



## **Lessons from a Science Classroom**

*By Claire Schneider, University of California San Diego extension*

Last summer, I received a green light from a state university to develop Alternative Assessments for Science, a graduate teacher education course. The intent of this elective course is to provide teachers with methods other than multiple-choice tests for assessing what their students have achieved and learned in science.

For example, as an alternative to a multiple-choice test, groups of students present information on specific topics, and as part of their overall grade, they perform a peer-assessment. Another alternative method for measuring student achievement is an open-ended assignment. For example, students are asked to use art, photography, drama production, an essay or other format to prove they understand the concepts listed in the ecology unit syllabus.

Because school and district success is measured, in part, by student scores on the year-end, standardized tests, preparation for traditional multiple-choice tests cannot be ignored. I needed to find a connection between traditional exams and alternative assessments. While browsing through stacks of books and research articles, I came across Jeffrey Burgard's *Continuous Improvement in the Science Classroom*,<sup>1</sup> a short, easy-to-read book on improving student achievement.

### **Concepts from the book**

The section on learning checks knocked my socks off, and that's why I incorporated these concepts into the graduate course I teach on assessment. It is such a simple idea, yet has the impact of high-beams on a dark night. On p. 57, Burgard explains something called a learning check enables teachers and students to see progress on the mastery of the entire year's curriculum. Each week, students are checked on a sample of the entire year's curriculum.

On the surface, this is a scary prospect for students: a weekly learning check on the entire year's curriculum. Yikes! Burgard's intent, however, is to break the teach-test-forget mentality. To accomplish this, the learning check is not graded for points; instead it is evaluated for progress. In brief, it works like this: At the beginning of the school year, students receive a complete list of course objectives, which Burgard calls a knowledge map. The knowledge map should cover the entire year's curriculum. Each week, the teacher creates a learning check by randomly selecting items off the knowledge map.

Students are given the learning check and asked to answer questions as best as they can. At the beginning of the school year, these learning checks can be quite overwhelming for students because the questions cover the entire school year's knowledge map. Progress is monitored, and over time, students should see improvement as they correctly answer more and more questions related to the objectives.

The random nature of the learning check removes the students' ability to fall back to old patterns of cramming before tests, guessing during tests and forgetting most of the content after tests. Because there is no way to predict which objectives will be on the weekly learning check, students realize and accept they must review the knowledge map once per week. They eventually understand all of the knowledge will become cemented into long-term memory.

### **High marks from teachers**

The assignment I created for my teacher-students in Alternative Assessments is to write an essay describing how they would use any part of the continuous improvement program (CIP) in their own teaching situation. My teacher-students were just as enthusiastic about the program as I was, especially the learning check segment.



Emily, one of my teacher-students, believes her sixth-graders will feel empowered when they possess a list of the content objectives that includes everything they must learn for the year-end, standardized test.

“I predict that with the list of objectives my students will feel an ownership of their learning and that the learning checks will add a level of accountability without stressing my students about grades,” Emily said.

Another of my teacher-students, Joanne, predicts that “some students might feel overwhelmed at first when they see the long list of course objectives.” She said she feels this anxiety will diminish, however, as students realize all of the objectives would be covered during the year. Furthermore, she said she believes calling the weekly assessment a learning check emphasizes it is a learning tool, not a formidable test or quiz.

Emily said she likes the idea of students grading their own learning checks, because they get instant feedback and additional exposure to the content.

Another teacher-student summarizes it best: “Why shouldn’t students know what they are expected to learn up front? Why hide essential content from them? It is our job to teach students content and give them the confidence to demonstrate the mastery of it.”

Of course, teachers must administer the year-end, state-mandated, multiple-choice exams. But we all agree the CIP would be a great alternative to the traditional method of preparation because it bypasses the memorize-test-forget mentality.

## **Reference**

1. Jeffrey Burgard, *Continuous Improvement in the Science Classroom*, ASQ Quality Press, 2009.

*Claire Schneider is an instructor for University of California San Diego extension in the education program. For more information about Burgard’s book, visit [www.asq.org/quality-press/display-item/index.html?item=H1353&xvl=76087338](http://www.asq.org/quality-press/display-item/index.html?item=H1353&xvl=76087338).*