What is assessment of student learning?

Assessment is the ongoing process of:

- Establishing clear, measurable expected student learning outcomes
- Ensuring that students have sufficient opportunities to achieve those outcomes
- Systematically gathering, analyzing, and interpreting evidence to determine how well student learning matches our expectations
- Using the resulting information to understand and improve student learning


Historical context: The shift from teaching to learning

A revolution that began in the mid-1990s created a new paradigm for higher education. Traditional faculty teaching, which assumed that it is the students' fault if they don't learn the material taught by the professor, increasingly is being replaced with a learning-centered paradigm. This paradigm is based upon research that demonstrates that students learn more effectively when they are actively involved in self-directed learning. Under this model, faculty are more directly involved with helping students learn through a role of a facilitator of learning, providing frequent feedback on students' work. In this model, if a significant number of students do not succeed in achieving learning goals, the faculty member assumes that teaching and learning strategies are in part responsible.

External Forces driving the assessment movement:

Besides the shift in higher education from a teacher-centered to a learner-centered paradigm, the following events have increased calls for accountability:

- As resources for higher education have become increasingly constrained, governments are taking a businesslike approach and want institutions to provide evidence that governmental investment yields significant results
- The federal government changed the kinds of evidence institutions must produce as measures of their "quality." Regional accrediting bodies now must require institutions to provide direct evidence that they are achieving their missions. Since the primary mission of higher education institutions is the education of students, institutions must now provide direct evidence that students are achieving learning goals that the institution has established.
Why assess?

We assess to answer questions in a systematic way. Here are a few reasons to assess:

- Assessment feedback helps faculty improve their teaching.
- Clear course and program expectations outlined in a good assessment plan help students understand where they should focus their time and energy.
- Assessment activities bring faculty together to discuss important issues such as what they should teach and why and what their standards and expectations ought to be.
- Assessment plans help faculty see how courses link together to form a coherent program.
- Continuous assessment lets faculty know which teaching methods under which conditions lead to effective student learning. The feedback loop process leads to continuous improvement of the program.
- It is now required by most state governments and by all accrediting organizations (as mandated by the federal government) that all higher education institutions provide direct evidence of student learning. Assessment is the process by which this evidence is collected and analyzed.

What is good assessment of student learning?

9 Principles of Good Practice for Assessing Student Learning

(American Association of Higher Education)

1. The assessment of student learning begins with educational values.

2. Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed in performance over time.

3. Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes.

4. Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes.

5. Assessment works best when it is ongoing not episodic.

6. Assessment fosters wider improvement when representatives from across the educational community are involved.

7. Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about.

8. Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change.

9. Through assessment, educators meet responsibilities to students and to the public.
Two general types of assessment:

**Formative:** When assessment is used to monitor progress and provide corrective feedback toward meeting an objective, it is formative in nature. Faculty interventions are non-threatening, provided throughout the learning process to indicate how well students are doing and include providing alternative learning methods as needed prior to final evaluation.

Summative: When assessment is used to validate or certify an objective has or has not been met by using a final evaluation instrument, it is summative in nature.

**Common Misconceptions about Assessment**

**Assessment is:**

<table>
<thead>
<tr>
<th>Misconceptions</th>
<th>Reality</th>
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<tr>
<td>1. ...completed once a year</td>
<td>1. ...a continuous process</td>
</tr>
<tr>
<td>2. ...the responsibility of program directors</td>
<td>2. ...a process involving all faculty in a program to ensure all program outcomes/objectives are met.</td>
</tr>
<tr>
<td>3. ...not important</td>
<td>3. ...vital for programs to remain current in the field and to offer the best learning experience for students.</td>
</tr>
<tr>
<td>4. ...complicated</td>
<td>4. ...a time-consuming process in its first year. Once baselines are established, the process becomes one of determining where improvements are needed and refining the plan.</td>
</tr>
<tr>
<td>5. ...imposed on us by accrediting agencies and the institution</td>
<td>5. ...part of the accountability process and is a fact of life in higher education.</td>
</tr>
<tr>
<td>6. ...additional work</td>
<td>6. ...natural for faculty who want to collect information about student performance for the purpose of improving instruction.</td>
</tr>
</tbody>
</table>
Student Learning Outcomes

Four levels of student learning:

Student learning outcomes are defined as the knowledge, skills, attitudes, and habits of mind that students take with them from a learning experience (Suskie (2004)). Writing effective learning outcomes is an art and is often easier to do in certain disciplines and more difficult in others. If learning outcomes are seen as a work in progress, they can be refined once they are implemented.

Kirkpatrick (1998) outlines 4 levels of evaluation of the learning experience which can aid in understanding which areas of learning to use for assessment:


**Level 1 - Reaction to the learning experience.** Are students satisfied with their learning experience? Satisfaction is important because dissatisfaction may indicate that students may not have learned some important things. But satisfaction alone does not tell us directly whether students learned what we value as important.

**Level 2 - Learning.** Are students learning what we want them to learn? The achievement of learning outcomes is the focus of most assessment plans.

**Level 3 - Transfer.** Are students using the knowledge, skills, attitudes, and habits of mind that they've learned in their later pursuits - in further study, on the job, in community service? While these are important outcomes, they are difficult to assess and often require expensive follow-up after the college experience is ended.

**Level 4 - Results.** Are the knowledge, skills, attitudes, and habits of mind that students have acquired helping them to achieve their goals and the institution's goals for them? Are students persisting through graduation? Are they successfully obtaining employment for which they have been prepared? Are they being admitted to advanced study? Retention and graduation rates, rates of admission to further study, etc. are excellent measures of the effectiveness of a program or institution, however, these measures are not good measures of student learning. These
measures don't tell us what exactly student have learned. For these reasons, this level of assessment often is not used to measure student learning.

Bloom's Taxonomy:

One of the most useful tools in developing student learning outcomes is to refer to Bloom's taxonomy of the hierarchy of learning. The table below pairs the cognitive levels of the taxonomy with process cues or verbs that can be useful in constructing learning outcomes and assessment measures. All levels of learning are important. The lower levels support the higher levels; the higher levels cannot function effectively without the lower levels. The higher levels are more complex, not necessarily more difficult. Difficulty depends on prerequisite knowledge and skills and on learning style. The process words do not guarantee the level. They must be presented in a context that ensures the appropriate level is addressed.

**Bloom’s Taxonomy of Learning**

<table>
<thead>
<tr>
<th>COGNITIVE LEVELS</th>
<th>PROCESS CLUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Arrange, define, describe, designate, duplicate, enumerate, identify, indicate, know, label, list, match, name, recall, recite, recognize, record, repeat, reproduce, select, state</td>
</tr>
<tr>
<td>Comprehension</td>
<td>Alter, change, cite, convert, demonstrate, describe, discuss, estimate, explain, express, extrapolate, generalize, give examples, identify, illustrate, indicate, interpret, paraphrase, predict, recognize, report, represent, restate, revise, rewrite, simplify, summarize, translate</td>
</tr>
<tr>
<td>Application</td>
<td>Apply, articulate, calculate, chart, collect, compute, construct, contribute, demonstrate, derive, determine, develop, discover, dramatize, employ, establish, extend, illustrate, implement, include, investigate, manipulate, operate, organize, predict, prepare, preserve, produce, project, provide, relate, schedule, show, sketch, solve, transfer, translate, use, utilize, write</td>
</tr>
<tr>
<td>Analysis (considered a higher level)</td>
<td>Analyze, break down, categorize, compare, contrast, correlate, determine, diagram, differentiate, discriminate, distinguish, examine, experiment, identify, induce, infer, inspect, outline, prioritize, question, recognize, relate, select, separate, subdivide, solve, test</td>
</tr>
<tr>
<td>Synthesis (considered a higher level)</td>
<td>Assemble, build, collaborate, collect, combine, communicate, compile, compose, construct, create, design, devise, develop, facilitate, formulate, generate, incorporate, integrate, intervene, manage, model, modify, negotiate, organize, perform, plan, prepare, produce, propose, reinforce, relate, reorganize, revise, set up, structure, substitute, synthesize, unite</td>
</tr>
</tbody>
</table>
Writing Student Learning Outcomes:

The aim for crafting student learning outcomes is to be neither too broad nor too concise. One way to overcome broad, nebulous learning outcomes is to use behavioral goals that use concrete action words that describe what a student can do after they've learned the material. However, some behavioral goals are not useful for measuring learning at the program level because they may be too limiting. But the lesson is to use concrete action words whenever possible that describe what students should know or be able to do.

Example (taken from Suskie, 2004, p. 78):

Too vague:    Students will demonstrate information literacy skills.

Too specific: Students will be able to use institutional online services to retrieve information.

Better:    Students will locate information and evaluate it critically for its validity and appropriateness.

Another piece of advice from assessment experts is to focus on the most important goals of the program. Trying to assess every learning goal is a Herculean task and goes against the main objective of assessment which is effectiveness. Also, working with colleagues in writing learning outcomes provides opportunities for others to give input on the big picture as well as the details involved in a program.

Examples of Student Learning Outcomes

1. [provide link to other SLOs cut from the Web]
2. From Suskie, 2004: Examples of effectively expressed learning outcomes

*Biology:* Make appropriate inferences and deductions from biological information.

*Business Administration:* Develop graphic, spreadsheet, and financial analysis support for positions taken.

*Chemistry:* Design an experiment to test a chemical hypothesis or theory.

*Communication Studies:* Systematically analyze and solve problems, advocate and defend one's views, and refute opposing views.
Earth Science: Analyze the surface and subsurface (three-dimensional and four-dimensional) geologic characteristics of landforms.

English: Present original interpretations of literary works in the context of existing research on these works.

Environmental Science: Critically evaluate the effectiveness of agencies, organizations, and programs addressing environmental problems.

Health Care Management: Apply basic problem-solving skills along with health care financial management knowledge to develop recommendations related to the financial issue(s) confronted by a health care organization.

Medieval & Renaissance Studies: Write with clarity, unit, coherence, and correctness.

Metropolitan Studies: Conduct and present sound research on metropolitan issues.

Speech-Language Pathology/Audiology: Use appropriate inter-personal qualities and professional characteristics during interaction with peers, academic and clinical faculty, and clients.

Theatre: Use voice, movement, and understanding of dramatic character and situation to affect an audience.

Women's Studies: Use gender as an analytical category to critique cultural and social institutions.

Methods for Assessment of Student Learning

I. Direct Measures

1. **Embedded Questions** - Often it is an excellent idea to include questions in a pre-planned test like a mid-term or final exam that measure student learning in a specific area. How students answer these items can be used to assess their knowledge, skills, or attitudes. These items are usually placed within a locally developed test, although items can be drawn from standardized tests if scoring permits.

2. **Capstone Project or Performance/Exhibition** - As students complete a program, they can demonstrate their abilities to synthesize their learning by a final project, performance, or exhibition. These projects are best assessed by a panel of program faculty members using scoring rubrics (see "rubrics" below). Such assessments not only measure individual student learning but also can indicate aspects of a program that need improvement.

3. **Nationally-normed Standardized Examinations** - Exams such as ETS Major Field Tests or Area Concentration Achievement Tests (ACAT) are nationally-normed tests that provide a comparison group for the program. Many such tests also provide a criterion-
Introduction to Student Learning

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referenced option. The criterion-referenced option is helpful especially if certain sections of the exam are not relevant to the learning outcomes of a particular campus program. Having individual student scores by item or by test category can help to understand how students are performing in the most relevant areas of the local program.

4. **State certification and licensure exams** - There are many teacher certification exams in Texas that can be used for assessing outcomes in the teaching discipline. Other disciplines, especially in the healthcare and engineering technology and GIS areas, require students to pass such exams. Pass rates and sub-scores on these exams can be helpful in assessing student learning outcomes.

5. **Locally-developed tests/Pre-tests and Post-tests** - Learning outcomes can also be assessed by tests designed by members of the faculty of a program. Pre-tests are administered before a learning experience (either a program, a course, or a specific lecture) and a post-test follows afterwards. Pre- and post-scores are compared to measure gains or change in student knowledge, skills or attitudes.

6. **Portfolios** - A portfolio is a collection of work over a period of time. Portfolios can be designed for several purposes. They can serve to show change in a student's abilities or knowledge or they can also be used as a summative presentation of a student's best work. Portfolios usually are assessed by a panel of faculty who use the products as a way to identify where improvements in a program are needed.

7. **Essays** - essays may be used to measure specific learning outcomes such as writing skills, appreciation for culture or diversity. They are usually evaluated by a panel of faculty using a rubric. These essays can be used to evaluate individual student abilities and knowledge as well as to shed light on how well a program is functioning.

8. **Direct Observation (Juries)** - a panel of faculty evaluate a student's performance or body of work through directly observing it. These individuals use a rubric for evaluating the quality of the student's work. (See "Authentic Assessment" below).

9. **Research Paper** - Similar to an essay and to the capstone project, a research paper can be used to evaluate a student's ability to analyze, synthesize, present, and evaluate information. A scoring rubric is used by a panel of faculty to evaluate the quality of the student's efforts.

10. **Employer Survey/Interview** - Some programs survey the employers of their former students about 6 months after graduation to assess the employer's perception of the graduate's ability to perform the needed skills of the job. Although this does not directly impact individual student learning, it provides feedback to the program as to how well it is providing the necessary knowledge for graduates to perform well on the job.

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II. **Indirect Measures**

A. **Surveys** - Surveys are not direct measures of learning because self-reported data is not objective or verifiable. However, surveys can be used as indirect measures of student learning and often can bolster and validate direct measures.

1. **National/State surveys administered campus-wide by the Office of Planning & Institutional Effectiveness (PIE)** (see [http://pie.tamucc.edu/](http://pie.tamucc.edu/) for more details about these surveys):
a. **National Survey of Student Engagement (NSSE)** - Administered to a sample of seniors and first-year students every two years in odd numbered years. Survey items on *The National Survey of Student Engagement* represent empirically confirmed "good practices" in undergraduate education. That is, they reflect behaviors by students and institutions that are associated with desired outcomes of college. Institutions will use their data to identify aspects of the undergraduate experience inside and outside the classroom that can be improved through changes in policies and practices more consistent with good practices in undergraduate education. [excerpted from the NSSE website, http://nsse.iub.edu/html/quick_facts.cfm]

b. **Noel-Levitz student satisfaction inventory (N-L SSI)** - Administered to a stratified random sample of students every two years in even numbered years. This instrument measures student satisfaction and priorities with many aspects of campus and student life, showing you how satisfied students are as well as what issues are important to them. [https://www.noellevitz.com/Templates/Tabs_Header_TwoByTwo_Sandbox.aspx?NRMODE=Published&NRORIGINALURL=%2fOur%2bServices%2fRetention%2fTools%2fStudent%2bSatisfaction%2bInventory%2f&NRNODEGUID=%7b0167F381-B5DC-4136-996B-DDCAF28A5AB4%7d&NRCACHEHINT=NoModifyGuest]

c. **Texas Survey of Organizational Excellence (SOE)** - Administered to staff every two years in odd numbered years. The SOE assists leadership by providing information about workforce issues impacting the quality of service ultimately delivered those served. The data provide insights into the dimensions capturing the total work environment. [http://www.utexas.edu/research/cswr/survey/site/prospect/promo_packet.pdf]

d. **Higher Education Research Institute's Survey of Faculty** - Administered every three years. The HERI Faculty Survey is designed to provide colleges and universities with timely information about the attitudes, experiences, concerns, job satisfaction, workload, teaching practices, and professional activities of collegiate faculty and administrators. [http://www.gseis.ucla.edu/heri/faculty.html]

2. **Locally developed surveys available from various campus sources:**

a. **Graduating student survey** (PIE) - Administered as students apply for graduation; data is compiled and analyzed by fiscal year. This instrument is intended to survey the student's college career and asks for levels of satisfaction with academic experiences and well as with campus facilities and services.
b. **Alumni Survey** (PIE) - Administered every two years in even numbered years. This survey targets former students approximately two years after graduation. It is designed to provide feedback about how well the university prepared the alumnus for life after college as well as to track the careers of former students.

c. **Freshman Seminar and Learning Communities Fall and Spring surveys** - Administered by the Directors of the Core Curriculum Program at the end of each fall and spring semester. At the end of the semester, students are asked for self-reported impacts due to various curricular experiences specific to the learning community structure.

d. **Library Patron Survey** - Administered by the Library staff on an as-needed basis. The study usually includes both students and faculty.

e. **Camden Miramar campus residence survey** (PIE) - administered every two years in odd numbered years. This instrument is designed to measure campus residents' satisfaction with resident facilities and services.

B. **Focus Groups** - Focus groups can provide valuable information about the quality and effectiveness of a program that can not be gained elsewhere. A Focus group approach usually is necessarily narrow in scope as feedback and insights are limited only to a small group of participants. However, the quality of the information provided by participants in a focus group can be broad and rich. This kind of information normally can not be gleaned from a survey. Potential participant groups include employers, alumni, faculty, parents, and special groups of students.

C. **Retention Rates** - The retention rate of a program can be a useful measure of the quality of a program. Remember that retention rates do not directly address the issue of student learning.

D. **Graduation Rates** - The strengths and weaknesses of a program may be reflected in the graduation rate of the program. The same caution about using this method to measure student learning applies here as it does for retention rates.

E. **Curriculum & Syllabus analysis** - This method is also called a curriculum map. It charts which courses cover which program objectives. Having such an analysis provides assurance that if students proceed through the curriculum in a certain sequence, a student will have the opportunity to learn course material that will be assessed.

**Authentic Assessment**

An authentic assessment usually includes a task for students to perform and a rubric by which their performance on the task will be evaluated. The student is observed in action and the instructor provides feedback (direction). Authentic assessment, in theory, can be applied to all areas of the curriculum.
Authentic assessment compliments traditional assessment methods such as standardized tests, embedded items, and surveys. Simulations or real world experiences (authentic assessment) are normally more complex and multi-faceted than traditional assessments. A system is needed to analyze the complexities of a simulation or task and to create clear criteria for student performance or their creation of a product. A rubric establishes expectations and serves to set expectations for performance on the task. Authentic assessment is a tool which is growing in popularity due to its usefulness in assessing complex and subjective criteria.

Rubrics

A rubric is a scoring tool that lists the criteria for assessing a piece of work or 'what counts.' For example, a rubric for an essay might tell students that their work will be judged on purpose, organization, details, voice, and mechanics. A good rubric also describes levels of quality for each of the criteria or a range for rating performance, usually on a point scale. Rubrics have several advantages. First, they allow assessment to be objective and consistent. They also allow the instructor to clarify criteria in specific terms so students know what to expect. They provide useful feedback regarding the effectiveness of instruction and provide benchmarks against which to measure and document progress.

Examples of Rubrics

A rubric is usually a grid with a scoring level across the top and criteria along the side. Here is an example of a simple scoring rubric:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
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</table>

Rubric Websites [taken from UCF Assessment website]
Automating Authentic Assessments with Rubrics

The Rubric Bank (fine arts rubrics)
http://intranet.cps.k12.il.us/Assessments/Ideas_and_Rubrics/Rubric_Bank/rubric_bank.html

Chicago Public Schools Performance Assessment Ideas and Rubrics
http://intranet.cps.k12.il.us/Assessments/Ideas_and_Rubrics/ideas_and_rubrics.html

Rubrics and Evaluation Resources (includes downloadable templates)
http://www.ncsu.edu/midlink/ho.html

Rubrics and Online Surveys
http://www.nova.edu/~burmeist/rubrics.html

Rubrics: Your Source for Information about Music Rubrics
http://www.music.miami.edu/assessment/rubrics.html

A List of Sample Rubrics [Someone] Found on the Web
http://pegasus.cc.ucf.edu/~jmorris/rubric.htm

Rubrics.com (sells software that helps you create your own rubrics)
http://www.rubrics.com

Assessment Planning Resource
http://www.assessmentplan.com

Creating a Rubric for a Specific Task
http://edweb.sdsu.edu/webquest/rubrics/rubrics.html

Weighted Rubrics
http://www.teachervision.fen.com/page/4525.html?detoured=1

Collaboration Rubric
http://edweb.sdsu.edu/triton/tidepoolunit/Rubrics/collrubric.html

Guidelines for Rubric Development
http://edweb.sdsu.edu/triton/july/rubrics/Rubric_Guidelines.html

General Rubrics Template
http://edweb.sdsu.edu/triton/july/rubrics/Rubric_Template.html

Using Rubrics for University Learning Outcomes
http://edtech.kennesaw.edu/intech/rubrics.htm

Using Rubrics
http://members.tripod.com/~ozpk/01rubric

Sample Rubrics

Introduction to Scoring Rubrics
http://school.discovery.com/schrockguide/assess.html

Sample Rubrics for Course Assessment; Class Participation; Research Papers and Group Presentations
http://www.arp.sprnet.org/inserv/eval5.htm#User

Creating Rubrics
http://www.teachervision.com/lesson-plans/lesson-4521.html

Teachnology: The Online Teacher Resource- collection on rubric generators
http://www.teach-nology.com/web_tools/rubrics/

Rubrics 4 Teachers: Extensive Guide to Educational Rubrics
http://www.rubrics4teachers.com/

Rubistar: Online tool to help teachers create rubrics
http://rubistar.4teachers.org/index.php

Introduction to Rubrics
http://www.stedwards.edu/cte/evaluation/rubric1.htm

Lesson Assessment Rubric- template based on Ohio SchoolNet
Rubrics/Primary Trait Analysis/Scoring Guides
http://pages.towson.edu/assessment/rubrics_external_links.htm

Jon Mueller’s Authentic Assessment Toolbox
http://jonathan.mueller.faculty.noctrl.edu/toolbox/rubrics.htm

Sample Presentation Rubrics
http://www.yorkville.k12.il.us/webquests/webqmaking/presentationrubric.html
http://www.glenbrook.k12.il.us/gbssci/phys/projects/yep/endoyrub/presrub.html

Sample Literature Review Rubric
http://edweb.sdsu.edu/Courses/Ed690DR/grading/literaturereviewrubrique.html

Sample Reflection Journal Rubric

Sample Project Proposal Rubric
http://www.glenbrook.k12.il.us/gbssci/phys/projects/yep/endoyrub/proprub.html

Sample Project Results Report Rubric
http://www.glenbrook.k12.il.us/gbssci/phys/projects/yep/endoyrub/resdirub.html

Sample Interview Paper Rubric
http://www.sdcoe.k12.ca.us/score/actbank/interview.html

Sample Essay Rubric
http://www.catholic-forum.com/churches/cathteach/assess_essayrubric.htm

Sample Persuasive Essay Rubric

Sample Metaphoric Poem Rubric

Example Rubric from Rollins College
http://www.rollins.edu/effectiveteaching/documents/RubricExample.doc

Example of Rubric for Assessment of Writing Assignment http://www.siue.edu/~deder/grrub.html

Rubrics for Web Lessons
http://edweb.sdsu.edu/webquest/rubrics/weblessons.htm

Example Rubric Template from presentation Creating Library Research Assignments
http://www.rwc.uc.edu/library/Library_Faculty_Development_Workshop_Rubric.doc
http://www.uc.edu/certitest/rubric/rubric.htm
References


