

FACULTY FOCUS

Special Report

Assessing Online Learning: Strategies, Challenges and Opportunities

Featuring content from

ONLINE CL@SSROOM
IDEAS FOR EFFECTIVE ONLINE INSTRUCTION

Assessing Online Learning: Strategies, Challenges and Opportunities

As online education moves from the fringes to the mainstream, one question still persists: “How do I know what my online students have learned?” There are no simple answers, just as there aren’t in face-to-face courses, but with a little creativity and flexibility, you soon discover that the online learning environment opens up a host of new student assessment possibilities. And, just as with traditional courses, the trick is finding the right combination that works best for your particular course.

This special report features 12 articles from *Online Classroom* that will cause you to examine your current methods of online assessment, and perhaps add something new to your assessment toolbox. It even talks about some of the common assessment mistakes you’ll want to avoid.

Take a look at some of the articles you will find in *Assessing Online Learning: Strategies, Challenges and Opportunities*:

- Authentic Experiences, Assessment Develop Online Students’ Marketable Skills
- Four Typical Online Learning Assessment Mistakes
- Assessing Whether Online Learners Can DO: Aligning Learning Objectives with Real-world Applications
- Strategies for Creating Better Multiple-Choice Tests
- Assessing Student Learning Online: It’s More Than Multiple Choice
- Using Self-Check Exercises to Assess Online Learning
- Measuring the Effectiveness of an Online Learning Community
- Ongoing Student Evaluation Essential to Course Improvement

Online courses enable a strong student-centered approach to learning and, as a result, assessment. We hope this report helps you design and develop online assessment strategies that take full advantage of the many formal and informal assessment tools now at your fingertips.

Rob Kelly
Editor
Online Classroom

Table of Contents

Four Typical Online Learning Assessment Mistakes	4
Authentic Experiences, Assessment Develop Online Students' Marketable Skills	6
Assessing Whether Online Learners Can DO: Aligning Learning Objectives with Real-world Applications	8
Strategies for Creating Better Multiple-Choice Tests	10
Assessing Student Learning Online: It's More Than Multiple Choice	13
To Plan Good Online Instruction, Teach to the Test	14
Using Self-Check Exercises to Assess Online Learning	16
Assessment for the Millennial Generation	17
Self-Assessment in Online Writing Course Focuses Students on the Learning Process	19
Using Online Discussion Forums for Minute Papers	20



Four Typical Online Learning Assessment Mistakes

By Patti Shank, PhD, CPT

The goal of learning assessments should be to measure whether actual learning outcomes match desired learning outcomes. Here's an analogy. Your freezer stops keeping foods frozen, so you call the appliance repair folks. They show up on schedule and charge you exactly what they estimated on the phone. Is that enough information for you to know if the desired outcome (frozen food) has been achieved? No, of course not.

We use freezers to achieve specific outcomes. We build instruction to achieve specific outcomes as well. Well-written instructional objectives describe the desired outcomes of instruction and are critical to designing good courses and assessments.

A freezer that works means the food stays frozen as expected. Instruction that works means people learn as expected. Adequate learning assessments tell us whether the instruction we built works and provides us with data to adjust our efforts.

We measure whether instruction "works" by seeing if the instruction we build actually helps people achieve the learning objectives. I'd even argue that we cannot be considered competent builders of instruction if we can't show that what we built helps learners learn. Some might say that's a big "duh," but I'm guessing a fair number of people who build instruction haven't really thought about it.

Here's a scenario for us to consider. Lana Mercer, a new instructor, has just finished teaching her online

People who build instruction make some typical but unfortunate mistakes when designing learning assessments, and these mistakes compromise both their competence as designers of instruction and the quality of the instruction they build.

course, Introduction to Computer Graphics. Here are the three most critical terminal objectives for this course (these are reasonably well-written, unlike most of the objectives I see, which makes it far easier to determine what assessments are needed):

- Analyze common uses for these computer graphics methods: 2-D representation and manipulation, 3-D representation and manipulation, animation, and image processing and manipulation.
- Describe methods for defining, modeling, and rendering of 2-D and 3-D objects.

- Determine the best tools to use for defining, modeling, and rendering of 2-D and 3-D objects.

Mercer graded students based on weekly homework assignments (10 percent of the grade), two projects (20 percent of the grade), and a final test (70 percent of the grade). More than a third of the students got a C or lower on the final and as a result, because the final was such a large percentage of the final grade, received low grades for the course. Lana didn't understand why students were upset, because final grade scores reflected a bell curve, so the range of grades was as she expected. See any assessment problems? (Yep, you should.)

Four typical mistakes

People who build instruction make some typical but unfortunate mistakes when designing learning assessments, and these mistakes compromise both their competence as designers of instruction and the quality of the instruction they build. These mistakes include:

1. Expecting a bell curve
2. The wrong type of assessment
3. Not valid (enough) assessments
4. Poorly written multiple-choice tests

Expecting a bell curve

Benjamin Bloom (1968), a distinguished educational psychologist, proposed that a bell curve model, with most students performing in the middle and a small percentage performing very well and very poorly (e.g., a normal or bell curve) is the wrong model of expected outcomes from most instruction. The bell curve model is what might be expected without instruction. Instruction should be specifically designed to provide the instruction, practice,

PAGE 5 ►

feedback, and remediation needed to bring about achievement of the desired outcomes. His “mastery” model assumes that most students will be high achievers and that the instruction needs to be fixed if this does not occur.

Mercer should not have expected her students’ final grades to fall on a bell curve. A mastery model assumes that most students will achieve the desired outcomes, and therefore, most will achieve higher grades.

The wrong type of assessment

There are two primary learning assessment formats: performance assessments and “test” assessments. The former involves assessing performance in a more realistic way (in situations), and the second involves paper or computer-based forms with multiple choice, matching, fill-in-the-blank, and short- and long-answer-type (i.e., essay) questions. Test assessments are by their nature a less authentic way of assessing learning but are very practical and are therefore commonly used.

The optimal assessment type depends primarily on whether the objective is declarative (facts: name, list, state, match, describe, explain...) or procedural (task: calculate, formulate, build, drive, assemble, determine...). Research shows that there is a big difference between these two types—the difference between knowing about and knowing how (practical application to real-world tasks).

Let’s take, for example, a biomedical technology course. A biomedical technician needs to know the names of a cardiac monitor’s parts (declarative objective) in order to find applicable information in the troubleshooting manual. But knowing part names only goes so far. Knowing

how to troubleshoot the cardiac monitor (procedural objective) involves far deeper skills. So asking biomedical technicians to name parts or even list the troubleshooting steps on a final test is an inadequate assessment of their troubleshooting skills. The bottom line is whether they can, in fact, troubleshoot, and that requires a performance assessment.

When it comes to designing adequate assessments, it’s inadequate to determine only whether learners know about if you need to determine whether they actually can perform in the real world. Many higher education instructors don’t adequately infuse their courses with real-world implications and skills, and I believe this is a mistake.

Mercer’s objectives are a mix of declarative and procedural, but her assessment scheme is heavily weighted toward achievement of declarative objectives (and the tests used to assess them). That made her grading scheme unbalanced and inappropriate. A more balanced and appropriate grading scheme would have given more weight to projects that show achievement of procedural objectives.

Not valid (enough) assessments

The gold standard for assessment quality is validity. A valid assessment measures what it claims to measure. For example, a biomedical equipment troubleshooting assessment should measure the skills of the person doing actual or simulated troubleshooting. It’s easier than you might think to design assessments that measure something other than what is intended.

Let’s say the biomedical equipment troubleshooting assessment primarily asks students to match parts, functions, and typical problems. Is this a valid assessment of troubleshooting skills? Unlikely. And what

if another assessment is written at too high a reading level. What is it measuring? For one thing, reading skills. Both tests are likely less valid than is necessary. The best way to establish validity is to carefully match objectives and assessments, as explained in the last mistake.

Lack of validity impacts course quality and fairness. And if the results of assessments impacts passing the course (as they usually do), invalid assessments are not only unfair but potentially illegal.

Objectives and assessments in Mercer’s class didn’t match up. Because students in Mercer’s class needed a passing grade in order to take higher-level graphics courses, she needs to rethink the validity of her assessments, starting with mapping assessment types to objective types.

Poorly written multiple-choice tests

Many assessments, even if they are the right kind, are poorly written. Two of the most common mistakes for multiple-choice questions are confusing or ambiguous language and implausible distractors (wrong alternatives from which the learner selects the correct answer[s]). A poorly written multiple-choice question automatically lowers the validity of the assessment.

Final thoughts

Inadequate learning assessments are at best frustrating. At worst, they can damage students and institutions. Adequate learning assessments are one of the hallmarks of competence in building good instruction and markedly improve the quality of instruction.

The final assessment for the Introduction to Computer Graphics course suffered from all the mistakes

listed, even though the instructor was well-intentioned. In an online course, where students often require extra feedback and motivation, unintended frustrations and unfairness can cause many problems including complaints, reduced enrollments, and lack of persistence.

Writing good performance assessments and test questions is a skill that takes training, time, and feedback.

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Authentic Experiences, Assessment Develop Online Students' Marketable Skills

By Rob Kelly

Maureen Colenso, an instructor at Northeast Wisconsin Technical College, sums up her assessment philosophy for her online courses as follows: “Whatever it is students are going to need to be doing on the job, then that’s how they need to be assessed for the classroom. I start with the assumption that the competencies for the class represent marketable skills, and I find that there’s pretty much always a way to figure out how to have students do a project that will be representative of the type of work they would do for an employer.”

Colenso didn’t come to teaching from a traditional path and says she has a pragmatic approach in her online courses and the ways she

assesses learning outcomes. “I teach at a community college, and we frequently have returning adult students who need to be trained for a new career. They need marketable skills, and we need to know that they really have learned these skills,” Colenso says.

The courses Colenso teaches online lend themselves to authentic assessment. Colenso teaches documentation, training, database theory, database applications, and several entry-level software skills courses. In all these courses, she finds ways to have students produce authentic products for local businesses.

Students produce electronic products that are easily delivered online and that can be shown to

prospective employers. “It gives students something real. It makes a world of difference in a competitive job market if the applicant, instead of just saying, ‘Yes, I can write a program that will suit your needs,’ can say, ‘Oh yes, here’s an example,’” Colenso says. “For example, I encourage students to build a custom database in the database class and then use the documentation class to provide good documentation for that system and use the training class to develop training materials to teach somebody how to use that system, and then they have a whole package they can show a prospective employer.”

PAGE 7 ►

FROM PAGE 6

Working with real clients adds to the authenticity of the learning experience. “It inspires much better work. To me that’s one of the real benefits. For one thing, it’s hard for a student to be really motivated when he or she knows that all that’s going to happen is a certain amount of points being awarded and nobody’s ever going to think about it again. If something is real, if a local business is going to be using [the product] and if they’re going to be sharing the results with other members of the class, it just spurs them to make a much greater effort,” Colenso says.

The experience of working online adds another element of authenticity because in many work situations workers are called on to collaborate online with their coworkers. When Colenso began teaching online six years ago, she found that the difference distinguishing online from face-to-face learning is that students have the additional challenge of negotiating distance communication methods. “But since that’s very much a part of what happens in the working world today, I think that that provides a better experience,” Colenso says.

The benefits of this experience are so strong that Colenso has begun incorporating online collaboration in her face-to-face courses. “Once I taught online, I thought the traditional students weren’t really getting their full measure, because they should be having these experiences too.

“Online students might be more likely to pick a client for their project where they’re going to be communicating more by e-mail and attachments and things like that. I do find that where I want to have students work in collaborative groups, there are some additional logistical chal-

lenges, but all of these software packages that are used for online delivery have things like virtual classrooms.”

Even courses that are more theory-based include some form of authentic assessment. For example, in a recently created database theory course, Colenso includes an assignment that has the students work with a local business to analyze its needs and to design an information-level database and make a recommenda-

Because they do not represent anything that students will be asked to do on the job, Colenso does not use objective, multiple-choice tests in her courses, except as a way to encourage students to complete the readings and review basic facts.

tion as to which platform would be best for that customer to implement this database. The students then write a proposal, which may or may not lead to that database being created, “but it still provides that interaction,” Colenso says. “It’s still real work. When it comes to lower-level classes, I’m more inclined to put together lab practicals that represent what businesses need.”

Course quality also figures into Colenso’s use of authentic assessment. “We received a grant to make all of our courses available online, and I was somewhat horrified when a few people implied that the courses

would somehow be watered-down versions of what students did in the classroom. It turned out that that was a common assumption. I said, ‘I’ll show you. These aren’t going to be even remotely watered-down.’”

Because they do not represent anything that students will be asked to do on the job, Colenso does not use objective, multiple-choice tests in her courses, except as a way to encourage students to complete the readings and review basic facts.

One of the selling points of the college’s online computer science program is the reputation the program has among the local IT community. “This is a small community. Everybody in the IT community kind of knows everybody else. If word gets out that some of our students can get all the way through and graduate our program and not be able to perform on the job, that would be bad. Part of how we sell our program is the good employment results at the end,” Colenso says.

Business clients get free services from the students, but they also help by providing mentoring for the students. Before working with business clients, it’s important that everybody knows the nature of this relationship, how students will be evaluated, and the client’s role in that evaluation. @

Assessing Whether Online Learners Can DO: Aligning Learning Objectives with Real-world Applications

By Patti Shank, PhD, CPT

Many of the criticisms of education come from the fact that much instruction isn't designed so learners can DO. For example, it's not good enough to design math instruction so learners can do the problems at the back of each chapter. They need to be able to calculate discounts, determine the implications of different interest rates, and so on, in the real world. And instructors need to assess if learners can DO, which commonly involves designing real or realistic performance assessments.

In this article, I'll first explain how the type of assessment should match the level of learning objectives and then describe how checklists and rating scales can be built to assess learning objectives that require demonstration of more complex skills. A foundational skill for developing good performance assessments is writing good learning objectives.

Two levels of objectives, two types of assessments

There are two levels of objectives, and each level is ideally assessed using a different type of assessment. Declarative objectives ask learners to remember or recall facts and concepts. In other words, they ask if learners know. These objectives use

verbs such as name, list, state, match, describe, and explain. Procedural objectives ask learners to apply what they know in realistic or real situations. They ask if learners

How can you assess if learners can develop an appropriate diet and fitness plan without having them develop the plan to see how well it was done? You can't. A test isn't adequate.

can DO. They use task-oriented verbs such as calculate, formulate, build, drive, assemble, and determine.

Most, if not all, terminal learning objectives in our courses should be procedural because we need learners to be able to DO real tasks in the real world. Knowing is foundational to doing, but it doesn't go far enough. Courses with mostly declarative terminal objectives probably don't go far enough either.

To illustrate the match between objective type and assessment type, let's analyze three objectives in a personal wellness course.

As a result of course activities, learners will

1. explain how the seven dimensions of wellness impact daily living,
2. analyze how deficits in nutrition impact human performance and longevity, and
3. plan a personal diet and fitness program based upon a personal diet and fitness assessment and personal goals.

Objective #1 is declarative, asking the learner to recall facts and concepts about the seven dimensions of wellness. Test questions are an appropriate and efficient way to assess if the learner can recall how physical, intellectual, emotional, social, occupational, environmental, and spiritual wellness impact daily living.

Objective #2 is a fairly uncomplicated procedural objective that asks learners to be able to reach conclusions based on a limited amount of information. Although a performance assessment might be optimal, simpler procedural objectives that don't involve much complexity can be assessed quite nicely (and efficiently) using well-written case or scenario-based multiple-choice test questions.

Objective #3 is a more complicated procedural objective that requires learners to deal with myriad factors in a realistic way. How can you assess if learners can develop an appropriate diet and fitness plan without having them develop the plan to see how well it was done? You can't. A test isn't adequate.

PAGE 9 ►

Performance assessments

Performance assessments assess actual or simulated performance. For example, if we want to see if a computer science student can write a real program, we provide the student with a programming challenge and then assess his or her performance.

In order to reduce subjectivity and improve validity when assessing performance, we can build a checklist or rating scale. A performance checklist or rating scale lists specific behaviors or results to be demonstrated.

Checklists and rating scales will often include a mechanism for tallying a final “score.” Many instructors share these in advance with students so they know how they will be assessed (good idea!). These checklists and rating scales are also commonly called rubrics.

Many instructors use authentic activities but haven’t considered adding checklists or rating scales to assess them. Checklists and rating scales reduce subjectivity and increase reliability and validity. They help learners achieve the desired success.

Let’s look at examples of portions of common types of performance assessment checklists and rating scales.

Checklist

A checklist lists the criteria and specifies the presence or absence of the behavior or results. A checklist is often the best verification instrument to use when unqualified presence is important (and it’s also easy to assess) because it doesn’t require the rater to make in-between judgments.

Rating Scale with Descriptors

A rating scale with descriptors provides a list of criteria with a description of what the behavior or results look like for each level of per-

formance. There is no specific number of levels to use in a rating scale. It is better to start with fewer levels and increase them if needed, because with more levels judgments become finer and finer, and the likelihood of rater error increases. Rating scales with descriptors are best when there are clearly more than two levels of performance.

Providing checklists and rating scales for download is the same as providing other types of print-based materials. The real challenge is designing real or realistic activities that allow learners to DO, and building clear and specific enough checklists and rating scales to assess them.

Rating Scale with Descriptors and Weighted Score

When building a rating scale, some behaviors or results may need more weight than others. In that case, a weighted rating scale may be appropriate.

Performance assessment online

Some online instructors dumb down their activities and assessments because online course systems make grading tests easy. This shortchanges learners and learning.

Consider what’s needed to make real or realistic performance a possibility and how to assess it (ask other online instructors and the instruc-

tional designers for ideas). For example, in an online presentation skills course I taught, learners peer reviewed each others’ presentation plans and slides using a checklist I devised. Learners gave their presentation to a real audience and were assessed by that audience using the rating scale I devised. The rating scales were faxed back to me directly.

Providing checklists and rating scales for download is the same as providing other types of print-based materials. The real challenge is designing real or realistic activities that allow learners to DO, and building clear and specific enough checklists and rating scales to assess them. Think out of the box. Remember that not all activities have to occur online (and many shouldn’t).

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Strategies for Creating Better Multiple-Choice Tests

By Patti Shank, PhD, CPT

Multiple-choice tests are commonly used to assess achievement of learning objectives because they can be efficient. Despite their widespread use, they're often poorly designed. Poorly written multiple-choice tests are equally damaging in classroom-based and online courses, but in online courses learners often have to contend with more challenges, and poor assessments can add insult to injury. In addition, poorly written tests can be more visible to the world when they are placed online.

In this article, I'll look at the plusses and minuses of multiple-choice tests, when they are appropriate and less appropriate, typical mistakes writers of multiple-choice questions make, and how to avoid these mistakes.

Some plusses and minuses

Multiple-choice tests can be developed for many different types of content and, if the test items are well written, can measure achievement of multiple levels of learning objectives, from simple recall and comprehension to more complex levels, such as ability to analyze a situation, apply principles, discriminate, interpret, judge relevance, select best solutions, and so on.

Multiple-choice tests are easy to administer and can be improved using item analysis in order to eliminate or correct poorly written items. They are

easy to score and less susceptible to scoring subjectivity than short-answer or essay-type items. They don't measure writing ability (which can be a plus or minus) and often do assess reading ability (another potential plus or minus, but in reality often a minus). They are more subject to guessing than many other types of learning assessments.

Multiple-choice tests are often promoted as "objective." Although scoring them doesn't involve subjectivity, humans do judge what questions to ask and how to ask them. These are very subjective decisions!

When multiple-choice is appropriate

Multiple-choice test items call for learners to select an answer or

answers from a list of alternatives. Because they do not ask learners to construct an answer or actually perform, they tend to measure knowing about rather than knowing how.

Multiple-choice items cannot assess learners' ability to construct, build, or perform. They are best used for objectives that can be assessed by selecting the correct answer from a list of choices rather than supplying the answer or performing a task. Think for a moment about how different selecting is from constructing and performing and you'll recognize the limitations of multiple-choice testing.

Consider the following learning objectives (**Table 1**) and decide if you think a multiple-choice test is a good assessment option. My answers follow, so you may wish to cover these up before proceeding.

My answers: Learning objectives one and two can be assessed with multiple-choice items because the response can be selected effectively. Multiple choice is not the best way to assess learning objectives three and four because they require the learner to either construct a response or perform a task.

PAGE 11 ►

Table 1

<i>Learning objective</i>	<i>Is multiple choice a good assessment option?</i>
1. Identify risk factors...	yes no reason:
2. Detect errors...	yes no reason:
3. Explain the purpose...	yes no reason:
4. Create a plan...	yes no reason:

Item parts and problems

It's important to use multiple-choice tests wisely and to write good test items when you use them. Let's look at the parts of a multiple-choice item and common problems with those parts. (Table 2)

A multiple-choice question test item has two parts: a stem and multiple alternatives. The stem initiates the item with a question, incomplete statement, or situation. The alternatives are a list of possible answers or solutions. They include the right answer(s), also known as the key, and inferior or wrong answers, known as distractors.

Let's look at a few examples to see these problems in action.

Example 1

Plants that are bona fide annuals, rather than half-hardy annuals, biennials, or perennials:

- Live for one growing season
- Bloom during their growing season
- Live and bloom for multiple years
- Are more attractive than other flowers

The stem is potentially confusing and the directions do not tell us to select all that apply. Both a and b are correct, and b is also true for the other types of plants described. And d is clearly implausible.

A better item:

Which of the following statements are true about annuals? Select all that apply.

- They grow and bloom during one season.
- Many bloom throughout their growing season.
- Many bloom in the early spring only.
- They commonly have shorter growing seasons than annuals.

Table 2

Part	Description	Common Problems
1. Stem	Describes the <ul style="list-style-type: none"> question to be answered, incomplete statement to be completed, decision to be made, or problem or situation to be resolved 	<ul style="list-style-type: none"> Confusing or ambiguous language Inadequate instructions
2. Alternatives	The alternatives from which the learner selects the correct answer(s)	<ul style="list-style-type: none"> Confusing or ambiguous language No clear right answer Poorly written or implausible distractors
- Key - Distractors	The correct answer(s) The incorrect answer(s)	

The writing is clearer, and a and c are unambiguously correct. Distractors b and d are plausible to those who don't know the content.

Example 2

A vendor offers a staff member two tickets to the World Series. Based on the rules listed in the vendor gift policy, he or she cannot accept them:

- Unless the tickets have no street value
- If the vendor is expecting "quid pro quo"
- If the gift is worth more than \$25 or is considered to be an inducement
- Unless the vendor is also a friend
- None of the above

The language requires understanding of "quid pro quo" and "inducement" and includes confusing negatives. Distractor c has two answers in one distractor; d is obviously implausible; and e, "None of the above," is not recommended as a distractor choice.

A better item:

Under what circumstances can a staff member accept a gift from a vendor, based on the vendor gift policy? Select the best answer.

- A gift can be accepted if the gift is not considered valuable.
- A gift can be accepted if the gift's actual value is under \$25.
- A staff member may never accept a gift from a vendor.

The writing is clearer and the distractors are plausible to those who don't know the content.

Writing better multiple-choice items

Confusing and ambiguous language and poorly written or implausible distractors are very common errors when writing multiple-choice test items. Here's a to-do list to help you avoid these mistakes and write better multiple-choice test items.

FROM PAGE 11

Use clear, precise language

1. Provide clear directions. Group questions with the same directions together.
2. Include as much of the question as possible in the stem, and reduce wordiness of alternatives. Include words in the stem that would otherwise be repeated in each of the alternatives.
3. Make sure language is precise, clear, and unambiguous. Include qualifiers as needed, but don't add unnecessary information or irrelevant sources of difficulty.
4. Avoid highly technical language or jargon unless technical knowledge and jargon are part of the assessment.
5. Avoid negatives and these words: always, often, frequently, never, none, rarely, and infrequently. When a negative is used, it should be CAPITALIZED, underlined, or bolded to call attention to it.
6. Don't use double negatives or double-barreled questions (asking two things in one question).

Write good alternatives/distractors

1. If alternatives include best and not-as-good alternatives ("Select the best answer..."), provide enough detail to differentiate best from not-as-good.
2. Make sure that each item has an unambiguously correct answer or answers.
3. Make sure distractors are plausible, especially to those with lower skills or lesser knowledge. These are the best types of plausible-but-incorrect distractors:
 - a) Common errors and commonly held myths or misconceptions (for those with

- less knowledge or skill)
- b) Statements that are true, but do not answer this question
- c) Content that is paraphrased incorrectly

Poorly written multiple-choice test items are almost as ubiquitous as multiple-choice tests, but it doesn't have to be this way. There are many ways to frustrate learners in online courses, but this shouldn't be one of them.

4. Avoid distractors that combine distractors ("b and c"), "all of the above," and "none of the above."
5. Avoid giving away the correct answer in the stem or alternatives. Common problems:
 - a) Alternatives that do not follow grammatically from the stem indicate an incorrect response.
 - b) An alternative that uses the exact same terminology as the stem indicates a correct response.
 - c) Two options that are synonymous or almost identical indicate two incorrect or two correct responses.
 - d) An alternative that is much longer than the others indicates a correct response.
 - e) Don't give away the answer in the wording of another question!

6. Make sure to use different placements of the correct answer. (The most common placement of the correct answer is c, and test-wise learners know this.)

Your turn

Get together with other multiple-choice item writers (faculty, instructional designers, etc.) and use this guidance to critique existing test items and suggest improvements.

Poorly written multiple-choice test items are almost as ubiquitous as multiple-choice tests, but it doesn't have to be this way. There are many ways to frustrate learners in online courses, but this shouldn't be one of them. Although it takes time and practice to write good items, this time and effort is certainly well spent.

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Assessing Student Learning Online: It's More Than Multiple Choice

By Elizabeth Reed Osika, PhD

As more and more instructors move their courses into the online environment, one consistent question that arises is, “How do I know what the students have learned?” The answer is not simple, but it can be effectively addressed with some common sense and a little bit of creativity.

How do I know what the students have learned?

The best place to start to resolve this question is your course syllabus. Aligning assessment strategies with your learning objectives allows you to check whether or not students have met the objectives of the course. Any course, online or face-to-face, should have clear, measurable objectives. An instructor need only pick the assessment technique that best matches each learning objective.

For example, if the objective states that students will be able to describe a concept, ask them to write a paper, post information on a discussion board, or create a flowchart. If they need to be able to identify or locate particular elements, they can complete an objective quiz, post relevant URLs, or submit digital pictures. If you have taken the time up front to identify clear, measurable objectives, determining assessment strategies becomes much simpler (Florida State University, 2006).

Typical assessment strategies of objective tests are easily administered through the various course management systems. Once online, these objective tests can now incorporate video, audio, and other media. Other assessment strategies commonly used in the traditional classroom can also be easily moved into the online environment, such as discussions and submission of written papers, essays, or reports.

With a bit of creativity, effort, and basic technical skills you can add 1) simulations and activities where students can virtually arrange elements, manipulate variables in experiments and equations, and even diagnose virtual patients; 2) group projects where students can address case studies, collaborate on presentations or reports, and develop original programs, lesson plans, or other materials; and 3) role plays where each person has a role, position, or character to represent in course discussions.

Allow the students the opportunity to practice with the technology prior to a formal assessment. Practice allows the students, and you, to become comfortable with the required technology; thus, results are less likely to be skewed by students' technical skills.

How can you actively engage students in the assessment process?

Assessment strategies are most successful if they replicate something that the student will do in his or her profession, that is clearly relevant to the course, and that is useful in demonstrating his or her knowledge and abilities. This type of assessment strategy, known as authentic assessment, actively engages students and demonstrates to the instructor that they not only understand the concepts but can also apply them in real-life scenarios (Mueller, 2006).

In addition to using appropriate and, when possible, authentic assessments in an online environment, it is important to keep students actively engaged in the “classroom.” This is best accomplished by requiring frequent, small assessments that will require the student to access the course two or three times a week. For example, Wednesday requires a short, objective quiz on the assigned reading material; Friday, a submission of a written summary of this week's activity and the posting of a reflection of what was learned through the assignment on the discussion board; and finally, Sunday, a reply to a fellow student's reflection. Frequent, small assessments lets them know how they are doing in the course and provides ample room for improvement or adjustment in study habits, if necessary.

How do you know it's the student's work?

How can I be sure that this is really the student's work? Unfortunately, there is no guarantee; though if you honestly think about a traditional classroom, you typically can't be sure there either. While this may seem like a dire situation, there are ways in-

PAGE 14 ►

structors can limit the amount of dishonesty in their courses.

One of the easiest ways is to assess higher-order and critical-thinking skills and limit the use of objective assessments such as multiple-choice tests. Objective assessments are the easiest for students to negatively manipulate. Use multiple-choice or other objective questions to assess information that provides a foundation for the course, the information they will have to use later to demonstrate their understanding through an authentic assessment. This allows the instructor the opportunity to make sure that each student is familiar with the most important aspects in the text.

If you use objective assessments as a primary assessment strategy, assume your students will use their books and discuss the concepts with friends and write your questions accordingly. In fact, encourage students

to use all relevant resources to complete a test, as this best reflects what occurs in real life. If we are faced with a question we don't know the answer to, we Google the topic, seek knowledge from others, and, if necessary, pull out texts to determine the answer. Why not encourage this problem-solving strategy in your students by posing complex questions that aim at higher-level thinking skills (Carneson, Delpierre, & Masters, 1996)?

Use a variety of assessments. If you have only one or two large assessments in the course, the pressure on students to succeed is enormous, and many may revert to less-than-honest activities. However, if you provide a variety of assessments that build on each other, the pressure is reduced drastically. Using frequent assessment points also allows the instructor to get to know students' work and personalities, making the identification of dishonest work easier.

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To Plan Good Online Instruction, Teach to the Test

By Patti Shank, PhD, CPT

Building effective instruction involves multiple tasks, but planning is one of the most critical. For online courses, planning is especially important because even under the best of circumstances, online learners often struggle with understanding what's expected of them. At a distance, they can get unbelievably frustrated (or worse) and stop trying. That's one of the best reasons for using a systematic approach to planning your instruction.

One of the best planning strategies for good instruction is teaching to the

test. You likely have heard the words "teaching to the test" uttered contemptuously. But it can be a very good thing indeed. I'm going to take a bit of a circuitous route in explaining why so you can understand my logic.

Objectives are the cornerstone for planning effective instruction, and good assessments determine if the objectives have been met. You might consider these the "bookends" of planning effective instruction.

ADDIE who?

Instructional designers (people who

typically have specialized training in using cognitive and other principles to design effective instruction) call the practice of systematically planning instruction "instructional design." There are numerous philosophies of instructional design but all have certain things in common, including following a list of tasks that ensure better end results.

Here is a list of typical instructional planning tasks, in order:

1. Identify learning objectives
2. Design assessments

PAGE 15 ►

3. Design content and activities
4. Select media and delivery options
5. Develop the course materials
6. Implement the course
7. Evaluate and revise

If you have worked with instructional designers or read articles or books on instructional design, you may be familiar with the ADDIE model, one of the most common models for the systematic design of instruction. ADDIE is an acronym for Analysis, Design, Development, Implementation, and Evaluation. Following a systematic process such as ADDIE can help prevent some of the typical problems that happen when instruction isn't well planned, including instruction that doesn't seem to have a clear goal; quirky (not in a good way) or deficient course content, activities, and assessments; and poor evaluations for the course and instructor.

Notice that identifying learning objectives is first on the list of tasks. And designing assessments is next, for good reason.

Design assessments after identifying learning objectives

Designing assessments should optimally occur right after identifying learning objectives. That's because assessments should measure if the objectives were met. If the learning objectives are well written, appropriate methods of assessment are generally quite clear.

See **TABLE 1** on how the appropriate assessment matches the learning objective? If you design assessments as an afterthought at the end of designing the instruction (a common but unfortunate mistake), you are likely to design the wrong content and the course activities and the assessments are likely to be far less meaningful or appropriate. In other

TABLE 1

If the learning objective is...	A matching assessment could be...
1. Learners will label the parts of the human respiratory system, including the trachea, bronchi, lungs, thoracic cavity, and diaphragm.	Illustration of the human respiratory system prompting learners to label the trachea, bronchi, lungs, thoracic cavity, and diaphragm
2. Learners will demonstrate three elements of a proper phone greeting.	Demonstration(s) of the three elements of a proper phone greeting
3. Learners will use the three-criteria model to evaluate a play.	Verbal or written application of the three-criteria model to evaluate a play

TABLE 2

If the learning objective is...	A matching assessment could be...	Matching content and activities
1. Learners will label the parts of the human respiratory system, including the trachea, bronchi, lungs, thoracic cavity, and diaphragm.	An image of the human respiratory system prompting learners to label the trachea, bronchi, lungs, thoracic cavity, and diaphragm	<ul style="list-style-type: none"> • Content: Images of the different parts, separately and together • Activity: Practice labeling the parts
2. Learners will demonstrate three elements of a proper phone greeting.	Demonstration(s) of the three elements of a proper phone greeting	<ul style="list-style-type: none"> • Content: Discussion of the three elements • Content: Examples of the three elements in use • Activity: Practice using the three elements
<ol style="list-style-type: none"> 1. Learners will demonstrate three elements of a proper phone greeting. 2. Learners will use the three-criteria model to evaluate a play. 	Verbal or written application of the three-criteria model to evaluate a play	<ul style="list-style-type: none"> • Content: Discussion of the three-criteria model • Content: Examples of the three-criteria model applied to a variety of plays • Activity: Practice applying the three-criteria model to a variety of plays

words, designing the assessment (test) right after identifying the learning objectives 1) makes the needed assessment very obvious and 2) provides clear cues about what content and activities are needed.

Design content and activities after designing assessments

I've finally made my way to telling you to design to the test. First identify the learning objectives and matching assessment (test). The learning objectives should clearly state what the learner should be able

to do, and the assessment (test) should measure if they can, in fact, do that. The content and activities should then be designed specifically so that the learner can pass the test, because that means they have met the learning objectives. And that's the goal of effective instruction.

Let's look at **TABLE 2** once again at the three objectives and matching assessments to see what content and activities make sense.

As you can see, a well-written objective and matching assessment provide pretty clear cues about what content and activities are needed. It makes the instruction not only more effective, but also easier to design. Better instruction and less work. Terrific!

A few more words about activities

Some people ask me whether content plus assessments is enough for a good online course—for example, PowerPoint slides and tests.

Aside from the fact that this would be unengaging for learners, this approach is not instruction. Activities and feedback are needed for instruction. In fact, I'd go so far as to say that the purpose of instructional content is to support instructional activities. Activities allow learners to reflect on and apply the content and make it personally meaningful. When we don't do this, we're likely teaching at only a surface level, preparing learners to do nothing with the content other than forget about it once the test is over.

Your turn

If activities are the opportunities for learners reflect on and apply the content so that it becomes meaningful to them, now would be a good time for you to do that with the content in this article! Using my previous articles on writing objectives and developing assessments, if needed, see if you can write two good learning objectives and then match assessments and content and activities. Try swapping your work

with someone else (another faculty member or maybe even an instructional designer) to get feedback.

Some people think it's hard or even impossible to create meaningful online activities, but that's not so. In fact, an asynchronous online learning environment provides opportunities for activities that would be hard to do in person.

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Using Self-Check Exercises to Assess Online Learning

By Patti Shank, PhD, CPT

The intermediate statistics class I took quite a number of years ago had two types of learners at the outset—those who were worried about passing the course and those who were sure they couldn't pass it. The professor clearly understood the "fear-of-stats" phenomenon and used a number of instructional techniques to help learners gain confidence and skills.

One especially valuable technique was consistent use of self-check exercises. These were handed out at the end of each class along with an answer sheet. Class started each time with a question-and-answer period about the self-check exercises from the previous session. Doing the exercises was optional and they weren't handed in or graded, but nearly everyone did them, and the

folks who did easily gained confidence and passed the course.

What are self-check exercises, exactly? They are problems (with answers) given to learners that allow them to assess how they are doing on an ongoing basis. Doing them online with self-grading provides immediate feedback. Links to additional

PAGE 17 ►

materials can be provided to help anyone who is having difficulties. Online learners can do these exercises and submit questions they have, which the instructor can aggregate and respond to for the benefit of all learners.

Studies show that these types of activities help learners keep tabs on their progress and adjust their efforts, know when to seek help, and stay on track. These outcomes are especially important in online courses.

Some of the most important benefits of self-check exercises for online learning include

- Helping learners determine what they do and do not understand so they can target where extra study is needed;
- Providing immediate feedback to learners and an option to link to additional materials (which may reduce the number of unfocused questions sent to the instructor);
- Providing feedback to the instructor about where learners are having difficulties so immediate interventions can be implemented; and
- Increasing learner satisfaction with the instructor and the course.

Getting Started

Consider how self-check exercises can be used in the courses you teach. Are there concepts that learners consistently have problems understanding? Are there terms that learners need to memorize or concepts that they need to understand? These might be the best places to start.

Patti Shank, PhD, CPT, is a widely recognized instructional designer and instructional technologist, and writer who builds and helps others build good online and blended courses and facilitates learning. She can be reached through her website: www.learningpeaks.com/. @

Assessment for the Millennial Generation

By Christopher Hill

Fresh assessment techniques are needed to gauge student learning in online classes, Julie Giuliani says. Giuliani is the executive dean of the Virtual College at Florida Community College-Jacksonville(FCCJ), which serves some 39,000 distance students. Giuliani has what she refers to as “a passion for assessment.” She has been working with assessment for years, since she was a graduate student researching classroom assessment techniques.

“There’s been volumes of research that says there’s no significant difference in terms of grades between students on land and online,” Giuliani says. “But there isn’t any formative kind of mechanism to gauge online student learning progress. We really can’t validate how well our students are learning online.”

She believes that the new wave of so-called Millennial students calls for what she refers to as “new millennium assessment approaches.” What she means by this is the employment of assessment techniques that are specifically designed for online media that are part of the structure of the course, and where students perform self assessment as they participate in course activities.

One of the first things Giuliani did when she came into her position was to familiarize herself with the quality of teaching and learning in the online courses. As she went through the process, it became evident to her that, while they were doing many things right, they still weren’t where they needed to be in terms of creating a culture of systematic observation of student learning.

The students were already familiar

with social networking sites like YouTube and MySpace, with podcasts and blogs, and with devices like cell phones and iPods. She came to believe that to engage these students in the process of assessment your best bet was to use the same kinds of media. FCCJ had been forward looking in the emphasis it gave to multimedia in its online program. The school had created a faculty resource center where any faculty member—full-time or adjunct—could produce their own multimedia tools.

Giuliani soon began to look for an opportunity to try out her ideas. The school’s interim associate dean happened to also be an online adjunct history professor. Giuliani proposed to her that they use her American history course as a laboratory to ex-

PAGE 18 ►

periment with multimedia assessment tools.

Podcasts and self-assessment

The first thing that they tried was a podcast of a re-enactment of a moment in American history. They scripted a podcast in which a 14 year-old girl described her family's journey West on the Oregon Trail in the 19th Century. They recruited a part-time actress from the resource center staff to read the script. They created a link to the podcast on the course's website. The online students did the assigned reading about the Westward expansion, and then listened to the podcast's first-person account of pioneer life. The instructor set up discussion board questions to assess how much the students had gotten from both the text reading and the podcast. But in addition, the instructor designed a discussion board rubric, so that not only were students discussing and giving their feedback regarding their learning experience, they were also encouraged to use the rubric to self-assess what they had learned as a result of the multimedia experience.

Using the discussion board for self-assessment

Giuliani and her partner found a way to use the discussion board for a more formative assessment purpose. The idea was that the students were to read the learning module, participate in the activities (such as the podcast) and then in the discussion board they were to do what is called a 3-2-1 evaluation. The student were directed to state three themes or concepts they learned during the unit, two questions that they still had, and one idea they wanted to share with others. This is beneficial on two levels, Giuliani explains. Not

only do students interact with and get different perspectives and ideas from each other, it gives the instructor feedback on their pedagogical strategies. "They can say, 'Wow, I need to change my approach for the next module because obviously they didn't get it.' Or 'Wow, this really worked and I'm going to grow this idea when I design the next module.'"

The students were already familiar with social networking sites like YouTube and MySpace, with podcasts and blogs, and with devices like cell phones and iPods. She came to believe that to engage these students in the process of assessment your best bet was to use the same kinds of media.

Three-2-1 assessment can be applied to any content area. The first two stages of the process are objective, while the final item involves a more subjective response. That difference in the questions helps the instructor gauge how much the students have absorbed from the unit and make adjustments based on the student responses.

Giulani and her associates call such practices VOAT's -- virtual online assessment techniques. Creative online instructors acquire a "toolbox" of different VOAT's. An instructor tries one out and sees how it works, tinkers with it a little, and tries again.

Part of the mission of introductory online courses, in Giuliani's view, is

to teach students how to use technology effectively. Giuliani and her colleague developed a VOAT for that, too. The course had a section on the iron mining and smelting industry in the United States. In the first weeks of the class, the instructor asked the student, after reading this segment, to take their cell phones or digital camera and go out in the field and take a picture of something that was made of iron--making sure the students themselves were in the shot. They would then send that picture via their cell phone to the course site. As an alternative, if you didn't know how to use your cell phone as a camera, or didn't have a digital camera, you could go online and find some pictures of iron products of that era, and then send them to the instructor.

A culture of multimedia assessment

"My hope is that through this model course that eventually we'll be able to do more training with our adjuncts using this as a model of best practices," Giuliani says.

Giuliani hopes that eventually full-time faculty, not just adjuncts, will become interested in the multimedia assessment practices that she is initiating and come to the faculty resource center to create their own tools.

"[The history course] was our pilot test," Giuliani says. "One of the first goals that was given to me was to work with quality assurance. And so I saw assessment and using the tools of the new generation as two of the supporting drivers to achieve the goal of quality and integrity of courses."

@

Self-Assessment in Online Writing Course Focuses Students on the Learning Process

By Rob Kelly

Worth Weller, continuing studies lecturer in Indiana University-Purdue University Fort Wayne's department of English and linguistics, believes in the efficacy of online learning, but he doesn't agree with the cliché, "I feel I get to know my online students better than my face-to-face students."

"I think you get a lot of utopian discussion about teaching online. I do think it's wonderful, but I sense a real disconnect with my students. Unless you make a superior effort, you don't have the type of community that you have in the classroom," Weller says.

This disconnect makes it harder for online instructors to have the same level of contact with students that is necessary for students to master the writing process. To compensate for the shortcomings of the online classroom, Weller uses sequenced self-assessment in his online composition courses. (Weller also uses this technique in his face-to-face writing courses, but, he says, it is particularly important in his online courses.)

Weller begins his online course with a chat session that asks students to discuss assessment criteria. He divides students into groups and asks them to come up with criteria they think would distinguish an A college

paper. After 15 or 20 minutes he brings the students back into the main chat room and asks a representative of each group to present the group's ideas and asks them why to explain why each item is important.

This first session instills in students the notion that they will be involved with assessment. Students have four papers to write during the semester. There are 10 points throughout the semester in which students assess their own writing and consult with Weller through synchronous discussions.

For each writing assignment, each student sends his or her paper to peers for review. Weller asks students to focus on structure – things like topics sentences and the use of quotes – rather than grammar. "I don't like to eavesdrop on the peer review process, but I train them well and tell them what the expectations are," Weller says.

After the peer review, each student writes a half-page reflective memo about his or her paper and the peer-review process. The students submit their memos to Weller (via a dialogue box in WebCT), which prepares them for the next step in the process: the synchronous conference with the instructor.

Having students write the reflective memo prior to the conference helps students create an agenda for the conference and tends to reduce the chance of the instructor dominating the conference, Weller says.

During the conference, the student and Weller "talk" about the paper, and Weller develops a revision strategy. (Weller thinks it might be more effective if the students developed their own revision plans, something he is thinking of doing.)

After the conference, Weller sends the student a memo that highlights what was accomplished in the conference as well as a provisional grade (the grade the student would receive if no revisions are made).

Rather than marking up the paper, Weller comments on the good points and shortcomings of the paper, often quoting sections of the paper as examples. To help students understand some common errors, Weller will direct them to resources such as websites and help documents.

Weller also requires students to send a short note to him reflecting on the conference and outlining the revisions they intend to make.

Students have until the end of the semester to revise their papers. In addition to the revisions, Weller has students submit a memo describing the changes they made. These memos serve several purposes: They get students to think about the process and serve as documentation that enables Weller to more easily grade students' work.

In addition to the self-assessments for each assignment, students also submit mid-term and final self-assessments, asking them to reflect on their performance and what they think their overall grade should be and why.

PAGE 20 ►

FROM PAGE 19

All of these self-assessment documents and drafts of their papers are compiled in a portfolio along with a cover letter and are also graded. For students' final grades, Weller uses this thorough documentation to make sure they did the revisions they said they would.

The ongoing self-assessment and

portfolio make it unlikely that students will plagiarize, Weller says. "With self-assessment it's much harder to turn in a bogus paper because you're calling on them to do all this writing about their writing."

Weller says his use of sequenced self-assessment in his courses helps students take control of their writing. "A lot of students who come to 100-level writing courses hate writing.

Even students who write well often say, 'I hate writing. I really struggle with this.' When they learn that they are in control of their own writing they feel a sense of freedom, which takes a lot of anger out of it. And they learn about learning," Weller says. @

Using Online Discussion Forums for Minute Papers

By Debra Vredenburg-Rudy

Most of us are familiar with the informal assessment tool called the minute paper in which students write a short narrative about what they have learned about a particular topic covered in class. Many faculty use the minute paper at the end of a class period in order to gauge student understanding of the material. But there have been many successful modifications of the basic strategy. A number of them are reported in the well-known book *Classroom Assessment Techniques* by Tom Angelo and Pat Cross, who first proposed the technique.

I have used the minute-paper strategy previously and found it a useful assessment tool, so I decided to change the format and make the minute paper online and interactive. In my courses, I upload documents to the university's Blackboard website. One of the features of Blackboard is the communication link, which allows instructors to create online

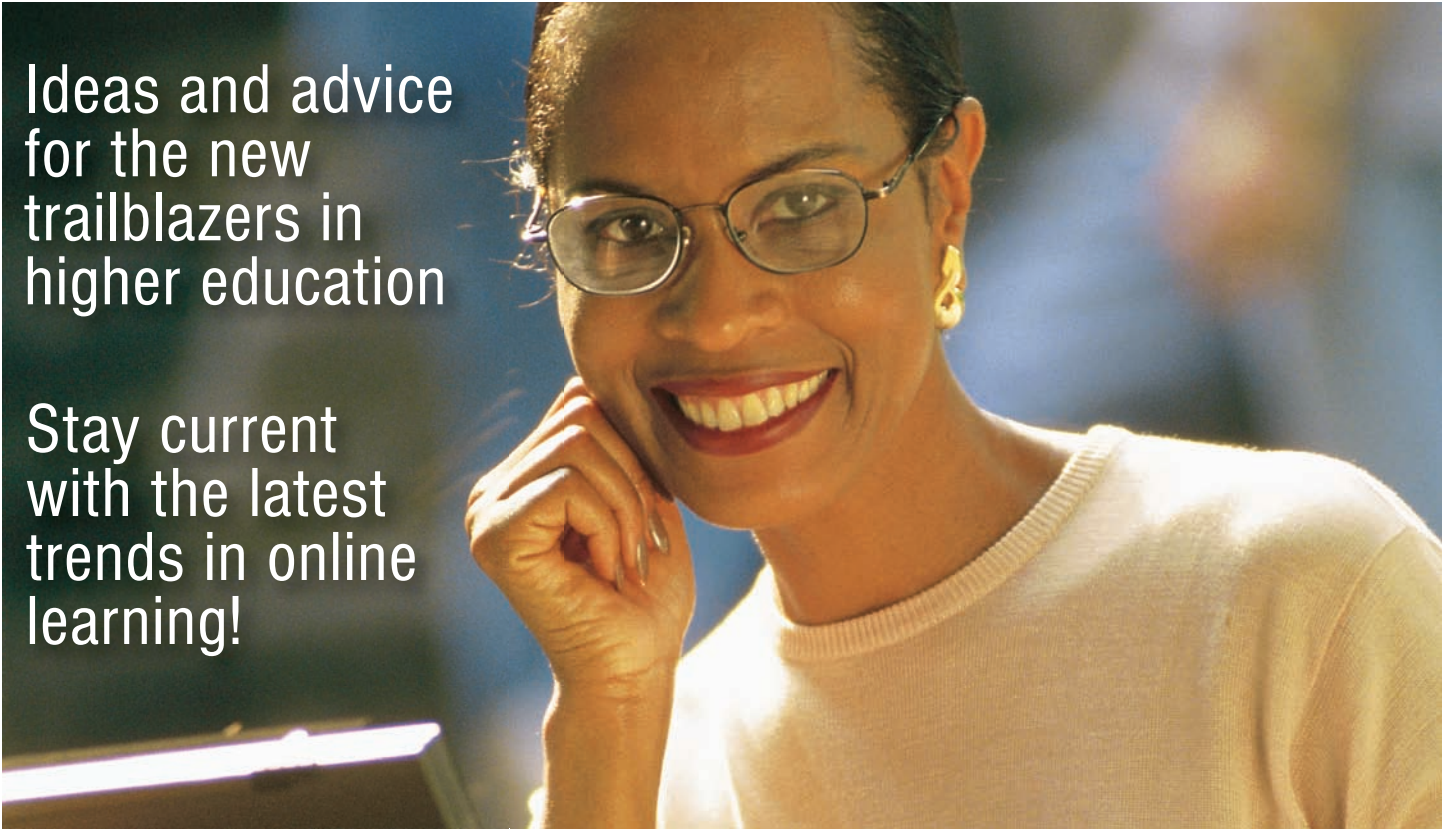
discussion boards where students can post comments and reply to other students' remarks. This feature presents the perfect opportunity to assess student learning via technology.

In a psychology research methods course, I used the minute paper during the last 15 minutes of a lab period. The lab portion of the course was held in a computer lab, which made Blackboard easily assessable to the students. At the completion of a lecture on identifying variables, I showed a video about the nonverbal signs of attraction during dating, a topic of interest to most college students. After the video and class discussion, students were required to post a comment on the discussion board and reply to a fellow classmate's remarks. I gave them the following instructions: 1) describe what you learned today either from the video or class discussion; 2) describe one thing that you found fascinating about human behavior;

and 3) reply to one of your classmate's comments.

To my pleasant surprise, students were so occupied with this exchange with their peers that I had to remind them that the period was about to end. Even students who were shy and unlikely to speak during class were now communicating with others who were less inhibited about speaking in public. I learned that an online minute paper not only serves as an assessment tool for student learning, it can be an effective means for stimulating classroom participation. The experience has renewed my respect for this simple but valuable feedback tool.

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