

Urban Policy

Calculus

Lively Arts

Minute Paper

Accounting

Metaphysics

Pre/Post

Syllabus

Cyberlaw

Primary Trait

Cervantes

COURSE-Based Review and Assessment

Methods for Understanding Student Learning

office of **Academic Planning & Assessment**
University of Massachusetts Amherst



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This handbook is one of two campus publications designed by the Office of Academic Planning and Assessment (OAPA) to guide the practitioner through the steps of student learning assessment. *COURSE-Based Review and Assessment: Methods for Understanding Student Learning* offers strategies for assessing student learning at the course level and is particularly useful to instructors developing assessment strategies for their courses. The companion publication *PROGRAM-Based Review and Assessment: Tools and Techniques for Program Improvement* focuses on the assessment at the department or program level and is particularly useful to department or program chairs, as well as others interested in program assessment, to guide program review and improvement. Both publications are available through OAPA.

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Letter to Instructors

Assessment as a Teaching Tool

Across higher education there is a growing demand for systematic and thoughtful student learning assessment. In general, however, state legislators, state higher education boards, and administrators have been more enthusiastic about assessment than have academics. In part, faculty members' ambivalence towards assessment is fueled by their perceptions that much of what is done in the name of assessment is of little use to them in improving their own teaching, student learning, or the curriculum.

Indeed, until fairly recently, much of assessment has focused more on issues of external accountability than on developing assessment activities that directly improve educational practices. Among the reasons why the assessment effort has had little effect on the teaching-learning process is that faculty have not been adequately involved in identifying relevant assessment questions or in developing appropriate assessment methods that could indeed inform teaching and learning.

This lack of faculty involvement is unfortunate because, at its best, course-based assessment can facilitate student learning by:

- *Helping you clarify your teaching goals and what you want students to learn*
- *Giving your students a better understanding of your expectations for their work in your course and how you evaluate their performance*
- *Opening up the lines of communication and feedback between you and your students*
- *Actively engaging students in their own learning*
- *Providing you with increased information about student learning in your classroom, allowing you to adjust your teaching as the course progresses*

Our hope is that this handbook will serve as a useful tool in helping you develop course-based assessment strategies that help your students learn. Please consider it as only one catalyst for your own ideas. I hope the information provided here will help you see assessment not as a chore, but as an opportunity to use your own inquiry skills to investigate the teaching and learning questions you find most relevant, compelling, and intriguing. And, as always, please contact our office if you would like additional information or assistance.

Martha L. A. Stassen, Ph.D.
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How to Use this Handbook...

Understanding “why”

If you're new to assessment, Chapter 1 provides an overview of what we mean by “assessment” and an introduction to its uses in the classroom. The introductory phase of assessment involves building a base of understanding about the benefits and tools of assessment, and about what you want to learn from the process. It is here that you identify why and what you want to assess.

Defining goals and objectives

If you already understand what assessment is and know why you want to assess, Chapter 2 can help you begin to adapt your course to include assessment. An effective assessment strategy is based on clear, explicitly stated goals and objectives. This chapter guides you through the process of writing course goals and objectives, identifying existing assessment methods, and analyzing your syllabus.

Defining the focus of course-based assessment

If you know your goals and objectives, Chapter 3 will help you decide whether to assess those goals at the moment or over time. During this phase, you will address the “how” of assessment and focus on when and why to use classroom-based techniques for short- or long-term assessment. You will also explore the importance of engaging students in the assessment process.

Techniques for assessing student learning

If you know you want to assess and have a good idea of what assessment in your classroom should look like, Chapter 4 will help you identify strategies and methods to collect assessment data at key points in the semester. *Chapter 5* introduces techniques to assess student learning throughout the semester and looks at ways to structure course assignments and the syllabus to facilitate ongoing assessment.

Understanding and using your results

If you're ready to use what you've learned from your assessment data, Chapter 6 will help you put it all together. Understanding what the data tell you is key to using the results to enhance teaching and learning in your classroom. Your findings serve as an example of your accomplishment and may be used to guide curricular revisions and improvements.

Chapter 1

■ Getting Started: What is Course-Based Assessment?

The purpose of this chapter...

This chapter offers basic definitions and explanations of assessment terminology and tools. It describes the similarities and differences between assessment and grading, as well as what assessment can mean for your students. Reasons to assess and common questions about assessment are also included.

Chapter 1 *At A Glance*

What is assessment?

Assessment and grading

Why assess?

What is course-based assessment?

Assessment challenges at research universities

Assessment: your students and you

Questions and answers

“...a learner-centered, teacher-directed approach designed to improve student learning in the individual classroom.”

– Wright, B. D. (1991)

What is Assessment?

The word “assessment” has taken on a variety of meanings within higher education. The term can refer to the process faculty use to grade student course assignments, to standardized testing imposed on institutions as part of increased pressure for external accountability, or to any activity designed to collect information on the success of a program, course, or University curriculum. These varied uses have, unfortunately, moved us away from a focus on the central role that assessment should play in educational institutions – the gathering of information to improve institutional practices.

Therefore, for the purposes of this handbook...

Assessment is the systematic collection and analysis of information to improve student learning.

Assessment and Grading

When the issue of course-based assessment is raised, faculty members often say, “I already do assessment. I grade student assignments.” Grades are indeed one measure of student achievement. There are significant drawbacks, however, to using grades to meet assessment’s primary goal – to improve teaching and learning.

Assessment links student performance to specific learning outcomes in order to provide useful feedback to the instructor and students about how successfully students are meeting these outcomes. Traditional grading, which offers one “score” to represent the sum total of students’ performance across a whole host of outcomes, does not provide the sort of detailed and specific information necessary for linking student performance to improvement. Because grades don’t tell you about student performance on individual (or specific) learning goals or outcomes, they provide little information on the overall success of your course in helping students attain the specific and distinct learning objectives of interest.

Grades are global evaluations that represent the overall proficiency of students. They *don’t* tell you about student performance on individual learning goals...

Why Assess?

An effective instructor understands that it is not enough to present course material to students and hope that they get it, assuming that some will and some will not. Learning occurs when there is an interplay between the teaching process and the outcome. When assessing learning, the instructor identifies specific goals and objectives for each course, systematically gauges the extent to which these anticipated outcomes actually occur and determines to what degree learning takes place.

Assessment also: ***makes the learning process more effective*** and consistent by systematically linking assignments, course structure and grading practices to intended learning goals; ***helps instructors become better teachers*** by offering specific feedback on what is working or not working in their classrooms; and ***provides systematic feedback to students*** about their own progress.

First, answer these questions

1. *What do you really want students to know and learn?*
2. *What are your students actually learning?*
3. *What can you do to help students learn what you believe they need to know?*

Then, follow these steps

1. *Identify and articulate what students should learn in your class*
2. *Develop tools to measure student learning*
3. *Establish systems to compile and analyze the data you collect with these tools*
4. *Use the information gathered to improve/adapt curricula, pedagogy, and goals*

What is Course Assessment?

Course-based Assessment refers to methods of assessing student learning within the classroom environment, using course goals, objectives and content to gauge the extent of the learning that is taking place.

Assessment Challenges at UMass Amherst and other Research Universities

The advantages to both instructor and student from classroom assessment are recognized and accepted at colleges and universities across the country. There are, of course, particular challenges for large research universities. However, there are faculty at institutions like UMass who are finding ways to use formal classroom and institution-wide assessment to improve practice. The websites for these campuses are included in the Sources and Resources section of this handbook. Examples of their work are provided throughout this handbook.

Assessment: Your Students and You

Assessment: Benefits for Students

Assessment designed to facilitate improved student learning can offer a number of benefits to students. For students, assessment can mean:

- clarifying their instructors' expectations for them
- focusing more on learning as they come to see the connection between learning and course content
- becoming more self-reflective learners
- understanding their own strengths and weaknesses as students

Assessment: Benefits for the Instructor

As an instructor, you can use assessment to:

- provide a more learning-centered, student-responsive classroom environment
- employ a variety of assessment techniques described in later chapters to stay on top of student learning as it occurs
- adjust the teaching process to accommodate gaps in learning that can be tied to methods of instruction
- become more student-responsive in terms of facilitating learning and acquisition of knowledge

Helping students understand these benefits is key. Enlisting student investment in the assessment process can both make the results more meaningful and encourage students' active participation in the learning process. Consistent and constructive feedback to students about the results of your in-class assessment can help you accomplish this goal. (See Chapter 3 for ideas on how to engage students in assessment)

Questions and Answers

Q. Doesn't assessment ask me to become an education researcher, conducting research in the classroom on how and why students learn?

A. If we define research as systematically making observations and collecting data, then assessment certainly may be looked at as classroom research, research that some faculty may want to pursue. However, the primary purpose of classroom-based assessment is to improve the teaching/learning process by identifying new ways to re-examine the courses you teach and to measure what works with students and what doesn't.

Q. Won't classroom-based assessment add greatly to my workload?

A. Articulating course goals in measurable terms and developing assessment tools and data collection methods will be time-consuming at first. However, you may find that what originally seemed like a lot of unnecessary work may actually generate renewed interest in an old course and a recharged excitement about teaching. Once you've figured out how assessment fits into your teaching style and goals and have developed the tools you'll need to implement it in your classroom, student evaluation may become easier and more efficient, freeing up more of your time.

Q. Assessment activity is not established as part of the faculty reward system on campus. How can I benefit from assessment on a professional level?

A. Assessment activity is not yet an explicit part of the faculty reward system but is taking on more institutional importance. Assessment can also benefit you professionally by improving your teaching skills and facilitating your interactions with students, which are important to the faculty reward structure. In addition, many grant funding agencies now require strong assessment components to any projects designed to improve teaching and learning.

Q. I'm convinced of the potential benefit of bringing assessment into my classroom, but I'm unclear where to start.

A. Once you've made the decision to do classroom-based assessment, the actual process is quite simple and focuses around identifying course goals and objectives, and developing assessment tools to evaluate how well you and your students meet those goals during the semester. The next chapter in this handbook helps you get started on this plan.

Chapter 2

■ Adapting Your Course to Include Assessment

2

The purpose of this chapter...

First outlining ways to get started with assessment, this chapter goes on to offer suggestions on how to define course goals and objectives and provides a worksheet to help you tie goals and objectives to your course syllabus. It helps you determine what assessment methods you are already using and discusses the ways to start including more deliberate assessment in the courses you teach.

Chapter 2 *At A Glance*

Suggestions for getting started

Steps in the process

Sample goals and objectives

Questions and answers

“Course-embedded assessment involves taking a second look at materials generated in the classroom so that in addition to providing a basis for grading students, these materials allow faculty to evaluate their teaching.”

– Palomba, C. A. & Banta, T. W. (1999)

Suggestions for Getting Started

At its most basic, the assessment process can be broken down into three parts:

- 1. establishing student learning goals and objectives for the course*
- 2. measuring whether these goals have been met*
- 3. using the results to improve teaching and learning in the course*

You already go through these steps, at some level, whenever you develop a new course or consider revising an existing one. In formal assessment, these steps become more systematic and detailed to ensure clearly articulated links between what you want students to learn and your understanding of what they actually do learn.

In this chapter, we will walk you through each of these steps. Before you begin, take some time to reflect on the course you will be assessing.

- **Take an inventory** of your classroom teaching goals to become more aware of what you want to accomplish in your courses.
- **Identify what, if any, assessment methods** (meaning, methods you use for gathering information on your students and their performance) you are currently using (e.g., tests, exams, surveys etc.).

Steps in the Process

Step 1: Establishing Learning Goals and Objectives

Just like the term “assessment,” there are varying definitions of “goals” and “objectives.” For consistency and ease of understanding as you work through this handbook, these terms will be used as defined:

Goals describe broad learning outcomes and concepts (what you want students to learn) expressed in general terms (e.g., clear communication, problem-solving skills, etc.).

Objectives describe specific learning behaviors that students should exhibit in the context of the course. Objectives are the specific skills, values and attitudes students should exhibit that reflect the broader goals (e.g., for students in a freshman writing course, this might be “students are able to develop a cogent argument to support a position”). Often in the assessment literature, “objectives” and “outcomes” are used interchangeably.

Identifying and Articulating Course Goals

Again, course goals reflect the broad concepts and skills you want students to develop as a result of your course. Explicit goals can help you focus the design and structure of your course and guide your development and implementation of specific, measurable course objectives.

So begin by asking yourself, “What are the major academic goals I want students to achieve in this course?” and write down your responses. Remember that the goal statements can be quite broad and theoretical. You will become more specific when you develop the learning objectives for the course.

If you are having trouble identifying course goals, try answering these questions:

- Why do you use current assignments, course structure, and activities? What is it you want to help students learn through these course elements?
- What do you want your students to learn and in what ways do you want them to grow?
- In the past, have your goals for students been realistic?
- What do your students usually learn and in what ways do they usually grow?
- Where do students have difficulty; what do they consistently not get?
- If you ran into a student who had taken your class the previous semester, what would you hope the student would say about what she took away from your course?

Drafting Course Objectives

Course objectives transform goal generalizations into specific student performance and behaviors that demonstrate student learning and skill development.

Here are three questions that focus on objectives in slightly different ways. Use them to help you identify course objectives:

- For each of your stated goals, what are the specific student behaviors, skills, or abilities that would tell you this goal is being achieved?
- Ideally and briefly, what would a skeptic need (what evidence needs to be present, what specific behavior needs to be visible) in order to see that your students are achieving the major goals you have set out for them?
- In your experience, what evidence tells you when students have met these goals – how do you know when they’re “getting” it?

Effective Objectives

- use action words that specify definite, observable behaviors (See table on next page).
- indicate an appropriate level of attainment
- are assessable through one or more indicators
- comprehensively and meaningfully define a goal
- are realistic and achievable
- use simple language

Adapted from California State University, Bakersfield, PACT Outcomes Assessment Handbook (1999).

The University of Iowa maintains an on-line version of the Cross and Angelo (1993) *Teaching Goals Inventory* (<http://www.uiowa.edu/~centeach/tgi/>). On the site, you can rate the importance of a host of learning goals and submit the results. You are provided with a summary report of the relative importance you place on various types of goals.

noteworthy

Bloom's taxonomy (1964) *is a well-known description of levels of educational objectives. It may be useful to consider this taxonomy when defining your objectives.*

Level	Cognitive Behaviors
1. Knowledge	to know specific facts, terms, concepts, principles, or theories
2. Comprehension	to understand, interpret, compare and contrast, explain
3. Application	to apply knowledge to new situations, to solve problems
4. Analysis	to identify the organizational structure of something; to identify parts, relationships, and organizing principles.
5. Synthesis	to create something, to integrate ideas into a solution, to propose an action plan, to formulate a new classification scheme
6. Evaluation	to judge the quality of something based on its adequacy, value, logic or use

WORD POWER

Concrete verbs such as “define,” “argue,” or “create” are more helpful for assessment than vague verbs such as “know,” “understand” or passive verbs such as “be exposed to.” Some examples of action words frequently used in objectives are included in the table below.

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
define	classify	apply	analyze	arrange	appraise
identify	describe	compute	appraise	assemble	assess
indicate	discuss	construct	calculate	collect	choose
know	explain	demonstrate	categorize	compose	compare
label	express	dramatize	compare	construct	contrast
list	identify	employ	contrast	create	decide
memorize	locate	give examples	criticize	design	estimate
name	paraphrase	illustrate	debate	formulate	evaluate
recall	recognize	interpret	determine	manage	grade
record	report	investigate	diagram	organize	judge
relate	restate	operate	differentiate	perform	measure
repeat	review	organize	distinguish	plan	rate
select	suggest	practice	examine	prepare	revise
underline	summarize	predict	experiment	produce	score
	tell	schedule	inspect	propose	select
	translate	shop	inventory	set-up	value
		sketch	question		
		translate	relate		
		use	solve		

Adapted from California State University, Bakersfield, PACT Outcomes Assessment Handbook (1999).

What are some examples of effective goals and objectives?

The goals and objectives that follow are examples for you to consider as you think about your own.

Biology

Course Goal

Students will learn and demonstrate use of the scientific method for original scientific research.

Objectives

- The student will demonstrate that s/he has formulated an hypothesis, designed a good experiment, controlled variables, operationally defined terms and interpreted data appropriately
- The student will demonstrate understanding of the scope and sequence of the scientific report format by outlining and completing a report based on one of the in-class experiments.

adapted from California State University Multi-Campus Team Drafts (1998).

English Composition

Course Goal

Students will learn to acknowledge and adjust to a variety of writing contexts.

Objectives

- The student will demonstrate through discussion, planning and writing an awareness that audiences differ and that readers' needs/expectations must be taken into account as one composes text
- The student will demonstrate in writing the ability to draft and revise work with a sense of purpose and an awareness of audience

adapted from California State University Multi-Campus Team Drafts (1998).

Management

Course Goal

The student will identify those activities that are most likely to distinguish effective, well-managed technology development programs from ineffective programs.

Objectives

- The student will outline the six components of an effective management development program.
- The student will develop a formal evaluation checklist to assess program success.

adapted from Diamond, Designing and Assessing Courses and Curricula (1998).

Religion

Course Goal

The student will demonstrate an understanding of the theological foundation of the course.

Objective

- When given a definition of the term "religion," the student will identify which of the following characteristics is emphasized: feeling, ritual activity, belief, monotheism, the solitary individual, social valuation, illusion, ultimate reality, and/or value.

adapted from Diamond, Designing and Assessing Courses and Curricula (1998).

History

Course Goal

The student will learn to work as a “knowledgeable practitioner” in the discipline.

Objectives

The student will be able to:

- describe relevant historical events and people
- argue as an historian does
- take a position on a debatable historical issue
- use historical data as evidence for a particular position or point of view
- raise and answer counter-arguments

Mathematics

Course Goal

The student will be able to apply course concepts to mathematical problem-solving models.

Objectives

- The student will be able to solve algebraic and quadratic equations
- The student will demonstrate the ability to explain each step in the problem solving process

Economics

Course Goal

Students will use economic theory and modeling to explain government policies and their effects.

Objectives

- Students will choose one topic relevant to current economic events and explain its relevance in terms of economic principle and theory
- Students will develop and run a statistical model analyzing the current rate of inflation in relation to the CPI

Physics

Course Goal

The student will be able to state and apply physical concepts in their own words and to discuss what they don't know.

Objectives

- The student will select one physical law and design an experiment to demonstrate its application
- The student will write a report on the experiment, including a section addressing unanswered questions

Education

Course Goal

As a result of taking this course, the student will be able to evaluate and apply educational theory and philosophy to the reality and challenge of today's system of education.

Objectives

At the conclusion of this unit, the student will be able to:

- discuss the philosophical foundation of education
- identify popular theories of education and teaching
- begin to apply philosophy and theory of education to their own development as an educator
- assess the contribution and development of the other members of the assigned task group

Examples on this page have been adapted from Walvoord & Anderson, Effective Grading (1998).

Step 2: Identifying and Reviewing Existing Assessment Techniques

The next step in the assessment process is to identify what information you already collect about student progress and how these measures tie to your intended learning goals and objectives. Consider the following:

1. *What information on student learning/performance do you currently collect (e.g., first-day surveys, class assignments, tests, etc.)?*
2. *How informative are each of these to understanding the student learning process?*
3. *How do these data sources relate to your newly articulated goals and objectives?*
4. *Are there gaps between the information you collect and your course objectives? What other information do you need to have to understand whether students are meeting these objectives? (Identification of these gaps will be useful in Chapters 4 and 5 when additional assessment techniques/options are provided).*

noteworthy

As you continue to go through this workbook, keep in mind that existing assignments can be made more valuable by self-consciously linking them to the objectives they are designed to assess. For example, the grade for a final exam can be made more meaningful in determining the extent of student learning if each construct or section of the exam is tied to specific, identified learning objectives for the course and discrete scores for each of these constructs is recorded separately.

Step 3: Reviewing the Course Syllabus

At this point in adapting your course to include classroom-based assessment you have developed specific course goals for student learning, outlined action-based course objectives to help you measure student knowledge, behavior, and skills, and identified current assessment techniques.

You should now look critically at whether your existing course syllabus explicitly outlines anticipated learning outcomes and ties course content and requirements to these outcomes. This is your first step in using the assessment process to develop improved communication between you and your students. Without clearly stated objectives that are linked to class content, it will be more difficult to implement classroom assessment.

The Course Syllabus and The Course Skeleton

The course syllabus is one of the first lines of communication between you and your students. You will not be able to accurately assess student learning without an effective syllabus that details course goals, expectations and requirements. These elements of the syllabus will serve as a starting point for implementing classroom assessment in your course.

For example, chances are that if your original syllabus did not state course goals, it may not be entirely clear to students how course goals and their own learning connect in the course. A good place to start is to develop a course skeleton that lists course goals and objectives and how each assignment will contribute to successful learning outcomes. An example of a course skeleton follows.

Economics Course Skeleton

Course: *Economics and Political Thought*

Goal #1:

Students will use economic theory and modeling to explain government policies and their effects.

Outcomes reflecting this goal:

1. Students will choose one topic relevant to current economic events and explain its relevance in terms of economic principle and theory.

Assignments that demonstrate accomplishment of this objective:

- a. Five-to-seven-page midterm paper
- b. Five minute in-class presentation based on midterm paper

2. Students will develop and run a statistical model analyzing the current rate of inflation in relation to the Consumer Price Index (CPI).

Assignments that demonstrate accomplishment of this objective:

- a. Data analysis preparation report describing data, steps in developing the model and methodology
- b. Statistical analysis results and one-page write-up

adapted from Walvoord & Anderson, Effective Grading (1998).

WORKSHEET

Worksheet for your course

Goal #1: _____

Outcomes reflecting this goal:

1. _____

Assignments that demonstrate accomplishment of this outcome:

- a.
- b.

2. _____

Assignments that demonstrate accomplishment of this outcome:

- a.
- b.

Goal #2: _____

Outcomes reflecting this goal:

1. _____

Assignments that demonstrate accomplishment of this outcome:

- a.
- b.

2. _____

Assignments that demonstrate accomplishment of this outcome:

- a.
- b.

Questions and Answers

Q. I teach more than one course a semester. Does it make sense to incorporate classroom-based assessment into only one of my courses or should I do it for each course I teach?

A. Classroom-based assessment techniques can be adapted to virtually any course so you could, in theory, begin using them in each course you teach. In practice, however, assessment specialists generally recommend beginning with one course. This will allow you the time you'll need to identify desired learning outcomes for the course, adapt your syllabus to track those outcomes and tailor assessment methods to course-specific needs. Later, you can use this initial experience to bring assessment into other courses that you teach.

Q. Aren't assessment methods more quantitatively-based than qualitative. How can I apply them to assignments where the answers are not quantifiable, such as research papers and essay exams?

A. Not all approaches to assessment must use quantitative data. A variety of methods that will be discussed later in this handbook are based on qualitative techniques. Identifying specific goals and objectives, as well as quality standards, for qualitative assignments can help you in your assessment of these types of assignments.

Q. How do I determine what the most appropriate assessment method is for a particular assignment or group of assignments?

A. Selecting an appropriate assessment method for course assignments is tied directly to the learning outcomes designated for each assignment and the traits within that assignment that you have identified as important. The next chapter of this handbook will describe the various assessment methods and discuss ways to select the most relevant one for each assignment.

Chapter 3

■ Selecting When and How Often to Assess

The purpose of this chapter...

Assessment can be done at a specific moment or over an extended period. This chapter explores ways to help you determine whether to assess student learning at a particular point in time or throughout the semester. It also provides an overview of classroom assessment techniques for both short and long-term assessment models and discusses ways to make sure students are at the center of your assessment activities.

Chapter 3 *At A Glance*

Deciding on whether to assess “at specific points in time” or “over time”
Assessing student learning at specific points
Assessing student learning over the course of the semester
Engaging students in assessment
Questions and answers

3

“Many faculty have been ‘doing assessment’ for their own sake, and have not been overwhelmed with the task, without particular experience in evaluation methodology.”

– Nichols, J. O. (1995)

Beyond Goals and Objectives

Once you have outlined course goals and objectives and identified the assessment techniques you’re already using, you’ll want to think about the length and scope of the new course-embedded assessment techniques you’d like to implement.

Deciding Whether to Assess “at Specific Points in Time” or “Over Time”

Classroom assessment can be conducted over the course of a semester or it can be done at a key moment during a specific part of class. Whether you assess student learning on a longer-term basis or “at-the-moment” really depends on what you are trying to evaluate and learn. (As is true in research generally, the inquiry method you use is dependent upon the questions you want to answer.) Think about what you want to learn from assessment results. Key questions to consider include:

1. Am I trying to gauge student learning of class content in general?	Yes	No
2. Do I care about the knowledge students bring into the classroom with them at the start of the semester compared to the learning they will take away with them at the end?	Yes	No
3. Does the extent of progress or improvement over a period of days or weeks matter?	Yes	No
4. Do I want to assess the level of students' reflective thinking about a particular reading assignment?	Yes	No
5. Am I interested in specific areas of learning that I have identified as particularly relevant or important?	Yes	No
6. Am I concerned about how well students understand a complicated lecture?	Yes	No

If you answered “yes” to questions 1, 2 or 3, you should plan on using an assessment method that gauges student learning over time. If you answered “yes” to questions 4, 5, or 6, you will need an assessment method that evaluates student learning at a particular point in time. Of course, it is quite possible that all the questions are of interest to you and you may want to incorporate both types of assessment in your model. Specific ways to assess learning on both a short- and a long-term basis are discussed throughout this chapter. Chapters 4 and 5 look at these methods in greater detail.

Assessing Student Learning: Specific Points in Time

It is often valuable to know whether students are keeping up with a particularly difficult lecture or have understood complicated reading assignments at various points in the semester. While the ability to understand key concepts should certainly increase as the semester progresses, levels of understanding and learning can also rise and fall throughout the semester based on the material being covered at any given point in time. In this way, “at-the-moment” assessment can be an important teaching tool that allows you to adjust your instruction as the semester continues to accommodate fluctuations in student progress. Examples of **short-term assessment**, (which are described in detail in **Chapter 4**), include the following:

- Minute paper
- Classroom polling techniques
- Reflective thinking activities
- Muddiest point exercises
- Primary trait analysis (scoring rubrics)
- Background knowledge probes

Assessing Student Learning: Over the Course of the Semester

One of the most effective ways of assessing student learning from the start of the semester to the end is to track student progress throughout the semester. It is somewhat more unusual for instructors to do this type of analysis because collecting data about student learning on specific learning outcomes across assignments is sometimes seen as troublesome and time-consuming. This is not always the case and can be avoided with a well-organized assessment plan. It is frequently worth the effort because increases in knowledge and understanding from the beginning of the semester/course until the end can tell you how well students learned and whether long-term course goals and objectives were achieved. Long-term assessment can be especially helpful in evaluating how well a course has succeeded in meeting its central goals. It can also help identify areas of content or instruction that were not as successful as others in facilitating student learning. Portfolio Analyses, Systematic Progression of Assignments, and Pre- and Post-Tests are all examples of “*over-time*” *assessment*. They are discussed in greater detail in *Chapter 5*.

Engaging Students in Assessment

One of the great benefits of many assessment techniques is that they provide an opportunity to create clearer communication with your students. Key to the success of this process, however, is engaging your students in assessment, motivating them to take the activities seriously, and helping them see how it can become a valuable complement to their learning. Angelo and Cross (1993) write that:

“Students are unlikely to realize the value of assessment, or of self-assessment, unless faculty make them explicitly aware of it through instruction and modeling. When students are helped to see the useful ways that classroom assessment can inform teaching and learning, they are much more likely to participate fully and positively” (p. 32).

Angelo and Cross also recommend that you maximize the positive impact of classroom assessment by letting students know:

- *what the assessment results were*
- *how you interpreted them*
- *what you intend to do in response*

As Wright (1991) puts it, classroom assessment has the potential to increase “*interest in learning and change attitudes and behaviors*” when students become more involved, self-reflective learners (p. 585).

How Can You Enlist Student Involvement in Assessment?

1. Make it Count

Students are people, too, and like the rest of us, they want to know what is in it for them. What will they gain by taking course-embedded assessment seriously? Altruistically, we may not want to attach grades or rewards to assessment exercises. Unfortunately, this often translates into a lack of importance in the eyes of many students. Therefore, for the most potentially reliable results:

- make all assessed assignments count in one way or another
- let students know how and why it will count
- explain how you will use the assessment component to evaluate their work

For instance, if you are using a scoring rubric, give them a copy of the evaluation standards, or explain the standards to them in class. You can even ask them to evaluate their own work using the rubric.

2. It's a "Two-Way-Street"

Beyond grades, students are also intelligent consumers. Help them understand why assessment matters and how it can help you become a more effective teacher and help them become more efficient learners. Explain how you will use the data to adjust the course as it goes along and to fine tune it before you offer it again. Let them know that their input will help future students who take this course. This will help students:

- invest in the process
- see the big picture outside of the immediate effect assessment will have on them
- keep lines of communication open
- facilitate student-faculty interaction

3. Important to Their Future

The third key component to helping students understand the importance and validity of classroom assessment is to show them how it will benefit them, beyond grades, now and in the future. Use course goals, objectives and anticipated learning outcomes to accomplish this, making sure to tie these to their future study and the world off-campus and post-degree:

- Clearly articulate the "transferability" of the skills you are asking them to produce
- Stress what the data can tell all of us about student learning, skills, abilities and achievements in general and how it can help them, as individuals, become self-reflective learners
- Show them how to use the data to alter and/or improve their own performance

In looking at how to engage students in assessment, Palomba and Banta (1999) define the assessment process as a "*natural responsibility to our students and each other*" that can "*help create high expectations for students as well as provide opportunities for synthesizing experiences, for active learning and for prompt feedback*" (p. 346). The challenge becomes helping students see the importance of the cycle.

Questions and Answers

Q. When deciding whether to use “at specific points in time” or “over time” assessment, isn’t a final exam for the course an easy way to accomplish both types of assessment at once?

A. While administering a final exam at the end of the semester will give you an idea of students’ learning at that point in time, standard year-end evaluations are final judgments that do not allow time for instructional change and may not provide real insight into student learning on specific goals and objectives. “At specific points in time” assessment offers both you and your students the chance to change direction, rethink priorities or keep going with what’s successful. “Over time” assessment, unlike final exams, shows the progression of thought and provides the ability to document learning outcomes.

Q. How can I learn more about different assessment methods and how to implement them?

A. *Chapters 4 and 5* in this handbook will give you a basis for understanding and beginning to implement classroom-based assessment techniques. These chapters outline several specific methods and describe how to implement them, how to collect and keep track of what you find out, and how to evaluate the results in order to fine tune course content and instruction if necessary.

Chapter 4

■ Assessing Student Learning at Specific Points in Time

The purpose of this chapter...

Assessing student learning at specific points in your course can mean assessing at the start of the semester, after a particularly in-depth lecture, at times when you think ideas are not flowing as freely as they might, to clear up potential areas of confusion, or to encourage reflective thinking on particular issues or topics. This chapter gives you examples of a variety of moment-specific assessment techniques.

The following methods of assessing student learning at specific points in time facilitate the learning experience and help students become more conscious of their learning. By linking course feedback to your goals and objectives, the learning/evaluation process becomes more “real” for students. It gives them the opportunity to reflect on their own learning in the context of articulated learning outcomes for the course and to gauge the extent to which they are meeting these outcomes. They, and you, can then make timely adjustments to teaching and learning in the classroom.

Chapter 4 *At A Glance*

Assessing student background and experience
Assessing student learning on key points
Considerations for large lecture classes
Examples and worksheets (Appendix)

“One important distinction in assessment methods is between techniques that directly determine whether students have mastered the content of their academic programs and those that ask students to reflect on their learning.”

– Palomba, C. A. &
Banta, W. (1999)

Assessing Student Background and Experience

A good starting point for classroom assessment is to gauge the level of knowledge and understanding that students bring into the classroom at the start of the semester. A **background knowledge probe** asks students not only basic questions about previous coursework and preparation but also focuses on identifying the extent to which the student may or may not be familiar with key concepts that will be discussed in the course. Use the background knowledge probe *at the beginning of the semester, at the start of a new unit, or prior to introducing a new topic.*

An example of a student background knowledge probe can be found in this chapter's Appendix

Data collected from the background knowledge probe can help you:

1. *understand the difference between student preparation and your expectations*
2. *plan and prepare for upcoming topics or units to be covered in the course*
3. *point out for students important areas in which they may lack basic knowledge and identify resources that they can access to improve their level of understanding*

Assessing Student Learning at Key Points in the Semester

Knowing what a student brings to a course or a unit is important. Knowing what learning is taking place at a specific moment in class is equally valuable. Every instructor can identify key concepts within a course. Assessing the extent to which students understand these key concepts can be especially helpful in gauging whether students are “getting” course content, or moving through the semester without a solid base of understanding on important fundamental concepts. This information can also help you know whether to slow down, move faster or adjust your syllabus to accommodate disparities in learning. Assessment methods to gauge student understanding of core concepts include:

Worksheets and examples can be found in this chapter's Appendix

Primary trait analysis

Minute papers

Misconception/Preconception check

Muddiest point

Punctuated Lectures

Chain Notes

Classroom Opinion Polls

Reading reaction

Paper reaction

Primary trait analysis

Primary trait analysis (PTA), adapted by Walvoord and McCarthy (cited in Walvoord & Anderson, 1998) combines traditional grading practices with classroom-based assessment. This technique asks the instructor to link specific goals and objectives outlined for a particular course assignment to varying levels of achievement (e.g., excellent, good, fair, poor). These levels are based on the degree to which the student has met the identified learning outcomes for the assignment. To conduct PTA, the instructor: 1. breaks down individual components, or primary traits, of an assignment that are key to successfully meeting assignment requirements; 2. identifies levels of achievement for each trait; and 3. constructs a grid (rubric) on which student achievement is scored.

For example, an essay for an English course might be analyzed for primary traits and levels of achievement as follows:

Primary trait analysis

Trait	5-Excellent	4-Good	3-Adequate	2-Weak	1-Poor
Introduction					
Argument					
Grammar					
Tone					
Conclusion					

The instructor would then check off the score for each of the five primary traits listed as important for the assignment, with a minimum total score of 5 (poor) and a maximum total score of 25 (excellent). In this way, PTA can reduce some of the subjectivity in grading and facilitate more reliable tracking of student progress on important course objectives throughout individual assignments.

This example of a PTA rubric is very simple. Others are more complex, providing definitions of what an “Excellent” introduction to an essay would look like and sometimes assigning varying numbers of points to different traits based on their importance in the assignment. (See Appendix 4-A for more information.)

Minute paper

The minute paper may be one of the most widely-used and accepted methods of classroom assessment. This method offers a quick and easy way to assess student learning at a particular point in time. Credited to Angelo & Cross (1993), the minute paper not only provides helpful feedback but requires little time or effort to administer. Several minutes before the end of class, you might stop your lecture or end the discussion to ask students to take one or two minutes to answer, in writing, several questions about the day’s work. These questions might include “What is the most important thing you learned in today’s class?” or “Do you still have questions about the material we covered today?” Students respond on a sheet of paper and hand them in before leaving.

You can use the minute paper to assess:

- Student recall and understanding
- Student evaluation of what they recall
- Student ability to self-assess their learning and understanding

key points
continued

Misconception/Preconception Check

The misconception/preconception check is a way to assess what students bring with them into class, or how they are processing information at various points in the semester. Used at the start of a course, the misconception/preconception check is a short survey, questionnaire or essay-type evaluation that asks students to comment on information and key points relevant to course content. Student answers provide the instructor with an understanding of the extent of “real” understanding or knowledge that students bring with them on the first day of class. It also offers information about misconceptions students may also have, misconceptions that the instructor can subsequently address and clear up during class.

The misconception/preconception check can also be used at various points in the semester to help assess whether :

- misconceptions are clearing up or growing
- preconceptions are being reshaped
- students are improving in their ability to assess relevant course content and filter out untruths or inaccuracies

Muddiest Point

The muddiest point exercise (Angelo & Cross, 1993) is a variation of the minute paper. Administered during or at the end of a lecture or class discussion, the muddiest point exercise asks students to think about what went on in class that day and to write about what was the “muddiest” (least clear) point in that day’s class.

This exercise:

- asks the student to reflect on the class lecture or discussion
- asks the student to decide what was understood and what was unclear
- asks the student to self-assess learning and to identify what did/did not work

One way to address the potential for confusion on key points is to incorporate into your course syllabus pre-planned times to assess students for their “muddiest point.” You can also use a more informal approach and assess for confusion or misunderstanding when you sense there may be a problem.

Punctuated Lectures

The punctuated lecture technique provides immediate, on-the-spot feedback on how students are learning from a lecture or a demonstration, and how their behavior may be influencing the process. It also encourages students to become self-monitoring listeners and self-reflective learners. This technique is designed for use in classes where lectures or lecture-demonstrations are a primary method of instruction.

This technique requires students and teachers to go through five steps:

- 1. Listen- students begin by listening to a lecture or demonstration**
- 2. Stop- after a portion of the presentation has been completed, the teacher stops the action**
- 3. Reflect- students reflect on what they were doing during the presentation, and how their behavior may have helped or hindered their understanding of the information**
- 4. Write- students write down any insights they have gained**
- 5. Feedback- students give feedback to the teacher in the form of short, anonymous notes**

Punctuated lectures can be used to monitor student listening skills throughout the semester by asking students to save their written reflections in folders. After they have done several of these self-reflection assignments, ask students what they have written, looking for patterns and changes over time.

adapted from Angelo & Cross, Classroom Assessment Techniques (1993).

Chain Notes

To respond to Chain Notes, students in a lecture course pass around a large envelope on which the teacher has written one question about the class and/or teaching of the class. The students have all been given index cards beforehand. When the envelope reaches a student, he or she spends less than a minute writing a response to the question, then drops the card in the envelope and passes it on. This assessment technique results in a rich, composite record of each individual student's reactions to the class in action. In this way, Chain Notes allow teachers a view of their class through all their students' eyes.

Chain Notes are most useful in large lecture or lecture-discussion classes where many students have little direct contact with the teacher.

When you review the cards in the envelope, categorize them into relevant groups: engaged/not engaged; interested/not interested; question/praise/neutral comment, etc. Try to detect patterns in responses. Discuss these patterns in your feedback to students. Ask for suggestions to promote more effective teaching and learning.

adapted from Angelo & Cross, Classroom Assessment Techniques (1993).

key points
continued

Classroom Opinion Polls

You may already use de facto opinion polling in your classes when you ask students to raise their hands to indicate agreement or disagreement with a particular statement. Create a short survey (one or two questions) and ask students to complete it and hand it in. By making the Classroom Opinion Polls anonymous, they will provide more honest and accurate results for you.

Classroom Opinion Polling can help you discover student opinions about course-related issues. In this way, you can better gauge where and how to begin teaching about issues that come up in students' responses, and where potential conflicts or divisions may arise. Students also learn about their own opinions, compare those opinions to others', and test their opinions against evidence and expert opinion. A number of UMass faculty use "class talk" to gather this type of information.

Classroom Opinion Polls are particularly useful in large lecture classes where there is only limited opportunity for students to express their thoughts, in preparation to discuss a controversial issue, or to assess student opinion after you have presented class material.

Use the Classroom Opinion Poll to evaluate student learning over a period of time or over the course of a semester by creating a pre- and post-assessment poll. This assessment method will help you determine whether and how students' opinions have changed in response to class discussions and assignments.

adapted from Angelo & Cross, Classroom Assessment Techniques (1993).

Reading Reaction

We often ask students to read and synthesize a wide variety of material during a course. Because the reading for one course is only part of the entire reading load a student may carry, the reading is often done in a hurry with the main purpose not to learn but "to get through it." This poses two problems:

1. The student is not reading to understand and gain knowledge, but reading to complete an assignment.
2. The student may not have the time or inclination to think critically about the reading, to judge its validity, or to evaluate its worth.

The reading reaction paper forces students to slow down the reading process and asks them to actually think about what they have read. It may be administered as a short homework assignment to be completed after the reading has been done or as an in-class assignment to stimulate class discussion. Typically, a reading reaction paper asks students to respond (or react) to the reading (i.e., what did the author say, did you agree with what was written, why/why not, etc.) in one page or less (typed or handwritten). Part of the class that day can be used to discuss student reactions to the reading, or the papers can simply be passed in to provide feedback on student levels of understanding. Either way, it is a good idea to record at least a pass/fail grade for these exercises to ensure student commitment to the task.

The reading reaction paper helps students learn by:

- building skills needed for critical thinking and argument construction
- encouraging students to take charge of a reading assignment and to judge its worth
- asking students to "think" instead of simply taking in the words as they read

Paper Reaction Exercise

In addition to asking students to analyze assigned reading, we can ask them to think critically about their own writing. The paper reaction exercise asks students to reflect back on a paper they have just written for course credit. It is usually administered during class just prior to when the students turn in the paper and is attached to the paper for the instructor's information and feedback. To complete this exercise, students might be asked to:

- think about and write a few sentences on what they really like about their papers
- write what they do not like about their papers and what they would change if they had the time
- reflect on one or two things about the subject that are still unclear even after writing their papers

This technique can be particularly effective when you have clearly stated objectives/grading criteria (using a scoring rubric like the PTA) of the paper and ask students to evaluate their own paper using these criteria. The purpose of the paper reaction task is to:

- assess student ability to reflect on what they have learned and how well they have transferred that learning into their own words
- allow the instructor greater insight into student thought processes as they relate to reading, writing and interpretation skills
- open up the opportunity for discussion about the assignment in general, the papers in particular and student response to both

noteworthy

Punctuated Lectures, Chain Notes, and Classroom Opinion Polls are particularly useful for faculty teaching large lecture classes.

Considerations for the large lecture classes (100+ students)

Faculty often raise the question of how to conduct classroom-based assessment in large lecture classes. Assessing teaching and learning in a large class, where students may feel as though they are little more than numbers on an attendance roster, is as important as assessing at the small-class level. Students in large lectures often complain about being faceless, and many do not even bother to come to class because they believe it doesn't really matter. Large lectures can be equally alienating for the instructor. An in-class exam can only begin to suggest the level at which individual students understand what is being taught in the class. Creating opportunities for student interaction and applying classroom assessment techniques can improve the teaching and learning process in large classes for both student and instructor.

Assessment in a large lecture class can be approached through:

- devising strategies to increase student involvement and make the class more interactive, thus providing increased opportunity for assessment and evaluation
- adopting assessment techniques designed to give you (and your students) quick, effective and constructive feedback on the teaching and learning process

Large Lecture Class Assessment How-To

Breaking a lecture class into interactive, self-directing groups is one strategy that can make even large classes more participatory. If the chairs are bolted to the floor in rows or if there is auditorium-style seating, students can still talk in pairs. Many teachers use *intermittent small-group interaction* to break up the lecture and to allow time to assess student learning on a more personal level. For example, some teachers stop their lecture several times during the class to ask students to compare and rework their class notes. Another strategy is to write a questions on the overhead projector and then ask students to form pairs to discuss the question. You may ask some pairs to report to the entire class.

A second strategy for making large classes more interactive and, thus, facilitating the assessment process is to give *formative, ungraded quizzes* to determine how students are comprehending course material. Using the kinds of questions that students might see on your exams, place questions on the overhead, and then give students a few minutes to respond. If the question entails multiple choices, break the question down into components that students can quickly answer. The preview of students' answers can help you determine student understanding of course content and show students problem areas that warrant further study.

A third strategy for making large lecture classes more interactive, and creating more opportunity for assessment, is to build *in tasks that ensure students come prepared to a lab or discussion section*. Time can be taken during lecture to ask students to complete a few questions, talk with a neighbor, or sketch out a lab procedure to prepare them for the lab or discussion to come. Another device for interactive learning in a large class is for the lab instructor or discussion leader to collect a "ticket" from each student before the student is allowed into class. The "ticket" might be a short statement of basic principles the student should have learned from the reading or in the lecture, thus showing the instructor that the student is prepared.

In practice, many of the assessment techniques discussed in this chapter can be used for lectures. Muddiest Points, Preconception Misconception Checks, and Minute Papers lend themselves to the large lecture venue. Punctuated Lectures, Chain Notes, and Classroom Opinion Polls all translate well into a large group setting.

Sources for Making Large Classes Interactive

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Weimer, M. (Ed.) (1987). Teaching large classes well. New Directions for Teaching and Learning (32), San Francisco: Jossey-Bass.

Appendix 4-A

Samples, Examples and Worksheets At a Glance: Student Background Knowledge Probe
 Primary Trait Analysis
 Minute Paper
 Misconception/Preconception check
 Muddiest Point

Student Background Knowledge Probe

Course: *English 251, A Survey of English Literature*
Semester: *Fall 1999*
Name:
Address:
Phone and e-mail:

What is your major and class year?

Do you have a minor? If yes, what is it?

What preparation have you had (courses, work experience, etc) that you believe will help you do well in this class?

What goals do you have for this course?

What do you already know? To help you (and me) understand the level of knowledge and experience with English literature that you bring to this course, please complete the following table by first listing the Shakespeare plays with which you are familiar and then indicating whether you read them, saw them performed in a theater, or saw them at the movies or on television.

Name of Play	Read	In Theater	Movies/TV
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Adapted from Angelo & Cross, Classroom Assessment Techniques (1993).

Primary Trait Analysis (PTA) Worksheet

It is helpful in understanding PTA, to place it along two continua: 1. The continuum from unstated criteria (“It feels like a B”) to highly explicit criteria (Primary Trait Analysis); 2. The continuum from norm-referenced scoring (grading on a curve) to criterion-referenced scoring (evaluation of student performance on predetermined standards).

PTA is both highly explicit and criterion-referenced. To construct a PTA scale, the teacher: 1. identifies the factors or traits that will count for the scoring (such as thesis, materials and methods, use of color, eye contact with client, and so on); 2. builds a scale for scoring the student’s performance on that trait; and 3. evaluates the student’s performance against those criteria.

Steps for Constructing a PTA Scale

If possible, work from examples of past student performances, grading check-lists, descriptions of criteria, comments on assignments or tests—anything that has helped you in the past to articulate criteria for students’ performances.

1. Choose a test or assignment that tests what you want to evaluate. Make clear your objectives for the assignment.
2. Identify the criteria or “traits” that will count in the evaluation. These are nouns or noun phrases, such as thesis, eye contact with client, use of color, or control of variables.
3. For each trait construct a two- to five-point scale. These are descriptive statements tailored to the assignment criteria.
For example, “A ‘4’ thesis is limited enough to treat within the scope of the essay and is clear to the reader; it enters the dialogue of the discipline as reflected in the student’s sources, and it does so at a level that shows synthesis and original thought; it neither exactly repeats any of the student’s sources nor states the obvious.”
4. Try out the scale with a sample of student work or review with colleagues and revise.

The following worksheet will help you identify the performance levels and an appropriate scoring rubric. List up to four of the primary traits you identified above and the scoring criteria you would use for each trait. We’ve provided an example below and left room for you to continue with your own.

Rating/Scoring Level

Traits	4-Excellent	3-Good	2-Weak	1-Poor
The student is able to construct a logical argument	The student takes a position and defends the position with examples and reference to the reading.	The student takes a position and defends it with examples but does not refer to the reading.	The student takes a position but does not defend it with examples or reference to the reading.	The student takes no discernible position on the issue.
1.				
2.				
3.				
4.				

adapted from Walvoord, B.A., & Anderson, V.J., Effective Grading (1998).

Minute Paper Example

Concerned that his students may not be understanding the importance of multiple points within his introductory statistics lectures, this instructor took several minutes at the end of each class to ask the following question:

“What are the five most important points from this session?”

“What one or two questions still remain in your mind?”

The students were given five minutes to write. The instructor collected the responses and read them through, making a list of “important points” and “important questions” and tallying how often each item was repeated.

Results

- ***Many points that students listed as “important” the instructor felt were simply details.***
- ***Students came up with as many as 20 different important points from the same lecture.***
- ***Some students mentioned points that he had not even brought up in the lecture at all.***

The next day, the instructor listed the 10 or 12 most common responses on the board before class. He began class by explaining the relative importance of each point and their relationship to each other. He also told them which points were not related and used the discussion to answer several of the important questions that had been raised in the minute papers.

After a month of using the minute paper at the end of each class, with a feedback session at the start of the next, the average number of different “important points” dropped from 20 to 8. Repeated use of the minute paper helped his students learn to listen more carefully and helped him realize the importance of being explicit in his lectures.

adapted from Angelo & Cross, Classroom Assessment Techniques (1993).

Misconception/Preconception Check Example

At the start of the semester, the instructor of a pre-Columbian history course explained to the 25 students in class that she was gathering information on what each student already knew about the Americas and Native Americans before 1492 so that she could better tailor her teaching to fit their existing knowledge. She passed out sheets of blank paper and asked the students to write their answers to the following questions, without putting their names on the papers. They had five minutes to write.

The questions were:

- 1. About how many people lived in North America in 1491?***
- 2. About how long had they been on this continent by 1491?***
- 3. What significant achievements had they made in that time?***

After she had collected the papers, the instructor wrote a fourth question on the board:

- 4. Where did you get those first three answers?***

The students spent the rest of the class period trying to answer the fourth question and realized that they could not. Their impressions of pre-Columbian history were based on vague knowledge whose source they were unable to identify. At the end of class, the instructor gave the students their first library research assignment: work in pairs to double-check the accuracy of their answers to the first three questions.

From Angelo & Cross, Classroom Assessment Techniques (1993).

The Misconception/Preconception Check shows not only how an instructor can quickly gauge a student’s initial knowledge or understanding, but how to catch students’ interest in a particular subject. This technique can also be an end-of-the-semester exercise used to assess the accuracy of student understanding after completing the course.

Muddiest Point Exercise

In thinking about one of the courses you teach, which topics do you believe might be most likely to cause confusion or "muddiness"?

- 1.
- 2.
- 3.
- 4.

Can you think of ways to adjust your teaching methods to anticipate and address this potential confusion?

Possible Muddy Point	What Can I Do In Advance?
1.	
2.	
3.	
4.	

Use the following table to help you think about possible muddiest points and when you might want to assess student understanding of these topics.

Key Point / Knowledge	Start of Semester	Mid-Term
1.		
2.		
3.		
4.		

Chapter 5

■ Assessing Student Learning Over the Course of the Semester

The purpose of this chapter...

This chapter looks at ongoing ways to assess student learning throughout the semester including techniques for structuring course assignments and the overall course schedule. Pre- and post-learning assessment techniques and portfolio analysis are also discussed as well as common questions about assessing student learning over the course of the semester.

Tracking student achievement over time is one of the best ways that you, as the instructor, have to document that students are really accomplishing what you intend. Course goals are sometimes vague and difficult to quantify. Specific objectives that outline what a student must do to demonstrate completion of course goals make it easier to observe whether or not course goals have been achieved. Incorporating classroom assessment into your teaching and curriculum design facilitates specific documentation of results that clearly demonstrate student learning from the beginning of the semester until the end of the course.

Chapter 4 outlined a group of assessment techniques that can be used to evaluate student learning at key points in the course. Each of these techniques can become part of a long-term assessment plan by being used repeatedly as the course goes along. Results from each set of assignments can help the instructor and the students see progress on the learning outcomes unfold as the semester progresses. Additionally, there are a variety of assessment tasks that have been developed specifically to address long-term results. A discussion of a number of these tasks follows.

“Assessment looks for achievement but also monitors the learning process; it is both summative and formative.”
– Wright, B. D. (1991)

Chapter 5
At A Glance

Primary trait analysis
Systematic progression of assignments
Pre/post-test survey
Portfolio analysis
Considerations for the large lecture class
Questions and answers

5

Primary Trait Analysis

Primary Trait Analysis (PTA), described in Chapter 4, can also be used to assess student learning over the course of the semester. Primary Trait Analysis links specific goals or objectives to varying levels of achievement (e.g., excellent, good, fair, poor). To use PTA over the course of the semester, track individual components, or primary traits, across several assignments. PTA is particularly useful for long-term tracking of results as the scores from the PTA rubrics are easily quantifiable and can provide clear data on student progress across key traits for course assignments.

Systematic Progression of Assignments

Systematic progression of assignments refers to a group of assignments that has been scheduled throughout the semester to track student progress on specific learning objectives as they occur. These often (or may) focus on one particular learning objective the instructor is particularly interested in studying. Each assignment is connected both to the one before and to the one after to maintain a formal record of student progress. Ways to develop this record include:

- breaking down a large term project into individual components spread out over the course of the semester, evaluated separately, and then evaluated as a final product
- weekly quizzes and lab reports
- an essay question on each exam that is directly related to a specific course objective

When using systematic progression of assignments to assess student learning, your most important task is to maintain clear and consistent records of results. The extent to which these results identify overall student learning or student learning on specific objectives that have been identified on the course syllabus depends on the method of tracking that you use. By using the same scoring rubric throughout the semester, you can track individual student progress on specific key traits over time.

noteworthy

The Appendix to this chapter includes examples of these assessment methods.

Pre/Post-Test Survey

Pre- and post-test surveys are another way to assess student learning from the start of the course until the end. A **pre-test survey** can be used at the beginning of the semester to capture the extent of student knowledge and understanding about key course concepts they will study that semester. It can also be used to measure students attitudes and values relevant to course concepts and predictive of their response and position on course materials. Using a follow-up **post test** (either the same as the pre-test, or somewhat different) at the end of the semester and comparing results from the two can be an effective way to demonstrate student achievement over time.

noteworthy

Pre/post-test surveys are similar to the misconception/preconception task discussed in Chapter 4, but look for general knowledge and background rather than inaccurate or judgmental ideas.

Portfolio Analysis

Portfolio analysis is becoming an increasingly popular method of assessment, both at the classroom and the program level. Portfolio analysis looks at student work during a period of time and evaluates the extent of learning based on the progression of the work from the first assignment until the last. At the classroom level, this might include a series of writing assignments of increasing difficulty or all work that the student has produced for a particular course. At the program level, the portfolio might include all key pieces of work that the student has completed for the major.

The advantages of the portfolio as a method of longer-term assessment include:

- A visual representation of student learning from beginning to end
- A concrete way to track and document student progress over a period of time
- A hard copy record of tasks and output for the student to retain for future reference and use
- A systematic progression of tasks that can be linked to course goals and objectives and interpreted in the context of whether each was accomplished
- An opportunity for students to reflect on their own progress as they review their portfolio

A key piece in portfolio work is getting students to analyze and reflect on their portfolio – what can they see that they’ve learned, what doesn’t it tell them about what they’ve learned, and how can they document the progression of their ideas and work from the beginning of the semester until the end. As one student wrote in a final paper that asked her to reflect back on a series of six essays written over the semester:

One of the most valuable aspects of this course, for me, has been the opportunity to look back on the work that I have completed. Through these papers, I can see how my ideas have changed, how my writing has improved and how my understanding of course material is reflected more in the last two papers than in the first...

Portfolio work offers not only an opportunity for the instructor to see the progression of students’ performance over time, but can also help the student see the value of reflecting back on her own work.

Considerations for the large lecture classes (100+ students)

Assessing student learning over the semester in large lecture classes can be accomplished in many of the same ways as for smaller classes. Please refer to Chapter 4, and the Appendix at the end of Chapter 4 for discussion of these techniques.

Questions and Answers

Q. I'm a math teacher. While I can see the value of assessing individual assignments, as well as assessing over the course of the semester, I'm not convinced that primary trait analysis and portfolio analysis can be adapted to my discipline. Aren't grades the best measure of math proficiency?

A. Mathematics faculty and faculty from other “quantified” disciplines often believe that assessment other than grades would be difficult to implement in their courses. The literature on this dilemma is clear (Keith, 1995; Walvoord & Anderson, 1998); math and science lend themselves as successfully to assessment and primary trait analyses as do the humanities and social sciences. For example, math instructors often give partial credit for partially correct answers. This situation is a particularly good match for the scoring rubric, where the student may do well (“5”) in outlining the problem, but poorly on the actual calculation.

Q. After assessing student learning outcomes over the course of the semester, what if my results show that students are not learning in some areas? Who will see the data?

A. One of the most positive aspects of classroom-based assessment is the potential for self-reflection and self-evaluation, both on your part and by your students. By collecting and documenting assessment results, you will have the opportunity to see what is working for your students and what is not. Using these results can help you adjust your syllabus, instructional methods and assignments to make them more effective. The data can also show you the aspects of your course that are working really well. In addition, sharing the results with your students can help them evaluate their own learning and reflect on ways that they can improve as participatory learners.

Another positive aspect of assessment is that if you are collecting the data, they are yours to share or not to share. You can use this information for your own purpose, or pass it along to your peers to help them re-evaluate their own teaching and course materials. The specific purpose of the assessment (e.g., achieve learning outcomes, improve instruction, complete departmental evaluation requirements, etc.) and who is involved in the process determine who sees the results.

Q. I can see the value of collecting data on student learning as the semester moves along, but I'm unclear what the data will mean as well as what to do with the results once I have them.

A. At times it may seem like collecting the data is the easy part while knowing what to do with the results is another story. However, data from classroom assessment can be invaluable to improving teaching and learning, and improving curriculum quality. The results can go to whom you choose, and can be used for a variety of purposes, from professional growth to institutional evaluation. How and why you use the data depends on your purpose in assessing. **Chapter 6** discusses using the results in greater detail.

Appendix 5-A

Samples, Examples and Worksheets At a Glance: Primary Trait Analysis
Systematic Progression of Assignments
Portfolio Analysis

Primary Trait Analysis Example

The following example was used in a junior-level anthropology course. Concerned about the ways his students were organizing their written analysis about theoretical anthropology texts, this instructor used a scoring rubric for seven written assignments that tracked organization and mechanics on each assignment. While each assignment had slightly different criteria, two features remained consistent throughout the seven written assignments: “Organization” – sequencing of key ideas; and “Mechanics” – spelling, punctuation, proofreading accuracy.

Anthropology 364 Scoring: assignment 1
Total points possible: 30 Total points earned: _____

Content

- _____ 1. Summarize (in a paragraph or two for an anthropologist unfamiliar with this particular group of people) what Mead considers to be some of the most important features of Samoan culture (5 points)
- _____ 2.a. What is Mead's objective in writing this ethnography? (5 points)
- _____ 2.b. What methods or techniques does she use to obtain the information expressed in the ethnography? (5 points)
- _____ 2.c. What are the categories of Samoan culture that Mead uses in her description? (5 points)
- _____ 2.d. Whose viewpoints or perspective is expressed: the ethnographer's; or that of the individual members of the society studied; or someone else's – and how? What are the advantages and disadvantages of such a stance? (4 points)

Organization

- _____ The organization of ideas, including appropriate use of evidence and inferences (3 points)

Mechanics

- _____ Mechanics: proofreading, punctuation, grammar, and spelling (3 points)

Anthropology 364 Scoring: assignment 4
Total points possible: 30 Total points earned: _____

- _____ Summarize Wolf's explanation as to how cultural changes occur. Note that this summary should be directed not to Wolf's views in general, but specifically to the causes of cultural change (8 points)
- _____ Then summarize Sahlin's position on the relation of history and culture (e.g., What is the connection between history and culture?) (8 points)
- _____ Choose either Sahlin's or Wolf's position as your own, and defend its superiority against the opposing point of view. In this portion, the essay should be explicitly comparative, demonstrating why a feature of Wolf's view is better than the same feature in Sahlin's view or vice versa (8 points)
- _____ Clarity of argument: good organization of ideas to make a compelling case (3 points)
- _____ Mechanics: spelling, grammar, punctuation, proofreading (3 points)

Results

At the end of the semester, the instructor analyzed students' scores and found:

- student's raw scores generally went up over the course of the semester for both criteria: organization and mechanics.
- the variability across students' grades decreased as well, suggesting that peer critiques gave students the opportunity to see examples of organization and mechanics by their peers who scored well on these two criteria and led to less differentiation in performance across the class.

personal correspondence, R. Faulkingham, University of Massachusetts

Systematic Progression of Assignments

Tracking student learning through a series of course assignments can provide a wealth of information on how well course goals and objectives are being met. For example, a faculty member teaching a junior-level accounting course decided to study the extent to which her students were able to report on the results of their in-class auditing assignments. She put together a series of assignments as follows to track expected skills and knowledge.

Sample Assignments to Track Skills and Knowledge

Assignment	Why Use?	Assess What?
One-paragraph audit report (first four weeks of the semester)	Begin to expose students to techniques on writing clear and easy to understand accounting documents.	Basic understanding of accounting practice and general technical writing skills.
One-page audit report (at week 6 and week 8)	Help students learn to expand on introductory exposure to writing audit reports.	Moderate understanding of accounting practice and ability to explain the results of this practice to layperson. Technical writing skills.
Two-page audit report with charts and tables (week 10)	Offer students the opportunity to create more formal, explanatory report in greater detail and help them learn to provide examples from accounting and use effective graphs and charts.	Solid understanding of accounting practice and increased ability to translate results in a format that will be easily accessed by the reader.
Formal oral presentation with audio-visual aids and written 5-7 page report with charts and tables.	Present a real-life scenario that asks students to prepare and present results of accounting practice, as might be required in the corporate world.	In-depth understanding of accounting practice. Strong oral and written presentation skills. Ability to translate classroom theory into a hypothetical situation.
Two essay exams, one at mid-term and one at the end of the semester.	Ask students to write short essay questions related to course concepts and lectures.	Evaluate particular broad course concepts that are interconnected through each class discussion and each assignment outlined earlier in this table.

Portfolio Analysis

In a basic writing course, an instructor used portfolio analysis to assess students' development as writers over the course of the semester. Each student collected the essays that he or she had written over the course of the semester, edited the essays again briefly, printed clean copies, and then compiled the essays into a self-designed "oeuvre" or portfolio. In addition to the essays, students included introductions to their portfolios. The instructor provided students a list of criteria that they could address in their introductions. Criteria included: self-assessment of their development as a writer, self-reflection about their strongest and weakest essays, and other insights about themselves as learners. Rather than a final exam, the instructor used the portfolio as an end-of-the-semester assessment measure.

The portfolio allowed the instructor to:

- assess each student's writing development over the course of the semester
- assess the effectiveness of specific assignments across student portfolios and adjust her curriculum accordingly
- review the order of assignments in relation to student progress
- gauge student perceptions of the assignments
- learn more about her students' perceptions about themselves as writers and the purpose of writing in their academic lives

The portfolio allowed students to:

- assess their progress as learners and writers over the course of the semester
- review the amount, quality, and kind of writing that they had accomplished. For basic writers who are often hesitant about their abilities as writers, the portfolio was a way to showcase their writing in a way that valued their work
- reflect on their struggles and successes during the semester and consider why these struggles or successes occurred
- become more articulate in discussing their writing process

University of Massachusetts Writing Program

Chapter 6

■ Interpreting and Using the Results of Classroom Assessment

The purpose of this chapter...

Defining and collecting assessment data is only part of the process. Understanding what the data tell you and deciding what to do with the results once you have gathered them are equally important. If you have chosen to assess student learning in your course, you may be doing so simply to find out more about the teaching and learning that goes on in your classroom. In that case, collecting and understanding the data is enough. If you have been asked to provide assessment data for institution-based program review or for external accreditation, you might need to prepare a more formal summary of the results. This chapter can help you with both. The question/answer section highlights common concerns about compiling and distributing results.

Chapter 6 *At A Glance*

Where to begin
Collection and analysis
Reporting your results
Questions and answers

“Effective assessment must begin with real concerns of the stakeholders and result in useful information and recommendations related to the purpose of the assessment.”

– Farmer, D.W. & Napieralski, E. A. (1997)

Where to Begin

Knowing WHY you are assessing is key to deciding WHAT to do with the data after you collect it. Assessment data can be gathered for a variety of reasons:

- *Classroom-based improvement in teaching and learning*
- *Department-based review*
- *Institution-wide program review requirements*
- *External accreditation initiatives*

Each of these reasons has its own reporting needs. Assessment data collected for the purpose of improving teaching and learning at the classroom level may need no formal report at all, particularly if you are undertaking the assessment on your own initiative. The key factor here is to understand what the data are telling you and to know what you will do with that information once you have it. When you collect assessment data for campus-wide program review requirements, or external accreditation you may be asked to prepare and submit a report describing the data, what you found and how you will use it to improve your course (see OAPA’s Program-Based Assessment Handbook for more information about program assessment.) Whether you assess for your own edification, for internal review or for external accreditation, assessment begins with collecting and analyzing the data.

Collection and Analysis

Identifying how you can use the results of your assessment data to improve teaching and learning in your course is essential to the assessment process. The first step is organizing the information you have collected. Think about what you were assessing and what assessment method you used. What type of data did that method yield? For example, if you decided to assess student knowledge at the beginning of the course you may have chosen to use a Student Background Probe as an initial assessment tool. This probe provides a variety of data, both qualitative and quantitative, on each student in your class and offers a good starting point from which to implement other evaluations and assessments.

After you determined the types of data you collected through the background knowledge probe, you will want to analyze the data and determine what these results tell you. There are a variety of ways to analyze your data, ranging from informal “eye-balling” analysis to more formal statistical manipulation. You may find the following worksheet helpful in organizing the information you’ve collected.

Analyzing Your Data (the first entry offers examples of answers you may give)

Assessing What?	Assessment Method	Type of Data Collected	What Do the Results Say?	What Will You Do?	Any Surprises?
Student knowledge of course content prior to beginning course	Student background probe	Quantitative survey data and open-ended response	60% of students have some pre-knowledge. 40% have none.	Challenge those who know, bring those who don't up to speed.	I thought more students would already know the information I asked for.

A final step in this process is to take your plans, or what you will do with the results from the data now that you have them, and make them more specific. For instance, the table above tells you that, based on your data from the background knowledge probe, you need to challenge students who have more initial background knowledge than others. You now have the opportunity to adjust your instruction and course requirements in response to assessment results. How will you do this? Using an action plan, such as the one following, can help in the process.

An Action Plan (entries 1 and 2 offer examples of answers you may give)

Action Item	Action to Take	Steps to Implement
1	Encourage students who have demonstrated prior knowledge	<ol style="list-style-type: none"> 1. From the data, identify content areas of greater knowledge 2. Develop extra credit tasks for students to complete to build on their knowledge 3. Establish a reward system to eliminate sense of extra work as "punitive"
2	Bring those with less prior knowledge up to speed	<ol style="list-style-type: none"> 1. 2. 3.
3		<ol style="list-style-type: none"> 1. 2. 3.
4		<ol style="list-style-type: none"> 1. 2. 3.
5		<ol style="list-style-type: none"> 1. 2. 3.

Using an action plan such as the one above can help you determine and frame your experience with assessment in terms of these results. This information can help you determine what you liked about the process, what you didn't like and what you found out. A plan like this can also be useful if you are thinking about adjusting your instructional methods during the semester, or at the beginning of the course when you teach it again, based on the results of your assessment work. Collecting and analyzing the data, then deciding in a concrete way what you will do with the data in the context of course instruction and student learning can help you to document your own effectiveness in the classroom as well as to identify areas of assessment that might be more broadly useful.

Reporting Your Results

In many cases, the sole purpose of your assessment activity may be for your own edification. If so, you need go no further with your results. However, in other situations, your assessment information may also be valuable to your department's curricular revisions, general education reform, or to granting organizations that help support your course revisions. In order for your findings to be more broadly useful, you will need to communicate your findings to other audiences. This type of "report" should cover five major components of assessment:

1. the goals and objectives you established for your course
2. the assessment methods you chose or designed
3. what you found out about student learning in your classroom
4. how these findings are being used for improvement
5. action to take

The matrix which follows may help you organize your results.

Assessment Matrix

Goal/Objective	Method	Results	Interpretation	Action to Take

adapted from Palomba, C. A., & Banta, T. W., Assessment essentials (1999).

Questions and Answers

Q. As a faculty member, I hesitate to use assessment within my classroom because it seems as though there is a potential for misuse of information. Aren't I setting myself up for negative repercussions if I end up collecting negative data?

A. Collecting assessment data can only be a positive step. First, the results are yours, to release or to keep private. Second, collecting data on student learning outcomes can be used to improve your teaching and your course, which will result in additional data the second time around, continuing the opportunity for improvement and re-evaluation. Third, the more we get assessment out on the table for discussion and the more faculty we involve in the process, the more productive and effective our discussion will be.

Q. Once I have collected the data, how do I analyze it? My knowledge of statistical analysis is very limited.

A. Analysis of assessment data collected in the classroom does not have to be complicated. It can be as simple as figuring out what percent of students passed the mid-term exam or as complicated as running a linear regression model to predict final grades for next semester. It's up to you, to your areas of interest and to the level of your ability to analyze data and communicate results. Also, there are individuals and offices on campus who can help you analyze the data if you have more complicated analyses in mind. This list of resources is given at the end of this handbook.

Q. I plan on using a variety of assessment activities in one of my courses this semester. Should I prepare feedback reports to the students on each assignment as it occurs or will one final report at the end of the semester be sufficient.

A. One of the advantages of providing feedback to students on assessment results is the opportunity to use these results as a teaching tool to not only refine your own methods of instruction but to demonstrate to students the extent to which they are achieving designated learning outcomes for the course. While preparing a final report is a good way to give students an overview of the semester, providing feedback as assessment results are gathered helps students stay in touch with both learning and the learning process. If preparing feedback reports for each assignment seems overwhelming, select only a few of the most important ones to report back to students.

Q. I have a lot of assessment data collected from a course I'm teaching this semester but have no idea what to do with it. Are there certain report guidelines I should follow?

A. Once you have collected the data, you should analyze it in the context of the goals and objectives you have set for the class and the learning outcomes you identified for each assignment. If you need more help in analyzing the data, check out the on-campus resources listed in the back of this handbook.

Sources and Resources

This section offers a variety of on-campus and on-line resources, as well as a reference list of articles and publications cited in this handbook, to provide additional assistance as you move deeper into the assessment process.

On-campus resources are given to provide you with a “real person” to contact should you have questions, concerns or need additional information or support.

On-Campus

Office of Academic Planning and Assessment
362 Whitmore Administration Building
Martha L. A. Stassen
Director of Assessment
(413) 545-5146
mstassen@acad.umass.edu
<http://www.umass.edu/oapa>

Office of Institutional Research
237 Whitmore Administration Building
Marilyn H. Blaustein
Director of Institutional Research
(413) 545-0941
blaustein@oirp.umass.edu
<http://www.umass.edu/oapa>

Center for Teaching
301 Goodell Building
(413) 545-1225
cfteach@acad.umass.edu
<http://www.umass.edu/cft>

On-line websites are listed to give you further opportunity to explore how assessment is being used at other large research institutions across the country. These websites are particularly useful in providing specific examples and “how-to” models as well as in sharing how the assessment experience is playing out in higher education today.

References from the literature offer more in-depth discussion of handbook topics.

On-Line

American Association for Higher Education
www.aahe.org

California State University - San Bernardino
<http://academic-affairs.csusb.edu>
www.co.calstate.edu/aa/sloa

ERIC Assessment Clearinghouse
<http://ericae.net/>

Internet Resources for Higher Education Outcomes Assessment
<http://www2.acs.ncsu.edu/upa/archives/assmt/resource.htm>

Ohio University
www.cats.ohiou.edu/~insres/assessments/ncaplan.html

Penn State
www.psu.edu/dus/uac/assessme.htm

Southern Illinois University
www.siu.edu/~deder/assess

University of Cincinnati - Raymond Walters College
www.rwc.uc.edu/phillips/index_assess.html

University of Colorado - Boulder
www.colorado.edu/pba/outcomes

University of Michigan
www.umich.edu/~crltmich/crlt.faq.html

University of Nebraska
www.unl.edu/svcaa/priorities/assessment.html

University of Wisconsin - Madison
www.wisc.edu/provost/assess.html

Virginia Tech
<http://aappc.aap.vt.edu>

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