



# Student Learning Assessment Handbook

Fall 2021



**Siena College**  
**Student Learning Assessment Handbook**



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## Overview

Student outcomes assessment is an ongoing process of collecting and analyzing learning evidence as well as implementing improvements in curriculum and program based on the evidence (Colorado MESA University, 2018; Volkwein, 2003). In the last two decades, assessment of student learning outcomes has received much attention for both external and internal reasons. In addition to fulfilling accreditation requirements, more and more colleges and universities have recognized the institutional value of outcomes assessment, which provides evidence of student achievement and thus, helps institutions to make decisions about curriculum, policy, and resource allocation (Kuh, et al., 2014; Sujitparapitaya, 2014). Two main purposes are identified in the current conversation about student outcomes assessment (Suskie, 2018):

*Accountability* involves demonstrating the quality (i.e., the progress) of teaching, learning, decision-making, programs, and services. The accountability process is beneficial in promoting the support of internal and external stakeholders: faculty, staff, alumni, businesses, the community, accreditors, and so on.

*Continuous quality improvement* involves increasing the quality of teaching, learning, decision-making, programs, and services. The improvement process is beneficial for students, faculty, and administration as it provides clear learning expectations to students, helps faculty to make pedagogical changes to enhance student learning, promotes agreement among faculty and staff on objectives, teaching content, assignments, and grading system, and finally, supports college administration to make informed decisions and allocate resources judiciously.

An effective assessment process is frequently represented as a loop with four stages: 1) establish the learning outcomes or goals<sup>1</sup> for students to achieve; 2) gather student learning evidence on how well students are achieving those outcomes; 3) interpret and use the results for continuous improvement; and 4) make improvements to programs based on the results. The following sections will provide a closer look at the process.

### Organization of this Handbook

Assessment generates rich information that can be used by program faculty and administrators to improve teaching and learning. This handbook presents a systemic view of student learning outcomes assessment at Siena College aiming to help faculty and administrators to gain a better understanding of it. This handbook is divided into three sections and discusses:

- I. Key Participants of Assessment
- II. Assessment Timeline
- III. A Closer Look at the Student Learning Assessment Process

In the third section, the learning outcomes assessment process is aligned with annual academic student learning assessment reports required by the College. However, this handbook explains

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<sup>1</sup> Note that learning outcomes and learning goals are used interchangeably at Siena College. This handbook uses learning outcomes to emphasize the actual results of a learning experience.

the process from a theoretical perspective providing background information and relevant resources. For a step-by-step instruction on report submission, a Guide to Submission of Academic Student Learning Assessment Reports is provided at the Office of Institutional Effectiveness<sup>2</sup> website.

## I. Key Participants of Assessment

**Student Learning Assessment Committee.** The purpose of the Student Learning Assessment Committee (SLAC) is to improve academic program (major, minor, certificate, core) assessment of student learning. This is accomplished by providing assessment guidance and support as well as development and opportunities to share best practices.

The charges of SLAC include the following:

- Provide guidance in the development of student learning outcomes.
- Identify & deploy assessment resources.
- Create opportunities for communicating best practices and experiences across all three schools.
- Be advocates for student learning assessment.
- Provide counsel to departments to help facilitate the submission of required assessment documents.
- Revise, if needed, current documentation and submission procedures to ensure a reasonable balance between required evidence and what is beneficial to the schools and academic departments.
- Develop and adopt an Assessment Cycle that:
  - Emphasizes the importance of prioritizing student learning outcomes. Hence, not all student learning outcomes need to be assessed annually.
  - Recognizes that (a) using the results, (b) making appropriate changes, (c) determining or affirming if student learning has improved as well as (d) conducting the assessment(s) are integral in the assessment of student learning.

**School Assessment Coordinators.** A School Assessment Coordinator is a member of the Student Learning Assessment Committee. The responsibilities of the assessment coordinators include the following:

School:

- Ensure that new course proposals have assessment plans that align with stated student learning outcomes.
- Be lead contact for faculty.
- Assist in the development and implementation of assessment training.
- Ensure planned assessments are being implemented. Help departments overcome challenges or obstacles to assessment.

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<sup>2</sup> Guide to Submission of Academic Student Learning Assessment Reports:  
<https://www.siena.edu/files/resources/guide-to-submitting-student-learning-assessment-re-2.pdf>

- Provide counsel to departments to help facilitate the submission of required assessment documents.

Core:

- Work with Core Advisory Committee (CAC) to facilitate faculty discussions about new core assessments.
- Work with CAC to develop and implement new core assessments.
- Develop and implement opportunities to share best practices in assessment with faculty within each of the new core disciplines and Franciscan concerns.

College:

- Be an assessment advocate.
- Participate in the Student Learning Assessment Committee (SLAC) by attending meetings and contributing to the development and execution of SLAC activities and initiatives.
- Develop and implement opportunities to share best practices in assessment with faculty across schools.
- Work with the Office of Institutional Effectiveness (OIE) to ensure that meaningful student learning assessment is conducted across campus.
- Review academic program documentation. Work with the departments that have academic program assessment documentation that is unclear, incomplete, or does not depict student learning assessment.

**Assistant Deans.** Assistant deans collaborate with school assessment coordinators and other stakeholders to promote student learning assessment efforts. The responsibilities of the assistant deans include the following:

- Propose web links for the College's assessment resource web page.
- Provide administrative support to departments for student learning assessment initiatives (ex. assessment instrument dissemination, collection of data, distribution of results).
- Help improve awareness and use of existing assessment resources.
- Advocate the value of student learning assessment.
- Partner with the School Assessment Coordinator to work with departments to provide feedback on their student learning assessments.
- Help in the development and dissemination of student learning assessment documentation.
- Assist in the revision of the student learning assessment schedule.
- Support specialized program accreditation activities as deemed appropriate by the dean and department heads.
- Facilitate the efforts to collect and assemble evidence as it pertains to assessment as required by Middle States accreditation.

**Department Head and Faculty.** The academic faculty members in the various majors/programs are responsible for assessing the attainment of course learning outcomes and submitting assessment plans and reports to their Major/Program Chairs. In collaboration with

faculty members, the Major/Program Chairs are responsible for incorporating the academic assessment reports in their Annual Assessment Report.

**Administration.** The deans and appropriate committees support faculty and staff by providing leadership and support, including financial, for assessment activities. The three schools, working with the SLAC, the College Planning and Finance Committee (CPFC), and OIE are responsible for the coordination, review, and follow-up of assessment activities in their units.

**The Office of the Provost.** As the chief academic officer, the Provost is responsible for overseeing the assessment process. The Provost ensures that the annual assessment plans are in alignment with the overall College mission.

## II. Assessment Timeline

Each year, all academic programs at Siena College are required to complete an assessment report of academic student learning outcomes. This report contains multiple student learning outcomes. For example, majors are encouraged to assess 4-6 outcomes, and minors and certificates are encouraged to assess 2-4 outcomes.

The Siena learning outcomes assessment reports include six main sections. Report sections are collected by OIE according to the following annual schedule:

1. Major/program student learning outcomes
2. Phase of the assessment cycle
3. Assessment procedures and criteria
4. Assessment results and determination of progress toward learning outcome

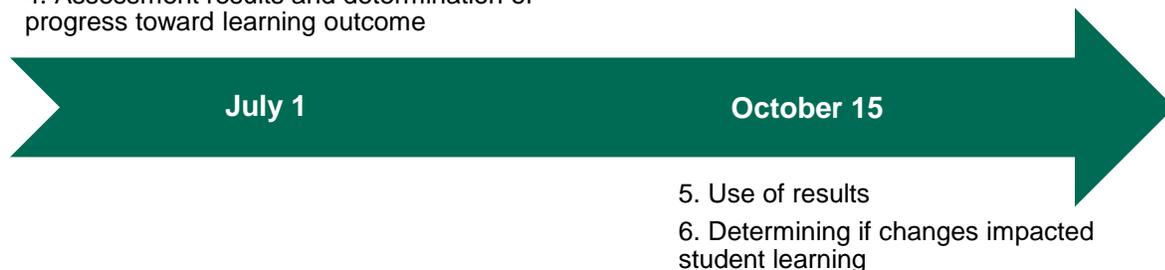


Figure 1. Learning Outcomes Assessment Submission Timeline

Once the report is submitted<sup>3</sup>, faculty from each program meet with the school assessment coordinator and/or school assistant dean to discuss and decide implementation of the assessment activities described in the report. Final assessment reports are posted on the OIE assessment website (<https://www.siena.edu/offices/oie/assessment/repository/>).

<sup>3</sup> Report needs to be submitted through ProcessMaker. Use this link to access ProcessMaker: [https://workflow.siena.edu/sysworkflow/en/green/login/login?u=/sysworkflow/en/green/925005634555ca179f1a3c6028716924/Student\\_Learning\\_Assessment\\_Report\\_Academic.php](https://workflow.siena.edu/sysworkflow/en/green/login/login?u=/sysworkflow/en/green/925005634555ca179f1a3c6028716924/Student_Learning_Assessment_Report_Academic.php)

OIE administrators are available to consult with faculty on all aspects of the assessment process. Once the report is submitted, OIE will review the plan and request meetings if it needs to be discussed.

### III. A Closer Look at the Student Learning Assessment Process

This section breaks down the three major stages of student learning outcomes assessment to four phases and discusses each phase in depth. The four phases are connected in a continuous cycle of improvement, as shown in Figure 2.

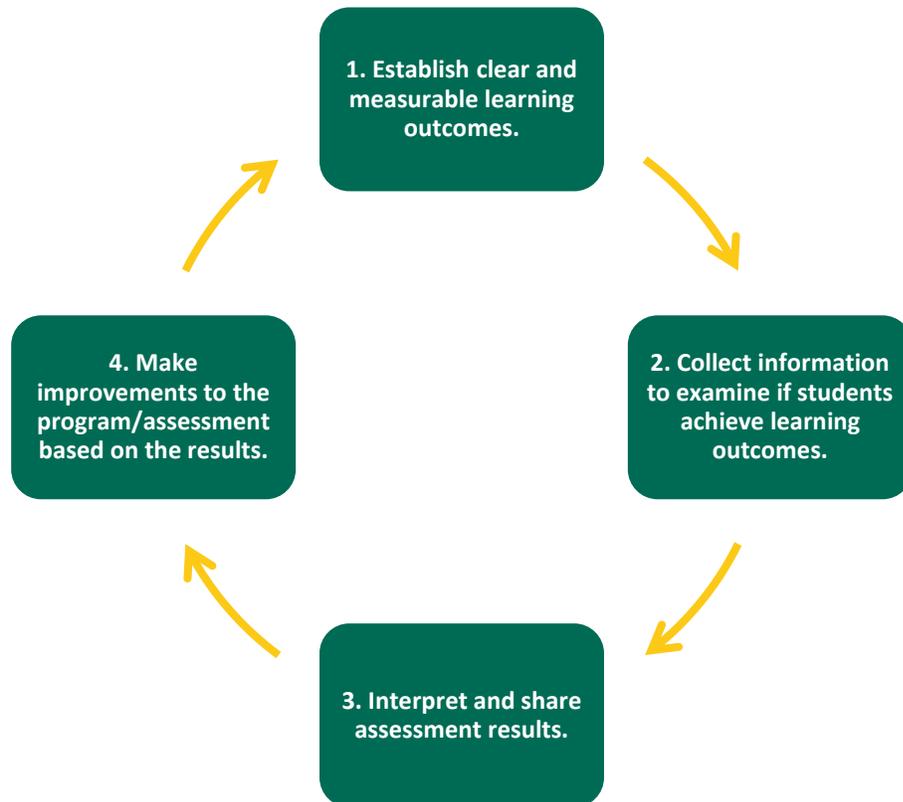


Figure 2. Student Learning Assessment Process Adapted from Colorado Mesa University Model<sup>4</sup>

The American Association for Higher Education lists 9 principles of good practice for assessing student learning outcomes (see Appendix A), which provides foundational ideas for faculty to start designing an assessment plan. Faculty are encouraged to use the guidance as a starting point to develop their own principles within the program.

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<sup>4</sup> Colorado Mesa University Assessment Model:  
<https://www.coloradomesa.edu/assessment/documents/Handbook.pdf>

## Step 1: Establish Learning Outcomes

Mission Statement. The planning phase should begin with the consideration of the program mission statement. The program mission statement is a *general and broad* perspective on learning (Massa & Kasimatis, 2017). This statement generally consists of a paragraph regarding the purpose and function of the program as well as the stakeholders of the program. Why is the program here? What does the program do? Who is helped by the program? The mission is ideally derived from the school mission statement and from other sources such as similar programs at other institutions, professional organizations, and accrediting bodies. Below is an example from the mission statement of the Physics program at Siena College.

*Physics, Siena College (2019-20)*

*The Physics Department aims to develop in students a thorough understanding of the laws of physics and their applications. It fosters an understanding and appreciation of the meaning and significance of the laws of physics and their relevance to students' lives; the ability to apply the laws of physics to real world situations to solve problems analytically and numerically; to think and write critically; to design experiments and analyze and present data and results; hands-on experience with current research techniques employed in physics; critical thinking and investigational curiosity and drive.*

Student Learning Outcomes. The goals present in the program mission should guide the formation of learning outcomes (Massa & Kasimatis, 2017). In this way, progress toward learning outcomes is tied to progress toward the values and purposes of the mission. Meanwhile, learning outcomes should create a shared understanding of goals among faculty and be shared with students as well.

However, in contrast to the goals of the program mission, learning outcomes are statements of *specific and measurable* achievements if someone successfully completes the program. When creating a learning outcome, it is often helpful to ask "What will students get from the experience?" Below are examples adapted from the Communications program.

*Communications, Siena College (2019-20)*

*Students will be able to apply digital media literacy skills to analyze mass media messages.*

*Students will be able to identify basic principles of modern medial law.*

Course vs. Program Learning Outcomes. Learning outcomes can be identified at many organization levels such as institution/college, school, program, and course. Faculty should identify the most important learning outcomes or learning goals when designing a course, address them throughout teaching, and evaluate the outcomes through multiple assignments.

Program learning outcomes are typically broader than course learning outcomes. Key program learning outcomes should be addressed in at least two required courses or other program requirements (Suskie, 2019). These outcomes characterize the expected results of students' cumulative learning across a variety of courses at the end of a program.

However, it is worth noting that an effective program is not a collection of courses; it should be more than that. Likewise, program learning outcomes are not a simple accumulation or summary of course learning outcomes. The learning outcomes for an effective program should have two characteristics: reflecting progressive rigor and concluding with a capstone experience (Suskie, 2018).

In an effective program, students are expected to develop more advanced skills as they progress through the program. That means the learning outcomes should include a diverse range of knowledge and skills of different levels of complexity (see Bloom's Taxonomy). Even for the same learning outcome, students can be required to achieve it at different levels of competency from understanding to mastering (see Curriculum Mapping in the following section).

Meanwhile, if the program includes a capstone requirement, by the time students reach the capstone requirement, the course and program learning outcomes may be the same.

Composition of a Student Learning Outcome. The learning outcomes from the Communications program consist of a few important components, and they are opening phrase, action word, and learning statement.

1. Opening phrase. The opening phrase indicates *who* will be doing the learning. Words such as "students" or "graduates" often serve as subjects (Massa & Kasimatis, 2017). Also, the future tense (e.g., "will") should be used to reflect the fact that outcomes are established in advance of student learning.

*Communications, Siena College (2019-20)*

***Students will be able to apply digital media literacy skills to mass media message analysis.***

***Students will be able to identify basic principles of modern medial law.***

2. Action word. The action word describes *how* learning will occur (Massa & Kasimatis, 2017). This word is often taken from Bloom's taxonomy (Bloom & Engelhart, 1956; see Appendix B and Appendix C) and should be easily connected to an assignment/action (e.g., a paper) and a measure (e.g., a rubric).

*Communications, Siena College (2019-20)*

***Students will be able to apply digital media literacy skills to mass media message analysis.***

***Students will be able to identify basic principles of modern medial law.***

3. Learning statement. The learning statement indicates *what* content will be learned (Massa & Kasimatis, 2017). This phrase can include discipline-specific knowledge, behavior, or values.

*Communications, Siena College (2019-20)*

***Students will be able to apply digital media literacy skills to mass media message analysis.***

Students will be able to identify **basic principles of modern medial law**.

Do's and Don'ts When Writing Outcomes. A high quality learning outcome should be realistic, clear, and specific. The table below lists recommended practices as well as those that should be avoided when developing student learning outcomes.

Table 1. Do's and Don'ts When Writing Learning Outcomes

<b>Do's</b>	<b>Don'ts</b>
The statement is aligned with the program's mission statement.	The statement is broad and unmeasurable.
The statement focuses on the results of student learning.	The statement involves learning resources, practices, or students' feeling about their learning experiences.
The statement is specific and measurable.	The statement does not use any action words.
The statement uses one action word.	The statement is too complicated or wordy.
One statement focuses on one learning outcome.	The statement covers multiple outcomes; usually uses "and" or more than one action word.
	The statement is not realistic.

Curriculum Mapping. Curriculum mapping is a tool for documenting and depicting where and when (e.g., in which courses) experiences relevant to student learning outcomes are occurring (Massa & Kasimatis, 2017). It helps to visualize the alignment between learning outcomes and other essential pieces of a program such as courses and assessments. Although curriculum mapping can be used at different levels of learning experience (e.g., lesson, co-curriculum, program), the most common form is curriculum mapping at the program level.

Purpose of curriculum mapping. The main purpose of curriculum mapping is simple—ensure a program offers students sufficient learning opportunities to achieve its key learning outcomes (Maki, 2002). Such a map documents where different learning outcomes are addressed within the program and can be utilized to identify if there are any gaps—such as key learning outcomes not addressed in courses or courses that are not aligned with any learning outcomes (NILOA, 2018). It also helps to visualize overlaps in coverage of learning outcomes and examine whether such repetition of learning outcomes happens in an optimal sequence from the lowest (e.g., introduced) to the highest level of complexity (e.g., mastery).

Moreover, curriculum mapping is a great tool for faculty to better understand their program and know where their courses fit in the whole program. During the process, all faculty including newcomers and adjunct faculty get to know updates of the program curriculum and requirements (e.g., purpose of course pre-requisites) and agree upon where and how the overarching learning outcomes are expected, taught, and assessed.

Last, but not the least, curriculum mappings are often used as aids in decision making for continuous improvement. For students, curriculum maps increase awareness of the alignment

of the curriculum and facilitate better course-taking decisions (McMahon & O’Riordan, 2006). For faculty, they can use their findings of curriculum mapping in making changes to, or in other words, backward-designing student learning outcomes, courses, instructional methods, or curriculum requirements.

Approaches to mapping. There are three common approaches to mapping learning outcomes. The first one is sending around an excel spreadsheet to faculty within a specific unit, and individual faculty members complete the sheet based on the courses they teach. Responses are then compiled into a simple map and filed.

In the second approach, the department chair, in isolation, completes the entire map of the curriculum. There may be minimal to no conversation with other faculty before, during, and after the process.

In the third mapping approach, faculty work together to identify which courses align with which outcomes. It is a process of discussion, conversation, and building a map collectively, based on shared understanding of the role of each course within the larger picture.

While there is not a right or wrong way to undertake mapping, the third approach is recommended as it includes a shared understanding of integrated learning design. It brings educators together to collaboratively discuss where learning occurs and explore alignment between learning outcomes, courses, and assessments.

Mapping from simple to complex. Curriculum mapping can display information in different ways. In its simplest version, the map is built on a two-dimension matrix, with the courses or learning practices (e.g., fieldwork or lab) arrayed across the top and learning outcomes listed down the left side. As shown in Table 2, a mark is made in the box where a course/learning practice addressed an outcome.

Table 2. A Basic Curriculum Map<sup>5</sup>

<b>Learning Outcomes</b>	<b>Course I</b>	<b>Course II</b>	<b>Course III</b>
Learning Outcome 1	X	X	
Learning Outcome 2		X	
Learning Outcome 3	X		X

With an additional layer, a curriculum map can show learning progression and development throughout the program. Table 3 provides an example of when, where, and how learning outcomes are addressed within a program by indicating the depth of complexity in which

<sup>5</sup> Table 2, 3, and 4 are from National Institute for Learning Outcomes Assessment (NILOA).

courses address learning outcomes. The codes of complexity not only visualize the increasing rigorousness in the program, but also help to identify assessment opportunities; the courses of the highest level of complexity are often ideal places for assessment (Suskie, 2018).

Table 3. A Map of Learning Progression and Development

<b>Learning Outcomes</b>	<b>Course I</b>	<b>Course II</b>	<b>Course III</b>
Learning Outcome 1	Introduced	Reinforced/Assessed	
Learning Outcome 2		Introduced/Assessed	
Learning Outcome 3	Introduced		Mastered/Assessed

Once the assessment opportunities are identified in the map of learning progression and development, faculty can move on to the next step – creating a map of assessment. As depicted in Table 4, the map includes not only where the learning outcome is addressed, but also how it is assessed and by which means. This layer of mapping allows for examination on issues of alignment as well as gaps: Do learning outcomes match with the means that students are required to demonstrate their learning?

Table 4. A Map of Assessment Approaches<sup>6</sup>

<b>Learning Outcomes</b>	<b>Course I</b>	<b>Course II</b>	<b>Course III</b>
Learning Outcome 1	Reflective Essay	Exam Question	Case Study
Learning Outcome 2	Term Paper	Group Project	Oral Presentation
Learning Outcome 3	Meeting Minutes	Lab Report	Capstone Project

Table 5 provides an example of an integrated curriculum mapping (incorporating elements of Table 3 and Table 4) from the Physics program at Siena College.

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<sup>6</sup> This table lists potential measurement tools in each course. In reality, only courses that address learning outcomes at the highest level of complexity need to include an assessment method.

Table 5. An Example of Curriculum Mapping Adapted from the Physics Program

	Emphasis on <i>Introduced</i>	Emphasis on <i>Reinforced</i>	Mix of <i>Introduced</i> and <i>Reinforced</i>	Emphasis on <i>Assessed</i>						
Learning Outcomes	PHYS130 - General Physics I	PHYS140 - General Physics II	SCDV110 - Intro to Data Exploration & Visualization	PHYS220 - Modern Physics	PHYS250 - Intro to Computational Physics	PHYS260 - Thermal Physics	SCDV230 - Electronics	PHYS310 - Mechanics I	PHYS470, PHYS472 - Advanced Laboratory I & II	Major Field Exam
<b>1. Conceptual Understanding:</b> Students will understand the fundamental concepts and theories of physics, as well as their historical development.	I, A (FCI pre/post)	I, A (EMCI pre/post)		I, R	R	I, R		I, R, A (summative, final exam)		A (summative, exam grade)
<b>2. Problem Solving:</b> Students will develop strong analytical skills and facility with mathematical modeling. Furthermore, students will learn to use computers to analyze and visualize data.	I	I	I	I, R	R, A (summative, final project)	I, R		I, R, A (summative, final exam)		A (summative, exam grade)
<b>3. Experimental Competency:</b> Students will demonstrate facility with laboratory equipment and techniques including computers as acquisition and experimental tools.	I	I		R	R		R, A (summative, lab practicum)	R	A (summative, research project)	
<b>4. Communication Skills:</b> Students will be able to research and clearly express scientific ideas using oral, visual and written communication.	I	I		R (research paper)			R	R	A (summative, research project)	
<b>5. Data Analysis:</b> Students will be able to analyze and interpret experimental data, and assess the statistical significance of results. Students will be able to evaluate the quality of scientific information.	I, A (PLIC pre/post)	I, A (PLIC pre/post)	I	R			R	R	A (summative, research project)	
<b>6. Independent Application of the Scientific Method:</b> Students will be able to design, plan and conduct an independent research project.	I	I	I	I			R		A (summative, research project)	

Curriculum mapping checklist. Once maps are completed, they should be shared and reviewed among faculty, staff, and students. The checklist below provides some questions for faculty and staff to discuss when reviewing the maps.

- In the key courses, are all outcomes addressed, in a logical order?
- Do all the key courses address at least one outcome?
- Do multiple offerings of the same course address the same outcomes, at the same levels?
- Do some outcomes get more coverage than others? Is that intentional?
- Are all outcomes first introduced and then reinforced?
- Are students expected to show high levels of learning too early?
- Do students get practice on all the outcomes before being assessed, e.g., in the capstone?
- Do all students, regardless of which electives they choose, experience a coherent progression and coverage of all outcomes?
- What do your electives, individually and collectively, contribute to the achievement of your student learning outcomes?

## **Step 2: Decide Assessment Methods**

Type of Assessment Evidence. After faculty has determined learning outcomes of a course or program, they can start selecting appropriate assessment methods to measure students' achievement. These methods should be tied to what students are expected to learn (learning outcomes) and how they learn it (learning activities). For example, students may demonstrate their disciplinary knowledge on multiple choice questions but not writing skills on the same test.

Faculty can collect different sources of assessment evidence based on the intended learning outcomes and learning activities. Generally, there are two common ways of categorizing assessment evidence. Evidence can be categorized according to whether the evidence is direct or indirect. Evidence can also be categorized according to whether the evidence is quantitative or qualitative.

Direct evidence. Direct evidence is “tangible, visible, self-explanatory, and compelling evidence of exactly what students have and have not learned” (Suskie, 2009, p. 20). One can use direct evidence to judge student work or performance, which is developed as a result of their learning experiences.

Examples of direct evidence include (Suskie, 2018):

- Published tests (e.g., Major Field Test) or licensure or certification exams
- Capstone experiences evaluated with a rubric
- Written work, performances, and presentations evaluated with a rubric
- Portfolios evaluated with a rubric
- Scores on locally-designed multiple-choice or essay tests
- Student reflections evaluated with a rubric

Indirect evidence. Indirect evidence consists of “proxy signs that students are probably learning” (Suskie, 2009, p. 20). In other words, indirect assessment uses program qualifications or students’ or others’ opinion to provide indirect evidence about students’ abilities or levels of knowledge.

Examples of indirect evidence include (Suskie, 2018):

- Retention and graduation rates
- Admission rates into graduate programs
- Job placement rates
- Alumni perceptions (e.g., satisfaction)
- Student ratings (e.g., knowledge)
- Questions about the course on end-of-course student evaluation forms
- Student, alumni, and employer satisfaction ratings from surveys, interviews, or focus groups
- Student participation in professional activities

Quantitative evidence. Quantitative evidence involves organized and planned response options (e.g., Likert scales or preset categories) that can be numerically represented and statistically analyzed in meaningful ways (Suskie, 2018).

Qualitative evidence. Qualitative evidence involves open-ended and unplanned response options (e.g., comments) that are generally analyzed into themes (Suskie, 2018).

Mixed methods. Different types of evidence are often useful in different ways (Suskie, 2018). Direct evidence is useful in tracking learning. For example, comparing Major Field Test results for the current senior cohort to those for last year’s senior cohort may indicate declines in knowledge and skills. On the other hand, indirect evidence is useful in revealing learning resources and processes. For example, conducting a focus group on performance declines in certain areas of the Major Field Test may indicate the need to increase time on task and/or to improve teaching methods.

Similarly, quantitative evidence is beneficial in revealing whether students are meeting learning goals, along with progress towards those goals (Suskie, 2018). For example, average scores on Higher Order Thinking on the National Survey of Student Engagement (NSSE) may be low relative to norms, indicating that critical thinking is an area for improvement. However, qualitative evidence is beneficial in showing why issues are arising, along with new issues to consider. For example, open-ended survey questions about perceptions of experiences with critical thinking may indicate that students do not fully understand what is meant by “critical thinking” when completing the NSSE.

As different types of evidence have different functions, it is a good practice to incorporate multiple types of evidence into an assessment plan. The Venn diagram in Figure 3 lists the simple definition of each assessment evidence as well as the relationship among them.

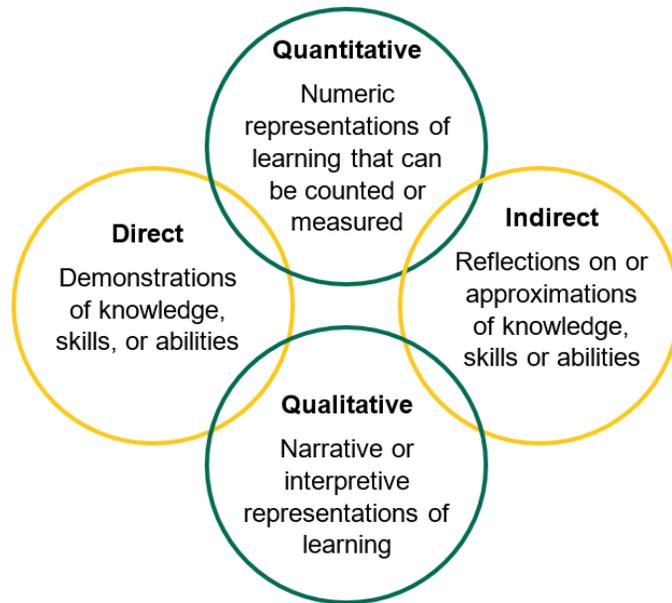


Figure 3. Venn Diagram of Sources of Assessment Evidence

Creating Effective Rubrics. As noted earlier, rubrics are often used with direct assessment methods. A rubric is a list or chart that describes the criteria that one would use to evaluate or grade completed student assignments. It helps faculty to maintain consistency in interpreting students' work, as it provides an objective guide for assessment. It also articulates expectations for an assignment and provides focused feedback to students. In this way, students are able to gain a better understanding of the assignment before they start the assignment, and identify their strengths and weaknesses when completing it.

Faculty are encouraged to use descriptive rubrics to assess students' attainment of learning outcomes at Siena<sup>7</sup>. The following is a method for constructing a rubric:

1. List the evaluation criteria or outcome components that students are expected to achieve in completing the assignment. Generally, rubrics should have *three to eight* criteria to keep grading time manageable and to help students identify important goals. Use strong action words and concrete language to facilitate measurement. In the example below (Table 6), the content under column "COMPONENTS" (e.g., Context of and Purpose for Writing, Thesis, Development of Argument, etc.) are the criteria of the rubric.
2. Add a rating scale and performance levels to the rubric. *Three to five* levels are ideal for an effective rubric, and each level should have a label for the purpose of clarity. There are four rating scales (A range, B range, C range, D range) in the example rubric (Table 6).
3. Add descriptions for each criterion-performance level cell. Faculty are encouraged to collaboratively review various assignments of different performance levels and discuss what qualities distinguish an assignment at one performance level from an assignment at the

<sup>7</sup> Definition of different types of rubrics can be found in this blog: What is a Rubric? Retrieved from <https://lindasuskie.com/apps/blog/show/43614526-what-is-a-rubric-?siteId=115520809&locale=en-US>

next. It is helpful to consider Bloom’s Taxonomy (Appendix B) and use action verbs (Appendix C) to make the descriptions distinctive and measurable for each scale.

4. Test the rubric on a sample of assignments of varying quality to help catch issues with clarity, criteria, and performance levels. Discuss the rubric with colleagues and revise it based on the feedback.

Below is an example from the First Year Seminar Program at Siena College. This rubric is used to evaluate a writing assignment required in this course.

Table 6. An Example of the Rubric Adapted from the First Year Seminar Program

	COMPONENTS	4 (A range)	3 (B range)	2 (C range)	1 (D range)
12%	<b>Context of and Purpose for Writing</b>	11-12	10-10.5	8.5-9.5	7.5-8
		Demonstrates a thorough understanding of assignment guidelines and the intended purpose. Clearly weighs and addresses the audience’s perceptions and assumptions.	Demonstrates an adequate consideration of assignment guidelines and the intended purpose. Shows awareness of audience’s perceptions and assumptions.	Demonstrates awareness of assignment guidelines and the intended purpose. Begins to show awareness of audience’s perceptions and assumptions.	Demonstrates minimal attention to assignment guidelines and intended purpose. Shows little to no awareness of audience’s perceptions and assumptions.
15%	<b>Thesis</b>	13.5-15	12-13	10.5-11.5	9-10
		Clearly articulates an intelligent, sophisticated and creative thesis that is expressed explicitly and addresses the “so what.”	Contains a thesis that is articulated clearly even though it may not be original, creative and/or express a “so what.”	Contains an idea that could be articulated more clearly and developed into a thesis.	Does not contain a thesis or an idea that could be developed into one.
25%	<b>Development of Argument</b>	22.5-25	20-22	17.5-19.5	15-17
		Provides original and highly relevant I SAY arguments along with thorough explanations and analyses of examples and details in fully developed paragraphs.	Contains somewhat original and relevant I SAY arguments and explanations and evaluations of examples and details in mostly developed paragraphs.	Contains few original or relevant I SAY arguments, examples, and details and relies more heavily on summary instead. Paragraphs are underdeveloped.	Does not contain any original or relevant I SAY arguments, examples, and details. Primarily summary and/or description. Paragraphs are underdeveloped.
15%	<b>Organization</b>	13.5-15	12-13	10.5-11.5	9-10
		Is extremely well-organized and unified with clear and logical	Contains minor flaws in regard to organization, coherence, and	Contains frequent flaws in organization and coherence. Is not	Is unorganized and incoherent.

		relationships among points, claims, and argument.	unification with adequate relationships among points, claims, and argument.	unified. There are loose connections among points, claims, and argument.	
15%	Use of evidence / sources	13.5-15	12-13	10.5-11.5	9-10
		Exceptional use of They Say/ I Say format. Contains carefully selected and appropriate sources and citations that are properly framed, unpacked, and fully analyzed (ICEd) with clear connections to points/ argument.	Good use of They Say/ I Say format. Contains adequate and appropriate sources and citations that are mostly framed, unpacked, and analyzed (ICEd) with connections to points/ argument.	Lack of They Say/ I Say format. Contains sources that are not carefully selected and citations that are not complex or meaningful. They are not ICEd well in that they are not integrated correctly or effectively, and analysis is weak.	Does not incorporate They Say/ I Say format. Does not contain adequate sources or enough citations and/or they are not documented. Little to no evidence of framing or analysis (ICE).
10%	Documentation	9-10	8-8.5	7-7.5	6-6.5
		Acknowledges and documents sources using designated citation methods. Includes a near perfect Works Cited / Bibliography page.	Some flaws in acknowledging, documenting and using sources and designated citation methods. Mostly correct Works Cited / Bibliography page.	Numerous and varied flaws in acknowledging and using sources and Works Cited / Bibliography page requires significant corrections.	Significant flaws in acknowledging and using sources and No Works Cited / Bibliography page or poor attempt.
8%	Syntax and Mechanics	7.5-8	6.5-7	6	5-5.5
		Is virtually free of all errors in grammar, punctuation, sentence structure, word choice, and spelling.	Contains minor errors in grammar, punctuation, sentence structure, and spelling.	Contains numerous errors in grammar, punctuation, sentence structure, and spelling.	Contains egregious errors in grammar, punctuation, sentence structure, and spelling.

Rubric checklist. Once a rubric is developed, it is important to test it on actual student work with a small group of faculty before disseminating it to everyone. Consider using this checklist to ensure the rubric follows the best practices:

- Does the rubric have three to eight evaluation criteria or learning outcomes?
- Is each of the criteria or learning outcomes distinct from the others?
- Is each of the criteria or learning outcomes defined in explicit, concrete, and measurable terms?
- Is each of these criteria or learning outcomes observable within the chosen assignment?
- Does the rubric contain three to five performance levels?

- Is each performance level labeled with a name, not just a number?
- Do performance levels progress in a clear and logical order?
- Are specific action verbs used in the descriptions of performance level?
- Is parallel language used in the descriptions across performance levels?
- Does each of the descriptions address the same content but vary in levels of performance?
- Are there any jargon terms used in the descriptions? There should not be.
- Is there any judgement instead of descriptor used in the descriptions? There should not be.
- Are samples of student work at various levels collected for rubric development?
- Is the rubric tested on actual student work?

In recent years, many higher education institutions have started to use technological tools for developing and using rubrics. Several websites offer free templates and simple software for creating and saving rubrics. Appendix D provides relevant resources. Other resources for rubric development are also provided there.

Setting Assessment Criteria. Once the rubric is developed, faculty can work together to determine the criterion, standard, or level of learning that is expected for students to achieve. This criterion or standard serves as a benchmark, which helps faculty to understand students' performance in different areas.

Common examples of criteria in academic assessment are:

- 70% of students will earn a B or higher on their application assignment.
- All students earn a minimum score of 65 out of 100 on the final project.
- 70% of students will meet or exceed expectations on their application paper, as measured by a rubric.

Faculty often have difficulty deciding the percentages of students at a given level of performance or achievement (Suskie, 2018). Some pointers for this decision include:

- Collaborate with other faculty in your program.
- Review past data such as historical score or grade distributions.
- Consult faculty in your discipline at one or more other institutions regarding their standards and percentages.
- Check professional organization websites for relevant rubrics and standards.

Establishing a Schedule. When the assessment tools are ready, faculty need to establish a timeline for implementation. *Formative assessment*, which is used to assess student learning over time, provides valuable information about how well students progress towards the program expectations. The ongoing feedback and sharing of assessment results gives students a chance to identify their strengths and weaknesses and to reflect on how they need to improve in their remaining studies.

Assessing student learning at the end of a course or program, known as *summative assessment* can be helpful as well, as it evaluates student learning by comparing it against the established criterion or benchmark, and helps faculty to identify their areas of improvement.

Faculty are encouraged to use both summative and formative assessments to obtain a better understanding of how and what students learn. Ideally, those assessments are conducted every semester or every year on a routine basis. Depending on the learning outcomes, the assessment could be planned for multiple years. However, the timeframe should run no more than two years, as the collected learning evidence is invalid and cannot be used to determine if learning has occurred (Suskie, 2018).

The example<sup>8</sup> below indicates what questions faculty need to ask when creating an assessment timeline.

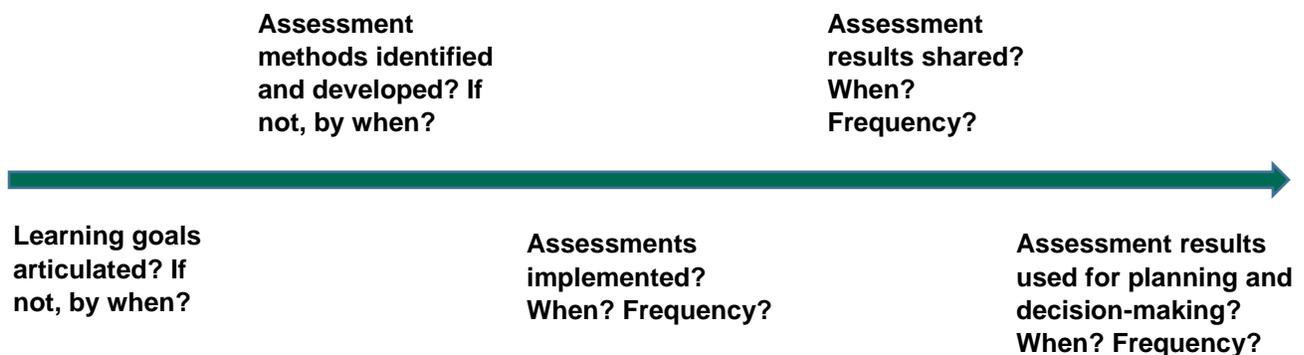


Figure 4. An Example of Assessment Plan Timeline

### Step 3: Discuss Results

Interpreting Assessment Results. One of the primary purposes of assessment is to provide timely and systematic feedback to all stakeholders who are involved in the assessment process for continuous improvement in student learning. Interpretations of assessment results or student learning evidence help to find out if students have learned what they are expected to learn.

To achieve the goal, faculty can use two analysis approaches. The first one is to compare student learning outcomes with one another. Take the First Year Seminar Program for example (see Table 6), students may demonstrate strong argument skills but not perform so well in essay organization.

Another approach, which is used by most higher education institutions, is to compare student learning evidence against the established criteria or targets (Suskie, 2018). For example, 80%

<sup>8</sup> This is adapted from a Chart for Monitoring Assessment Progress Across a College in Assessing Student Learning by Linda Suskie (2018).

of students receive a B or above on their final research paper. This approach helps faculty to identify if the course or program meets its original goal.

Sharing Assessment Results. Improvement can occur only if assessment results are discussed and communicated clearly and accurately (Suskie, 2018). Interpretations of results should be shared with a variety of stakeholders in the assessment process, and serve as evidence for future decision-making.

Faculty. Faculty are most interested in improving the courses they teach and the instructional methods they use. Sharing assessment results with faculty can help them identify if students have achieved the course objectives. It may lead to reflection and redesign of current curriculum and pedagogy, and thus, make the learning experience more effective for students.

Students. Students also need to receive assessment results in order to understand their strengths and weaknesses in a particular area or discipline. Sharing formative assessment results with students throughout the assessment cycle (one semester or one year) also offers them an opportunity to reflect on their learning, try out different learning strategies, and demonstrate their improvement in their remaining studies.

Administrative Divisions. Changes need to be recognized and addressed at an institution's decision-making levels to assure the institution appropriately allocate resources for the changes or innovations. Therefore, Administrative Divisions should also understand the assessment results in order to make accurate decisions about college strategic planning and budgeting (Maki, 2002).

#### **Step 4: Determine Impact**

Making Changes. When the changes are identified at the program or institutional level, faculty, staff, and administrators need to carry out the changes to improve program or institutional effectiveness. Changes could happen in the following formats (adapted from Maki, 2002):

- Revise pedagogy, curricula, sequence of courses
- Ensure reinforcement of particular knowledge, abilities, habits of mind by integrating relevant information across the curriculum
- Design more effective student orientation
- Describe learning outcomes more precisely and share them with students
- Increase connections between in-class and out-of-class learning
- Shape institutional decision making, planning, and allocation of resources based on the results

Repeating Assessment Cycle. After the changes are implemented, the expected learning outcomes should be assessed again to examine if student learning has improved. If yes, faculty should consider a new learning objective or outcome to measure during the next assessment period. The cycle is presented in figure 5.

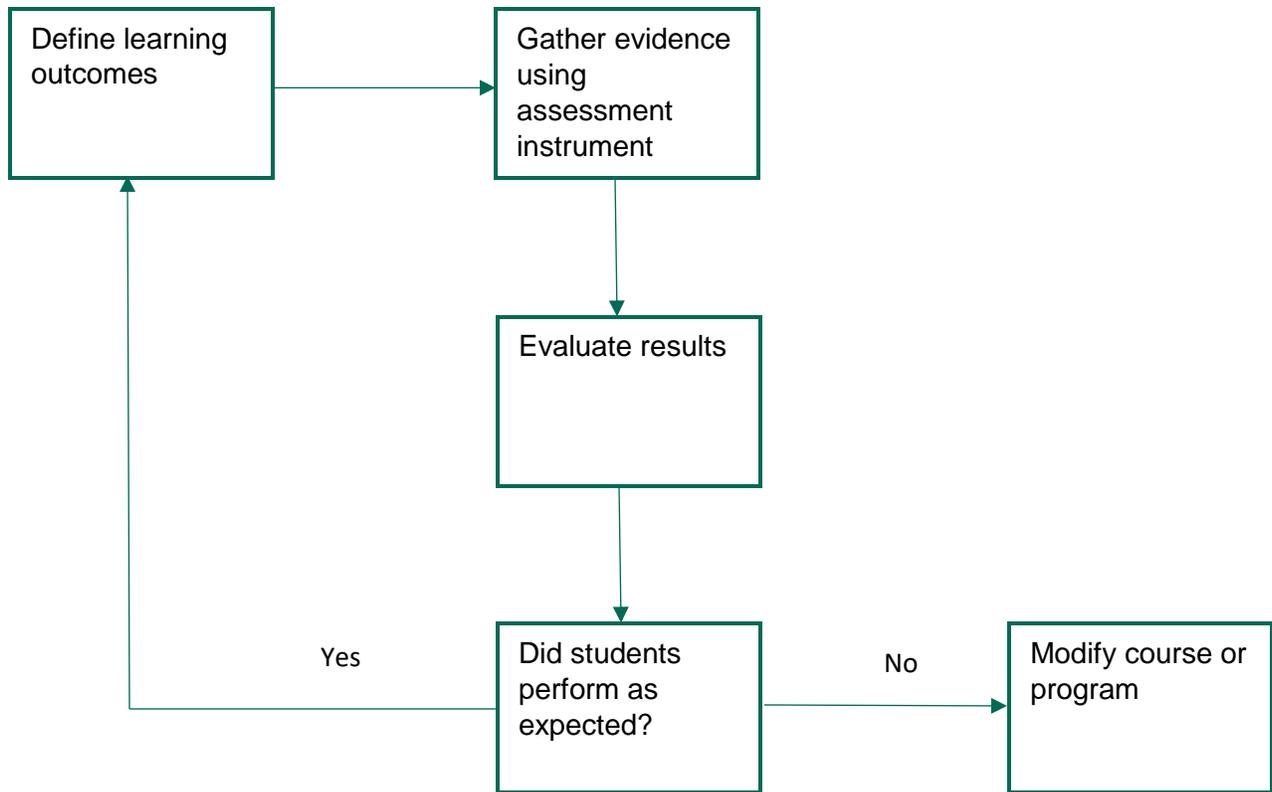


Figure 5. Repeated Assessment Cycle

### Conclusion

Assessment of student learning outcomes facilitates explanation of causal relationships between policies, practices, methods, and student learning achievements. At Siena College, assessment is mandatory for accreditation purposes to demonstrate quality of academic programs and student services. However, it is not the only reason to conduct assessment activities. More importantly, assessment promotes a culture of continuous improvement through routine collaboration among faculty, professional staff, and administrators. Eventually, the college will transform into a learning community constantly raising questions about student learning and development, and finding ways to engage students in more effective and meaningful learning experiences.

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## 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 over, assessment threatens to be an exercise in measuring what is 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 firmer bases for improving our students' 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 worked at. 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.

**Authors:** Alexander W. Astin; Trudy W. Banta; K. Patricia Cross; Elaine El-Khawas; Peter T. Ewell; Pat Hutchings; Theodore J. Marchese; Kay M. McClenney; Marcia Mentkowski; Margaret A. Miller; E. Thomas Moran; Barbara D. Wright

## Appendix B. Original Bloom's Taxonomy<sup>9</sup> (1956)

<b>LEVEL</b>	<b>DEFINITION</b>	<b>SAMPLE VERBS</b>	<b>SAMPLE BEHAVIORS</b>
<b>KNOWLEDGE</b>	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.
<b>COMPREHENSION</b>	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.
<b>APPLICATION</b>	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.
<b>ANALYSIS</b>	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.
<b>SYNTHESIS</b>	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.
<b>EVALUATION</b>	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.

<sup>9</sup> For more information about the revised Bloom's taxonomy (Anderson & Krathwohl, 2001), please visit: <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>

### Appendix C. Action Verbs for Bloom's Taxonomy<sup>10</sup> (2001)

Levels of Learning					
Low ----- High					
Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Choose	Classify	Apply	Analyze	Agree	Adapt
Define	Compare	Build	Assume	Appraise	Build
Identify	Contrast	Choose	Categorize	Assess	Change
Label	Demonstrate	Construct	Classify	Award	Combine
List	Describe	Conclude	Discover	Choose	Compose
Locate	Explain	Determine	Dissect	Compare	Construct
Match	Extend	Develop	Distinguish	Conclude	Create
Memorize	Illustrate	Experiment	Divide	Criticize	Delete
Name	Infer	with	Examine	Decide	Design
Recall	Interpret	Identify	Infer	Deduct	Develop
Recognize	Outline	Model	Inspect	Defend	Elaborate
Reproduce	Paraphrase	Organize	Relate	Determine	Estimate
State	Relate	Plan	Simplify	Disprove	Formulate
Tell	Rephrase	Select	Survey	Estimate	Imagine
	Show	Solve	Test for	Evaluate	Improve
	Summarize	Use		Explain	Invent
	Translate			Influence	Make up
				Interpret	Maximize
				Judge	Minimize
				Justify	Modify
				Measure	Originate
				Perceive	Plan
				Prioritize	Predict
				Prove	Propose
				Rate	Solve
				Recommend	Suppose
				Rule on	Test
				Select	Theorize
				Support	
				Value	

<sup>10</sup> Anderson, L. W., & Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing, Abridged Edition. Boston, MA: Allyn and Bacon.

## Appendix D. Technological Tools and Other Resources for Rubric Development

Authentic Assessment Toolbox by Jon Mueller (2014): <http://jfmuller.faculty.noctrl.edu/toolbox/>

Course Level Examples by College and Type from the Eberly Center for Teaching Excellence at Carnegie Mellon: <http://www.cmu.edu/teaching/assessment/examples/index.html>

Designing Scoring Rubrics for Your Classroom by Craig A. Mertler from Bowling Green University: <https://northweststate.edu/wp-content/uploads/files/designingrubrics-mertler.pdf>

Grading Rubrics: <http://gsi.berkeley.edu/teachingguide/grading/rubrics-practice2.html>

How Do You Know If You Need a Rubric? by Danielle D. Stevens and Antonia J. Levi, Introduction to Rubrics: <http://www.introductiontorubrics.com/>

iRubric: <https://www.rcampus.com/indexrubric.cfm>

Middle States Rubric Guidance: Middle States Commission on Higher Education. (2007). Student Learning Assessment: Options and Resources, 2nd ed. Philadelphia, PA.

Rubistar: <http://rubistar.4teachers.org/>

Rubrics: Transparent Assessment in Support of Learning, A Workshop by Kenneth Ronkowitz: <https://www.slideshare.net/ronko4/rubrics-35019148>

University of Delaware's Center for Teaching & Assessment of Learning: <http://assessment.udel.edu/resources/rubrics.html>

Teaching With Rubrics: The Good, the Bad, and the Ugly by Heidi Goodrich Andrade: [https://www.researchgate.net/publication/238684324\\_Teaching\\_With\\_Rubrics\\_The\\_Good\\_the\\_Bad\\_and\\_the\\_Ugly](https://www.researchgate.net/publication/238684324_Teaching_With_Rubrics_The_Good_the_Bad_and_the_Ugly)

Valid Assessments of Learning in Undergraduate Education (VALUE) rubrics: <http://www.aacu.org/VALUE/rubrics/>

What is a Rubric: <https://lindasuskie.com/apps/blog/show/43614526-what-is-a-rubric-?siteId=115520809&locale=en-US>