ASSESSMENT FOR STUDENT LEARNING

HANDBOOK

IT'S ALL ABOUT HELPING STUDENTS LEARN

Are our students learning?

**What do we want our students
to know and be able to do?**

**How will we know
what our students have learned?**

Nebraska College of Technical Agriculture
Curtis, NE

Assessment for Student Learning at NCTA

NCTA is all about helping students learn. We're committed more than ever to creating learning-centered environments where faculty, administrators, and staff work actively to help students learn. Using methods of Assessment FOR Student Learning is our way of assuring that learning is occurring and improving. We've learned that "one size does not fit all." However, the improvements that do result from an assessment process make the challenge of finding answers to that significant question, "How do we know what our students have learned?"

We are discovering that unlike evaluation, which looks at mastery of outcomes and process, Assessment FOR Learning looks at the process of learning or failing to learn. We ask the question, "If learning has not been achieved, what factors or behaviors have interfered with the learning process, and what can we do about it?" Processes and outcomes are connected.

The **ASSESSMENT FOR STUDENT LEARNING HANDBOOK** provides a framework for continuous improvement of student learning and a commitment to program excellence. Our process provides evidence that:

- Learning outcomes are observable and are performed by the students
- Curriculum alignment provides the opportunity for students to achieve these outcomes because the curriculum is driven by intended learning outcomes and assessment evidence
- Learning opportunities are consistent and contribute to student learning
- Successful program completion provides students with the skills and abilities described in the general education goals and are clear enough to be understood by our stakeholders
- Faculty teaching NCTA courses provide students with multiple integrated learning opportunities to assure that students will be able to do outside the learning environment (classroom and labs) what they have learned through their learning experiences

NCTA Assessment Goals FOR Student Learning
- Promote a community of collaboration and inquiry to share ideas, find solutions, and build innovations regarding student learning
- Support student learning outcomes as the core of faculty, student services, and workforce development to strive for partnerships among campus educators while creating innovative learning experiences for students
- Create a resource center to provide a collaborative environment to engage faculty, staff, administrators, and the college community in outcome assessment practices
- Create a repository for required academic assessment reports and best practices in assessment that will be accessible to all faculty, administrators, staff, students, and other interested constituents
- Work collaboratively with academic divisions to support assessment activities
- Strengthen the measurement of general education to develop student learning

- Maintain a website to increase the visibility, communication, and importance of assessment for student learning in all learning areas and modes of delivery
- Maintain and disseminate the Assessment for Student Learning Handbook
- Collaborate with curriculum management to integrate assessment evidence into the curriculum review process
- Integrate practices with curriculum development, instructional design, distance learning, student services, community education, and workforce development.

Yearly Assessment of Intended Learning Outcomes for Student Achievement

Assessment is a method for faculty to collect feedback on how well students are learning. The purpose of assessment is to provide faculty and students with information and insights needed to improve student learning, teaching strategies, and curriculum. Assessment can be fun and most importantly, puts the responsibility of learning squarely on the student. It also opens a dialogue between the faculty and the student on the teaching/learning process. Overall, assessment is a process of self-reflection with an outlook towards improvement.

Faculty provides continuous feedback to students to help students improve their learning strategies and study habits so that they can become more independent, successful learners. The conversations between and among faculty, students, and other stakeholders provide an excellent way to share best practices.

Continuous Improvement for Student Learning Through a Culture of Evidence, Inquiry, Teaching and Learning.

1. PLAN – Identify intended Leaning Outcomes and Benchmarks
2. APPROACHES – Identify measures selected for program and General Education Outcomes
3. DATA – Gather, exhibit, and present on projects or information gained
4. SHARE – Review and discuss data

Assessment FOR Student Learning – Frequently Asked Questions (FAQs)

Assessment is a type of action research to help us gather indicators that will be useful for improving student learning through our curriculum and teaching strategies. It focuses on student learning and <u>what the student will be able to do</u> and not so much on what we are going to teach. The following Q & As will attempt to provide answers to some frequently asked questions that may further your understanding of the assessment process.

1. **Q. Why do we assess FOR student learning?**
   A. To do assessments for the goal of doing an assessment and writing a report would be a waste of time. Link your assessment practices to compelling, powerful, and consequential processes such as division review or program validation. You can link it to curriculum revisions, distance learning, retention, service learning, and improving student learning and teaching strategies.

There is considerable evidence that assessment drives student learning and curriculum. Most important, our assessment tools tell our students what we consider to be important and make clear our expectations of what the student will do to be successful in the course or program. They will learn what we guide them to learn through our assessments. By using appropriate assessment techniques, we can encourage our student to raise the bar.

2. **Q. I already give tests and grades. Isn't that assessment?**
   A. Not really. Tests and quizzes are an evaluation of learned material. Assessment involves a sample of behavior from your student that can be observed and judged on the basis of specific criteria developed and assessed in multiple modes and contexts of the *learning process.* For example, a project, presentation, a number of writing assignments, labs, and more. Traditional testing methods are limited measures of student learning and of limited value for guiding student learning. We can't just say that 73% of our students are getting A's and B's, so we must be doing okay. A letter grade itself does not give enough information about the learning that is occurring.

3. **Q. Aren't student learning outcomes specific tasks that the student will perform?**
   A. No, not tasks. Student learning outcomes are generic abilities that can be developed/improved and assessed. (See the Glossary for terms – competency vs. learner-centered outcome)

4. **Q. What is an outcomes-based course?**
   A. An outcomes-based course is supported with multiple learning opportunities for the student to achieve the learning outcomes.

5. **Q. What is the syntax of pedagogy?**
   A. Student learning outcomes, taxonomy, assessment – for each learning outcome the faculty will develop/provide at least three assessments with measurements, more specifically, opportunities for the students to learn with meaningful feedback.

6. **Q. When we validate program outcomes (3-year cycle) at NCTA, aren't we assessing individual students?**
   A. No. We are assessing programs and program outcomes. We want to determine how well our programs are actually achieving what they profess to achieve. Program outcome validation seeks to determine if program and general education outcomes are appropriate to meeting current academic, business, trade and/or professional/technological standards.

7. **Q. How does assessment FOR learning help faculty?**
   A. It provides teachers with useful information about their students, including the quality of learners and readiness for learning. Ongoing assessment informs the teachers about the pace and progress of student learning in their classroom.

8. **Q. Is this something extra for me to do? Who should be doing assessments?**
   A. No, it's not extra. You're already assessing. It's those learning opportunities that you have designed in your curriculum where you can give your students on-going feedback so that they can improve learning. Only faculty who guide the learning process can identify the student learning outcomes of that process, what it is they expect to happen to/for the student. It is the faculties who teach in that program, interpret the results, and recommend improvements in pedagogy and curriculum.

9. **Q. How can I assess attitudes and understanding what are simply not quantifiable?**
   A. It seems a common misunderstanding that assessment requires that everything be reduced to statistical measures. The thrust of assessment is objective results such that anyone will know that the learning goals are being met; but this *need not be quantifiable.* If the faculty identify as an important result that which is not quantifiable, the process simply asks them to specify some objective means to demonstrate that the results are happening as intended.

10. **Q. Why is the Higher Learning Commission making us assess?**
    A. Right now, higher education is concerned with two national issues: the learning college and accountability. Most faculty have been engaged in some type of assessment throughout their teaching career and have found it to be a tool for understanding what their students are learning.

11. **Q. Does student assessment information results affect faculty evaluation?**
    A. No. We're focusing on the classroom level. Assessment is informed by the expertise and professional judgment of the faculty. Faculty in an academic division or program, interpreting the results of an assessment measure, might collectively decide to give more attention to certain outcomes, and might even recommend changes in pedagogy.

12. **Q. Are adjunct faculty involved?**
    A. Yes, by all means. All faculties, full and part-time, are involved in student learning. We have many creative and dedicated adjunct faculties at NCTA.

13. **Q. What is the connection among the various levels of assessment?**
    A. The focus of assessment is student learning. The most significant educational interaction happens between students and faculty in the classroom. The individual class section is part of a course, and courses are parts of programs. These levels reflect different, yet interrelated, facets of a student's education.

14. **Q. How will assessment improve learning?**
    A. Assessment is a tool. However, it is a tool by which we can communicate with our students about learning with learning opportunities and ongoing feedback. Assessment does not accomplish learning – but it provides information to the student and the faculty who may use it to improve learning.

15. **Q. How does classroom assessment relate to program/discipline assessment, and how does program/discipline assessment fit in with the College's overall assessment efforts?**

   A. Classroom assessment involves assessing student learning in a particular course. This can be accomplished using Classroom Assessment Techniques (CATs), which are quick, ungraded, classroom assignments used to provide feedback for determining student understanding of particular lessons. It is an ongoing process with the primary purpose of improving course-level instruction and student learning.

   This is accomplished through an annual process where each program/discipline designs and implements an Assessment Plan, measures learning outcomes, analyzes the data collected, communicates the information, and uses these results to develop an action plan aimed at improving student learning.

   College assessment efforts include classroom assessment, program/discipline assessment, and assessment of general education. The goal of assessment of student learning at NCTA is to improve student learning and support the College in fulfilling its educational mission. Assessment provides evidence of how well NCTA is meeting its mission and helps identify areas for improvement.

16. **Q. How many faculty of a given program should participate in the assessment process?**

   A. All faculties, both full time and adjunct, should participate in assessment. All have a stake in the success of their respective program or discipline.

17. **Q. Does an Assessment Plan have to be prepared for each course within a program/discipline or within a sequence of courses?**

   A. No, only one assessment plan is required for an entire program/discipline or sequence of courses. This plan should reflect the cumulative learning outcomes for the students in the course. Nonetheless, to achieve this goal, a particular course within a program/discipline may become the focus of the Assessment Plan.

18. **Q. What's the purpose of Program Validation?**

   A. In campus statements of mission and goals, we have committed to providing our students with excellence in student learning and preparation to meet the world. Validation reveals our linkages between programs and the community it serves. Validation contributes to planning for the future of our programs. All together, it promotes campus wide understanding of the contributions of each program to the mission of the college.

19. **Q. How do faculty within a division identify student-learning outcomes?**

   A. Some learning outcomes can be mandated by outside agencies or advisory boards. Others are identified through discussion among faculty who have tried to answer the question of what knowledge or skills their students should demonstrate upon exiting the course or program. Learning outcomes inform our curriculum, teaching, and assessment.

20. **Q. Who chooses lead instructors for assessment in the division/discipline?**

   A. This is a divisional decision. Typically the division chair would make this decision in conjunction with the Associate Dean.

21. **Q. Where do lead instructors or division chairs submit their assessment plans?**
    A. Plans are submitted to the NCTA Assessment Committee.

22. **Q. Where can we get help for developing an assessment plan?**
    A. The Assessment committee is here to help. There are a number of individual members of the Assessment Committees who, through research, attending conferences, and hands-on experiences, have gained expertise with assessment of student learning. The committee as a whole and these individuals will be glad to do what they can to help.

23. **Q. What is a program outcome?**
    A. Think about what your students will need to be able to DO "out there" (in the rest of life) that you are responsible for in your program?"
    When developing your program outcomes, encompass several levels of learning through the learning sequence of the program. One program outcome will encompass more than one course. Look at the big picture, not tiny details of skills that could be checked off.

24. **Q. What's the difference between assessment and evaluation?**
    A. See the chart that shows the differences (Assessment and Evaluation, p. 25)

25. **Q. What's the difference between an objective and an outcome?**

    A. Objectives describe skills, tools, and content that enables a student to achieve the outcome.

    Objectives are teacher-centered. Objectives may be impossible to assess because they can often be numerous, specific, and detailed.

    Outcomes describe the overarching product(s) that students will generate by applying skills, tools, and content. Outcomes are learner-centered. Outcomes require the use of higher-level thinking such as analysis, synthesis, and evaluation in order to demonstrate the student's ability to apply the skills, tools, and content in authentic contexts.

    Outcomes can be assessed. They are products that can be observed as a behavior, attitude, skills, or discrete useable knowledgeable and can be measured against criteria (rubric, checklist, Likert scale, survey).

Assessment and Evaluation

Assessment is the analysis and use of data by students, faculty, and/or division to make decisions about improvements in teaching and learning.

Evaluation is the analysis and use of data by faculty to make judgments about student performance. Evaluation includes the determination of a grade or a decision regarding pass/fail for an individual assignment or a course.

Examples

Assessment	Evaluation
A faculty member provides feedback to a student regarding performance on an examination. The student uses that feedback to study differently in order to improve learning and performance.	A faculty member corrects an examination and assigns a grade of 82% to a student.
A team of faculty members analyze examination results of all students in a course and discovers that 65% of the students did not demonstrate understanding of an important concept. Faculty members investigate possible causes and plan changes in teaching/learning strategies to improve student understanding.	Pop quizzes are given in a class to determine if students have read sections of the text that cover important concepts. Simple Pass/Fail grades are assigned and tallied at the end of the term. The quizzes count for 5% of the total grade.
A student delivers an oral presentation in class. The faculty member provides a critique of delivery and content so that improvements may be made in the student's subsequent presentations.	A student delivers an oral presentation in class. The faculty member provides a critique of delivery and content accompanied by a grade for the assignment.
A faculty member analyzes the results of oral communication checklists completed for all students in the course section who delivered oral presentations in class in order to determine opportunities for improving teaching and learning.	An Allied Health faculty member uses a rating scale to assign numbers (1-4) that indicate the level of achievement of clinical criteria based on observation of a student's performance of patient care.
The class attendance record indicates that a student has been absent multiple times. The faculty member advises the student in order to facilitate improved attendance, as studies suggest that regular class attendance contributes to student success.	Points are deducted from a student's grade for each class absence in accordance with a division policy.
Students are videotaped interacting with the children in the Early Childhood Education Centers. They view their videotapes and develop self-assessment narratives in which they describe and evaluate their performances. They then develop specific plans for improvement.	Students are videotaped interacting with children in the Early Childhood Education Centers. A faculty member evaluates each videotaped performance based upon course criteria and assigns a letter grade.
A student reads another student's essay and gives feedback on the content and correctness of the essay as a way to improve the writing.	A faculty member reviews a student peer reader's feedback and assigns a point value to the documentation to indicate satisfactory completion of the assignment.

Created by Sinclair Community College, Dayton, Ohio.

Diagnostic, Formative and Summative Assessment (An Overview)

Assessment is the process of gathering data. More specifically, assessment is the *ways* instructors gather data about their teaching and their students' learning (Hanna & Dettmer, 2004). The data provide a picture of a range of activities using different forms of assessment such as: pre-tests, observations, and examinations. Once these data are gathered, you can then evaluate the student's performance. *Evaluation,* therefore, draws on one's judgment to determine the overall value of an outcome based on the assessment data. It is in the *decision-making* process where we design ways to improve the recognized weaknesses, gaps, or deficiencies.

Types of Assessment
There are three types of assessment: diagnostic, formative, and summative. Although the three are generally referred to simply as assessment, there are distinct differences between them.

Diagnostic Assessment
Diagnostic assessment can help you identify your students' current knowledge of a subject, their skill sets and capabilities, and to clarify misconceptions before teaching takes place. Knowing students' strengths and weaknesses can help you better plan what to teach and how to teach it.

Types of Diagnostic Assessments
- Pre-tests (on content and abilities)
- Self-assessments (identifying skills and competencies)
- Discussion board responses (on content-specific prompts)
- Interviews (brief, private, 10-minute interview of each student)

Formative Assessment
Formative assessment provides feedback and information during the instructional process, while learning is taking place. Formative assessment measures student progress but it can also assess your own progress as an instructor. For example, when implementing a new activity in class, you can, through observation and/or surveying the students, determine whether or not the activity should be used again (or modified). A primary focus of formative assessment is to identify areas that may need improvement. These assessments typically are not graded and act as a gauge to students' learning progress and to determine teaching effectiveness (implementing appropriate methods and activities).

In another example, at the end of the third week of the semester, you can informally ask students questions which might be on a future exam to see if they truly understand the material. An exciting and efficient way to survey students' grasp of knowledge is through the use of clickers. Clickers are interactive devices which can be used to assess students' current knowledge on specific content. For example, after polling students you see that a large number of students did not correctly answer a question or seem confused about some particular content.

At this point in the course you may need to go back and review that material or present it in such a way to make it more understandable to the students. This formative assessment has allowed you to "rethink" and then "re-deliver" that material to ensure students are on track. A primary focus of formative assessment is to identify areas that may need improvement. It is good practice to incorporate this type of assessment to "test" students' knowledge before expecting all of them to do well on an examination.

Types of Formative Assessment
- Observations during in-class activities; of student's non-verbal feedback during lecture
- Homework exercises as review for exams and class discussions
- Reflection journals that are reviewed periodically during the semester
- Question and answer sessions, both formal—planned and informal—spontaneous
- Conferences between the instructor and student at various points in the semester
- In-class activities where students informally present their results
- Student feedback collected by periodically answering specific question about the instruction and their self-evaluation of performance and progress

Summative Assessment

Summative assessment takes place after the learning has been completed and provides information and feedback that sums up the teaching and learning process. Typically, no more formal learning is taking place at this stage, other than incidental learning which might take place through the completion of projects and assignments.

Rubrics, often developed around a set of standards, outcomes (course or program) or expectations, can be used for summative assessment. Rubrics can be given to students before they begin working on a particular project so they know what is expected of them (precisely what they have to do) for each of the criteria. Rubrics also can help you to be more objective when deriving a final, summative grade by following the same criteria students used to complete the project.

High-stakes summative assessments typically are given to students at the end of a set point, during or at the end of the semester, to assess what has been learned and how well it was learned. Grades are usually an outcome of summative assessment: they indicate whether the student has an acceptable level of knowledge gained - is the student able to effectively progress to the next part of the class? To the next course in the curriculum? To the next level of academic standing?

Summative assessment is more product-oriented and assesses the final product, whereas formative assessment focuses on the process toward completing the product. Once the project is completed, no further revisions can be made. If, however, students are allowed to make revisions, the assessment becomes formative, where students can take advantage of the opportunity to improve.

<u>Types of Summative Assessment</u>
- Examinations (major, high-stakes exams)
- Final examination (a truly summative assessment)
- Term papers (drafts submitted throughout the semester would be a formative assessment)
- Projects (project phases submitted at various completion points could be formatively assessed)
- Portfolios (could also be assessed during its development as a formative assessment)
- Performances
- Student evaluation of the course (teaching effectiveness)
- Instructor self-evaluation

Summary

Assessment measures *if* and *how* students are learning and if the teaching methods are effectively relaying the intended messages. Hanna and Dettmer (2004) suggest that you should strive to develop a range of assessment strategies that match all aspects of your instructional plans. Instead of trying to differentiate between formative and summative assessments, it may be more beneficial to begin planning assessment strategies to match instructional goals and objectives at the beginning of the semester and implement them throughout the entire instructional experience. The selection of appropriate assessments should also match course and program objectives necessary for accreditation requirements.

Glossary of Operational Terms

Academic Achievement: Student performance of program and general education outcomes; measured by various assessment methods pertaining to the stated outcomes.

Assessment: Assessment is an ongoing process, aimed at improving student learning and quality educational programs. It involves developing criteria and high standards for learning; systematically gathering, analyzing, and interpreting evidence to determine how well performance matches those expectations and standards; and using the resulting information to document, explain, and improve learning.

Benchmark: A description or example of student or institutional performance that serves as a standard of comparison for evaluation and judging quality.

Bloom's Taxonomy of Cognitive Objectives: Six levels arranged in order of increasing complexity (1=low, 6=high)
1. Knowledge: Recalling or remembering information without necessarily understanding it. Includes behaviors such as describing, listing, identifying, and labeling.
2. Comprehension: Understanding learned material and includes behaviors such as explaining, discussing, and interpreting.
3. Application: The ability to put ideas and concepts to work in solving problems. It includes behaviors such as demonstrating, showing, and making use of information.
4. Analysis: Breaking down information into component parts to see interrelationships and ideas. Related behaviors include differentiating, comparing, and categorizing.
5. Synthesis: The ability to put parts together to form something original. It involves using creativity to compose or design something new.
6. Evaluation: Judging value of evidence based on definite criteria. Behaviors related to evaluation include: concluding, criticizing, prioritizing, and recommending. (Bloom, 1956).

Capstone Course: A capstone could be a senior seminar or designated assessment course where program learning outcomes can be integrated into assignments.

Classroom Assessment: The system and on-going study of what and how students are learning in a particular course often designed by individual faculty who wish to improve their teaching of a specific course. Classroom assessment differs from tests and other forms of student assessment in that it is aimed at improved student learning and course improvement, rather than at assigning grades.

Closing the Loop/Feedback Loop: closing the loop is the process by which assessment results are used in programmatic and campus-wide decisions to impact student learning. In other words, it provides data/evidence for decisions for changes in pedagogy and curriculum – taking relative feedback and doing something with it.

Community: A community is the collaboration and inquiries among individuals to share ideas, find solutions, and build innovations regarding student learning.

Competency-Based Assessment: An assessment of a student's performance/competency as compared to a specific learning outcome or performance standard. Competencies are assessed by the instructor to prove competence in isolated tasks; for example, do a minimum number of tasks; minimum level of proficiency. These can be assessed by demonstration and check-off in the classroom or lab when the student is ready.

Content-Based Assessment: The purpose is to assess knowledge in a content framework by assigning a grade and identifying top students. It is assessed by the class (curve) or the instructor (%) by a standard determined by the instructor or test developers using a quiz or objective test weekly, midterm, final, etc.

Direct Assessment Methods: Assessment that requires students to display their knowledge and skills as they respond to the instrument itself. These methods include licensure test results; capstone course portfolios, presentations, and entry and exit test results. Objective and performance measures are both types of direct assessment methods. Direct assessment may also be quantitative (numerical scores) or qualitative (descriptions).

Embedded Questions to Assignments: Questions that are related to program learning outcomes are embedded within course exams. It is a means of gathering information about student learning that is built into and a natural part of the teaching-learning process. It is often used for assessment purposes in classroom assignments that are evaluated to assign students a grade. This process can assess individual student's performance or aggregate the information to provide information about the course or program; can be formative or summative, quantitative, or qualitative. Example: as part of a course, expecting each senior to complete a research paper that is graded for content and style but is also assessed for advanced ability to locate and evaluate web-based information.

Evaluate/Evaluation: Definition 1: Evaluation uses assessment information to make an informed judgment on such things as: whether students have achieved learning goals that we've established for them; the relative strengths and weaknesses of our teaching/learning strategies; or what changes in goals and teaching/learning strategies might be appropriate. Assessment results alone guide us; evaluation forms our decisions. Definition 2: Evaluation is used to investigate and judge the quality or worth of a program, project, or other entity, rather than student learning. Under this definition, evaluation is broader than assessment.

Formative Assessment: Assessment that takes place so that feedback can be given prior to the completion of the performance (program), which enables the student to modify and improve the student performance (program).

Goals: Goals are general aims or purposes of a program and its curriculum. Effective goals are broadly stated, meaningful, achievable, reachable and timely. Goals provide a framework for

determining the more specific educational outcomes of a program and should be consistent with program and institutional mission. Goals are what we "wish" for our programs and students. Goals require outcomes to provide evidence of how to reach the goal.

Grades: A mark that signifies the overall rating of student performance on an assignment. It is comprehensive in that it includes the rating of all student work on the assignment; it cannot be used as a method of assessment as it does not specifically pertain to a single objective; however, individual Performance Assessment Tasks (PATs) used to assess specific outcomes can be aggregated into a grade.

Indirect Assessment Methods: Assessment that requires students to reflect upon their learning rather than demonstrating what has been learned. Surveys; interviews; number of students successfully transferring; graduation rates; placement data; advisory committee evaluation; and feedback from students, graduates, or employers are typical indirect methods.

Matrices (Formative and Summative (F&S Charts): Matrices are used to summarize the relationship between program outcomes and courses, course assignments, or course syllabus outcomes to examine congruence and to ensure that all outcomes have been sufficiently structured into the curriculum.

Mission Statement: The mission statement is the initial point of reference for a program. It is a brushstroke statement (not measurable) of the general values and principles which guide the curriculum and the larger context in which more specific curricular goals will fit. In broad terms, it is your program's vision that will set a tone and philosophical position of what you do, for whom you do it, and how you will get it done.
It addresses the following questions:
1. What are the general values and broad principles that will guide the program?
2. What are the general characteristics and abilities of the ideal graduate?
3. Whom will the program serve and how?
4. In what specific ways is the program mission consistent with the college's mission and strategic plan?

Objectives: Objectives describe what learners will be able to do at the end of instruction, and they provide clear reasons for teaching. When writing objectives be sure to describe the intended result of instruction, rather than the process of instruction itself.

Observations: Observations can be of any social phenomenon, such as student presentations, students working in the library, or interactions at student help desks. Observations can be recorded as a narrative or in a highly structured format, such as a checklist; and they should be focused on specific program outcomes.

Outcomes: Program outcomes are the knowledge, skills, and abilities students should possess when they graduate from a program. They are answers to the question, "What should program graduates know and be able to do *at the time of program completion?*"

When thinking about program outcomes, it might be helpful to consider where program graduates should be within three to five years of graduation. Should they be practitioners in the profession of the discipline? Should they have entered the work force prepared for entry-level jobs? Should they be in a graduate or professional degree program? Should they have passed a licensure or certification exam in the field? The answers to questions such as these can help program faculty focus on the knowledge, skills, and abilities that will best prepare students for their next educational or professional endeavors.

Performance Criteria: Student learning outcomes need to be measureable. Ask, "What are the conditions for achievement? How will we know the project, task, lab, and report development was successful?" This is not a number or percentage. Develop a narrative.

Portfolio: A portfolio is a systematic and organized collection of a student's work that exhibits to others the direct evidence of a student's efforts, achievements, and progress over a period of time. The collection should involve the student in selection of its contents, and should include information about the performance criteria, the rubric or criteria for judging merit, and evidence of student self-reflection or evaluation. It should include representative work, providing a documentation of the learner's performance and a basis for evaluation of the student's progress. Portfolios may include a variety of demonstrations of learning and have been gathered in the form of a physical collection of materials, videos, CD-ROMs, reflective journals, etc.

Primary Trait Analysis (PAT): PAT is a rubric that specifically addresses desired outcomes and scores the achievement of those outcomes using a detailed description of the degree to which the outcome has been achieved.

Program and General Education Outcomes Validation: This step of the process seeks to determine if program and general education outcomes are appropriate to meeting current academic, business, trade, and/or professional/technological requirements. A well-executed program outcome validation study will answer the question:
"Are the program outcomes consistent with expectations of employers, transfer institutions, entering students, and the communities of interest?" Program Outcomes Validations studies are required of all programs every three years.

Program Assessment: A combination of assessments techniques, data collection and analysis about student achievement for learning outcomes at the classroom and course level, and leading to improvement of the academic program.

Reliability: Reliability insures that the instrument or results from the instrument measure the desired outcome consistently over time.

Scoring Rubrics: A rubric describes a specific set of criteria that clearly defines for both student and teacher what a range of acceptable and unacceptable performance looks 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 that

delineates criteria used to discriminate among levels is developed and used for scoring. Generally two raters are used to review each product and a third rater is employed to resolve discrepancies.

Student Learning-Centered Outcome (SLO): The purpose of SLO is to increase learning by demonstrating evidence of intended outcomes. Learner-centered describes up front what the student will be able to DO (in the rest of life) with what he learns in a course or program. The students will engage in meaningful work projects, portfolios, presentations, exhibits, etc., that require synthesis of understanding and skill development and are assessed by students, peers, instructor, stakeholders, with clearly identified qualitative criteria. LCO is assessed priorly, continuously, and summatively. While some believe competencies and outcomes to be the same things, they are not. The intended learning outcomes justify the course content. They give it purpose beyond learning content for the sake of content.

Examples of Outcomes:
- **Math**: compute using arithmetical, algebraic, geometric, and statistical methods to solve problems.
- **Ethics**: Analyze real world ethical problems or dilemmas and identify those affected by the dilemma.
- **Culture and Equity**: Describe the concepts of power relations, equity, and social justice and find examples of each concept in the US society and other societies.
- **Team work**: Listen to, acknowledge, and build on the ideas of others.

Summative Assessment: The gathering of information at the conclusion of a course, program, or undergraduate degree to improve learning or to meet accountability demands. 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 than others.

Triangulation: Triangulation involves the collection of data via multiple methods in order to determine if the results show a consistent outcome.

Validity (validation): Validity refers to outcomes or instruments that are well grounded and are based upon evidence or fact.

Example 1 of a student learning outcome and an associated rubric:

Student Learning Outcome: Upon completion of this course, students will be able to weld proficiently in the flat position using common electrodes.

Rubric: Using 6011, 7018 and 6013 electrodes, students will produce a butt weld, tee weld, fillet weld, and lap weld which scores a minimum of 3 on a scale of 1 to 5 when evaluated for arc length, travel speed, penetration, and current.

Sample rubric scorecard:

Name _____Assignment: _ _ _ _ _ _ _Points: _ _ _ _ **/** 5

	1= Poor	2	3	4	5
Current					
Arc Length					
Travel Speed					
Penetration					

Defects: Causes:

- **O** Pores/Pits
- **O** Undercut
- **O** Improper Fusion
- **O** Overlap
- **O** Insufficient Penetration
- **O** Excessive Penetration
- **O** Excess Weld Spatter
- **O** Bead is Not Uniform
- **O** Burn Through
- **O** None

- **O** Proper current, travel speed, and arc length
- **O** Current too low
- **O** Current too high
- O Arc length too short
- **O** Arc length too long
- **O** Travel speed too slow
- **O** Travel speed too fast
- **O** Inconsistent Speed
- **O** Too severe

Examples of Welding Beads

A. Proper current, travel speed, arc length
B. Current too low
C. Current too high
D. Arc length too short
E. Arc length too long
F. Travel speed too slow
G. Travel speed too fast
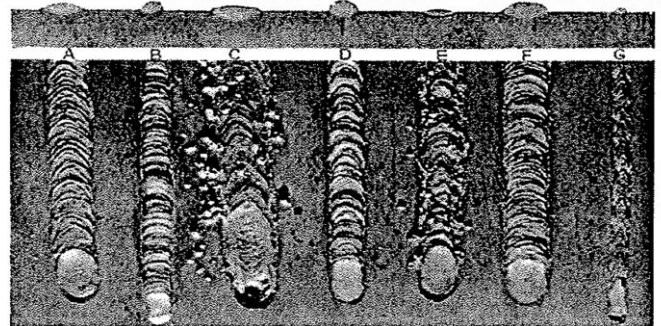
Example 2 of a student learning outcome and an associated rubric:

Student Learning Outcome: Upon completion of this course, students will demonstrate proper beginner level English riding techniques.

Rubric: Students will score at least 7 on a scale of 1 through 10 when evaluated for (1) appropriate professional presentation, (2) execution of maneuvers required for chosen seat, and (3) rider position and equitation.

Rubric scorecard·   Student_____   Date: ....

Professional Presentation (appearance, poise, polish)

	#	Grade	
	9-10	A	Rider is neat, clean and correctly attired. Equipment is appropriate for schooling the discipline and is also neat and clean. Rider executes required elements with confidence and polish.
	7-8	B	Rider is fairly neat and clean. Attire is mostly correct but lacks polish. Equipment is appropriate for schooling the discipline and is mostly neat and clean. Rider completes required elements but does not have the confidence one would like to see in a show ring ready rider.
	5-6	C	Rider is somewhat neat and clean. Attire is mostly correct but is ill fitted or sloppy (un-tucked, baggy tee shirt, jeans or jods too short etc.) Equipment is correct but dirty/ sloppy. Stirrup length incorrect. Desired maneuvers executed but without any polish
	3-4	D	Attire and appearance are somewhat messy. Clothes/boots not clean or not proper for seat ridden. Longer hair messy and not up in some manner. Equipment mostly correct but ill fitted. Knotted split reins or game reins on a western horse. Rider lacks poise and seems unsure of what to do on the horse
	0-2	F	Attire and appearance do not reflect that the rider has any plans to ride a horse with someone watching. Incorrect equipment such as western saddle and hunt bridle. Equipment which would not be allowed in the show ring for that discipline (mechanical hacks on all but jumpers, draw reins, tie downs, over and under) Improper footwear, jeans/jods/breeches with holes, tank tops, bare midriffs etc.

Execution of Maneuvers Required for Chosen Seat

	#	Grade	
	9-10	A	Rider and horse execute smooth transitions at the correct times. Horse and rider work together smoothly. Horse is going in a frame correct for the discipline and responds to the riders quickly and quietly. Very few minor mistakes such as late lead changes or minor resistance from the horse.
	7-8	B	Rider and horse execute mostly smooth and correct transitions with a few errors such as late transitions, picking up an improper lead but quickly correcting, breaking gait for a stride or two, adding or leaving out a stride in a line of jumps, picking up incorrect diagonal but quickly fixing.
	5-6	C	Rider and horse execute the required maneuvers but with some errors. Incorrect lead or gait for more than a few strides. Late transitions, horse very resistant during transitions exhibiting head tossing/bucking/kicking but rider is able to work through that resistance
	3-4	D	Rider and horse execute most of the required maneuvers but with major errors such as stopping at a jump, dragging a lead for an entire circle, missing a diagonal, missing a transition, over/inappropriate use of bit/spurs/sticks to attempt to get horse to complete required maneuvers
	0-2		Rider and horse execute some of the required maneuvers but have major errors such a seeming to be unaware of missed leads/diagonals/appropriate locations for transitions.

Ride1· position and Equitation

	#	Grade	
	9-10	A	Rider's leg and hand position and use are correct for discipline. Reins held and used correctly. Legs used as cues and remain in proper secure position throughout ride. Balanced in all required positions for discipline (sitting, positing, 2-point, and release over jumps) Rider uses seat/weight effectively to help horse and does not hinder its movement. Uses soft eyes to navigate arena smoothly and effectively.
	7-8	B	Rider's leg and hand position and use are correct for discipline. Reins held correctly but some over steering may occur. Legs used as cues but sometimes appear loose or in a less than secure position throughout ride. Mostly balanced in all required positions for discipline but may lean a bit or get too forward over a jump (sitting, positing, 2-point, release over jumps) Rider generally uses seat/weight effectively to help horse and does not hinder its movement but may have moments of hindrance. Uses soft eyes to navigate arena smoothly and effectively but occasionally looks down. –,– –,---,--------:---,..-----
	5-6	C	Rider's leg and hand position and use are mostly correct for discipline. Reins held correctly but hands move more than is appropriate. Legs sometimes over or under used and often appear loose or in a less than secure position throughout ride. Somewhat balanced in all required positions for discipline but may lean a bit, get too forward over a jump, bounce more than needed at a sitting trot (sitting, positing, 2-point, release over jumps) Rider generally uses seat/weight effectively to help horse and does not hinder its movement but may have moments of hindrance. Uses eyes okay but looks down for leads/diagonals, execution is not fluid due to rider not looking far enough ahead.
	3-4	D	Rider's leg and hand position and use are somewhat correct for discipline. Reins held incorrectly but used somewhat effectively. Legs loose/heels up over use or no use of leg for cue. Rider lacks overall balance bouncing on horses back, landing hard when posting/ remaining in horse's way over a jump. Leans over to check lead, leans forward for canter/lope.
	0-2	F	Use of hands and legs not correct. Reins held or used incorrectly for discipline. Leg loose, heel up, rider bounces on horses back, leans too far forward or back, punishes horse's mouth with hands either on purpose or due to lack of balance and using mouth to balance.

Example 3 of a student learning outcome and an associated rubric:

Student Learning Outcome: Upon completion of this course, students will be able to write at a level of proficiency sufficient to convey ideas accurately and professionally.

Rubric: students will be able to write a technical document which is ranked acceptable or superior on all key writing traits, as identified in the following rubric scorecard:

Rubric scorecard: Student _____ Date _____ Grade _____

Score	Writing Trait	Unacceptable (1)	Acceptable (2)	Superior (3)
	Organization of Ideas and Content	Writing is not concise and has a tendency to ramble. Lack of focus and organization interfere with communication and understanding. If appropriate: Lacks a clear introduction and conclusion. *Needs work.*	Writing could be more concise. Focus and direction of writing is acceptable, but could use some work. Organization doesn't interfere with communication and understanding. If appropriate: Introduction and conclusion are acceptable, but could use a little work.	Writing is concise. Information is presented in a manner which makes it extremely easy for the reader to understand. Ideas are clearly stated. Focus and direction of the writing are extremely clear. If appropriate: Compelling introduction, informative body with details, and effective conclusion.
	Sentence Structure	Sentences don't express ideas well and are poorly developed. Sentence structure is sometimes so poor that it makes reading and understanding difficult. Sentences would sound strange if read out loud. *Needs work.*	Sentences usually flow well while at other times lack conciseness and/or appropriate structure. Overall, most sentences clearly express ideas.	Extremely well developed sentences. Sentences flow well. Sentences clearly express ideas. Sentences are concise.
	Paragraph Structure	Sentences within a paragraph are unrelated. No clear direction within the paragraph. Connections between paragraphs are confusing. *Needs work.*	Similar to Superior, but a few paragraphs need improvements. Most sentences within a paragraph build upon or relate to a single issue. A few paragraphs may not have strong lead-in or transitional sentences.	Organization of paragraphs enhances readability. Sentences within paragraph all build upon or relate to a single issue. Good lead-in sentence for each paragraph. Good transition between paragraphs.
	Word Choice and Tone	Writer struggles to use appropriate vocabulary. Words are used incorrectly. Tone and word choice are inappropriate for intended audience. Inappropriate use of slang and cliches. *Needs work.*	Writer uses familiar words well and occasionally makes more sophisticated word choices. Tone and word choice are appropriate for the intended audience.	Sophisticated and appropriate use of vocabulary. Word choice adds to quality of the writing and enhances overall meaning. Tone and word choice are appropriate for the intended audience.
	Grammar, Punctuation, and Spelling	Writing contains numerous and/or significant errors which interfere with comprehension and distract from the message. For example, three or more errors on a page, or for longer papers, more than five errors in the whole paper. *Needs work.*	Writing contains a few insignificant errors that don't interfere with comprehension or distract from the message. For example, two minor errors on a page, or for longer papers, five or fewer minor errors throughout the paper.	Writing is nearly error free. For example, paper has no more than one error on any given page, or for longer papers, no more than four errors throughout paper.
	Professional Format and Use of Conventions	Document has numerous and significant printing and/or formatting problems. Aesthetic qualities of the paper would be an embarrassment to an organization. Doesn't follow basic formatting conventions (e.g., citations and documentation). *Needs work.*	Document is reasonably neat and professional looking. Document has a few minor formatting or convention problems (e.g., citations and documentation).	Document is extremely neat and professional looking. Everything formatted correctly. Proper use of any necessary conventions (e.g., citations and documentation).
	Professionalism	The reader (e.g., student, instructor, coworker, client, supervisor) of this document would view it as unprofessionally written.	The reader (e.g., student, instructor, coworker, client, supervisor) of this document would view it to be adequate, but not extremely professional.	The reader (e.g., student, instructor, coworker, client, supervisor) of this document would view it as extremely professional.
	Length	More than 20% too long or too short.	10 to 20% too long or too short	Appropriate length _____

Bloom's Taxonomy

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Remember previously learned information	Demonstrate an understanding of the facts	Apply knowledge to actual situations	Break down objects or ideas into simpler parts and find evidence to support generalizations	Compile component ideas into a new whole or propose alternative solutions	Make and defend judgments based on internal evidence or external criteria
(Remember)	(Understand)	(Apply)	(Analyze)	(Evaluate)	(Create)
Count	Associate	Add	Analyze	Arrange	Appraise
Define	Classify	Calculate	Application	Assemble	Arbitrate
Describe	Compute	Change	Appraise	Categorize	Argue
Draw	Contrast	Choose	Breakdown	Combine	Assess
Label	Defend	Classify	Calculate	Compile	Attach
List	Describe	Complete	Categorize	Compose	Award
Match	Differentiate	Compute	Combine	Construct	Choose
Name	Discuss	Demonstrate	Compare	Create	Compare
Outline	Distinguish	Discover	Connect	Design	Conclude
Point	Estimate	Divide	Contrast	Develop	Contrast
Quote	Explain	Employ	Criticize	Devise	Convince
Read	Extend	Examine	Design	Drive	Core
Recall	Extrapolate	Experiment	Detect	Explain	Criticize
Recite	Generalize	Graph	Diagram	Formulate	Critique
Recognize	Give Examples	Interpolate	Differentiate	Generalize	Decide
Record	Infer	Manipulate	Discriminate	Generate	Defend
Repeat	Identify	Modify	Distinguish	Group	Determine
Reproduces	Indicate	Operate	Examine	Integrate	Discriminate
Selects	Interpret	Perform	Experiment	Invent	Evaluate
State	Locate	Practice	Explain	Formulate	Explain
Write	Paraphrase	Prepare	Infer	Manage	Grade
Memorize	Predict	Produce	Outline	Modify	Interpret
Arrange	Report	Relate	Point out	Order	Judge
Duplicate	Review	Research	Question	Organize	Justify
Order	Rewrite	Organize	Relate	Plan	Measure
Relate	Translate	Schedule	Select	Prepare	Predict
Tabulate		Service	Separate	Prescribe	Prioritize
		Show	Subdivide	Propose	Rank
		Sketch	Test	Rearrange	Rate
		Solve	Utilize	Reconstruct	Recommend
		Subtract		Related	Referee
		Translate		Reorganize	Reject
		Troubleshoot		Revise	Select
		Write		Rewrite	Summarize
				Setup	Support
				Substitute	Test
				Summarize	Value
				Transform	