Table 3.5 Generic Form of the Scale

Score 4.0	More complex content
Score 3.0	Target learning goal
Score 2.0	Simpler content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content
Score 0.0	Even with help, no success

To understand the scale, it is best to start with score 3.0. To receive a score of 3.0, a student must demonstrate competence regarding the target learning goal. A score of 2.0 indicates competence regarding the simpler content, and a score of 4.0 indicates competence regarding the more complex content. Scores 4.0, 3.0, and 2.0 involve different content, then, while scores 1.0 and 0.0 do not. A score of 1.0 indicates that, independently, a student cannot demonstrate competence in the score 2.0 or 3.0 content, but, with help, he or she demonstrates partial competence. Score 0.0 indicates that even with help, a student does not demonstrate competence or skill in any of the content.

Table 3.6 uses one of the learning goals about heritable traits described previously to show what a scale that has been filled in might look like.

Table 3.6 Scale for Goal 1

Score 4.0	Students will be able to discuss how heritable traits and nonheritable traits affect one another.
Score 3.0	Students will be able to differentiate heritable traits from nonheritable traits in real-world scenarios.
Score 2.0	Students will be able to recognize accurate statements about and isolated examples of heritable and nonheritable traits.
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content
Score 0.0	Even with help, no success

Again, the score 3.0 content is the target learning goal. Thus, a teacher simply uses the target learning goal for the class as the score 3.0 content when designing a scale. The next whole-point score down is 2.0. The simpler content goes here. The next whole-point score up from the target learning goal (score 3.0) is 4.0. The more complex content goes there.

The score values of 1.0 and 0.0 do not represent new content, but they do represent different levels of competence. Score 1.0 indicates that the student does not demonstrate competence in any of the content when working independently. However, with help, the student has partial success at the score 2.0 and score 3.0 content. Score 0.0 indicates that even with help, the student has no success at the score 3.0 or 2.0 content.

Writing Scales in Student-Friendly Language

The scales described in the preceding text are written for the teacher; they are in teacher-friendly language. To make scales more useful to students, they should be written in student-friendly language. This should be done in cooperation with students. The teacher should introduce each scale to students as it is used in class; explain what is meant by the content placed at the score values 4.0, 3.0, and 2.0;

and then have the entire class participate in rewriting the content at each score value in a manner that makes it easy for students to understand. To illustrate, consider again the scale in table 3.6 (page 45). The teacher would start with the score 3.0 content, explaining his or her expectations for it. Once students had a firm grasp of the score 3.0 content (the target learning goal), he or she would explain expectations for the score 2.0 and 4.0 content. Next, students would be asked to work in small groups to come up with their own ways of wording the score 2.0, 3.0, and 4.0 content. These suggestions would be put together into a rewritten version of the scale that might resemble table 3.7.

Table 3.7 Student-Friendly Scale

Score 4.0	We should be able to talk about how the traits we inherit and the traits we develop on our own are related to one another. For example, a person born in a family that has always lived near the equator might have darker skin and enjoy warm-weather hobbies such as swimming or scuba diving, but someone born in a family that has always lived in a cold climate might have fair skin and enjoy cold-weather hobbies such as skiing or ice skating.
Score 3.0	We should be able to tell the difference between traits we inherit from our parents and traits we develop on our own. For example, Michael Phelps is such a good swimmer partly because of how tall he is and how wide his wingspan is (traits he inherited) and partly because he practiced really hard and did what his coach told him to (things he chose to do).
Score 2.0	We should be able to talk about the traits we get from our parents and the traits we develop on our own. For example, we cannot change the traits we get from our parents, such as height or eye color, but we can change the traits we develop, such as patience or work ethic.
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content
Score 0.0	Even with help, no success

Notice that the rewritten scale has examples of what it would look like to provide a correct answer for the score 2.0, 3.0, and 4.0 content. This is critical to student-friendly scales. In effect, the teacher and the students have created something akin to what composition teachers refer to as an "anchor paper." In the context of writing instruction, an anchor paper is a composition that clearly shows the characteristics that are expected of a particular type of composition. The same is true of the examples for the score 2.0, 3.0, and 4.0 content in table 3.7. The student-friendly scales should provide students with clear guidance as to what it would look like to demonstrate score 2.0, 3.0, and 4.0 competence.

Using the Scales to Score Assessments

With scales written for the unit-specific learning goals, a teacher can design and score various types of assessments. We go into this process in depth in chapter 4. Briefly though, consider again the scale shown in table 3.7. To assess the content in this scale, a teacher might design a test like the one in table 3.8.

Notice that the test is organized into three sections—one for score 2.0 content (section A), one for score 3.0 content (section B), and one for score 4.0 content (section C). To score this assessment, the teacher would look at the pattern of responses across the three sections. If a student correctly answered all items on the test, she would receive a score of 4.0. If she answered all items correctly in sections A and B but not section C, she would receive a score of 3.0. If she answered all of the items correctly in section A but not B and C, she would receive a score of 2.0. If she could answer no items correctly on her own but could answer some items correctly with help from the teacher, she would receive a score of 1.0. Finally, the score of 0.0 would be assigned if she could answer no items correctly, even with help.

Table 3.8 Sample Test

Section A
1. True or False: All diseases are inherited. _____
2. True or False: If your mom is afraid of roller coasters, you will inherit that fear from her. _____
3. Examples of inherited traits are _____ and _____.
4. Put a check in front of the traits you can develop over time.
_____ Shoe size
_____ Gender
_____ Knowledge of history
_____ Fear of snakes

Section B
5. Name three traits you like about yourself. Are these heritable traits or not? Explain your answer.
6. Joey signed up for the summer spelling bee just after Christmas. He did not practice very much because he was playing baseball, and he went to Florida with his parents over spring break. When the bee came, he lost in the first round. Later that night, he told his mother he lost because he is not very smart about words. Do you think this is correct? Why or why not?
7. Simon's mother always asks him to go to the grocery store with her so that he can reach the items on the top shelf. He can reach almost everything she points out. Is this because Simon was born tall, or is it because he has so much practice reaching for items in high places? Has he inherited his ability to reach items on the top shelf? Explain your answer.

Section C
8. Hemophilia is an inherited disease that prevents your blood from clotting. This means that if you ever get a cut or a scrape, you might lose so much blood that it could be life threatening. If you were born with this disease, what kinds of things would you have to avoid? What kinds of things might you be good at instead? What kinds of personality traits might you have that other people might not have? Explain your answer.

You probably see a problem with scoring this test right away. What if the student answers all score 2.0 questions (section A) and some of the score 3.0 questions (section B) correctly? Does the student receive a score of 2.0 or 3.0? The solution to this dilemma lies in the use of a scale that employs half-point scores. This is depicted in table 3.9 (page 48).

Now the scale is sensitive to partial credit or to some items answered incorrectly for a particular section of an assessment. Again, it is useful to begin with the target goal—score 3.0 content. A score of 3.0 indicates that a student has answered all 3.0 items correctly. A score of 2.5 means that the student has success at the score 2.0 content (the simpler content) and has partial success at the score 3.0 content (the target learning goal). A score of 3.5 indicates that a student has success at the 3.0 content (the target learning goal) and partial success at the 4.0 content (the more complex content). A score of 1.5

indicates that a student has partial success at the score 2.0 content (the simpler learning goal). Finally, a score of 0.5 indicates that, with help, a student has partial success at the score 2.0 content.

Table 3.9 Complete Scale

Score 4.0	More complex content
Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	Target learning goal
Score 2.5	No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content
Score 2.0	Simpler content
Score 1.5	Partial success at score 2.0 content, but major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content
Score 0.5	With help, partial success at score 2.0 content, but not at score 3.0 content
Score 0.0	Even with help, no success

Over the years, we have found that teachers can use this scale to design and score classroom assessments with a relatively high degree of reliability (see Marzano, 2002). To illustrate, let us go back to the activity you completed regarding the inadequacies of the 100-point scale. Table 3.10 reproduces the content of the three sections of the hypothetical assessment.

Table 3.10 Types of Content in Three Sections of an Assessment

Section A:	Ten multiple-choice items that are factual in nature but important to the topic
Section B:	Four short constructed-response items that require students to explain principles or give examples of generalizations as presented in class
Section C:	Two short constructed-response items that require students to make inferences and applications that go beyond what was presented in class

Recall that you were asked to compute a score for a student who answered all items correctly in section A, half of the items correctly in section B, and no items correctly in section C. As described previously, when the 100-point scale is used to score this pattern of responses, scores will range from 15 to 90 due to the differential weighting of items. Teachers assign scores with much less variability when the scale in table 3.9 is used, especially when they realize that section A items represent score 2.0 content, section B items represent score 3.0 content, and section C items represent score 4.0 content. In fact, scoring is quite straightforward from this new perspective. The student has answered all score 2.0 items correctly and half of score 3.0 items correctly. Therefore, the student receives a score of 2.5.

The preceding example involves a traditional paper/pencil test, but the scale applies equally well with other types of assessments. For example, an art teacher might design an assessment for which students are asked to sketch an object of their choice. However, in the directions, students are asked to make sure they demonstrate a sense of the basic sketching technique addressed in class (score 2.0 content), demonstrate an awareness of the concept of perspective as addressed in class (score 3.0 content), and demonstrate orally or through writing how they have modified some of the basic techniques to achieve a specific artistic purpose (score 4.0 content).

To score a sketch, the teacher would first make sure that the student had demonstrated the basic sketching techniques. If so, the teacher would know that his score was at least 2.0. The teacher would