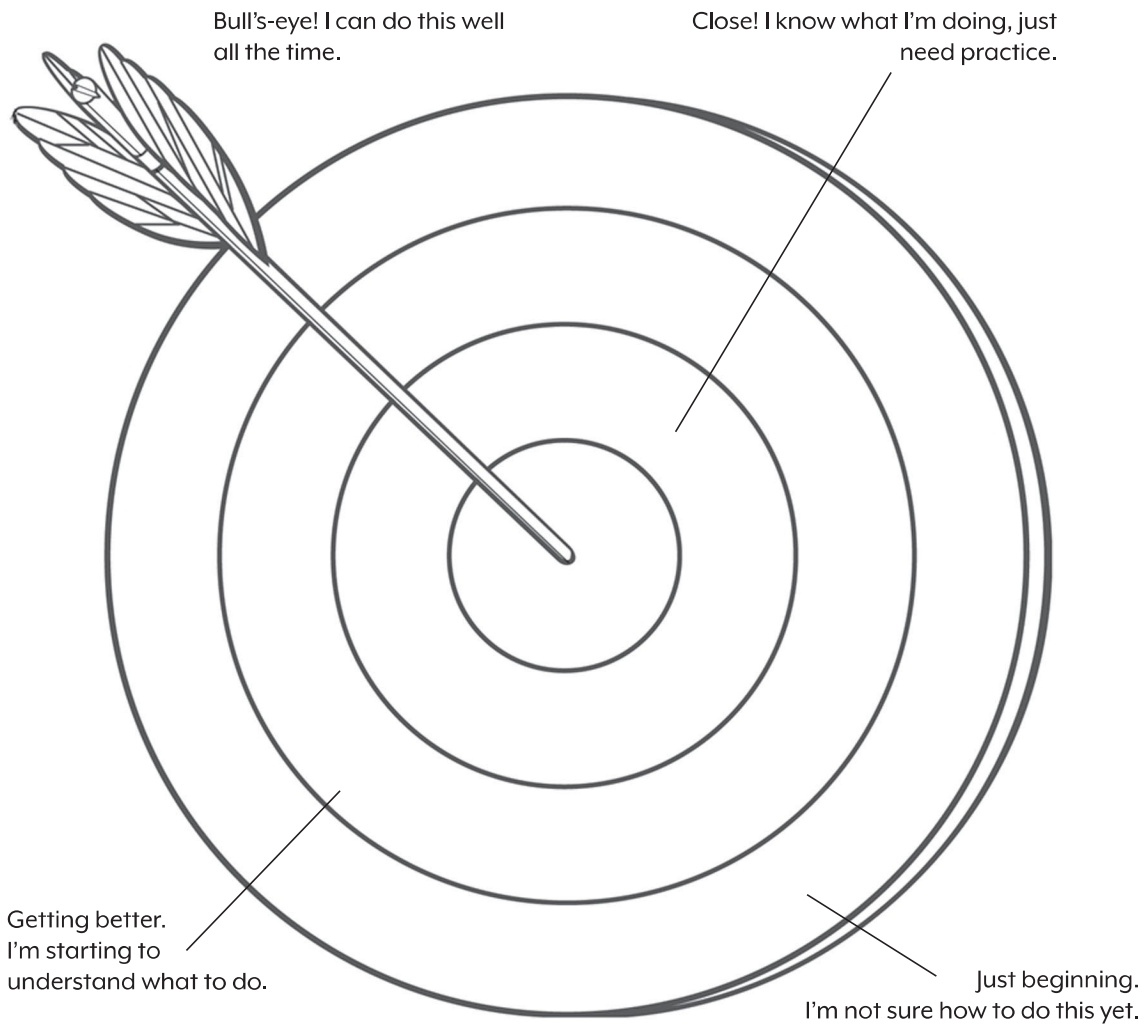
Alternatively, consider providing students with a list of possible mastery goals, each tied to a specific part of the success criteria. A student may be working at a proficient level on ideas for writing but be below proficient in using standard grammar conventions, for example. This student would aim for developing more creative, advanced writing ideas and using grammar more proficiently.

5.3 A Tool for Helping Students Track Progress Toward a Learning Target

Hit the Target

Look at your work on: _____

Place a dot on the target and the date you made that "hit."



Source: From *Formative Assessment Strategies for Every Classroom* (2nd ed., p. 147), by S. M. Brookhart, 2010, Alexandria, VA: ASCD. © 2010 by ASCD. Used with permission.

TEACH TARGETED LEARNING STRATEGIES AS AN INTEGRAL PART OF THE LESSON. Elementary-level reading teachers are used to teaching reading strategies, regularly asking their students to do things like sound out words, use finger tracking or a bookmark to focus their eyes, and use context clues. Similarly, mathematics teachers teach problem-solving strategies, regularly asking their students to identify the nature of the problem (e.g., “Does the problem ask you to put things together? Then use addition.”), identify the relevant numbers, write the problem as an equation, and so on.

You should give students strategies for doing *every* lesson, in all subjects and at all grade levels. Some students can figure out strategies on their own. But if you provide strategies, you give *all* students methods for approaching their work. Suggest a strategy (“Here’s how I might go about doing this assignment . . .”) and then ask other students to share how they might approach the work. A brief discussion of this nature gets students to share, provides all students with a variety of suggestions about how to work, and—most important—communicates to students that they should be active and strategic learners who are continually figuring out how to learn.

PROVIDE FEEDBACK THAT IDENTIFIES A STRATEGY FOR GROWTH LINKED TO THE SUCCESS CRITERIA, AND GIVE STUDENTS A CHANCE TO USE THE FEEDBACK TO IMPROVE. In addition to providing descriptions of where students are now and a description of where they need to go next, teachers should suggest strategies that students can use to get to where they need to go.

Let’s look at a classroom example. History teachers often address how civilizations met their needs based on their specific constraints. For example, various cultures had to solve the problem of preserving food. In addition to unpacking the historical concepts in a lesson on how people in ancient Mesopotamia used salt to preserve their food, the teacher can teach problem-solving strategies that extend students’ ability to grapple with upcoming historical concepts. A discussion of how decisions are bound and informed by limiting conditions as well as needs would help students figure out how to learn history by applying specific reasoning strategies.

As the teacher walks students through the content example, he can point out the specific constraint and ask students to use an unstructured problem-solving model, then suggest a strategy for growth focused by the idea of “Where am I now?”: “We learned how these ancient people used salt to preserve their food so that they could store it at room temperature. As we move into a study of the Incas, a culture that learned to store three to seven years’ worth of food, we can apply a simple problem-solving model to learn about their culture. These questions outline the steps that will help us: What was the food preservation goal they were aiming for, and why? What

were their limiting conditions? How did they overcome their constraints? How can we evaluate the effectiveness of their decisions?”

SCAFFOLD SELF-ASSESSMENT SKILLS IN ALL LEARNERS

All students can and should learn how to self-assess—to observe themselves and adapt what they are doing as a means to improve their work and understand their growing competence over time. It’s true that some high-achieving students may have better self-assessment and self-regulation skills than students who are struggling, but it’s dangerous to assume that all high-achieving students consistently and effectively self-assess. Some students may have done well because the curriculum wasn’t challenging. It is just as dangerous to assume that young learners or students with learning challenges lack what it takes to assess their own work and take steps to improve it.

As with any concept or skill, different students have different strengths and needs when it comes to accurately assessing their own work and using that information to regulate what they do to improve it. Scaffolding any new skill requires that we provide incremental challenge and support as we pull our students to higher levels of competence. Figure 5.4 illustrates how teachers can enhance student self-assessment by adjusting their level of support in accordance with each student’s growing competence.

LOOKING FORWARD

Learning targets and criteria for success increase student agency by showing students where they are headed with their learning. Students can’t assess themselves effectively unless they have a goal in mind and understand what it looks like. When they *do* have a goal in mind and understand what it looks like, self-assessment becomes the obvious next step: Am I getting there? What else do I need to do?

In short, learning targets are the foundation of student self-assessment. They are also the foundation of differentiated instruction, which we turn to in Chapter 6.

5.4 Strategies to Challenge and Support Self-Assessment Growth			
Self-Assessment Skill Building Block <i>I can...</i>	Continuum of Competence Strategies		
	Learn/Practice	Gain Competence	Enhance/Extend
Describe success criteria for today's lesson.	The teacher shares the success criteria in student-friendly language to explain what good work looks like for the lesson.	The student explains and paraphrases the success criteria in his or her own language.	The student generates success criteria for a specific product or performance.
Apply the success criteria to my work.	The teacher teaches, demonstrates, and guides students in applying the success criteria to exemplars representing different levels of quality.	The teacher guides the student in applying the success criteria to his or her own work to identify one area of strength and one area of need.	The student applies multiple success criteria to complex products or performances.
Determine the accuracy and fairness of my self-assessment.	The teacher provides feedback on how well the student's assessment focused on a factor specified in the success criteria.	The student compares his or her self-assessment with the teacher's assessment on several success criteria; they discuss areas of agreement and disagreement.	The student works with peers to discuss self-assessment for a complex product or performance.
Set a goal for improvement.	The teacher provides an appropriate goal for the student.	The teacher provides a list of mastery goals, and the student chooses a goal based on his or her own self-assessment.	The student uses self-assessment information to determine a mastery goal or set of goals appropriate to the success criteria and the performance of understanding.
Select a strategy to improve my work using the success criteria.	The teacher provides a specific strategy for producing good work and describes it using the success criteria.	The teacher provides a list of next-step improvement strategies, and the student chooses a strategy based on his or her own self-assessment.	The student selects, adapts, or designs a learning strategy based on his or her informed goals for improvement.