

Getting Results

MODULE 6:

Assessing Teaching and Learning

Learn how to connect assessments to outcomes and evaluate both students' learning and your teaching.

Getting Results




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Section 1: Introduction and Intended Outcome

I. Preface

Assessment involves gathering data about the success of the teaching and learning in your classroom. It is a continuous process that provides insight into student learning, gives teachers a basis for making instructional decisions and modifying teaching methods, and helps in assigning grades. The best assessments also serve as learning opportunities for students. In this session, you'll learn techniques for gathering data on the teaching and learning in your classroom that will help you assess both your students' learning and your own teaching.

Intended Outcome for This Module

As a result of this learning experience, you should be able to create assessments that focus on intended outcomes and your own teaching.

II. Module Overview **V I D E O**

Watch the following video showing how one teacher conducts formative assessment as part of her Quality Manufacturing and Statistics class.

V Video Note

At this point in the module, please view the **Assessing Teaching and Learning** video. This video is available on the *Getting Results* course Web site at www.league.org/gettingresults or on the CD-ROM, available from the League (www.league.org).

Think About

What do you think this teacher learned about her students' thinking through the use of this assessment? How does this assessment serve as a learning opportunity for the students?

V More about the class in the video

Anita Gilkey teaches Quality Manufacturing and Statistics at Sinclair Community College in Ohio. Jim Houdeshell, the director of the National Center for Manufacturing Education at Sinclair, observes Ms. Gilkey's class and provides feedback on the assessment strategies used.

Now take a moment to reflect on your practice.

Notebook

This video showed the third class meeting in a course. Do you normally conduct evaluations so early in the course? How are your evaluation methods similar or different from this instructor's? What methods do you use to gather data along the way to ensure that all students are "getting it"?

Think of a project that you were involved with, either as a student, a teacher, or an employee, that didn't go well. How might assessing work in progress have avoided a disappointing result? Design an assessment technique that could have helped you or others avoid the situation you described above.

Section 2: Assessing Student Learning

I. Assessing Learning Outcomes

Throughout this course, you've learned about the importance of developing learning outcomes. Learning outcomes define the purpose of your course, guide you in developing appropriate learning experiences for your students, and play a major role in assessment. In an outcomes-focused course, assessments measure the outcomes students have achieved.

Although this concept may seem simple, it is a relatively new way of thinking about assessment. In the past, many teachers turned automatically to tests and quizzes as the best way to measure student learning. But once instructors start thinking about assessment as a way to measure attainment of learning outcomes, they often decide to adopt new methods of assessment. For example, learning outcomes such as knowing how to operate machinery, run a lab experiment, or use manufacturing tools are not well suited to paper-and-pencil tests.

Keep in mind that the objective of assessments is to discover what a student really knows. Therefore, a variety of assessments will help to appeal to the different learning and testing styles of the students in your course. Some students may need to see all of the questions and know the credit assigned to each part before starting an exam to allot their time well. Others perform best when given choices about which questions to answer, such as "Choose two of the following three...." Still other students may prefer the option of explaining a concept rather than or in addition to answering true/false or multiple-choice questions. Assessments that require the least amount of teachers' time to prepare or grade rarely do the best job.

II. Assessing Performance **V I D E O**

Students who enroll in technician preparation programs are likely to be contextual learners. These students often exhibit more competence in technical, laboratory, or field work than they do on homework, classroom exercises, tests, or highly structured lab reports.

Provide these students with multiple ways to demonstrate their knowledge and skills. A student could build a model rather than write an essay to demonstrate an understanding of major concepts. Or students can identify laboratory examples to illustrate a point learned in the lecture.

Watch this video about individual assessment for certifying computer technicians using something other than quizzes and tests.

V Video Note

At this point in the module, please view the **Assessing Performance** video. This video is available on the *Getting Results* course Web site at www.league.org/gettingresults or on the CD-ROM, available from the League (www.league.org).

Think About

How is this assessment method well suited to the stated learning outcome—preparing students to be computer repair technicians? What other kinds of assessments might you expect to see in this class?

V More about the class in the video

Rudy Helm teaches a PC Configuration and Analysis class at Bellevue Community College in Washington. The students learn to repair PCs and become PC service technicians.

Now reflect on your own experiences.

Notebook

Take a look at the assessments you currently use in your classroom. How do they measure student achievement of your learning outcomes?

III. The Guiding Principles of Assessment

- Assessments measure students' attainment of learning outcomes.
- Assessments measure the level of student success.
- There should be a connection between the way students learn the material and the way they are tested on it.
- Assessments should be varied.
- Assessments include formal and informal evaluations.
- Students should know the evaluation plan at the beginning of a course.

Think About

What would these principles look like in practice? Which do you already practice in your classroom? Which are you interested in developing further?

Notebook

Do your current assessments live up to these six principles? What changes would you have to make to comply?

IV. Formative Assessment

Until very recently, assessment was thought of as something teachers do at the end of a course; something teachers do *to* the students to evaluate them. Classroom assessments were few and far between, consisting of perhaps a few quizzes before the final exam. Feedback from the instructor came only in the form of a letter grade, and students were offered little opportunity to revisit or revise their work before moving on to a new topic.

Today, assessment is changing. More and more instructors are assessing students not just at the end of a semester, but frequently during class, as a part of instruction. Their goal is to make student thinking visible, both to themselves and to students, so that the understanding can be monitored before any grades are assigned.

Formative assessment can be used to inform instructional practices and to give students advice without their worrying about grades. In this sense, assessments are done for the students and the instructor.

Formative assessment involves everything from pre-assessment to the many ways you might collect data about student understanding throughout learning experiences in a course. All this data is used to inform instructional decisions—what you need to review or teach from another perspective—and to help in assigning grades.

Assessment Methods

Assessments should measure not just the amount of content students know, but the extent of their understanding, their ability to make connections, and their ease in transferring knowledge to new situations. You may notice that these methods are also used at the end of a unit or course, in which case they are summative in nature.

Ideally, assessments also allow students to monitor their own progress throughout a course. This is especially important, because if students are to be lifelong learners, they need to be able to monitor and control their own process of learning. Paper-and-pencil assessments (multiple choice, true/false, fill in the blanks, short essays, etc.) are most useful for determining what students know; performance tasks (demonstrations, presentations, etc.) are often more suited to assessing what students can do with what they know. The following assessments may help you collect information and distribute feedback on student learning.

- **Essays**

Essays ask students to organize their thoughts and put them down on paper. They are a good way to evaluate the level of student understanding of a particular topic. Essays also benefit students by giving them practice in writing. On the negative side, essays can be time-consuming to review. Essays can also be difficult to grade objectively.

- **Presentations**

Asking students to present research, homework, or a short assignment, either individually or as part of a group, is a popular assessment method for many teachers. Presentations develop speaking skills, which are important in any field. They provide insight not only into the specific content the student has learned, but the depth of her understanding and her confidence with the material.

- **Demonstrations**

Demonstrations are often the most appropriate way of evaluating outcomes that ask students to *do* something—diagnose problems or assemble machinery, for instance. Demonstrations are often done in one-on-one settings with the instructor. They are particularly helpful at determining where students need extra study or assistance.

V. Providing Immediate Feedback **V I D E O**

Watch this video about a hands-on midterm exam using aerial photographs in natural resources technology.

- V Video Note**

At this point in the module, please view the **Providing Immediate Feedback** video. This video is available on the *Getting Results* course Web site at www.league.org/gettingresults or on the CD-ROM, available from the League (www.league.org).

Think About

Did anything surprise you about the midterm examination depicted in this video? What does the teacher gain by using this type of test? What does the student gain?

V More about the class in the video

Kate Holleran teaches Aerial Photo Interpretation at Mt. Hood Community College in Oregon. Students enrolled in the course will likely pursue careers as natural resource technicians after graduation.

After seeing this video, consider how you might rethink the assessment methods you currently use.

Notebook

Describe assessment methods you use in class, both to improve your teaching and to monitor student learning. How effective do you feel your methods are? What is one of the most important learning outcomes you want students to gain from your class? What are at least two different ways they could demonstrate understanding of this outcome? How would you build an assessment?

VI. Assessing Student Thinking

Some teachers seem to be able to assess instinctually, listening in on conversations between groups, keeping track of students who raise their hands, and reading the facial expressions and body language of students in their classes. But there are also established strategies that can help both novice and experienced teachers understand student thinking. These can supplement other methods of gathering information about learning, such as tests and term papers. Here are a few ideas for assessing student thinking:

- Have students summarize research or readings in class. If students seem reluctant to speak up in front of peers, have them discuss and share in pairs or small groups.
- Ask students to debate aspects of a topic covered in class. For example, having students discuss whether cloning is ethical is a good way to see if they really understand what cloning involves.
- Walk around the room as students are working on projects and listen in on what they are doing. Ask them what they plan to do next, what roadblocks they've experienced, and what they've learned so far.

- Take a few minutes at the end of each class period to gather data about what students have learned or understood. On a 3x5-inch index card, ask students to do the following: respond to a question, sketch their understanding of a concept, write a 3-2-1 summary (e.g., three important ideas they learned today, two questions they have, one thing about the class that really supported their learning), etc. The information provided on the card can afford the instructor a lot of data to make decisions about how to approach the next class. (See **Conducting Classroom Research** later in this module for more ideas.)

VII. Summative Assessments

So far in this module, you've learned how formative assessment helps instructors gather information and offer feedback on student learning throughout the course of the semester. Equally as important is summative assessment, which allows instructors to gather information on student learning in order to assign a grade. While summative and formative assessments may share characteristics, what you do with them differs.

Although paper-and-pencil tests remain the most popular way of measuring cumulative achievement, the following pages offer some alternatives to traditional exams.

VIII. Final Papers

A final essay or another written assignment can assess students' ability to analyze or apply material or evaluate ideas. It allows students to express themselves creatively and to really show off the depth of their knowledge. These kinds of assignments are often quick for an instructor to prepare, but are time-consuming to read.

Grading essays is subjective, meaning that two different teachers—or even the same instructor—might grade similar essays differently in different situations. This pitfall can be avoided by setting up guidelines—sometimes called rubrics—ahead of time for what essays should include and how ideas should be expressed.

IX. In-Class Presentations

In-class presentations motivate students to perform well in front of their peers and expose their classmates to new ideas. Students become teachers of their work. Few teaching techniques can push learning to the level of competence as well as having students demonstrate mastery of some aspect of course content and/or defend their solutions to problems.

Fielding questions from fellow students and instructors increases self-confidence and provides motivation for acquiring a deeper understanding of concepts and applications. Students who traditionally don't do well on pencil-and-paper tests may excel in presenting. Establish the criteria for success or standards you will use to measure presentations and let students know them in advance so they can focus their efforts.

Group presentations are a variation on this theme, allowing students to present a more complete or in-depth look at a topic, or to cover a greater number of topics. Working in groups and making group presentations can take the pressure off students who are intimidated by public speaking, but can be difficult to grade. You may be able to overcome this hurdle by assessing the process—not just the product—of their work together.

For example, spend time in class listening to students discuss ideas, analyze data, and debate results. Ask students how their work is coming along, look over their notes, and ask them to submit reports detailing the progress they have made so far, any problems they have run into, and their plans for proceeding.

X. Portfolios

Portfolios offer a third opportunity for your students to demonstrate their learning. Much like artists' portfolios, student portfolios contain a sampling of work that represents a student's achievement over the semester.

Generally, portfolios include both classwork and work that the student has completed outside of class—for example, an independent research project, or a sample of work completed during an internship or volunteer experience. Ask students to prepare a written statement documenting how the work in their portfolio shows a growth in understanding over time.

XI. Other Technician-Oriented Assessment

Although technicians are not likely to be required to write formal essays in the workplace, they will be required to write job-related documentation, such as proposals, product descriptions with installation instructions, troubleshooting guides, letters (such as responding to a customer complaint), etc. Asking students to practice the kind of writing that will be necessary in the workplace provides them opportunities to use skills across several disciplines.

A proposal, for example, may include a cover letter, extensive calculations, CAD drawings, product sources, and test data. This type of assessment allows the student to demonstrate skills ranging from mathematics and science to technology and communications.

Think About

Which summative assessment measures do you currently incorporate into your class? What are the advantages and disadvantages? List three ways you might be able to overcome disadvantages.

Assigning Grades

One of the major purposes of assessment is assigning grades. But before you begin to think about who deserves an A versus a B, you must first come up with a grading structure.

In the past, some courses were graded “on a curve,” with each student assigned a grade based on his performance relative to all the other students in the class. Instructors knew ahead of time how many As, Bs, and so on they wanted to assign, and students competed for a limited number of high grades. This method should not be used because it can discourage students. The goal of any class is to maximize the number of students who master learning objectives. All assessment practices should be designed to help them demonstrate what they know.

Absolute Grading

This system assigns students grades relative to a preexisting set of criteria. Students are not directly in competition with each other, since all students who pass a certain set of standards can receive an A. Students should know ahead of time what the criteria are for receiving each grade, so they can track their progress through the course.

There are a few general rules that you should follow in setting up your grading system. First, you should determine ahead of time how many tests and projects you will require and how they will be weighted. Adding assignments at a later date is unfair to students and possibly against your school’s grading policy. Second, you should clearly document your plan and make it available to students at the beginning of the course as part of the syllabus. Third, stick to the plan, unless there are extremely compelling reasons to deviate.

XII. From Micro to Mastery

This activity is designed to help faculty assess students in ways that support course and program learning objectives. Good evaluation builds from the micro level—frequent formative assessment in the classroom—toward mastery of major concepts and knowledge.

Print out the blank **Assessment Flowchart** at the end of this document.

1. Begin by filling in your course or program learning outcomes in the first column.
2. Next, review your syllabus, curriculum, textbook, lab manuals, and other course materials to be sure that all distinct activities are assessed in some way. Formative assessment is characterized by frequency and focus. Formative evaluations should be brief and to the point. After you have done this review, write down formative assessment tools you can use to evaluate each discrete lesson, lab, or module, in the second column.
3. Summative assessment evaluates mastery, usually through longer, less frequent, and more comprehensive tests and projects. Determine what type of summative assessment will measure your course's learning objectives. Cognitive knowledge, for example, might be best measured by a written test or essay, whereas technical skills and practices might be better assessed with a performance activity. Also, make sure summative assessment tools echo what was previously measured by your formative assessment techniques. Write down summative assessment tools in the third column.

XIII. Assessment Flowchart

The following chart includes examples from three courses, including one drawn from the Aerial Photo Interpretation class highlighted in the **Planning for Outcomes** activity in Module 2. After reviewing the examples in the chart, print out a blank assessment flowchart (included at the end of this document) and use it in your own course or one you might teach.

Learning Outcomes	Formative Assessment	Summative Assessment
Student goals & outcomes; e.g., what students should know or be able to do upon course completion	Lesson/module activity evaluation	Cumulative, mastery; e.g., midterm/final exam, portfolio, timed performance, evaluation rubric, etc.
<p><i>(From a Natural Resource Technology course)</i></p> <p>“When you have successfully completed this course, you should be able to obtain 3-D views from aerial photographs and relate the feature on the photos to topographical maps.”</p>	<ul style="list-style-type: none"> ● Discuss geometry of aerial photos ● Prepare and view stereo pairs ● Work on scale practice problems ● Field lab 	<ul style="list-style-type: none"> ● Navigate using aerial photographs ● Determine scale and area
<p><i>(From a Web/multimedia course)</i></p> <p>“Upon completion of the course, students will be able to design and produce original hypertext pages containing text, graphics, and clickable links.”</p>	<ul style="list-style-type: none"> ● Weekly digital image portfolio ● Quiz: HTML commands ● Presentation/critique: Web page design ● Tracking of hours logged into online course tutorials 	<ul style="list-style-type: none"> ● Digital copies of set of three related Web pages uploaded to student portfolio area ● Peer evaluation rubric containing five evaluation criteria
<p><i>(From an agriculture course)</i></p> <p>“After this course, students will be able to collect and analyze data from wind instruments, following industry-standard field testing procedures.”</p>	<ul style="list-style-type: none"> ● Daily reports in field notebooks ● Lab experiments ● Quiz: Wind energy terminology ● Participation in class visit to local industry 	<ul style="list-style-type: none"> ● Final field report ● Three to five questions on midterm exam relating to wind power equipment

XIV. Utilizing Right and Wrong Answers

VIDEO

Watch the following video to see how one teacher uses a test to reinforce and correct student understanding of a concept.

V Video Note

At this point in the module, please view the **Utilizing Right and Wrong Answers** video. This video is available on the *Getting Results* course Web site at www.league.org/gettingresults or on the CD-ROM, available from the League (www.league.org).

Think About

Why does the teacher have students discuss their differing answers before he returns the corrected tests? Why are students working together on this task?

V More about the class in the video

Bruce Koike teaches Life Support and Operations and is the director of the Aquarium Science program at Oregon Coast Community College. Students in the program are training to become aquatic animal care specialists, or aquarists, and will likely pursue jobs at public aquariums and aquaculture facilities.

Section 3: Assessing Your Teaching

I. Gaining Insight on Your Teaching

With all the focus on student assessment, instructors sometimes overlook the second major reason to assess learning in the classroom—to gain insight on teaching. Getting a read on which teaching methods are most successful becomes easier after many years in the classroom, but even novice instructors can begin to assess the effectiveness of their teaching with the use of some simple evaluation tools. In this section, you'll learn how to evaluate your teaching through classroom research, peer review, and teacher reflection.

II. Conducting Classroom Research

Before you can make any changes, you need to gain insight on your teaching. Asking students to provide feedback and engaging them in the assessment process lets them know that you respect their thoughts and value their contributions, and they may find it empowering and enjoyable. Students are able to see research in action and gain an appreciation for how it informs practice.

The following are some specific strategies for gaining feedback from your students, adapted from *Classroom Assessment Techniques* by Thomas Angelo and Patricia Cross (1993).

- **The Minute Paper**

The minute paper is a short exercise in which you ask students to write for one minute on two questions: What was the most important thing you learned today, and what question still remains in your mind after today's class?

- **The Muddiest Point**

This assessment method is similar to the minute paper. Students write a one-minute essay on the muddiest point that remains in their minds after a lecture, demonstration, or presentation.

- **The One-Sentence Summary**

In this method, students write and then discuss a one-sentence summary that describes the content covered in class.

- **Directed Paraphrasing**

In directed paraphrasing, students summarize a concept or procedure in two or three sentences.

- **Applications Cards**

Here, the instructor asks students to think of real-world applications of topics discussed in class.

When using these strategies in class, make sure you tell your students that you are not grading the responses, but trying to get a feel for their understanding. Asking students to reply anonymously may help dispel any anxiety. After you have collected the responses, read them carefully. If you don't have time to closely analyze responses, at least do a quick tally to see if the same muddy points or questions keep coming up. Or sort responses into piles that represent students who seem to get it and those who don't. Share what you've learned with students, and change what you do in class accordingly.

III. Peer Review

Another valuable way of receiving feedback on your teaching is through peer review. In their own classrooms, instructors are often so busy presenting information, facilitating discussions, monitoring student groups, answering questions, and keeping an eye on the time that they may not notice issues that can negatively impact learning. Having a peer in the classroom who is expressly dedicated to observation can be invaluable.

In peer review, a colleague sits in on a class and offers feedback from a different perspective. Peer review does not have to involve advice or judgment. Often just having more information on what is going on in class can make a big difference in how an instructor prepares and presents lessons.

In some colleges, formal peer review programs exist, often as a requirement for new instructors and sometimes as a professional development option for tenured instructors. Generally, a team of more experienced instructors make observations and comments on the teaching dynamics they observe in a classroom.

If your college does not have a formal program, informal peer review is another option. This can be as simple as asking a colleague to sit in on a class meeting and take notes on what she sees and experiences. It's best to ask a more experienced colleague, but even a novice can provide valuable feedback. Let that person know what specifically you would like feedback on—presenting information clearly, facilitating groups, or fostering a welcoming community.

IV. Teacher Reflections

Another important source of information, of course, is yourself. Reflecting on your own teaching—shortcomings as well as successes—is a way to make sense of your own experiences and to gain perspective on the day-to-day workings of your own classroom. Writing down your thoughts and observations can also give you an outlet for the frustrations, disappointment, and conflict you will undoubtedly run into in the classroom. Reflection exercises can help you think through problems, find solutions, and come to closure on issues that affect your teaching.

The simplest and easiest way to keep track of your thoughts is through keeping a journal. Try writing about only one class every week, or writing only when there is a problem that needs extra attention.

No one else will be reading your journal, so write honestly. You may choose to write about your classroom environment, a new teaching technique, or strategies for reaching different learners. Look over the list of topics in the table of contents for this course if you are stuck for ideas to write on. Later, you will be able to look back and track your own progress as a teacher.

Here are some questions to get you started:

1. What aspect of your teaching are you most satisfied with? Why?
2. What aspect of your teaching are you most dissatisfied with? Why?
What can you do to change it?
3. What is the most surprising or unexpected thing that has happened in your classroom?
4. What has been most difficult?

Section 4: Self-Assessment and Resources

I. Looking Back at Your Notebook

Look back at what you wrote at the beginning of this module about the assessment methods you use in class and those you might use in the future. Write down the one or two assessment strategies you've learned in this module that can help you meet your goals for a class you are now teaching or about to teach. Talk them over with a colleague.

II. Resources and Readings

For general information on assessment:

Angelo, Thomas A., and K. Patricia Cross. *Classroom Assessment Techniques*. San Francisco: Jossey-Bass Publishers, 1993.

Saphier, Jon, and Robert Gower. *The Skillful Teacher*. Acton, Mass.: Research for Better Teaching, Inc., 1997. (This book was written originally for K–12 teaching, but includes an outstanding chapter on assessment.)

For classroom assessment:

Cross, K. Patricia. Developing Professional Fitness Through Classroom Assessment and Classroom Research. In *The Cross Papers*, No. 1. Phoenix: League for Innovation in the Community College, 1997.

For more information on grading systems, see the following link:
<http://ctl.unc.edu/fyc10.html>.

III. Summary of Module 6

Assessment offers critical data about teaching and learning and can alter the direction and decisions made in a course. It also greatly impacts student and teacher success.

When thinking about assessing teaching and learning:

- You need to *tie assessments to course goals and outcomes*.
- You need to *create formative assessments* that can be used to *inform instructional practices and to give students advice* without worrying about grades.
- You need to *design summative assessments* that can be used to *gather information on student learning* in order to assign a grade.
- Above all, you need to *consider assessments as tools for improving teaching and learning*. Effectively assessing your students will measure what they have learned, and effectively assessing yourself will measure what you have been successful teaching.

Assessment Flowchart: From Micro to Mastery

Learning Outcomes	Formative Assessment	Summative Assessment
Student goals & outcomes, e.g., what students should know or be able to do upon course completion	Lesson/module activity evaluation, e.g., minute paper, quiz, escape problem, practice/rehearsal, discussion, worksheet, summary, daily instructor observations, etc.	Cumulative, mastery, e.g., midterm/ final exam, portfolio, timed performance, evaluation rubric, etc.