

Student Learning Assessment Handbook

Revised May 2024

COLORADO MESA UNIVERSITY

ASSESSMENT PROCESS

The Assessment Process at CMU is predicated upon the importance of continuous program improvement to provide quality, current, and rigorous academic programs that prepare students for the challenges they will face, both personally and professionally. The six Colorado Mesa University Institutional Student Learning Outcomes listed below are key areas needed for success in today's world and are the basis for all program student learning outcomes and assessment at CMU. For all CMU Institutional Degree Student Learning Outcomes, please see the webpage at <https://www.coloradomesa.edu/assessment/learning-outcomes/index.html> and page 6 of this Handbook.

The CMU baccalaureate degree graduate will be able to:

- Construct a summative project, paper or practiced-based performance that draws on current research, scholarship and/or techniques, and specialized knowledge in the discipline (specialized knowledge/applied learning);
- Analyze data critically, reason logically, and apply quantitative analysis methods correctly to develop appropriate conclusions (quantitative fluency);
- Make and defend assertions about a specialized topic in an extended well-organized document and an oral presentation that is appropriate to the discipline (communication fluency);
- Describe reasoned conclusions that articulate the implications and consequences for a particular decision by synthesizing information and methodologies (critical thinking);
- Reflect on and respond to ethical, social, civic, and/or environmental challenges at local, national, and/or global levels (personal and social responsibility); and
- Find relevant sources of information, evaluate information critically, and apply the information appropriately and effectively to specific purposes (information literacy).

Through alumni surveys, graduation surveys, capstone project evaluations, essential learning assessments, the Maverick Milestone assessments, and other academic program assessment, CMU faculty, in all disciplines, create, develop, and assess curriculum that will best prepare students. Assessment is not a separate step of the learning process, rather it is the basis for continuously ensuring students are learning what faculty curate as most important and for making continuous adjustments to maintain program quality, currency, and effectiveness. Courses and course student learning outcomes are intentionally scaffolded so that upon graduation, a CMU graduate will have acquired the abilities listed in the six Institutional Student Learning Outcomes above. Through course assessments that measure student attainment of needed knowledge, skills, and abilities, faculty craft curriculum that in its program totality prepares students to achieve the above CMU Institutional Student Learning Outcomes. For faculty, student learning, of which assessment plays a key role, is at the center of each and every class.

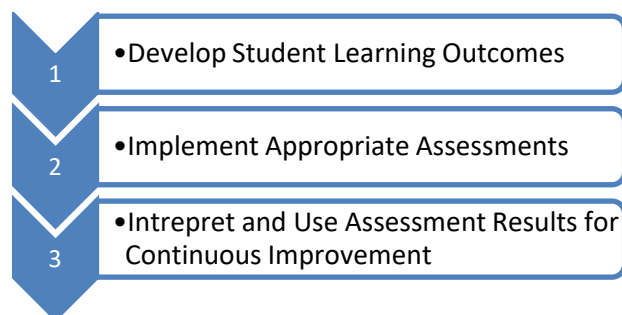
Overview

Assessment is the ongoing process in which student learning outcomes are defined, student success in achieving those outcomes is measured, and the results are used to implement improvements in curriculum. Thus, the overarching purpose is to gauge what students have learned in the context of program/course expectations and then document the resulting enhancements to program/course delivery. Most faculty members do this on an on-going basis, though perhaps not documenting changes or not discussing in concert with other faculty members. A key consideration is that the learning outcomes data that are collected are *meaningful* to those faculty members involved in the instruction, and the assessment process is *manageable* for all who participate. Elaborate plans that are not implemented and/or result in feedback that does not benefit a faculty member's efforts are of no value in this context.

There are three stages to an effective outcomes assessment program:

- 1) Define the important skills for students to achieve from an academic experience through course and program student learning outcomes (**outcome**);
- 2) Evaluate how well students are achieving those skills through course and program assessments (**assessment**); and,
- 3) Interpret and use the results for continuous program improvement (**closing the loop**).

Figure 1.



Often the first two stages are accomplished, and data is gathered without using the data for program improvement. Similarly, it may be the case that information is not recorded and there is no history to determine why changes were made. A good assessment program can demonstrate high quality student learning and program effectiveness for all University constituents. The stages of assessment start with a review of the institution's mission statement.

Colorado Mesa University Legislative Mission Statement

The role and mission of the institution was reenacted in 2010 by the Colorado General Assembly (Colorado Revised Statutes 23-53-101) and amended in 2011 when Mesa State College was renamed Colorado Mesa University:

"There is hereby established a university at Grand Junction, to be known as Colorado Mesa University, which shall be a general baccalaureate and graduate institution with selective admission standards. Colorado Mesa University shall offer liberal arts and sciences, professional, and technical degree programs and a limited number of graduate programs. Colorado Mesa University shall also maintain a community college role and mission, including career and technical education programs. Colorado Mesa University shall receive resident credit for two-year course offerings in its commission-approved service area. Colorado Mesa University shall also serve as a regional education provider."

CMU Mission Statement

As a Human Scale University, our mission is to provide an affordable and accessible education and form meaningful and mutually enriching partnerships that support the well-being and vibrancy of our community.

Assessment Committee Mission Statement

The Colorado Mesa University Assessment Committee oversees the implementation and advancement of Program Assessment of student learning and achievement.

Assessment Oversight

- The Associate Vice President for Academic Affairs, Assessment, Accreditation, and Curriculum (AVPAA) has oversight responsibility for academic assessment.
- The Assessment Committee – a standing Faculty Senate committee – is responsible for monitoring program assessment including assessment criteria and methods and the review of assessment documents at the three-year and at the six-year interval which corresponds with program review. The committee reviews assessment plans and reports and gives feedback to the departments for improvements of assessment methods.
- The AVPAA is responsible for assisting faculty and departments with the development, implementation, and overall maintenance of program assessment.
- Department Heads are responsible for the successful operation of assessment within the department.
- Program Faculty determine what is assessed in the major. Aligning with the institutional student learning outcomes, instructors determine where the specialized knowledge, applied learning and intellectual skills are taught in the curriculum and as well when to assess if the students know, and are able to demonstrate, what they have been taught.

Who Benefits from Assessment?

- First, and foremost, students benefit from assessment because learning outcomes provide clear expectations about what is important in the program or course. Program improvements based on assessment can benefit students in their learning experiences.
- Second, faculty benefit because assessment helps determine what is and is not working in the program. Assessment lends itself to writing the ‘story’ of the program and can demonstrate to interested constituencies of the institution the quality of the program. Faculty determine what is assessed, thus strengthening the cohesive nature of teaching and learning.
- Third, administration benefits when the assessment process demonstrates institutional commitment to continuous improvement of academic programs and student support services. Valuable information is shared with state and local governments, private supporters, accrediting agencies and others, as requested. Results of assessment can be easily shared with the University’s stakeholders and demonstrate the positive impact that education has on students and the community.

Cycle of Assessment – Program Review

At Colorado Mesa University, student-learning assessment takes place at the essential learning level, at the academic program level, and at the institutional level.

Table 1.

Assessment Levels	Timeline
Essential Learning	Yearly
Academic Program Review and Assessment	Six-year rotation for each program: Year 1 = SLO Plan Year 3 = Summary Review Year 6 = Program Review
Program Specific Accreditation	Varies by program
Institutional Assessment	NSSE, FSSE, CCSSE Approximately every three years Campus Climate Survey Approximately every three years See the following webpage for more details: https://www.coloradomesa.edu/institutional-research/surveys/administered.html

The assessment of student learning is an integral part of each faculty member's teaching responsibilities. Proper assessment is designed to improve student learning, a goal of all CMU faculty. Faculty assess within their courses and programs regularly.

Program Review

Program review is on a six-year rotation, with assessment review aligned with that cycle. In year one, a program assessment plan is submitted in the fall semester to indicate the outcomes and criteria that will be evaluated over the next six years. Evidence is gathered by the program over the six-year period. At the beginning of the third year, a program assessment progress report is submitted to the Assessment Committee to document what has been accomplished during years 1-3. At the completion of the six-year period, a formal program assessment report is completed, which is included in the program review as an appendix. This final report documents the assessment work over the review period and looks at strengths and weaknesses in the program and identifies areas for improvement. An independent external reviewer evaluates the program, the assessment information, and provides feedback.

Linking Assessment to Program Review

One purpose of conducting program review is to help programs/departments identify the strengths and weaknesses of the curriculum. Assessment of student learning can help programs determine necessary improvements to courses and determine what works well. A well-designed assessment plan assists the program in formulating a time frame for assessment as well as deciding what courses line up with the learning outcomes to be assessed. The Assessment Committee's role in this process is to review program assessment plans and offer suggestions for outcomes, find gaps in yearly assessment of outcomes, and assure that the program has reviewed the data and utilized the data to improve the program and student learning.

The time frame for the Committee review of the assessment portion of the program review is as follows:

- Department Head submits the program review to the AVPAA Academic Affairs in November, and the Assessment Appendix is shared with the Assessment Committee.
- The Assessment Committee sub-groups review the assessment plan/report using a rubric, making comments and observations. The sub-group review is shared with the AVPAA, who forwards the report to the appropriate department.
- The Chair of the Assessment Committee submits the report to Faculty Senate by May 15.

Overview of Assessment of Learning

The following are assumptions for student learning assessment at CMU based on the 9 Principles of Good Practice for Assessing Student Learning (Appendix A) and Characteristics of a Good Departmental Assessment Plan (Appendix B):

1. Assessment should be designed to improve student learning.
2. All faculty members should be actively involved.
3. Assessment should be embedded in regular course and program activities where possible.

Institutional Student Learning Outcomes

At Colorado Mesa, learning outcomes are established at the institutional level, by campus faculty, with program and course outcomes aligning to those outcomes. The institutional outcomes for degree programs follow.

Institutional outcomes for Graduate Programs:

The CMU doctoral degree graduate will be able to

- Advance science, education, leadership, practice, or policy within a chosen discipline by completing an original research project approved by the student's Graduate Committee. (Specialized Knowledge/Applied Learning)
- Employ discipline-specific logical, mathematical, or statistical methods, or other analytical processes to address a topic or issue. (Quantitative Fluency)
- Create oral and written arguments or explanations, well-grounded in discipline-specific theories and methods, for specified audiences. (Communication Fluency)
- Formulate and evaluate hypotheses as related to research problems, issues, concepts, and various perspectives. (Critical Thinking)
- Synthesize, evaluate, or refine the information base of various scholarly sources. (Information Literacy)
- Choose ethical and legal courses of action in research and professional practice. (Ethical Reasoning)

The CMU master's degree graduate will be able to:

- Contribute to scholarly advancement in the chosen field by completing projects individually and collaboratively. (Specialized Knowledge/Applied Learning)
- Employ discipline-specific logical, mathematical, statistical methods, or other analytical processes to address a topic or issue. (Quantitative Fluency)
- Create oral and written arguments or explanations, well-grounded in discipline-specific theories and methods, for specified audiences. (Communication Fluency)
- Formulate and evaluate hypotheses as related to research problems, issues, concepts, and various perspectives. (Critical Thinking)
- Synthesize, evaluate, or refine the information base of various scholarly sources. (Information Literacy)
- Articulate moral, ethical, legal, or professional challenges within discipline. (Ethical Reasoning)

Institutional outcomes for Undergraduate Programs are:

The CMU baccalaureate degree graduate will be able to:

- Construct a summative project, paper or practiced-based performance that draws on current research, scholarship and/or techniques, and specialized knowledge in the discipline. (Applied Learning; Specialized Knowledge)
- Analyze data critically, reason logically, and apply quantitative analysis methods correctly to develop appropriate conclusions. (Quantitative Fluency)
- Make and defend assertions about a specialized topic in an extended well-organized document and an oral presentation that is appropriate to the discipline. (Communication Fluency)
- Describe reasoned conclusions that articulate the implications and consequences for a particular decision by synthesizing information and methodologies. (Critical Thinking)
- Reflect on and respond to ethical, social, civic, and/or environmental challenges at local, national, and/or global levels. (Personal and Social Responsibility) and
- Find relevant sources of information, evaluate information critically, and apply the information appropriately and effectively to specific purposes. (Information Literacy)

The CMU/CMU Tech associate degree graduate will be able to:

- Locate, gather, and organize evidence on an assigned topic addressing a course or discipline-related question or a question of practice in a work or community setting. (Applied Learning; Specialized Knowledge)
- Use program-level mathematical concepts and methods to understand, analyze, and explain issues in quantitative terms. (Quantitative Fluency)
- Make and defend claims in a well-organized, professional document and/or oral presentation that is appropriate for a specific audience. (Communication Fluency)
- Identify and gather the information/data relevant to the essential question, issue and/or problem and develop informed conclusions. (Critical Thinking)
- Reflect on and respond to ethical, social, civic, and/or environmental challenges at local, national, and/or global levels. (Personal and Social Responsibility) and
- Identify, utilize, and cite various sources of information in academic assignments, projects or performances. (Information Literacy)

Institutional outcomes for Certificates are:

Institutional outcomes for a Technical Certificate program:

The CMU/CMU Tech technical certificate graduates will be able to:

- Locate, gather, and organize evidence on an assigned topic addressing a course or discipline-related question or a question of practice in a work or community setting. (Specialized Knowledge; Applied Learning)
- Make and defend claims in a well-organized, professional document and/or oral presentation that is appropriate for a specific audience. (Communication Fluency)
- Identify and gather the information/data relevant to the essential question, issue and/or problem and develop informed conclusions. (Critical Thinking)

Institutional outcomes for a Professional Certificate program:

The CMU professional certificate graduate will be able to:

- Construct a summative project, paper or practiced-based performance that draws on current research, scholarship and/or techniques, and specialized knowledge in the discipline. (Specialized Knowledge; Applied Learning)
- Describe reasoned conclusions that articulate the implications and consequences for a particular decision by synthesizing information and methodologies. (Critical Thinking)
- Reflect on and respond to ethical, social, civic and/or environmental challenges at local, national, and/or global levels. (Personal and Social Responsibility)

Institutional outcomes for a Graduate Certificate program are:

The CMU graduate certificate graduate will be able to:

- Graduate Certificates will, at a minimum, align with either two Masters Student Learning Outcomes or two Doctoral Student Learning Outcomes, depending on certificate level. Certificates may choose to use more than two Student Learning Outcomes, if desired.

Institutional outcomes for Essential Learning are:

- Produce effective arguments and summaries in written English
- Present information effectively in spoken English
- Demonstrate quantitative literacy
- Critically examine and evaluate an argument
- Demonstrate investigative and analytical thinking skills to solve problems
- Select and use appropriate information or techniques in an academic project
- Construct an academic project using techniques and methodologies from multiple disciplines

Based on these institutional outcomes, programs will produce student learning outcomes applicable to the discipline. Course learning outcomes may vary but should align with the program/ institutional outcome alignment.

The Assessment Process

Define Learning Outcomes

The first step in assessment is to define clear and measurable student learning outcomes. Generally, these outcomes should state what the student will be able to do as a result of learning. In other words, student learning outcomes should focus on student performance at the completion of a course or program. Therefore, outcomes should be written with action words that indicate what a student will be able to do, at the appropriate level for 100 through graduate level courses. Bob Mundhenk, Senior Scholar to the HLC, presented the following questions that one should answer when building assessment plans:

1. What do we promise incoming students?
2. What do we say our graduates will be able to do or to be?
3. What do we expect students in a course to carry with to other courses and to life after college?
4. What *essential* skills, knowledge, and values *must* they carry forward?
5. How do we help students understand what is most important?
6. How do our assignments, activities, assessment practices, grading strategies, syllabi, and other forms of interaction communicate what is important?
7. How do we assure that these important things are developed within courses, experiences, and majors? (Mundhenk, 2011)

The student learning outcomes should be closely aligned to Bloom's Taxonomy of Learning Objectives. It is important that the instructor use the appropriate level(s) of Bloom's Taxonomy in developing outcomes. The Taxonomy begins with knowledge at the lowest level and develops through multiple levels up to evaluation. For example, a student in a 100-level Essential Learning course may only demonstrate the lower levels such as knowledge and comprehension. A 400-level course should provide the student with higher-level learning such as analysis and synthesis. Huitt (2009) provides examples of action words and behavior outcomes for each level as shown in Figure 2.

Figure 2 From <http://www.edpsycinteractive.org/topics/cognition/bloom.html>

LEVEL	DEFINITION	SAMPLE VERBS	SAMPLE BEHAVIORS
KNOWLEDGE	Student recalls or recognizes information, ideas, and principles in the approximate form in which they were learned.	Write List Label Name State Define	The student will define the 6 levels of Bloom's taxonomy of the cognitive domain.
COMPREHENSION	Student translates, comprehends, or interprets information based on prior learning.	Explain Summarize Paraphrase Describe Illustrate	The student will explain the purpose of Bloom's taxonomy of the cognitive domain.
APPLICATION	Student selects, transfers, and uses data and principles to complete a problem or task with a minimum of direction.	Use Compute Solve Demonstrate Apply Construct	The student will write an instructional objective for each level of Bloom's taxonomy.
ANALYSIS	Student distinguishes, classifies, and relates the assumptions, hypotheses, evidence, or structure of a statement or question.	Analyze Categorize Compare Contrast Separate	The student will compare and contrast the cognitive and affective domains.
SYNTHESIS	Student originates, integrates, and combines ideas into a product, plan or proposal that is new to him or her.	Create Design Hypothesize Invent Develop	The student will design a classification scheme for writing educational objectives that combines the cognitive, affective, and psychomotor domains.
EVALUATION	Student appraises, assesses, or critiques on a basis of specific standards and criteria.	Judge Recommend Critique Justify	The student will judge the effectiveness of writing objectives using Bloom's taxonomy.

For example, clear and measurable student learning outcomes for an introductory accounting course might state:

- *At the completion of the course a student will be able to describe basic accounting principles and terminology.*
- *At the completion of the course a student will be able to identify and record basic accounting transactions in the general journal.*

Some verbs are not clear or easily measurable and should be avoided when developing student learning outcomes. Examples of these problem verbs include understand, know, grasp or comprehend.

Create Curriculum Maps

Once faculty write learning outcomes, it is important to determine where the outcomes will be assessed in the curriculum. By mapping the outcomes to the program courses on a grid, it is easy to see if there are any holes in the assessment process.

Table 2.

Outcome	Course 1XX	Course 2XX	Course 3XX	Course 4XX
1. Communication	x		x	x
2. Quantitative Fluency		x		x
3. Critical Thinking			x	x
4. Program Special Knowledge and Applied Learning	x	x	x	x

After determining where the outcomes are assessed in the curriculum, an assessment plan is developed to determine when the assessment will take place. Program faculty determine this planning process, as they will be responsible for gathering the data in the courses.

Gather Evidence

After faculty have determined the expected outcomes of the course and the acceptable level of performance, they can determine how to measure whether learning has taken place. It is generally better to embed assessment in the normal activities of the course or program. For example, one can assess learning in the course by using a particular writing assignment that is given each semester. An assessment can be direct or indirect. Direct assessments look at the work a student produces. Indirect assessments may include surveys and interviews. Both types of assessment can be extremely informative in making improvements to curriculum and a mixture of direct and indirect assessments should be used with at least one direct measure used.

Examples of assessment instruments may include:

Direct:

- Pre-tests and post-tests
- Writing activities
- Multiple choice questions
- Essay questions blind scored by faculty across the department
- Oral presentations
- Standardized tests
- Projects
- Clinical experiences
- Internships
- Simulations

- Portfolios
- Externally reviewed art exhibitions and performances

Indirect:

- Interviews
- Surveys/questionnaires
- Job placement/continuing education data

In deciding the assessment instrument, faculty need to consider if it is appropriate and meaningful and if it will be useful in improving learning. It is also important to determine the appropriate timing of the assessment in relation to the course or program.

Interpret the Evidence

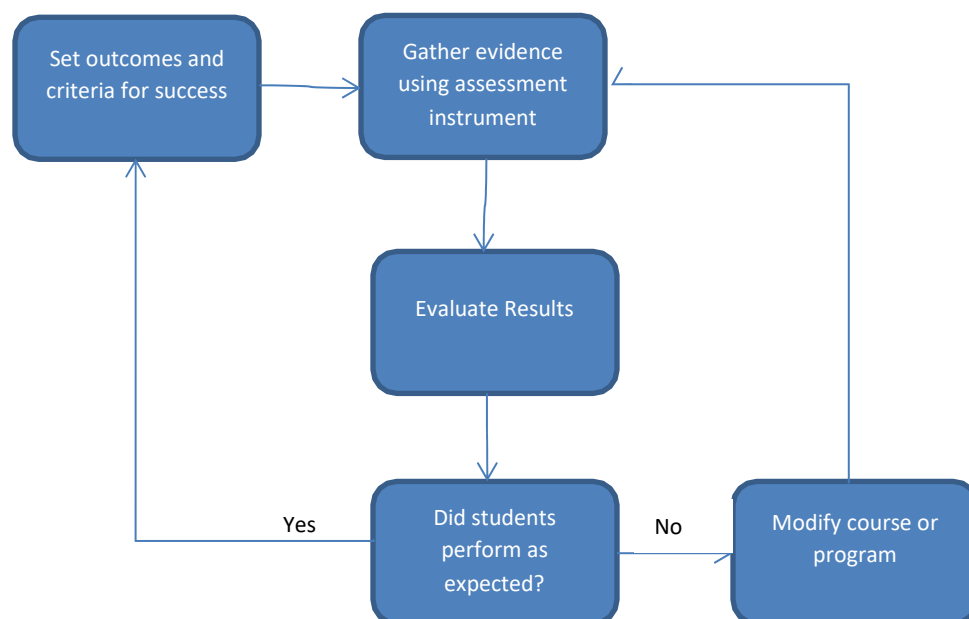
After evidence has been gathered, the faculty must judge the student's work. It is helpful for both the student and the faculty to understand the learning outcomes and the expectations of acceptable student performance. The faculty may interpret the evidence by using a rubric. A rubric is an assessment tool that can be used to analyze many assignments like writing activities, exams, and oral presentations. This allows consistency in interpreting the work along a continuum of performance of the skill or ability the student is demonstrating. These are helpful for students in understanding how grades were determined based on specific criteria. The AAC&U Values Rubrics are used for the assessment of Essential Learning. These rubrics can be found at http://www.aacu.org/value/rubrics/index_p.cfm.

Use the Results

The primary purpose of assessment is continuous improvement in student learning. Therefore, the use of the results to advance the curriculum is imperative. After interpreting the evidence, one may find that the students are learning what was intended. Such a favorable result means that the current design of the course or program is meeting that particular objective. In that case, it would be appropriate to consider another objective or outcome to measure during the next assessment period. Faculty members might be inclined to continue to measure the same thing period after period even though the assessment does not indicate that changes are necessary. In so doing, they may be missing an opportunity to refine their course or program in other areas that do need improvement.

After interpreting the evidence, one may find that students have not learned what was intended. In that circumstance, it would be appropriate to modify the curriculum to achieve the intended learning. Perhaps students did not realize that it was important. Perhaps another method of presenting the material would be more effective. The faculty should look at the curriculum to determine how it might be modified to improve student learning in that particular area in order for students to achieve the expected outcome. After making changes to the course or program, the expected outcome should be assessed again to see if student learning has improved. See Figure 3.

Figure 3



Document what changes were made as a result of assessment

As stated before, faculty assess in their courses. However, the assessment process is not always formally documented. The last step is to document the assessment of courses and programs to show evidence of continuous improvement for the program and CMU's various stakeholders. All faculty should participate in the recommendation process as well as the discussion of the changes that occurred as a result of assessment. The Assessment Committee will review program assessment plans/reports each year (in the program review cycle) to assure that the process is on-going. For definitions of terminology used, see Appendix D Glossary of Assessment Terms.

The Assessment Cycle

An assessment cycle in which evaluating each outcome occurs over the 6-year period of time is beneficial. Depending on the number of program outcomes, faculty should consider assessing two outcomes in the first year, evaluating the results of the assessment and determining the course of action in the second year, and then putting any changes into action in the third year. The fourth-sixth year would be a repeat of the cycle in order to have two cycles of assessment in the six-year program review period. The rest of the outcomes would be cycled in a similar manner. An example of this cycling (courtesy of Gloria Rogers, Senior Scholar to the HLC) is as follows:

Table 3.

Student Outcomes	AY 25-26	AY 26-27	AY 27-28	AY 28-29	AY 29-30	AY 30-31
Recognize ethical and professional responsibilities	A	E	C	A	E	C
Identify how contemporary issues shape and are shaped by mathematics, science, and engineering		A	E	C	A	E
Recognize the role of professionals in the global society			A	E	C	A
Describe diverse cultural and humanistic traditions	A	E	C	A	E	C
Work effectively in teams		A	E	C	A	E
Communicate effectively in oral, written, graphical, and visual forms			A	E	C	A

A= Assess; E= Evaluate;
C= Changes (if necessary)

The assessment period will depend on the number of students assessed. Classes with 20 or more students may provide usable data for the outcomes while classes with less students may need to be assessed over two or three semesters/years in order to collect enough information to make determinations on changes. While assessment generally occurs in capstone courses and perhaps in some formative courses, evaluation of the results of assessment should be conducted by all faculty whose courses contributed to the outcomes. The program curriculum map identifies which courses are assessing which outcomes. Including all faculty in these discussions becomes very productive in determining changes in courses or the entire curriculum. By streamlining the process, all faculty at various times in the assessment cycle should participate.

Course Student Learning Outcomes Assessment

A critical piece of assessment of learning outcomes takes place within the course itself, whether in the classroom or in online learning. Outcomes should be based on what students will learn in the course and the learning should align to the program and, ultimately the institutional outcomes. Many schools have used the term ‘objective’ instead of ‘outcome’ in regard to student learning assessment. Both terms can be used in the course syllabus, however, CMU has chosen to use the term “student learning outcomes” for assessment rather than the term, “objectives”. The following information from Rensselaer Polytechnic Institute gives a brief explanation of the difference:

Table 4.

<p>Objectives</p> <ul style="list-style-type: none">• Objectives represent valuable skills, tools, or content which enable a student to engage a particular subject.• Objectives describe the goals and intentions of the professor who teaches the course.• Objectives focus on content and skills important within the classroom or program. Objectives describe what the staff and faculty will do.• Objectives, often termed the input in the course, state the purpose, and goals, of the course.• Objectives can often be numerous, specific, and detailed. Assessing and reporting on each objective for each student may be impossible. <p>Outcomes</p> <ul style="list-style-type: none">• Student Learning Outcomes catalog the overarching products of the course. Learning Outcomes are statements that describe or list measurable and essential mastered content-knowledge—reflecting skills, competencies, and knowledge that students have achieved and can demonstrate upon successfully completing a course.• Outcomes express higher-level thinking skills that integrate course content and activities and can be observed as a behavior, skill, or discrete useable knowledge upon completing the course. Outcomes of assessments show what the student is able to do upon completing the course.• An assessable outcome is an end-product that can be displayed or observed and evaluated against criteria.

Writing Student Learning Outcomes

When writing Student Learning Outcomes, the focus should be on what the student can accomplish upon completion of a course. Using a three-step process can be useful.

The **first step** should use the following beginning verbiage:

Upon completion of the course, the student will be able to:

The **second step** in writing SLOs should focus on the appropriate Bloom's Taxonomy verb. A focus on knowledge and comprehension is appropriate for 100-200 level courses and a focus on Application and Analysis is appropriate for 300-400 level courses. See Appendix C for additional verbs by category.

Upon completion of the course, the student will be able to *list*

The third step is to identify what the student will be able to do that aligns with the course and the program student learning outcomes.

Upon completion of the course, the student will be able to list *the five steps of decision making*.

Writing clear and measurable student learning outcomes ensures the outcome can be measured, provides meaningful information, and ensures the outcome has successfully scaffolded into the course and program student learning outcomes.

An excellent reference for writing student learning outcomes is found at the University of Connecticut. (see <https://kb.ecampus.uconn.edu/2024/07/15/writing-cognitive-objectives/>).

Assessment (FAQs) Frequently Asked Questions

Question:

Why engage in assessment when students get grades for their completed assignments? Isn't assessment and grading basically the same thing?

Response:

Assessment encompasses a broader and more comprehensive evaluation of student learning than grading. Assessment involves gathering information and evidence about what students know and can do, using various methods such as tests, projects, presentations, and other forms of evaluation. Grading is a specific component of assessment that involves assigning numerical or letter-based scores to students' performance on assignments, exams, or other evaluative measures. It is the process of converting the assessment data into a formal record of achievement for the individual student.

The primary purpose of assessment is to understand the effectiveness of teaching and learning processes, measure the achievement of learning outcomes, and provide feedback to both students and instructors at the program level. Assessment is not limited to assigning grades; it involves diagnosing strengths and weaknesses in student understanding to inform instructional practices.

The primary purpose of grading is to communicate a summary of a student's performance in a course. It serves as a quantitative representation of the quality of work completed, providing students with feedback on their academic performance. Grading also facilitates the comparison of student achievements within a class or across different courses.

In short, assessment is a broader term that encompasses a variety of methods used to evaluate student learning through the program in a comprehensive manner. Grading is a specific part of the assessment process that involves assigning scores or grades to evaluate and communicate the level of accomplishment attained by each student individually.

Question:

How can assessment help my program go deeper than the grading/reflecting we're already doing?

Response:

Assessment is a tool that helps faculty focus on higher-order outcomes relevant to the program. Instead of simply grading an assignment/project/artifact, artifacts are viewed (perhaps with the help of a rubric) through the lens of the long-term outcomes that students will achieve some level of mastery of over their time in the program. In this way, assessment provides a valuable birds-eye view of how students are progressing in the skills that have identified as key for the program.

Additionally, as program faculty evaluate artifacts together and come to an agreement on next steps, faculty form a shared picture of how their students are progressing and are reminded of the key outcomes identified for the program. This shared vision is a valuable tool for fostering cohesiveness and improvement as a program.

Question:

Should I use multiple assessment tools?

Response:

By using multiple assessment tools, you may get a more complete picture of what you are trying to measure. It will give you multiple perspectives for analysis.

Question:

Which and how many faculty members of a program need to participate in the assessment process?

Response:

All faculty members should participate in assessment as they are all stakeholders in improving student learning and the success of the program. Also, courses across the curriculum are used in the assessment process which makes faculty participation crucial.

Question:

Will assessment information be used to evaluate faculty?

Response:

Absolutely not. This process is about assessing the effectiveness of programs not individuals. The results will be reported in a way that will not identify individual faculty or students.

Question:

Where can I go for help in developing assessment for my course or program?

Response:

Each department has a representative on the Assessment Committee who will have information about assessment at CMU. In addition, the AVPAA of Assessment is available to meet with you and provide guidance. Contact information is on the web site. Many online resources are listed at <http://www.coloradomesa.edu/assessment/>.

Question:

Is assessment just another academic fad that will be gone in a couple of years?

Response:

Absolutely not. Assessment is integral to the learning process. Every institutional higher education accreditation agency, including the HLC, includes the assessment of learning outcomes as one of the highest priority criterion.

Question:

Aren't we only assessing student learning for the Higher Learning Commission?

Response:

While it is true that the Higher Learning Commission will review assessment practices, the primary purpose of assessment is to assist faculty in continuously improving their courses and programs.

Question:

How will assessment improve learning?

Response:

Assessment by itself will not improve learning. It is a tool that provides information to faculty and that information can be used to improve learning.

Question:

What are examples of how different programs have made assessment meaningful and helpful for them?

Response:

For examples of exemplary Assessment practices, see the Assessment Highlights by clicking here:

[Spotlight on Assessment](#)

For the current assessment forms for both the 3-year and the 6-year assessment review, click here: [Three and Six Year Forms](#)

For the Current Program Review Cycle that includes the Assessment Cycle, click here: [Program Review Cycle](#)

References

Huitt, W. (2009). *Bloom et al.'s taxonomy of the cognitive domain*. Retrieved September 7, 2011, from Educational Psychology Interactive:

<http://www.edpsycinteractive.org/topics/cognition/bloom.html>

Mundhenk, B. (2011). *Assessment of Learning: The Basics. Making a Difference in Student Learning: Assessment as a Core Strategy*. Chicago: HLC.

Resources

Association of American Colleges and Universities: <http://www.aacu.org/leap/index.cfm>

National Institute for Learning Outcomes Assessment:

<http://learningoutcomeassessment.org/>

Appendix A

AAHE's 9 Principles of Good Practice for Assessing Student Learning

1. The assessment of student learning begins with educational values. Assessment is not an end in itself but a vehicle for educational improvement. Its effective practice, then, begins with and enacts a vision of the kinds of learning we most value for students and strive to help them achieve.

Educational values should drive not only *what* we choose to assess but also *how* we do so. Where questions about educational mission and values are skipped, assessment threatens to be an exercise in measuring what's easy, rather than a process of improving what we really care about.

2. Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed in performance over time. Learning is a complex process. It entails not only what students know but what they can do with what they know; it involves not only knowledge and abilities but values, attitudes, and habits of mind that affect both academic success and performance beyond the classroom. Assessment should reflect these understandings by employing a diverse array of methods, including those that call for actual performance and using them over time to reveal change, growth, and increasing degrees of integration. Such an approach aims for a more complete and accurate picture of learning, and therefore a firmer base for improving the student's educational experience.

3. Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes. Assessment is a goal-oriented process. It entails comparing educational performance with educational purposes and expectations -- those derived from the institution's mission, from faculty intentions in program and course design, and from knowledge of students' own goals. Where program purposes lack specificity or agreement, assessment as a process pushes a campus toward clarity about where to aim and what standards to apply; assessment also prompts attention to where and how program goals will be taught and learned. Clear, shared, implementable goals are the cornerstone for assessment that is focused and useful.

4. Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes. Information about outcomes is of high importance; where students "end up" matters greatly. But to improve outcomes, we need to know about student experience along the way -- about the curricula, teaching, and kind of student effort that lead to particular outcomes. Assessment can help us understand which students learn best under what conditions; with such knowledge comes the capacity to improve the whole of their learning.

5. Assessment works best when it is ongoing not episodic. Assessment is a process whose power is cumulative. Though isolated, "one-shot" assessment can be better than none, improvement is best fostered when assessment entails a linked series of activities undertaken over time. This may mean tracking the process of individual students, or of cohorts of students; it may mean collecting the same examples of student performance or using the same instrument semester after semester. The point is to monitor progress toward intended goals in a spirit of continuous improvement. Along the way, the assessment process itself should be evaluated and refined in light of emerging insights.

6. Assessment fosters wider improvement when representatives from across the educational community are involved. Student learning is a campus-wide responsibility, and assessment is a way of enacting that responsibility. Thus, while assessment efforts may start small, the aim over time is to involve people from across the educational community. Faculty play an especially important role, but assessment's questions can't be fully addressed without participation by student-affairs educators, librarians, administrators, and students. Assessment may also involve individuals from beyond the campus (alumni/ae, trustees, employers) whose experience can enrich the sense of appropriate aims and standards for learning. Thus understood, assessment is not a task for small

groups of experts but a collaborative activity; its aim is wider, better-informed attention to student learning by all parties with a stake in its improvement.

7. Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about. Assessment recognizes the value of information in the process of improvement. But to be useful, information must be connected to issues or questions that people really care about. This implies assessment approaches that produce evidence that relevant parties will find credible, suggestive, and applicable to decisions that need to be made. It means thinking in advance about how the information will be used, and by whom. The point of assessment is not to gather data and return "results"; it is a process that starts with the questions of decision-makers, that involves them in the gathering and interpreting of data, and that informs and helps guide continuous improvement.

8. Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change. Assessment alone changes little. Its greatest contribution comes on campuses where the quality of teaching and learning is visibly valued and pursued. On such campuses, the push to improve educational performance is a visible and primary goal of leadership; improving the quality of undergraduate education is central to the institution's planning, budgeting, and personnel decisions. On such campuses, information about learning outcomes is seen as an integral part of decision making, and avidly sought.

9. Through assessment, educators meet responsibilities to students and to the public. There is a compelling public stake in education. As educators, we have a responsibility to the publics that support or depend on us to provide information about the ways in which our students meet goals and expectations. But that responsibility goes beyond the reporting of such information; our deeper obligation -- to ourselves, our students, and society -- is to improve. Those to whom educators are accountable have a corresponding obligation to support such attempts at improvement.

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Appendix B

Characteristics of a Good Departmental Assessment Plan

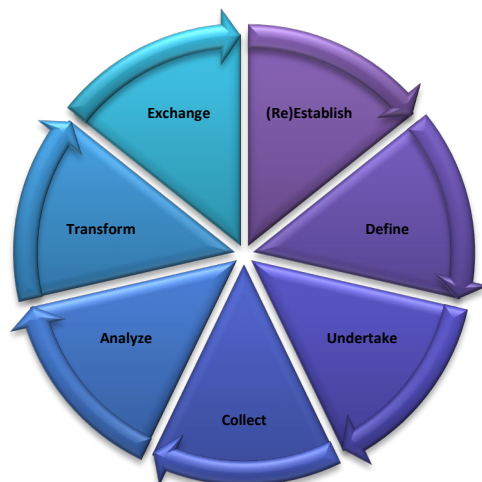
1. The plan flows from the mission statement.
2. The focus is on the major (i.e. degree program) as a whole rather than on individual courses.
3. The number of critical student learning outcomes is small. No more than 6-8 SLOS for a program and 4-6 SLOs for a course.
4. The assessment plan is the product of input and discussion by the entire department/unit (faculty and students).
5. The plan is integrated into the curriculum or services provided.
6. The plan is ongoing rather than periodic.
7. The plan is manageable.
8. The plan uses multiple measures, both qualitative and quantitative, and direct and indirect measures.
9. Students understand their role in assessment (how it will be used and how it can help them).
10. The results of assessment activities are used by faculty/programs to improve; they are seen as a means rather than an end.

Source: Concordia College; Ball State University; Kansas State University; Higher Learning Commission

EDUCATE

The 7-step Assessment Cycle called **EDUCATE**. Source: Penick, Chris, CMU.

- (Re)Establish learning objectives
- Define measures of success
- Undertake a plan of action
- Collect data
- Analyze the data
- Transform the data into actionable practices
- Exchange best practices



Appendix C

Bloom's Taxonomy Examples

For an informative website with more detailed example and information go to

<https://www.utica.edu/academic/Assessment/new/Blooms%20Taxonomy%20-%20Best.pdf>

Since understand, know, appreciate, improve, learn, etc., are difficult to measure, use of these verbs is discouraged when writing SLOs.

University of Connecticut Assessment Primer Example:

COMPREHENSION		APPLICATION		ANALYSIS	SYNTHESIS	EVALUATION
KNOWLEDGE						
	Associate				Arrange	Appraise
Cite	Classify	Apply	Analyze	Assemble	Assess	
Count	Compare	Calculate	Appraise	Collect	Choose	
Define	Compute	Classify	Calculate	Compose	Compare	
Draw	Contrast	Demonstrate	Categorize	Construct	Criticize	
Identify	Differentiate	Determine	Classify	Create	Determine	
List	Discuss	Dramatize	Compare	Design	Estimate	
Name	Distinguish	Employ	Debate	Formulate	Evaluate	
Point	Estimate	Illustrate	Diagram	Integrate	Grade	
Quote	Explain	Interpret	Differentiate	Manage	Judge	
Read	Express	Locate	Distinguish	Organize	Measure	
Recite	Extrapolate	Operate	Examine	Plan	Rank	
Record	Interpolate	Practice	Experiment	Prepare	Rate	
Repeat	Locate	Report	Inspect	Prescribe	Recommend	
Select	Predict	Restructure	Inventory	Produce	Revise	
State	Report	Schedule	Question	Propose	Score	
Tabulate	Restate	Sketch	Separate	Specify	Select	
Tell	Review	Solve	Summarize	Synthesize	Standardize	
Trace	Tell	Translate	Test	Write	Test	
Underline	Translate	Write			Validate	

Lower division course outcomes

The shading on the lower division outcome/courses indicates that the majority of the SLOs will be at the knowledge and comprehension level. The shading on the upper division course outcomes indicates the majority of the SLOs will be at the application, analysis, synthesis level.

COMPREHENSION		APPLICATION		ANALYSIS	SYNTHESIS	EVALUATION
KNOWLEDGE						
	Associate				Arrange	Appraise
Cite	Classify	Apply	Analyze	Assemble	Assess	
Count	Compare	Calculate	Appraise	Collect	Choose	
Define	Compute	Classify	Calculate	Compose	Compare	
Draw	Contrast	Demonstrate	Categorize	Construct	Criticize	
Identify	Differentiate	Determine	Classify	Create	Determine	
List	Discuss	Dramatize	Compare	Design	Estimate	
Name	Distinguish	Employ	Debate	Formulate	Evaluate	
Point	Estimate	Illustrate	Diagram	Integrate	Grade	
Quote	Explain	Interpret	Differentiate	Manage	Judge	
Read	Express	Locate	Distinguish	Organize	Measure	
Recite	Extrapolate	Operate	Examine	Plan	Rank	
Record	Interpolate	Practice	Experiment	Prepare	Rate	
Repeat	Locate	Report	Inspect	Prescribe	Recommend	
		Restructure	Inventory	Produce	Revise	
		Schedule	Question	Propose	Score	
		Sketch	Separate	Specify	Select	
		Solve	Summarize	Synthesize	Standardize	
		Translate	Test	Write	Test	
Underline	Translate	Write			Validate	

Upper division Course / Program outcomes

Appendix D

Glossary of Assessment Terms

Assessment: The systematic process of determining educational objectives, gathering, using, and analyzing information about student learning outcomes to make decisions about programs, individual student progress, or accountability. Methods used to analyze student learning outcomes or achievement of program objectives.

Accreditation: The process of evaluation and recognition by an external accrediting body that assesses whether an educational institution or program meets predetermined standards of quality and integrity.

Alignment - Ensuring that assessment activities, learning objectives, and instructional methods are congruent and support each other.

Artifact - A tangible and concrete product or evidence that demonstrates a student's learning or achievement.

Assessment Cycle - A systematic and recurring process of planning, implementing, evaluating, and using assessment activities to improve student learning outcomes and the overall quality of educational programs.

Assessment Plan: A document used to summarize the relationship between program outcomes and courses, course assignments, or course syllabus objectives to examine congruence and to ensure that all outcomes have been sufficiently structured into the curriculum.

Authentic Assessment: The provision of real-life situations for students to practice and reinforce knowledge and skills. An assessment that measures a student's ability to perform a “real world” task in the way professionals in the field would perform it.

Benchmark: A criterion-referenced objective performance datum that is used for comparative purposes. A program can use its own data as a baseline benchmark against which to compare future performance. It can also use data from another program as a benchmark. In the latter case, the other program often is chosen because it is exemplary and its data are used as a target to strive for, rather than as a baseline. (James Madison University)

Bloom's Taxonomy: The extent and rigor of learning as defined by six levels by Benjamin Bloom: (1-Knowledge; 2-Recall and Comprehension; 3-Application; 4-Analysis; 5-Synthesis; 6-Evaluation); characterized by action verbs.

Capstone Course: A course that encompasses educational experience and provides a summative demonstration of competencies.

Closing the Loop: Evaluative steps in the assessment process that lead to program improvement. This is accomplished by reviewing the data collected in course assessment and discussing possible methods of course or program educational improvement or revision.

Competency: The demonstration of the ability to perform a specific task or achieve a specified criterion.

Course-level Assessment: Assessment of student-learning outcomes in a specific course. Faculty members engage in course assessment by evaluating student performance on assignments, projects, and exams, and then using that information to improve student learning. The focus is on understanding the performance of an entire class or the effectiveness of the course across multiple sections.

Course Learning Outcomes: A demonstrable competency at a certain level of proficiency (what does the student know; what can the student do); outcomes must be measurable for the sake of assessment. Measurement can be both objective (quantitative) and/or subjective (qualitative).

Course Objectives: Detailed aspects of the course that are accomplished by the successful completion of the course outcomes. Refers to the specific knowledge, skills, or attitudes that students are expected to achieve through their college experience.

Criterion - A specific standard or expectation against which student work is evaluated.

Criterion-Referenced Assessment - Evaluation that measures a student's performance against pre-established criteria or learning standards.

Curriculum Mapping: Curriculum mapping is a process for collecting and recording curriculum-related data to identify core skills and content taught, processes employed, and assessments used for each course and level in a degree program. The purpose of a curriculum map is to document the relationship among the components in the curriculum, and ultimately, to create a more coherent curriculum. A curriculum map can be used for analysis, communication, and planning.

Degree Qualifications Profile: A qualifications framework that illustrates clearly what students should be expected to know and be able to do once they earn their degrees at any level. (Lumina Foundation)

Direct Assessment Methods: Direct measures of student learning require student to display their knowledge and skills as they respond to the instrument itself. Objective tests, essays, presentations, and classroom assignments all meet this criterion. (James Madison University)

E-Portfolios: A portfolio is a collection of work developed across varied contexts over time. The portfolio can advance learning by providing students and/or faculty with a way to organize, archive and display pieces of work (Regis University). An electronic format of a collection of work developed across varied contexts over time. The electronic format allows faculty and other professionals to evaluate student portfolios using technology, which may include the Internet, CD-ROM, video, animation or audio.

Essential Learning – Often referred to as “General Education”; lower division courses, in which students begin to develop skills in written and oral communication, quantitative literacy, and critical thinking, that form an important foundation for all majors.

Formative Assessment: The gathering of information about student learning-during the progression of a course or program which is usually repeatedly-to improve the learning of those students. Example: reading the first lab reports of a class to assess whether some or all students in the group need a lesson on how to make them succinct and informative. (Leskes, 2002)

Higher Learning Commission: The review commission for accreditation within NCA (North Central Association of Colleges and Schools).

Indirect Assessment Methods: Methods such as surveys and interviews that ask students to reflect on their learning rather than to demonstrate it (James Madison University). Reflection by students and others on learning experiences, adequacy of a program, etc.; may be administered by surveys, course embedded activities (such as minute papers), focus groups, job placement rates, transfer studies success, etc.

Information Literacy: The ability to acquire, evaluate, organize, maintain, interpret, and communicate knowledge.

Institutional Assessment: A process of assessing institutional outcomes in relationship to mission, values, and strategic planning.

Institutional Learning Outcomes: Broad-based learning outcomes reflecting common educational knowledge and skills from all programs that all graduates of the institution will acquire. Outcomes should align with the institution's mission.

Liberal Education: A philosophy of education that empowers individuals with broad knowledge, transferrable skills, and a strong sense of values, ethics and civic engagement. The specific choice of major matters far less than the knowledge and skills gained through all studies and experiences in college. (AAC&U)

Norm-Referenced Assessment - Evaluation that compares a student's performance to that of a normative group, often expressed as percentiles.

Outcomes Based Assessment: Measures of performance against defined, measurable outcomes. Faculty and administrators purposefully plan the program to support student achievement of the outcomes, implement methods to systematically identify whether the end results have been achieved, and use the results to plan improvements or make recommendations for resource reallocation or requests.

Portfolio: A collection of education experiences and assessments that reflects the capabilities of a student or group of students.

Program Learning Outcomes: The knowledge, skills, and abilities students should possess when they complete a program. Educational or degree programs are more than a collection of random courses. Educational programs prepare students for a range of specific outcomes that can be stated in measurable terms. Program assessment seeks to determine the extent to which students in the program can demonstrate these outcomes.

Program Review: The administrative and peer review of academic programs conducted on a six-year cycle, the results of which are reported to the CMU Board of Trustees. This review includes a comprehensive analysis of the structure, processes, and outcomes of the program.

Qualitative Data: Data in which the values of a variable differ in kind (quality) rather than in amount.

Quantitative Data: Data in which the values of a variable differ in amount rather than in kind.

Reliability: The characteristic of a measuring instrument to obtain similar results with repeated administrations.

Rubrics: Specific sets of criteria that clearly define for both student and Instructor what a range of acceptable and unacceptable performance look like. Criteria define descriptors of ability at each level of performance and assign values to each level. Levels referred to are proficiency levels which describe a continuum from excellent to unacceptable product. (SABES) A scoring tool that lists the criteria for a piece of work, or "what counts" (for example, purpose, organization, and mechanics are often what count in a piece of writing); it also articulates gradations of quality for each criterion, from excellent to poor.

Standardized Assessment: A standard-based assessment of learner achievement in relation to set standards.

Student Artifacts: A collection of papers, projects, documents, etc., which represent student knowledge, competency, understanding, and achievement of identified goals and learning incomes.

Student Learning Outcomes: Demonstration of what students will be able to know, do, and value at the end of their degree program. An expression of what a student will demonstrate on the successful completion of a module, course or program of study. At CMU there are three levels of student learning outcomes: Institutional Student Learning Outcomes, Program Student Learning Outcomes, and Course Student Learning Outcomes.

Summative Assessment: Evaluation at the conclusion of a unit or units of instruction or an activity or plan to determine or judge student skills and knowledge or effectiveness of a plan or activity. (Leskes, 2002). When used for improvement, impacts the next cohort of students taking the course or program. Example: examining student final exams in a course to see if certain specific areas of the curriculum were understood less well than others.

Validity: The degree to which a test or other assessment measure measures what it is designed to measure. The extent to which an assessment measures what it is supposed to measure and the extent to which inferences and actions made on the basis of test scores are appropriate and accurate.

Voluntary System of Accountability (VSA): A joint accountability initiative by the American Association of State Colleges and Universities (AASCU) and the Association of Public and Land Grant Universities (APLU) aimed at making institutional data transparent.

Value Added Learning: The increase in learning that occurs during a course, program, or undergraduate education. Can either focus on the individual student (how much better a student can write, for example, at the end than at the beginning) or on a cohort of students (whether senior papers demonstrate more sophisticated writing skills-in the aggregate-than freshmen papers). A baseline measurement is required for comparison. (Leskes, 2002) The increase in knowledge, skills and aptitudes from the college experience; may also be the additional benefits of learning teamwork, appreciation for one's culture, etc.

References:

Leskes, A., Beyond the Confusion: An Assessment Glossary, AAC&U Peer Review, Winter/Spring, 2002.

Northern Illinois University Assessment Glossary: <http://www.niu.edu/assessment/Resources/terms.shtml>

Quality Research International Analytic Quality Glossary:
<http://www.qualityresearchinternational.com/glossary/learningoutcomes.htm>