

***Using Standards
and Assessments to
Improve Student
Learning***

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Dr. Guskey is Professor of Educational Psychology in the College of Education at the University of Kentucky. A graduate of the University of Chicago, he has taught at all levels, served as an administrator in Chicago Public Schools, and was the first Director of the *Center for the Improvement of Teaching and Learning*, a national educational research center. He is the author of numerous award-winning books and over 100 articles published in prominent research journals as well as *Educational Leadership*, *Kappan*, and *School Administrator*. Dr. Guskey served on the Policy Research Team of the *National Commission on Teaching & America's Future*, on the Task Force to develop the *National Standards for Staff Development*, and recently was named a Fellow in the American Educational Research Association, one of the Association's highest honors. He co-edits the *Experts in Assessment Series* for Corwin Press and has been featured on the National Public Radio programs, "Talk of the Nation" and "Morning Edition." As a consultant to schools throughout the world, he helps bring insight to some of education's most complex problems.

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BENJAMIN S. BLOOM

Portraits of an Educator

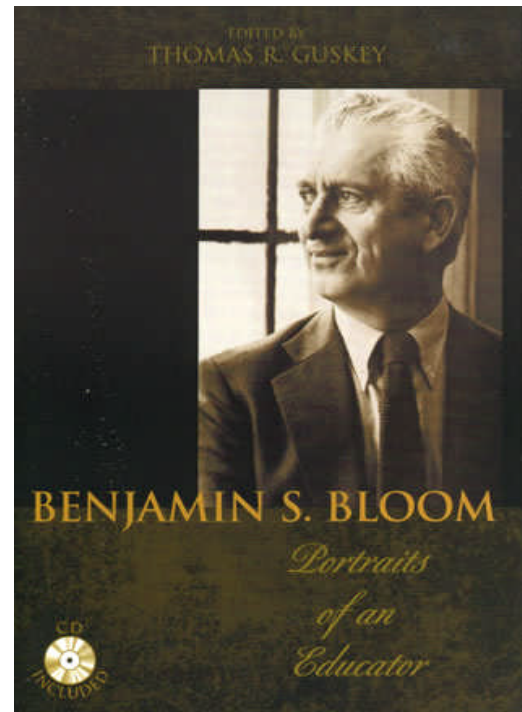
Edited by
Thomas R. Guskey

Few individuals in the history of education have had greater impact on educational policy and practice than Benjamin S. Bloom. During a career that spanned over five decades, his research and writing guided the development of innumerable educational programs and provided powerful insights into the untapped potential of educators to help all students learn well.

Benjamin S. Bloom spent most of his professional life at the University of Chicago, where he held the Charles H. Swift Distinguished Service endowed chair. At this university, he founded and chaired the program in Measurement, Evaluation, and Statistical Analysis (or MESA), authored or co-authored 17 books, and wrote numerous journal articles. He served as the president of the American Educational Research Association (AERA), a member of the National Academy of Education, and a founding member of the International Association for the Evaluation of Educational Achievement (IEA). Also the recipient of several awards, perhaps his greatest accomplishment was the profound influence he had on his students and professional colleagues. Much of his time was spent in one-to-one interactions with them, which have become known as "Bloom Stories" and have gained legendary status.

Many of the "Bloom Stories" are humorous and show his amazing quick wit. Others recall the kindness and encouragement, and subtle wisdom he showed in helping students and colleagues overcome obstacles or setbacks. No matter what the topic, Benjamin Bloom's stories are touching remembrances that offer special insight into his uniqueness as a preeminent scholar, colleague, mentor, and friend. This book is a collection of these stories, with brief reviews of some of Bloom's major professional contributions. Includes a CD recording of Benjamin Bloom discussing his book, *Human Characteristics and School Learning*.

This book will be of interest to educators at all levels.



Thomas R. Guskey is professor of Educational Policy Studies and Evaluation at the University of Kentucky.

2005

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Copies of Slides

Using Standards & Assessments to Improve Student Learning

Thomas R. Guskey

Systemic Change

- ✓ Change is a Highly Complex Process
- ✓ Professional Development is Essential

Change is a
Prerequisite for
Improvement!

Standards-Based Education

Four Crucial Understandings

#1 The Ideas Are Not New!

- Ralph W. Tyler - 1949
- *"Basic Principles of Curriculum and Instruction"*
- **Two Fundamental Decisions:**
 - A. What do I want students to learn?
 - B. What evidence would I accept to verify their learning?

#2 The *Ideas* are more important than the *Vocabulary!*

Confusing Vocabulary

- ✓ Objective
- ✓ Goal
- ✓ Outcome
- ✓ Standard
- ✓ Benchmark
- ✓ Competency
- ✓ Proficiency
- ✓ Performance
- ✓ Expectation
- ✓ Aspiration
- ✓ New Years' Resolution

#3 Good Ideas Can Be Implemented *Poorly!*

- ✓ How do the ideas translate into practice?
- ✓ How will we know if they work?

#4 Success in Education hinges on what happens at the *Classroom Level!*

Guidelines for *Success*

#1 Think *Big*, but Start *Small!*

- ✓ Don't require too much, too soon from teachers and administrators.

#2 Ensure that Assessments become an *Integral Part* of the Instructional Process.

- ✓ Quizzes and Tests should be ***Learning Tools***,
- ✓ Not Simply Evaluation Devices That Mark the End of Learning.

Implication #1

**Assessments must be
Sources of Information
for Students *and* Teachers.**

Implication #2

**Assessments must be
followed by
High Quality
Corrective Instruction.**

Implication #3

**Students must be given a
Second Chance
to Show Improvement !**

Quote

**“Spectacular achievements
are *always* preceded by
unspectacular preparation.”**

Roger Staubach

How do I use Formative Assessments in my classes?

Questions / Concerns

- ✓ Time vs. Coverage?
- ✓ Motivation?
- ✓ After the 2nd Assessment?
- ✓ Grading?

Corrective Activities

Activity	With the Teacher	With a Friend	By Oneself
Reteaching	X		
Individual Tutoring	X	X	
Peer Tutoring		X	
Cooperative Teams		X	
Course Texts	X	X	X
Alternative Texts	X	X	X
Alternative Materials	X	X	X
Academic Games	X	X	X
Learning Kits		X	X
Learning Centers		X	X
Computer Activities		X	X

Assessment Formats

Multiple-Choice Items: *Include Common Errors to Diagnose Learning Problems*

1. $1.2 + .23 = \underline{\quad}$
- a. 3.5
 - b. .35
 - c. 1.43
 - d. 14.3

Assessment Formats

Multiple-Choice Items: *Convergence Theory*

- a. Stephen Douglas
- b. Abraham Lincoln
- c. James Monroe
- d. Robert E. Lee

Name _____ Date _____	Name _____ Date _____
1. A B C C E _____	1. A B C D E _____
2. A B C D E _____	2. A B C D E _____
3. A B C D E _____	3. A B C D E _____
4. A B C D E _____	4. A B C D E _____
5. A B C D E _____	5. A B C D E _____
6. A B C D E _____	6. A B C D E _____
7. A B C D E _____	7. A B C D E _____
8. A B C D E _____	8. A B C D E _____
9. A B C D E _____	9. A B C D E _____
10. A B C D E _____	10. A B C D E _____
11. A B C D E _____	11. A B C D E _____
12. A B C D E _____	12. A B C D E _____
13. A B C D E _____	13. A B C D E _____
14. A B C D E _____	14. A B C D E _____
15. A B C D E _____	15. A B C D E _____
16. A B C D E _____	16. A B C D E _____
17. A B C D E _____	17. A B C D E _____
18. A B C D E _____	18. A B C D E _____
19. A B C D E _____	19. A B C D E _____
20. A B C D E _____	20. A B C D E _____

Tallying Assessment Results

Assessment Analysis (# of Errors / Item)	
1. /	11. ///
2. ///	12. ###-###-###-//
3.	13. //
4. //	14. ##
5. ///	15.
6. /	16. ///
7. ###-###-///	17. ###/
8. ###-###-###	18. //
9. ///	19. /
10. //	20. //

Assessment Formats

**** Alternative Assessments ****

- 6. Skill Demonstrations
- 7. Oral Presentations
- 8. Task Performances & Complex Problems
- 9. Compositions & Writing Samples
- 10. Laboratory Experiments
- 11. Projects & Reports
- 12. Group Tasks or Activities
- 13. Portfolios

The Key To Success with Alternative Assessments:

Clearly Specified Performance Criteria or Scoring Rubrics.

Rubrics:

1. List the criteria for a piece of work, or “what counts.”
2. Articulate graduations of quality for each criterion from “Excellent” to “Poor.”

See: Arter, J., & McTighe, J. (2001). *Scoring rubrics in the classroom*. Thousand Oaks, CA: Corwin Press.

Why Use Rubrics ?

1. They are powerful tools for teaching and assessment.
2. They help students become more thoughtful judges of their own work.
3. They reduce the time teachers spend evaluating students' work.
4. They allow teachers to accommodate differences in heterogeneous classes.
5. They are easy to use and explain.
6. They improve objectivity in scoring.

Tips for Designing Rubrics:

1. Begin with Models of Excellence
2. Avoid Unclear Language (e.g., “A Creative Beginning”)
3. Avoid Unnecessary Negative Language
4. Involve Students in the Process

See: Arter, J., & McTighe, J. (2001). *Scoring rubrics in the classroom*. Thousand Oaks, CA: Corwin Press.

4 Provide High Quality Professional Development!

- ✓ There must be active encouragement and support for *collaboration, experimentation, and change.*

Remember the Stages of Concern

1. Personal
2. Management
3. Impact

From: Hall, G., Wallace, R. & Dossett, W. (1973). *A developmental conceptualization of the adaptation process within educational institutions*. Austin, TX: Research and Development Center for Teacher Education, University of Texas.

Consider the Order of Change

- Teacher Attitudes and Beliefs
- Teaching Practices
- Student Learning

From: Guskey, T. R. (1986). Staff development and the process of teacher change. *Educational Researcher*, 15(5), 5-12.

**#5 Integrate *All* Programs
and Innovations!**

✓ Improvement means
implementing multiple
innovations *simultaneously!*

An Important Distinction:

Managers know how
to do things right.

Leaders know
the right things to do!

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Readings

School Administrator

October 1999

Making Standards Work

Thomas R. Guskey

For all the debate about the standards movement in political circles, think tanks and the op-ed pages of daily newspapers, most educators welcome the idea.

By providing consensus about what's important for students to learn and what skills they should acquire, standards give direction to reform initiatives. They also bring much-needed focus to curriculum development efforts and provide the impetus for new forms of student assessment.

To realize the benefits of standards, however, educational leaders must keep in mind three essential principles.

Principle No. 1: The ideas are more important than the vocabulary we use.

Many educators today are embroiled in a war of words that engenders passionate arguments and long debates. These arguments also squander precious time and detract from the important work that needs to be done.

I became aware of this war several years ago when asked to facilitate the work of a school district's ineffective curriculum development committee. I quickly discovered that the committee members were lost in a tangled thicket of terminology. Most of their time was spent in squabbles about whether particular concepts should be labeled "goals" or "objectives."

My first action was to write this simple phrase on a sheet of paper: "The student will be able to . . ." I then added a popular, performance-based verb, such as "demonstrate," and completed the statement with some elements of content. I asked the group to read this statement and tell me if it was a(n): a. Goal, b. Objective, c. Outcome, d. Competency, e. Standard, f. Proficiency, g. Performance, h. Expectation, I. Aspiration or j. New Year's Resolution.

The resulting debate took up most of the next hour. Yet when I took my statement to the high school cafeteria where students were having lunch and asked 10 students the same question, each gave me the same immediate answer: "Who cares?"

Educators must be clear about what they expect students to learn and be able to do. It is also crucial to decide what evidence best reflects that learning. In the long run, however, the label we attach to those things is unimportant. To the degree that distinctions in terminology are helpful and provide clarification, they should be used. But the confusion and distraction that such distinctions often cause must be avoided. Being clear about what we want students to learn is far more important than the specific vocabulary we use to describe those things.

Dust-Free Frameworks

Principle No. 2: Good ideas can be implemented poorly or not at all.

The end product of nearly all efforts to clarify educational goals is a document typically labeled a curriculum framework or set of learning standards. In most cases, these documents are bound in large notebooks, color-coded by level and distributed to teachers. Although they may be the pride of curriculum directors, how—or even whether—these frameworks are used is rarely considered.

If curriculum frameworks and learning standards are to make a difference in classroom practice and lead to improvements in students' learning, we must give serious consideration to how they can be implemented practically and efficiently. Otherwise our latest efforts, like those of earlier decades, will end on a shelf gathering dust.

Implementation considerations should involve the difficult task of bridging the chasm between our goals and prevailing policies and practices. We must consider, for example, what types of professional development administrators and teachers will need to implement these new learning standards, what additional materials and resources will be required and how the effects of these efforts will be assessed and evaluated.

Regardless of the work that goes into clarifying our educational goals, their true value will depend directly on the quality of implementation.

Principle No. 3: Success hinges on what happens at the classroom level.

Studies of change convincingly show that success always hinges on what happens at the smallest unit of the organization. What this says to educational leaders is that successful improvement efforts will always hinge on what happens in the classroom, regardless of what occurs at the national, state or even district level.

As William Cooley recently lamented to a conference audience of the American Educational Research Association: "I have concluded that most educational reform takes place in our literature and on the pages of Education Week, not in schools and classrooms. . . . It seemed to me that all this talk about waves and waves of reforms really refers to trends in the reform literature, not changes that are really taking place in real schools."

Improvement in education means more students learning better. The only level at which that generally takes place is in classrooms. Sadly, judged by the criterion of classroom impact, most educational reforms have a poor record of success. Even reforms that include development of high-level learning standards for students, paired with performance assessments on which teachers are held accountable for results, show relatively modest change in classroom practice; significant change is tied more directly to well-targeted, high-quality, ongoing, job-embedded professional development.

Efforts to clarify what students should learn and be able to do are vitally important. Such efforts provide essential focus and direction in reform initiatives at all levels. But to lead to significant

improvements in student learning, serious consideration must be given to the impact of these standards on classroom practice and the conditions necessary for change at that level.

A Dynamic Process

Clarifying our educational goals will never be easy. The process is enormously complex and often highly political. The dynamic nature of our society and the world also make it a continuously evolving process. The learning goals we establish today are unlikely to be adequate five years from now and will surely be antiquated 10 years hence.

Nevertheless, the process is essential to teaching and learning at all levels and, therefore, a task we must achieve. Investment in the principles described here will not make the process less challenging. It will ensure, however, that efforts remain focused on the issues most crucial to success.

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Getting Curriculum Reform Right

BY THOMAS R. GUSKEY

My American history teacher in high school loved the Civil War. More precisely, he was a Civil War addict.

To him, all of American history revolved around that singular event. So in his class, we covered American history from the year 1490 to 1860 in the first two weeks of school. (Apparently, the time before Columbus' voyage was insignificant.) The period from 1860 to 1865 took us the next 20 weeks.

The class was a joke, and we treated it that way. We would take turns each evening looking up trivial snippets about the Civil War. Before class began the next day, the student whose turn it was would raise her hand and ask her a trivial question. "Now that is an interesting point," our teacher would respond. He would then wax eloquently for the next 45 minutes about that trivial point — and we had a free class.

In essence, as students we were cheated. We did not recognize it at the time, but indeed we were. The class was not an American history class. It was a Civil War class. And it was not a very good Civil War class at that.

This is the reason that standards are important. Had standards for student learning been developed for the class, that situation could have been avoided. Standards define what students should know and be able to do as a result of their learning experiences in a class or at a grade level. Developed by teachers and subject-area experts, standards clarify the expectations for student learning and establish criteria for judging the adequacy of student performance.

This is the basis of the Common Core States Standards Initiative led by the Council of Chief State School Officers and the National Governors Association. Because every state has its own set of academic standards, expectations for students'

learning vary depending on where they live. The standards initiative provides a chance for states to collectively develop a core set of academic standards in mathematics and English language arts, perhaps followed by science and social studies.

Clear standards help students understand what is expected and allow them to be more self-directed in their learning. They help parents understand what students need to know and be able to do. Standards help educators focus instruction and align it with assessments of student learning. A set of common standards also provides a basis for comparing and evaluating policies and practices across states.

Skeletal Structure

We must keep in mind, however, the best standards represent a curriculum skeleton. They describe only the core of a subject area or course. They set forth the essential elements that teachers and subject-area authorities jointly agree should be provided to every student, regardless of the individual teacher or the location of the school. But providing that skeleton alone is clearly not enough.

Every teacher's responsibility is to fashion a body around that skeleton. Teachers bring the skeleton to life by building on those core elements. Through sharing their excitement for the subject, teachers give the skeleton a heart and other vital organs. By providing students with their special insights and unique understandings, teachers build the muscles and tissue that hold the skeleton together. Their efforts to help students make sense of a subject and develop personal meaning from it help that subject area or course come alive.

While every student's curriculum skeleton will look much the same, the bodies fashioned by individual teachers and individual students might look different. And that is how it should be. That is part of the beauty of the special interaction between teachers and their students. It is that beauty that brought most teachers to the profession in the first place.

Teachers who provide students with only the skeleton are remiss in their duties. A skeleton by itself is dead. But no stu-

dent should leave a classroom without that essential skeleton on which all of the other body parts must rely.

Clarifying Processes

This means that when teachers and subject-area experts define standards, they must be sure to identify the essential skeleton core only. They must distinguish those elements most crucial to students' understanding in that subject area or course. To overspecify standards confines teaching to a mechanistic process devoid of any excitement for teachers or their students. It also lessens teachers' capacity to make learning interesting and fun.

For their part, teachers must do their best to help all students learn those core elements well. No student should leave a class lacking a curriculum arm or leg. From that essential foundation, teachers then must add to the skeleton, building with their special insights, their passions and their excitement. They also must use that core as a basis for helping students develop their own insights and passions for the subject.

The challenge for education leaders when reforming any curriculum is to find that crucial balance. Standards that define a curriculum skeleton of essential core elements are indispensable. They help to ensure no students are cheated, regardless of where they go to school or who their teacher might be.

But those standards also must not be overspecified or be so many in number that they contract or restrict teaching. To do so is to lose the beauty and exhilaration that make teaching and learning so valuable and so much fun for teachers and students alike.

Success in curriculum reform will lie with those leaders who achieve that crucial balance, those who ensure the standards for every subject and grade level set forth a basic curriculum skeleton without attempting to prescribe the entire body of learning outcomes.

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How Classroom Assessments Improve Learning

Teachers who develop useful assessments, provide corrective instruction, and give students second chances to demonstrate success can improve their instruction and help students learn.

Thomas R. Guskey

Large-scale assessments, like all assessments, are designed for a specific purpose. Those used in most states today are designed to rank-order schools and students for the purposes of accountability—and some do so fairly well. But assessments designed for ranking are generally not good instruments for helping teachers improve their instruction or modify their approach to individual students. First, students take them at the end of the school year, when most instructional activities are near completion. Second, teachers don't receive the results until two or three months later, by which time their students have usually moved on to other teachers. And third, the results that teachers receive usually lack the level of detail needed to target specific improvements (Barton, 2002; Kifer, 2001).

The assessments best suited to guide improvements in student learning are the quizzes, tests, writing assignments, and other assessments that teachers administer on a regular basis in their classrooms. Teachers trust the results from these assessments because of their direct relation to classroom instructional goals. Plus, results are immediate and easy to analyze at the individual student level. To use classroom assessments to make improvements, however, teachers must change both their view of assessments and their interpretation of results. Specifically, they need to see their assessments as an integral part of the instruction process and as crucial for helping students learn.

Despite the importance of assessments in education today, few teachers receive much formal training in assessment design or analysis. A recent survey

showed, for example, that fewer than half the states require competence in assessment for licensure as a teacher (Stiggins, 1999). Lacking specific training, teachers rely heavily on the assessments offered by the publisher of their textbooks or instructional materials. When no suitable assessments are available, teachers construct their own in a haphazard fashion, with questions and essay prompts similar to the ones that their teachers used. They treat assessments as evaluation devices to administer when instructional activities are completed and to use primarily for assigning students' grades.

To use assessments to improve instruction and student learning, teachers need to change their approach to assessments in three important ways.

Make Assessments Useful For Students

Nearly every student has suffered the experience of spending hours preparing for a major assessment, only to discover that the material that he or she had studied was different from what the teacher chose to emphasize on the assessment. This experience teaches students two un-fortunate lessons. First, students realize that hard work and effort don't pay off in school because the time and effort that they spent studying had little or no influence on the results. And second, they learn that they cannot trust their teachers (Guskey, 2000a). These are hardly the lessons that responsible teachers want their students to learn.

Nonetheless, this experience is common because many teachers still mistakenly believe that they must keep their assessments secret. As a result, students come to regard assessments as guessing games, especially from the middle grades on. They view success as depending on how well they can guess what their

teachers will ask on quizzes, tests, and other assessments. Some teachers even take pride in their ability to out-guess students. They ask questions about isolated concepts or obscure understandings just to see whether students are reading carefully. Generally, these teachers don't include such "gotcha" questions maliciously, but rather—often unconsciously—because such questions were asked of them when they were students.

Classroom assessments that serve as meaningful sources of information don't surprise students. Instead, these assessments reflect the concepts and skills that the teacher emphasized in class, along with the teacher's clear criteria for judging students' performance. These concepts, skills, and criteria align with the teacher's instructional activities and, ideally, with state or district standards. Students see these assessments as fair measures of important learning goals. Teachers facilitate learning by providing students with important feedback on their learning progress and by helping them identify learning problems (Bloom, Madaus, & Hastings, 1981; Stiggins, 2002).

Critics sometimes contend that this approach means "teaching to the test." But the crucial issue is, What determines the content and methods of teaching? If the test is the primary determinant of what teachers teach and how they teach it, then we are indeed "teaching to the test." But if desired learning goals are the foundation of students' instructional experiences, then assessments of student learning are simply extensions of those same goals. Instead of "teaching to the test," teachers are more accurately "testing what they teach." If a concept or skill is important enough to assess, then it should be important enough to teach. And if it is not important enough to teach, then there's little justification for assessing it.

For Teachers

The best classroom assessments also serve as meaningful sources of information for teachers, helping them identify what they taught well and what they need to work on. Gathering this vital information does not require a sophisticated statistical analysis of assessment results. Teachers need only make a simple tally of how many students missed each assessment item or failed to meet a specific criterion. State assessments sometimes provide similar item-by-item information, but concerns about item security and the cost of developing new items each year usually make assessment developers reluctant to offer such detailed information. Once teachers have made specific tallies, they can pay special attention to the trouble spots—those items or criteria missed by large numbers of students in the class.

In reviewing these results, the teacher must first consider the quality of the item or criterion. Perhaps the question is ambiguously worded or the criterion is unclear. Perhaps students mis-interpreted the question. Whatever the case, teachers must determine whether these items adequately address the knowledge, understanding, or skill that they were intended to measure.

If teachers find no obvious problems with the item or criterion, then they must turn their attention to their teaching. When as many as half the students in a class answer a clear question incorrectly or fail to meet a particular criterion, it's not a student learning problem—it's a teaching problem. Whatever teaching strategy was used, whatever examples were employed, or whatever explanation was offered, it simply didn't work.

Analyzing assessment results in this way means setting aside some powerful ego issues. Many teachers may initially say, "I taught them. They just didn't learn it!"

But on reflection, most recognize that their effectiveness is not defined on the basis of what they do as teachers but rather on what their students are able to do. Can effective teaching take place in the absence of learning? Certainly not.

Some argue that such a perspective puts too much responsibility on teachers and not enough on students. Occasionally, teachers respond, "Don't students have responsibilities in this process? Shouldn't students display initiative and personal accountability?"

Indeed, teachers and students share responsibility for learning. Even with valiant teaching efforts, we cannot guarantee that all students will learn everything excellently. Only rarely do teachers find items or assessment criteria that every student answers correctly. A few students are never willing to put forth the necessary effort, but these students tend to be the exception, not the rule. If a teacher is reaching fewer than half of the students in the class, the teacher's method of instruction needs to improve. And teachers need this kind of evidence to help target their instructional improvement efforts.

Follow Assessments With Corrective Instruction

If assessments provide information for both students and teachers, then they cannot mark the end of learning. Instead, assessments must be followed by high-quality, corrective instruction designed to remedy whatever learning errors the assessment identified (see Guskey, 1997). To charge ahead knowing that students have not learned certain concepts or skills well would be foolish. Teachers must therefore follow their assessments with instructional alternatives that present those concepts in new ways and engage students in different and more appropriate learning experiences.

High-quality, corrective instruction is not the same as reteaching, which often consists simply of restating the original explanations louder and more slowly. Instead, the teacher must use approaches that accommodate differences in students' learning styles and intelligences (Sternberg, 1994). Although teachers generally try to incorporate different teaching approaches when they initially plan their lessons, corrective instruction involves extending and strengthening that work. In addition, those students who have few or no learning errors to correct should receive enrichment activities to help broaden and expand their learning. Materials designed for gifted and talented students provide an excellent resource for such activities.

Developing ideas for corrective instruction and enrichment activities can be difficult, especially if teachers believe that they must do it alone, but structured professional development opportunities can help teachers share strategies and collaborate on teaching techniques (Guskey, 1998, 2000b). Faculty meetings devoted to examining classroom assessment results and developing alternative strategies can be highly effective. District-level personnel and collaborative partnerships with local colleges and universities offer wonderful resources for ideas and practical advice.

Occasionally, teachers express concern that if they take time to offer corrective instruction, they will sacrifice curriculum coverage. Because corrective work is initially best done during class and under the teacher's direction, early instructional units will typically involve an extra class period or two. Teachers who ask students to complete corrective work independently, outside of class, generally find that those students who most need to spend time on corrective work are the least likely to do so.

As students become accustomed to this corrective process and realize the personal benefits it offers, however, the teacher can drastically reduce the amount of class time allocated to such work and accomplish much of it through homework assignments or in special study sessions before or after school. And by not allowing minor errors to become major learning problems, teachers better prepare students for subsequent learning tasks, eventually need less time for corrective work (Whiting, Van Burgh, & Render, 1995), and can proceed at a more rapid pace in later learning units. By pacing their instructional units more flexibly, most teachers find that they need not sacrifice curriculum coverage to offer students the benefits of corrective instruction.

Give Second Chances to Demonstrate Success

To become an integral part of the instructional process, assessments cannot be a one-shot, do-or-die experience for students. Instead, assessments must be part of an ongoing effort to help students learn. And if teachers follow assessments with helpful corrective instruction, then students should have a second chance to demonstrate their new level of competence and understanding. This second chance helps determine the effectiveness of the corrective instruction and offers students another opportunity to experience success in learning.

Writing teachers have long recognized the many benefits of a second chance. They know that students rarely write well on an initial attempt. Teachers build into the writing process several opportunities for students to gain feedback on early drafts and then to use that feedback to revise and improve their writing. Teachers of other subjects frequently balk at the idea, however—mostly because it differs from their personal learning experiences.

Some teachers express concern that giving students a second chance might be unfair and that “life isn’t like that.” They point out that that a surgeon doesn’t get a second chance to perform an operation successfully and a pilot doesn’t get a second chance to land a jumbo jet safely. Because of the very high stakes involved, each must get it right the first time.

But how did these highly skilled professionals learn their craft? The first operation performed by that surgeon was on a cadaver—a situation that allows a lot of latitude for mistakes. Similarly, the pilot spent many hours in a flight simulator before ever attempting a landing from the cockpit. Such experiences allowed them to learn from their mistakes and to improve their performance. Similar instructional techniques are used in nearly every professional endeavor. Only in schools do student face the prospect of one-shot, do-or-die assessments, with no chance to demonstrate what they learned from previous mistakes.

All educators strive to have their students become lifelong learners and develop learning-to-learn skills. What better learning-to-learn skill is there than learning from one’s mistakes? A mistake can be the beginning of learning. Some assessment experts argue, in fact, that students learn nothing from a successful performance. Rather, students learn best when their initial performance is less than successful, for then they can gain direction on how to improve (Wiggins, 1998).

Other teachers suggest that it’s unfair to offer the same privileges and high grades to students who require a second chance that we offer to those students who demonstrate a high level of learning on the initial assessment. After all, these students may simply have failed to prepare appropriately. Certainly, we

should recognize students who do well on the initial assessment and provide opportunities for them to extend their learning through enrichment activities. But those students who do well on a second assessment have also learned well. More important, their poor performance on the first assessment may not have been their fault. Maybe the teaching strategies used during the initial instruction were inappropriate for these students, but the corrective instruction proved more effective. If we determine grades on the basis of performance and these students have performed at a high level, then they certainly deserve the same grades as those who scored well on their first try.

A comparable example is the driver’s license examination. Many individuals do not pass their driver’s test on the first attempt. On the second or third try, however, they may reach the same high level of performance as others did on their first. Should these drivers be restricted, for instance, to driving in fair weather only? In inclement weather, should they be required to pull their cars over and park until the weather clears? Of course not. Because they eventually met the same high performance standards as those who passed on their initial attempt, they receive the same privileges. The same should hold true for students who show that they, too, have learned well.

Similar Situations

Using assessments as sources of information, following assessments with corrective instruction, and giving students a second chance are steps in a process that all teachers use naturally when they tutor individual students. If the student makes a mistake, the teacher stops and points out the mistake. The teacher then explains that concept in a different way. Finally, the teacher asks another question or poses a similar problem to ensure the

student's understanding before going on. The challenge for teachers is to use their classroom assessments in similar ways to provide all students with this sort of individualized assistance.

Successful coaches use the same process. Immediately following a gymnast's performance on the balance beam, for example, the coach explains to her what she did correctly and what could be improved. The coach then offers specific strategies for improvement and encourages her to try again. As the athlete repeats her performance, the coach watches carefully to ensure that she has corrected the problem.

Successful students typically know how to take corrective action on their own. They save their assessments and review the items or criteria that they missed. They rework problems, look up answers in their textbooks or other resource materials, and ask the teacher about ideas or concepts that they don't understand. Less successful students rarely take such initiative. After looking at their grades, they typically crumple up their assessments and deposit them in the trash can as they leave the classroom. Teachers who use classroom assessments as part of the instructional process help all of their students do what the most

successful students have learned to do for themselves.

The Benefits of Assessment

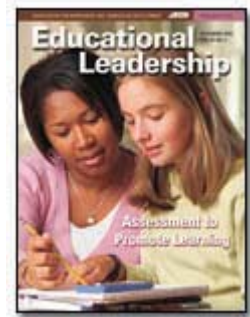
Using classroom assessment to improve student learning is not a new idea. More than 30 years ago, Benjamin Bloom showed how to conduct this process in practical and highly effective ways when he described the practice of mastery learning (Bloom, 1968, 1971). But since that time, the emphasis on assessments as tools for accountability has diverted attention from this more important and fundamental purpose.

Assessments can be a vital component in our efforts to improve education. But as long as we use them only as a means to rank schools and students, we will miss their most powerful benefits. We must focus instead on helping teachers change the way they use assessment results, improve the quality of their classroom assessments, and align their assessments with valued learning goals and state or district standards. When teachers' classroom assessments become an integral part of the instructional process and a central ingredient in their efforts to help students learn, the benefits of assessment for both students and teachers will be boundless.

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Mapping the Road to Proficiency

A table of specifications provides a travel guide to help teachers move students toward mastery of standards.

Thomas R. Guskey

When the standards movement began in the United States more than 15 years ago, most educators welcomed the idea. The enthusiasm that greeted the first set of clearly articulated student learning goals, published by the National Council of Teachers of Mathematics in 1989, led other professional organizations to follow suit. During the next decade, the National Council for the Social Studies, the National Academy of Sciences, and the National Council of Teachers of English all developed standards in their respective disciplines. States also took up the task, with Kentucky leading the way in 1990. Today, 49 of the 50 states have established standards for student learning.

Thoughtfully constructed standards guide education reform initiatives by providing consensus about what students should learn and what skills they should acquire. Standards also bring much-needed focus to curriculum development efforts and provide the impetus for fashioning new forms of student assessment.

But to bring about significant improvement in education, we must link standards to what takes place in classrooms. For that to happen, teachers need to do two important things: (1)

translate the standards into specific classroom experiences that facilitate student learning and (2) ensure that classroom assessments effectively measure that learning (Guskey, 1999).

Some states, school districts, and commercial publishers have developed teaching guides that identify instructional materials and classroom activities to help teachers meet the first challenge. Rarely, however, do teachers get help in meeting the second challenge—developing classroom assessments that not only address standards accurately, but also help identify instructional weaknesses and diagnose individual student learning problems.

Translating Standards into Instruction and Assessments

Large-scale assessments provide evidence of students' proficiency with regard to the standards developed by states and professional organizations. These assessments are well suited to measure the final results of instruction and, thus, to serve the purposes of summative evaluation and accountability.

But teachers cannot be concerned only with final results. Their primary concern lies in the process of helping students

reach proficiency. Large-scale assessments just don't offer teachers much help in that respect. They tend to be too broad and are administered too infrequently. In addition, teachers often don't receive their results until several weeks or months after students take the assessment.

To understand the difference between assessing the final product and supporting progress toward that product, we might consider a youngster learning to play tennis. If you were concerned only with summative evaluation and accountability, you would need to have a clear mental picture of a "proficient" tennis player—the standard that you wanted the student to attain at the end of the learning process. Your mental picture might include approaching the ball, positioning the racket correctly, swinging smoothly, returning the ball to the other side of the court, and following the rules of the game. You would then need to identify specific criteria for judging the student's performance and finally develop a rubric describing various levels of proficiency on each of these steps.

If you were a tennis coach, however, that mental picture would be only your starting point. From there, you would go on to divide the aspects of your desired final performance into various components. You would probably think about matching the racket to the student's size and strength; adjusting the student's grip for backhand and forehand returns; explaining the importance of watching the ball; and demonstrating the backswing, return, and follow-through. You would introduce important terms, such as *service line*, *backcourt*, and *volley*. You would also need to explain the rules and describe how to keep score.

Building on this analysis, you would consider an appropriate sequence of learning steps, perhaps ordered in terms of difficulty or complexity. You would present basic elements, such as watching the ball, before such advanced elements as achieving appropriate follow-through and recovery. As you taught, you would check for any special problems the student may experience and correct them when they appeared. You would also need to become aware of individual differences among players and adapt your teaching to those differences. For instance, some players do well using a traditional closed stance; others do better with a more open stance. In addition, you would probably make a point of complimenting the student whenever progress was evident and providing reassurance during challenging times. And, of course, you would emphasize the enjoyable aspects of the game and give the student opportunities to experience these.

This example illustrates the complex process that takes place in effective standards-based teaching and learning. To organize instructional units and plan appropriate classroom activities, teachers must *unpack* the standards—that is, determine the various components of each standard that students must learn and then organize and arrange these components in a meaningful sequence of learning steps. Teachers must make adaptations for individual learning differences to ensure that all students understand, practice, and master each component as they progress toward the final goal. As part of this process, teachers need to develop procedures to formatively assess learning progress, identify learning problems, and determine the effectiveness of their instructional activities.

A Tool to Link Assessments to Standards

One tool to analyze standards for instruction and assessments is a *table of specifications*: a simple table that describes the various kinds of knowledge and abilities that students must master to meet a particular standard. Growing numbers of teachers are discovering how this strategy, described years ago in the work of Ralph Tyler (1949) and Benjamin Bloom (Bloom, Hastings, & Madaus, 1971), can help them align their classroom instruction and assessments with curriculum standards.

As a planning tool, a table of specifications serves two important functions. First, it adds precision and clarity to teaching. The information in the table helps teachers break down standards into meaningful components that exactly convey the purpose of the instruction. It also clarifies for students the learning goals of a course or unit so that students understand what they are expected to learn. In fact, many teachers use tables of specifications as teaching guides, sharing their tables with students to reinforce students' understanding and learning progress.

Second, a table of specifications serves as a guide for consistency among standards, the steps needed to help students attain them, and procedures for checking on students' learning progress. Although this alignment is essential in standards-based teaching and learning, teachers often neglect it in their planning (Guskey, 1997). For example, many teachers stress that they want their students to develop higher-level cognitive skills—such as the ability to apply knowledge to new situations—but administer quizzes and classroom assessments that tap mainly the skills that are easiest to assess,

particularly knowledge of facts and definitions of terms.

Developing Tables of Specifications

To develop tables of specifications, teachers must address two essential questions regarding the standard or set of standards in question. The first question is, *What must students learn to be proficient at this standard?* In other words, what new concepts, content, or material are students expected to learn? Teachers often use textbooks and other learning resources as guides in addressing this question. But textbooks should not be the only guide. Teachers should feel free to add to or delete from what the textbook and other learning materials provide to better match the standards and better fit students' learning needs.

The second essential question is, *What must students be able to do with what they learn?* In answering this question, teachers must determine what particular skills, abilities, or capacities must pair up with the new concepts and material. For example, will students simply be required to know the steps of the scientific method of investigation, or should they be able to apply those steps in a classroom scientific experiment?

Teachers generally find it helpful to outline their answers to these two questions using some of the categories in the *Taxonomy of Educational Objectives* (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956). These categories represent a hierarchy of levels, moving from the simplest kinds of learning to more advanced cognitive skills. Figure 1 (p. 34) shows the categories that teachers in a wide variety of subject areas find most useful:

- *Knowledge of terms.* Terms include new vocabulary, such as names, expressions, and symbols. Students may be expected to know the definitions of these terms, recognize illustrations of them, determine when they are used correctly, or recognize synonyms. Examples include the terms *factor* and *product* for a mathematics standard dealing with multiplication and *photosynthesis* for a science standard related to plant life.
- *Knowledge of facts.* Facts include details that are important in their own right and those that are essential for other kinds of learning. Examples of facts are "The U.S. Senate has 100 members, two elected from each of the 50 states," and "Wealthy families or church officials commissioned many well-known works of art and music produced during the Renaissance."
- *Knowledge of rules and principles.* These generally bring together or describe the relationships among a number of facts. Typically, they concern patterns or schemas used to organize major concepts. Other terms for rules and principles include *organizers*, *scaffolds*, *guidelines*, and *organizational cues*. Examples include the commutative principle related to a mathematics standard and the rules for subject/verb agreement incorporated in a language arts standard.
- *Knowledge of processes and procedures.* To demonstrate their proficiency on some standards, students must know the steps involved in a certain process or procedure. Frequently, they must recall these steps in a specific sequence. For example, students may be expected to know the specific patterns of character development used in a novel, the appropriate order of steps in a mathematics problem, or the sequence of events necessary to enact legislation.
- *Ability to make translations.* Translation requires students to express particular ideas or concepts in a new way or to take phenomena or events in one form and represent them in another, equivalent form. It implies the ability to identify, distinguish, describe, or compute. In general, students employ translation when they put an idea in their own words or recognize new examples of general principles they have learned. Examples include having students identify the grammatical errors in sentences or convert temperatures from Fahrenheit to Celsius.
- *Ability to make applications.* Making applications means using terms, facts, principles, or procedures to solve problems in new or unfamiliar situations. To make applications, students first must determine what facts, rules, and procedures are relevant and essential to the problem and then use these to solve the problem. The ability to make applications involves fairly complex behavior and often represents the highest level of learning needed to be proficient on a particular standard. For example, writing a persuasive letter using appropriate elements of argument and correct grammatical forms

requires the student to make applications.

- *Skill in analyzing and synthesizing.* Because of the complexity of analyses and syntheses, these skills typically are involved in standards for more advanced grade levels. Some teachers, however, believe that students at all levels should engage in tasks involving analysis and synthesis. Analyses typically require students to break down concepts into their constituent parts and detect the relationships among those parts by explaining, inferring, or comparing/contrasting. Examples of analyses include distinguishing facts from opinions in editorials published in the newspaper or

comparing and contrasting George Washington and Ho Chi Minh, each considered the “father” of his country. Syntheses, on the other hand, involve putting together elements or concepts to develop a meaningful pattern or structure. Syntheses often call for students to develop creative solutions within the limits of a particular problem or methodological framework. They may require students to combine, construct, or integrate what they have learned. The assignment “Write a paragraph explaining how knowledge of mathematics and science helped Napoleon’s armies improve the accuracy of their cannons” would require synthesis.

Figure 1. General Format for a Table of Specifications

TABLE OF SPECIFICATIONS

Knowledge of						
Terms	Facts	Rules & Principles	Processes & Procedures	Translation	Application	Analysis & Synthesis
New Vocabulary: Words Names Phrases Symbols	Specific Information: Persons Events Data Operations	Relations Guidelines Organizational cues	Patterns Sequences Order of events or operations Steps	Identify Describe Recognize Distinguish Compute	Use Illustrate Solve Demonstrate	Compare Contrast Explain Infer Combine Construct Integrate

Once they become familiar with the format of a table of specifications, most teachers have little difficulty breaking down standards in terms of these

categories. Those who use textbooks or other learning materials in developing tables usually find these resources to be helpful in answering the first essential

question (What must students learn to show their proficiency with regard to this standard?) but less helpful in addressing the second question (What must students be able to do with what they learn?). And because tables clarify the learning structures that underlie standards, many teachers use them both as teaching guides to help plan lessons and as study guides for students.

Advantages of Tables of Specifications

Although developing tables of specifications can be challenging at first, teachers generally find that doing so offers several advantages. First, analyzing standards in this way helps teachers link instructional activities more meaningfully to standards. If faced with several narrowly prescribed standards, for example, teachers can use the table as a framework for combining those standards and developing relationships among them in effective instructional units. On the other hand, if confronted with a very broad or general standard, developing a table can help teachers clarify the individual components that students must master to demonstrate their proficiency.

Tables of specifications also bring precision to teaching. By analyzing standards according to the categories in the table, teachers identify the different subskills that students may be required to learn and bring attention to the relationships among those subskills. Students may need to know the definition of a term, for example, to understand a fact pertaining to that term. Knowing two or three facts may be essential to understanding a particular procedure. Similarly, knowing a procedure will probably be a prerequisite to being able to apply that procedure in solving a

complex problem. Clarifying these relationships makes instructional tasks more obvious and improves the diagnostic properties of classroom assessments.

Although this kind of analysis may guide teachers in choosing classroom activities, it does not dictate specific instructional practices. Teachers may address the “what” questions in developing a table of specifications in exactly the same way, and yet teach to that standard very differently. One teacher, for example, may use a discovery approach by introducing a complex problem or application to students and then helping students determine the facts, rules, or processes needed to solve the problem. Another teacher may use an advanced organizer approach by first explaining important rules or procedures to students and then posing complex problems to which students must apply those rules and procedures. In other words, precision does not prescribe method. Clarifying our goals does not dictate how we will reach them.

Finally, and perhaps most important, tables of specifications bring added validity and utility to classroom assessments. They help teachers ensure that their assessments provide honest evidence of students’ learning progress, accurately identify learning problems, and provide useful information about the effectiveness of instructional activities.

Linking Classroom Assessments to Tables of Specifications

To serve formative evaluation and instructional purposes well, classroom assessments must include items or prompts for each important concept or subskill related to the standard being measured. By matching assessment

items or prompts to the elements outlined in the table of specifications, teachers can ensure that their assessments measure all these important skills and abilities.

Consider, for example, the table of specifications shown in Figure 2, developed for an elementary school social studies standard related to the use and interpretation of maps. Although a large-scale assessment may include only one or two problems asking students to use or interpret maps, a classroom assessment designed for formative evaluation purposes would look very different. It would include items that assess students' knowledge of relevant terms, facts, principles, and procedures related to maps, as well as other items that measure their skill in translating that information into new forms. It would also include constructed or extended-response items that require students to apply their knowledge in using or interpreting maps. (Note that this particular elementary standard does not require analysis and synthesis skills.)

Incorporating items that draw on this wide range of cognitive skills enhances an assessment's diagnostic properties and makes it more useful as a learning tool. Suppose students are unable to answer a complex, high-level assessment item that asks them to look at a map showing various geographic features (two major rivers and their intersection, mountain ranges, flat and steeply sloped areas); to identify the location on the map where a major settlement is likely to develop; and then to explain their reasons for selecting that location.

A closer look may reveal that some students correctly answered earlier items

in the formative assessment demonstrating their knowledge of the necessary facts and principles, but could not apply that knowledge in this practical, problem-solving situation. Such students clearly need additional guidance and practice in making applications. Other students may answer this high-level item incorrectly because they did not know the requisite facts and principles, as evidenced by their incorrect answers to those items appearing earlier on in the assessment. These students need to return to activities that help them gain this basic knowledge. Although such a distinction in students' learning needs matters little to those concerned only with summative evaluations of students' proficiency, it matters greatly to teachers concerned with helping students attain proficiency.

Linking classroom assessments to tables of specifications also guarantees consistency and thoroughness. In analyzing their formative classroom assessments, teachers often find items they cannot locate on the table of specifications. Such items usually tap trivial aspects of learning that are unrelated to the standard, and they can be revised or eliminated from the assessment. At other times, teachers find essential learning elements included in the table that are not tapped in their classroom assessment. In such instances, teachers must expand the assessment to include measures of these vital aspects of learning. As a result, classroom assessments become more thorough, complete, and effective at serving their formative purposes.

Destination: High Achievement for All

In developing tables of specifications, teachers identify the signposts that students must reach on the way to

demonstrating their proficiency on standards. Although some teachers initially find the process challenging, most soon discover that it not only improves the quality of their classroom assessments but also enhances the quality of their teaching. Analyzing standards in this way clarifies what students need to learn and be able to do. With that focus established, teachers can concentrate more fully on how best to

present new concepts and engage students in valuable learning experiences.

A table of specifications is much like a travel guide. Although it never limits the pathways available, it enhances traveling efficiency, enjoyment of the journey, and the likelihood of successfully reaching the intended destination.

Figure 2. Table of Specifications for a Social Studies Unit on Maps
TABLE OF SPECIFICATIONS

Knowledge of					
Terms	Facts	Rules & Principles	Processes & Procedures	Translation	Application
Geography Geographer Map Scale Legend Topography Topographic features Longitude Latitude Coordinates	<p>The skill of map-making is very old.</p> <p>Early people based maps on inaccurate information.</p> <p>Inaccurate maps affected early explorations.</p> <p>Rivers determined the location of many early settlements.</p>	<p>Earth features influence many human activities:</p> <ul style="list-style-type: none"> • The routes traveled • The location of towns and cities • Occupations • The things eaten 	<p>Travel routes came first.</p> <p>Settlements, towns, and cities were established along major travel routes and intersections, especially rivers.</p> <p>Occupations were based on the needs of travelers.</p>	<p>Describe how geography affected early travel routes.</p> <p>Describe why accurate maps were important to early explorers.</p> <p>Identify lines of longitude and latitude on a map.</p> <p>Describe how longitude and latitude help locate points on maps.</p>	<p>Explain why major cities developed in their current locations.</p> <p>Identify specific points or locations on a new and unfamiliar map.</p> <p>Use a map in planning a travel route.</p>

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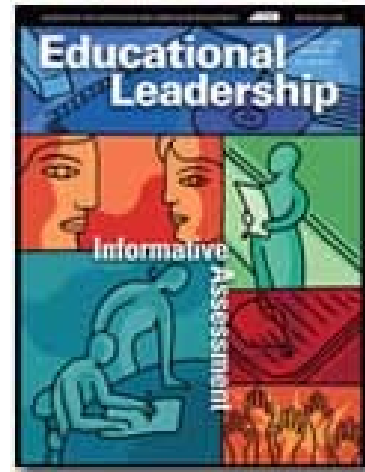
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The Rest of the Story

Thomas R. Guskey

The power of formative classroom assessment depends on how you use the results.



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Radio commentator Paul Harvey gained widespread fame by reporting factual stories with a twist at the end. What he called "the rest of the story" typically gave the report entirely new meaning, leaving listeners surprised but well informed. Were Harvey to report on the use of formative classroom assessments, he undoubtedly would describe how increasing numbers of educators today consider these regular checks on learning progress to be an integral part of the instructional process. He would point out that well-designed formative assessments can provide students with essential feedback and inform teachers about the quality of their teaching by identifying concepts that students have and haven't mastered (Guskey, 2003; Hattie & Timperley, 2007).

The rest of the story, however, would be that formative assessments alone do little to improve student learning or teaching quality. What really counts is what happens *after* the assessments. Just as regularly checking your blood pressure does little to improve your health if you do nothing with the information gained, what matters most with formative assessments is how students and teachers use the results. Unfortunately, many educators today overlook this vital aspect of formative assessment. And by missing "the rest of the story," they fail to produce the most valuable benefits of the formative assessment process.

An Old Idea Reborn

The importance of using classroom assessments as learning tools was identified more than 35 years ago by Benjamin Bloom and his colleagues in *Handbook on Formative and Summative Evaluation of Student Learning* (Bloom, Hastings, & Madaus, 1971). They described the benefits of offering students regular feedback on their learning progress through formative classroom assessments. As the name implies, formative assessments are designed to inform (see Scriven, 1967). They pinpoint for both students and teachers what concepts and skills have been learned well and what learning problems still exist.

Bloom and his colleagues stressed, however, that to improve student learning these regular progress checks must provide feedback (identifying students' individual learning difficulties) and be followed up with correctives (specific remediation strategies). Such procedures are precisely what make individual tutoring so effective. When a student being tutored makes a mistake, the tutor points out the error and immediately provides further explanation and clarification. Academically successful students typically initiate their own feedback and correctives: They follow up on the mistakes they make on quizzes and tests, seeking further information and greater understanding so that they do not repeat their learning errors. Most students, however, need a more structured classroom corrective process to help them use formative assessment results to improve their mastery of the concepts and skills.

Bloom and his colleagues further emphasized that correctives will be effective *only* if they are qualitatively different from the original instruction. Having students repeat a process that has already proven unsuccessful is unlikely to yield any better results the second time around. Effective corrective activities provide students with alternative pathways to learning success, adapted to meet their individual learning needs and interests (see Duffy & Kear, 2007).

Planning Corrective Activities

Effective corrective activities possess three essential characteristics (see Guskey, 1997). First, they *present the concepts differently*. For example, if a language arts unit initially taught the use of metaphors in poetry with a deductive approach (presenting the general concept and then giving specific examples), the corrective activity might use an inductive approach (presenting a variety of specific examples and building an understanding of the general concept from these examples). The best corrective activities involve a change in format, organization, or method of presentation.

Second, effective corrective activities *engage students differently in learning*. They consider different learning styles or modalities (Given, 2000; Lawrence, 1997; Sternberg, 1994) or different forms of intelligence (Armstrong, 2000; Gardner, 2006; Silver, Strong, & Perini, 2000). If science students initially learned about cell structure through a group activity, for example, a good corrective might involve an individual activity, such as reviewing an informative Web site and then using the computer to write and illustrate a report. If students originally learned the events of the American Revolutionary War in social studies by reading passages in their textbook and studying wall maps and charts (visual intelligence), a useful corrective might employ a group discussion of the events (auditory and interpersonal intelligence). To make a corrective strategy effective, students' engagement in learning must be qualitatively different from what took place during the initial instruction.

Finally, effective corrective activities *provide students with successful learning experiences*. If an activity does not help students overcome their learning difficulties and experience success, the teacher should abandon it for another option. Corrective experiences should make students better prepared, more confident, and more motivated for future learning tasks.

The best ideas for effective corrective activities generally come from fellow teachers. Teaching colleagues often can offer new ways of presenting concepts, different examples, and alternative materials. Professional development opportunities that provide teachers with time for such sharing reduce the workload of individual teachers and typically yield higher-quality activities (Guskey, 1998, 2000). Faculty meetings devoted to examining classroom assessment results and developing corrective strategies also work well. Such meetings also might involve district-level personnel or content experts from local colleges and universities.

Types of Corrective Activities

Many teachers find it useful to organize corrective activities into three groups: those to be done with the teacher, those to be done with a friend, and those to be done by oneself (see fig. 1). Although any particular activity may fall into more than one category, every activity should be designed to provide students with a different presentation and mode of engagement. Most teachers plan several types of corrective activities for each instructional unit to give students some choice and to accommodate a wider variety of learning styles and modalities. Further, if a particular activity falls flat, having several activities planned makes it possible to turn to another immediately without wasting valuable time. These are a few corrective activities that many teachers find to be effective:

Corrective Activity	With the Teacher	With a Friend	By Oneself
Reteaching	X		
Individual Tutoring	X	X	
Peer Tutoring		X	
Cooperative Teams		X	
Course Textbooks	X	X	X
Alternative Textbooks	X	X	X
Workbooks and Study Guides	X	X	X
Academic Games	X	X	X
Learning Kits		X	X
Learning Centers and Laboratories		X	X
Computer Activities		X	X

Figure 1. How to Use Corrective Activities

Reteaching

The simplest and most frequently used corrective activity involves reteaching. The teacher, or another teacher in team-teaching situations, explains difficult concepts again using a different approach or different examples. Most teachers use reteaching as they review the results from formative assessments with students, reexplaining concepts that many students misunderstood or found difficult, before turning to other types of corrective activities.

The greatest challenge with reteaching, of course, is ensuring that it involves a truly different presentation and level of engagement. When reteaching a difficult concept, some teachers simply restate their original explanation louder and more slowly, perhaps believing that increased volume and a slower pace are what some students need. This approach seldom works.

Individual Tutoring

One of the most effective corrective activities is individual tutoring. In most cases, the tutor goes through the formative assessment with the student, explaining concepts that the student missed in a new way or from a different perspective, continually checking for understanding as they move along. Even teachers who employ other forms of correctives usually monitor students' understanding with some individual tutoring, especially for those students with more serious learning difficulties. Many teachers have obtained excellent results using older students, teacher's aides, and classroom volunteers as tutors (Topping & Bryce, 2004; Wright & Cleary, 2006). Regardless of who serves as the tutor, individual tutoring consistently ranks among the most efficient and most powerful types of corrective activity.

Peer Tutoring

Students who have already mastered the important concepts and skills in the unit often make excellent tutors for their classmates. Like other tutors, peers typically explain concepts from a different perspective or in a different way (Kourea, Cartledge, & Musti-Rao, 2007). In addition, research indicates that students who serve as peer tutors generally benefit as much as the students they assist (Medcalf, Glynn, & Moore, 2004). Helping classmates understand new concepts or master new skills often deepens their own understanding. Most teachers find, however, that peer tutoring is best presented as one of several corrective options from which students can choose. Requiring two mismatched students to work together can be counterproductive.

Cooperative Teams

In cooperative teams, three to five students get together to discuss their learning gaps and to help one another. The teams are heterogeneous, assigned by the teacher, and usually stay intact for several learning units. During the corrective session, students review the formative assessment item by item. Any question or crucial element that one or more students have missed is explained by another team member who understands it. If all members of the team are having difficulty, they can work collaboratively to find a solution or call on the teacher for assistance. With modest direction and supervision, cooperative teams can be a highly effective corrective activity at any level of education (Johnson & Johnson, 1995; Slavin, 1991).

Textbooks

Another simple but highly effective corrective is to have students reread relevant sections in the textbook. Rereading is especially effective when combined with other activities, such as having students write a short paragraph explaining the concept in their own words. Teachers who use the textbook as a corrective resource typically list page-number references beside each item or problem on the formative assessment so that students can turn directly to the relevant sections or examples. Although referring students to the textbook may seem to be repetition of the same old thing, focusing students' attention on specific passages often helps them recognize or clarify important concepts and information they missed in their initial reading.

Alternative Textbooks

When available, alternative textbooks often provide a different presentation or explanation of crucial ideas or concepts. Many teachers save several copies of their old textbooks when a new one is adopted to offer students an additional source of information. Other teachers use alternative textbooks to provide additional practice exercises, examples, or problems.

Alternative Materials, Workbooks, and Study Guides

Alternative materials include videotapes, audiotapes, DVDs, hands-on materials, manipulative models, Web-based resources, and so forth. Because workbooks and study guides usually present ideas and concepts in a different way from textbooks and often include examples or practical applications, they can provide excellent corrective activities for a wide range of student learning styles. In addition, the variety of presentation formats allows the teacher to choose appropriate materials that the student can use with the teacher, with a friend, or for working alone.

Academic Games

Most academic games consist of group activities in which students work together to solve a particular problem or accomplish a task that relates to specific learning goals (Harnadek, 1992; Larson, 2002). Many academic games can be adapted or modified to fit a variety of learning situations. Like cooperative teams, academic games typically promote cooperation and collaboration among students and can be a highly effective corrective activity.

Learning Kits

Learning kits usually present ideas and concepts visually and often involve the manipulation of materials. In addition, most kits can be used with the teacher, among a small group of students, or by a student working alone. Learning kits might include puzzles, learning tools, or other instructional materials. Many involve the use of models or manipulative materials; others are based on interactive multimedia content (Learning Kit Project, 2007). Although learning kits are widely available from commercial publishers and Web-based sources, many teachers assemble their own from materials they gather.

Learning Centers and Laboratories

Directing students to learning centers or learning laboratories in the classroom or in another part of the school often serves as a highly effective corrective activity. In these centers, students get help on their specific learning problems, often under the guidance of a learning supervisor or center aide. Center activities typically engage students in more hands-on and manipulative tasks than might have been possible during the initial instruction. Centers are most effective as a corrective when students are involved in a structured activity and receive a specific assignment to complete.

Computer Activities

Many teachers use computers and other forms of technology—including videodiscs, laser discs, interactive video, various forms of hypermedia, and a variety of powerful online resources—as a primary means of corrective activities. The highly versatile, user-friendly nature of technology makes it appropriate for almost any subject area and grade level. Computer activities enable students to work alone or in collaboration with classmates. Many tutorial programs also enable students to control the kind and amount of assistance they receive; this individualized interaction makes assistance potentially less embarrassing. When students

become familiar with a program's operation, and when the software closely matches the learning goals, computer activities can be highly effective as a corrective (Dillon & Gabbard, 1998; Kumar, Greer, & McCalla, 2005; Perry, Thauberger, MacAllister, & Winne, 2005).

Planning for Enrichment Activities

On any given formative assessment, some students will demonstrate their mastery of unit concepts and skills on the first try and will have no need for corrective activities. Rather than sitting around, biding their time while other students relearn the material, these students need opportunities to extend their learning through enrichment activities.

Effective enrichment must provide valuable, challenging, and rewarding learning experiences. Students who master the learning objective the first time and perform well on the formative assessment should view enrichment activities positively—not simply as harder tasks or busywork. Rather than being narrowly restricted to the content of specific instructional units, enrichment activities should be broadly construed to cover a wide range of related topics.

Students should have some degree of choice in selecting enrichments. For example, if a learner has a special interest in some aspect of the subject, using enrichment time to prepare a report on that topic not only provides a unique learning opportunity but also enhances this student's motivation to do well in subsequent formative assessments so that he or she can return to working on the report. Other examples of enrichment activities include challenging academic games and exercises, various multimedia projects, and peer tutoring.

Some creative teachers find it easy to develop different types of enrichment activities for their students. Others struggle to create such learning experiences. Besides consulting with colleagues, many teachers turn to materials designed for gifted and talented students as their primary resource for enrichment. Certain publishers focus specifically on activities that genuinely extend students' learning by involving them in higher-order skills (for example, Critical Thinking Press and Software in Pacific Grove, California; Dale Seymour Publications in Palo Alto, California; and Thinking Works in St. Augustine, Florida). Further, the game-like nature of many of these activities motivates students to want to take part. Most teachers use class time in early instructional units to engage all students in enrichment activities, both to encourage participation and to enhance students' motivation on future formative assessments.

Managing Corrective and Enrichment Activities

Mr. Tanabe is a typical 4th grade teacher whose class has just studied a two-week unit on multiplying and dividing fractions. He administers a 20- to 25-minute formative classroom assessment that he corrects with his students in class, reviewing each item and stopping occasionally to reexplain ideas or concepts that appear troublesome to most of the students. After completing the review, he reminds students that the mastery or proficiency standard is 80 percent correct.

He then divides students into two groups: those who attained the proficiency standard and those who did not. Students who demonstrated their proficiency can choose from various enrichment activities—including working with partners to write original word problems or doing a guided Web search to learn about a famous mathematician—or they may volunteer to serve as peer tutors. Those who did not reach proficiency begin their corrective work under the teacher's direction. The cooperative teams that Mr. Tanabe has put into place move their desks together to begin working with their teammates.

Mr. Tanabe does three important things when dividing the class into separate corrective and enrichment groups. First, he recognizes students who attained the proficiency standard for their achievement. A quick show of hands followed by congratulations helps sustain these

students' persistence in future learning units. Next, he reminds students that group membership is temporary and can change with every unit and every formative assessment. As students' performance changes, so will the members of both corrective and enrichment groups. Finally, he emphasizes his confidence in the skills of those students who have not yet attained proficiency. He assures these students that with a little extra time and effort they too will reach the proficiency standard and will be well prepared to tackle upcoming units.

After starting the enrichment group on its activities, Mr. Tanabe turns his attention to the corrective group. He begins with reteaching, using some supplemental materials to present difficult ideas and concepts in a new and different way. He then moves to guided practice activities, leading students through structured problems or exercises. He includes practice time in which some students work independently to demonstrate their understanding and others work with peer tutors. As students work, he moves from student to student, asking questions and offering individualized assistance. At the same time, he checks on students engaged in enrichment activities, making sure they remain on task.

As this example shows, correctives rarely involve a single activity. In this case the teacher combined reteaching with alternative materials, guided practice, independent practice, and individual tutoring. When students work on their own or with a friend, most teachers require completion of a written assignment that summarizes their work. Enrichment activities may be similarly diversified, and many teachers require a tangible product from these students as well. After students become accustomed to the corrective and enrichment process, however, teachers often relax or eliminate this requirement.

Finding Time

Some teachers fear that taking time for corrective and enrichment activities in each instructional unit will lessen the amount of material they will be able to cover. They believe that as a result of sacrificing coverage to allow a higher level of learning, some students may learn better but all will learn less.

Corrective and enrichment activities initially do add time to instructional units. Especially in early units, these activities must be done in class, under the teacher's direction, and typically require a class period or two. Teachers who ask students to complete correctives outside class as a homework assignment or during special study sessions held before or after school rarely experience success with this strategy. Instead, they quickly discover that those students who could benefit most from the corrective process are the least likely to take part.

After students become accustomed to the corrective process and realize its advantages, most teachers begin reducing the class time they allocate to correctives. They use more student-initiated activities and ask students to complete more of their corrective work outside class. As students remedy their learning problems in early units, they perform better on formative assessments in subsequent units. This improvement leads to more students becoming involved in enrichment activities and fewer students engaged in correctives. The amount of corrective work each student needs to reach the proficiency standard also diminishes (Whiting, Van Burgh, & Render, 1995).

Modest changes in instruction further lessen the extra time needed. Many teachers, for example, eliminate review sessions prior to formative assessments and shift that time to the corrective and enrichment process. With the results from the formative assessment, teachers can become more efficient in their review, concentrating on those concepts and skills that pose problems for students. In addition, by allowing fast learners to demonstrate their proficiency and move on to enrichment activities, teachers can spend their time working with a smaller group of students who need their assistance most.

In general, teachers do not need to sacrifice content coverage to implement corrective and enrichment activities, but they must be flexible in pacing their instruction. The time used for correctives and enrichment in early units yields powerful benefits that will make the pace of instruction faster later on. Teachers must keep in mind what the class needs to accomplish by the end of any learning sequence, but they also must see students' pathways to that end in more flexible and accommodating terms.

Making Good Use of a Valuable Tool

Formative classroom assessment offers educators a valuable tool to improve student learning. But to realize the true benefits of such assessment, we need to focus attention on what students and teachers do with the assessment results. To close achievement gaps and help all students learn well, educators must provide students with alternative pathways to learning success. Engaging students in diverse corrective activities or exciting and challenging enrichment activities, depending on their performance on well-designed formative assessments, offers the practical means to do just that.

And now you know ... the rest of the story.

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