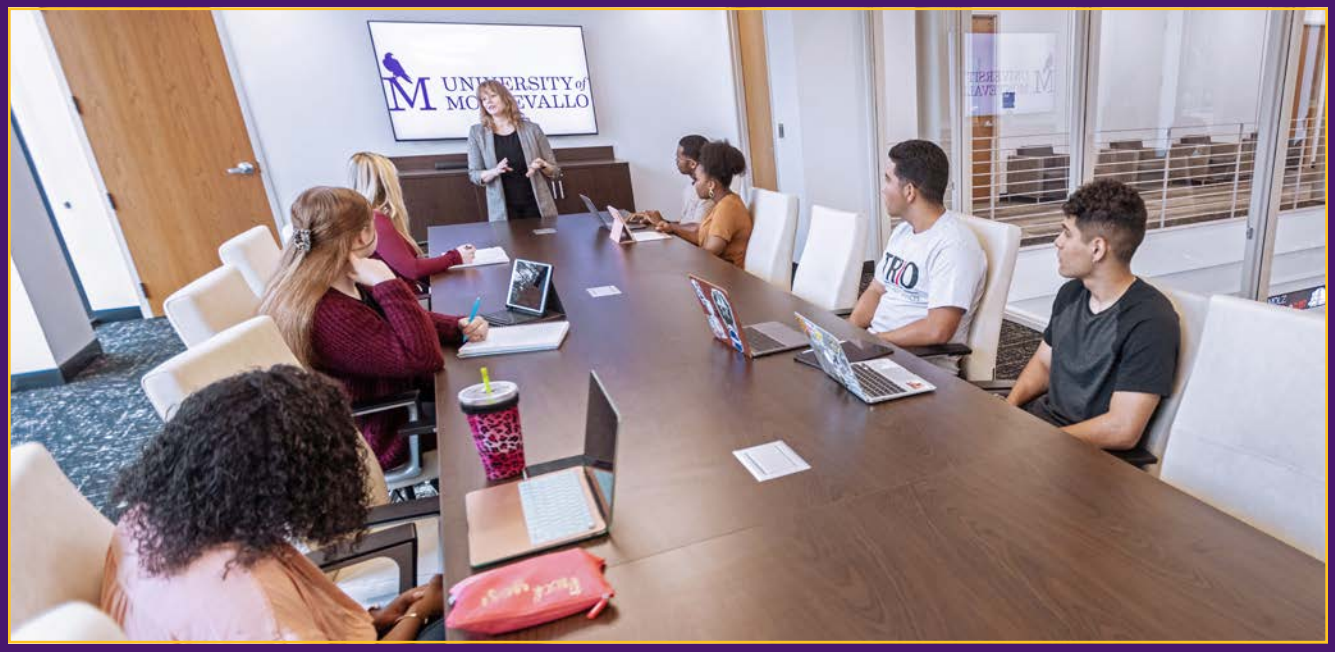
University of Montevallo Student Learning Outcomes Assessment Guide

VERSION 1 | 2021-2022



UNIVERSITY of MONTEVALLO
DIVISION OF ACADEMIC AFFAIRS
INSTITUTIONAL RESEARCH PLANNING & ASSESSMENT

Contents

University Mission Statement

The overriding mission of the University of Montevallo, unique in Alabama higher education, is to provide to students from throughout the state an affordable, geographically accessible, "small college" public higher educational experience of high quality with a strong emphasis on undergraduate liberal studies and with professional programs supported by a broad base of arts and sciences, designed for their intellectual and personal growth in the pursuit of meaningful employment and responsible, informed citizenship.

VISION STATEMENT

UM offers undergraduate and graduate students a learner-centered 21st century education informed by our liberal arts identity.

Core Values

- Respect and civility
- Intellectual and personal growth
- Civic engagement and advocacy
- Global citizenship and sustainability

SACSCOC STANDARD FOR UM STUDENT LEARNING OUTCOMES ASSESSMENT

From "The Principles of Accreditation: Foundation for Quality Enhancement." Adopted by the Collge Delegate Assembly, December 2017. Southern Association of Colleges and Schools Commissionon Colleges (SACSCOC).

SECTION 8: Student Achievement

Student learning and student success are at the core of the mission of all institutions of higher learning. Effective institutions focus on the design and improvement of educational experiences to enhance student learning and support student learning outcomes for its educational programs. To meet the goals of educational programs, an institution provides appropriate academic and student services to support student success.

1. **The institution identifies, evaluates, and publishes goals and outcomes for student achievement appropriate to the institution's mission, the nature of the students it serves, and the kinds of programs offered. The institution uses multiple measures to document student success. (Student achievement) [CR]**

2. The institution identifies expected outcomes, assesses the extent to which it achieves these outcomes, and provides evidence of seeking improvement based on analysis of the results in the areas below:

    a. *Student learning outcomes for each of its educational programs. (Student outcomes: educational programs)*

    b. Student learning outcomes for collegiate-level general education competencies of its undergraduate degree programs. (Student outcomes: general education)

    c. Academic and student services that support student success. (Student outcomes: academic and student services)

INTRODUCTION

Student Learning Outcomes (SLO) assessment is the process of collecting information that will tell a university whether the teaching and learning services, activities, or experiences it offers are having the desired impact on students. In short, is the organization making a difference in the lives of the students it serves in terms of learning gain?

Generally, the University of Montevallo (UM) conducts assessments of its academic, academic support and administrative departments' effectiveness to ensure both quality and continuous improvement. Student Learning Outcomes Assessment is most applicable to academic departments, although in a robust SLO assessment culture academic support services are often included.

Effective assessment of all units across campus has implications for improvement in strategic planning, support in discrete decision-making, resource allocation, and general institutional effectiveness. Assessment provides a regular, systematic evaluation of the effectiveness of programs and services, and the data provided by the assessment process provides a source of information and impetus to guide goal-directed and research-based change. Planning and assessment have been intentionally integrated within the University planning process to emphasize this important linkage and to facilitate research-based planning. It is the intent of the University planning process to emphasize the powerful, iterative nature of assessment as a form of quality assurance and internal research and development to improve the effectiveness of academic and administrative units across the campus.

This guide is intended to provide a general blueprint for program level Student Learning Outcomes Assessment at the University and serves two main purposes: (1) provide a general overview of SLO assessment and (2) provide specific information on the SLO assessment process at the University of Montevallo. The guide contains general information about SLO assessment and details about SLO assessment for use in preparing UM's SLO assessment documents.

PART I: SLO ASSESSMENT'S RELATION TO STRATEGIC PLANNING AND UNIT PLANNING

The University's Strategic Plan describes institutional-level themes and goals for a five-year period. It is approved by the Board of Trustees and provides guidance for functional planning at the unit level (Strategic Plan Policy). Student Learning Outcomes assessment sits at the base of any strategic plan for a higher education institution. The results of SLO assessment indicate the level and quality of the fundamental product that higher education produces: learning.

In the context of the University of Montevallo's 2021-2026 Strategic Plan, SLO assessment associated with activities under "Theme 3: Innovations for Teaching and Learning" will ultimately determine whether those "innovations" have been effective and worthwhile, both directly and indirectly. There are areas under "Theme 2: Focus on Growth," where success ultimately is measured in UM's ability to insure student learning gain: developing and strengthening new academic programs, for example. Overall, all programs whether existing or new must maintain strong learning outcomes if the Strategic Plan is going to be worthwhile at all.

Given the importance of SLOs to the University's fundamental mission to provide an "experience of high quality…designed for their [students] intellectual and personal growth" it becomes incumbent that SLO assessment be something on which all academic departments focus every year. *So, it is strongly encouraged then that at least one goal associated with SLOs be included in each academic department's unit plan in a given year*.

This one Goal could focus on one high-stakes learning outcome on which the program has struggled to achieve the desired level of performance, or it could focus on developing some other aspect of SLO assessment, like curriculum mapping or improving program level learning outcomes statements.[1] Whatever the choice in Goal, academic Unit Plans should emphasize department's most important function, *student learning gain.* See Unit Planning and Assessment Guide for more information on the Unit Planning and Assessment process and system documentation.

PART II: WHAT DOES LEARNING OUTCOMES ASSESSMENT ENTAIL

Learning outcomes assessment is a process in which clear expectations of what students are expected to know at the completion of an academic experience are articulated and then evaluated to determine whether the goals have been accomplished, and then improving capacity to reach the specified learning outcomes goals. In higher education, at its simplest, outcomes assessment has three stages:

1. Defining the most important goals for students to achieve as a result of participating in an academic experience (program learning outcomes)
2. Evaluating how well students are actually achieving those goals (assessment)
3. Using the results to improve the academic experience (closing the loop)

S*tudent learning outcomes* (SLOs) directly describe what a student is expected to learn as a result of participating in academic activities or experiences at the College. These outcomes focus on knowledge gained, skills and abilities acquired and demonstrated, and attitudes or values changed. These are the outcomes that are of most interest to educators, but they are also difficult to measure, and may require multiple iterations before the data collected are deemed valid and reliable.

Program level learning outcomes are a set of no more than 10 overall outcomes that a program asserts its completers will be able to do upon completion of the program. Mastery of these overarching outcomes is toward which every course and other learning activity in the program curriculum is expected to move students in a progressive manner. Each learning outcome represents a combination of knowledge (information) and skills that a student has the ability to apply to the production of relevant outcomes in the real world.

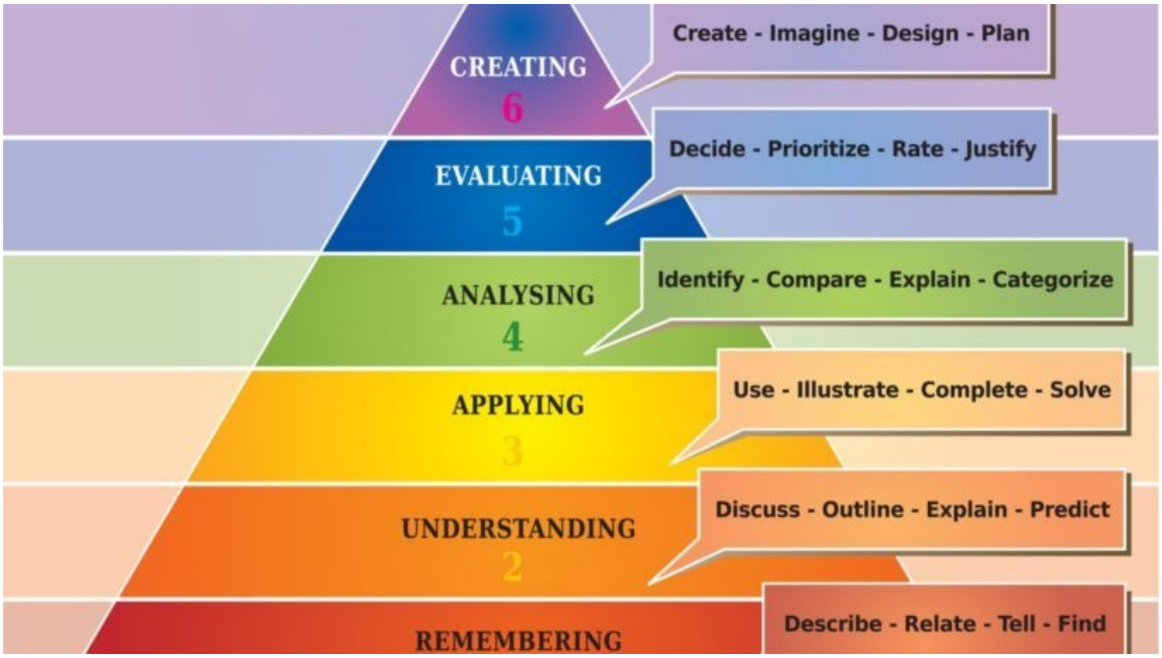
Course level learning outcomes are a varied number of outcomes, depending on the complexity of the concepts being learned in a course, that a student is expected to have gained at completion of a course. These outcomes may represent mastery of a body of information, concept, skill or the ability to apply, typically in higher level courses or may represent an intermediate or even beginner level understanding of content in lower level courses. Course outcomes should represent an aspect (or set of aspects) of program learning outcomes or move a student toward those ultimate outcomes by moving the student up a level toward mastery of program outcomes.

Evaluating how well students are doing involves developing a clear set of measures that are tied directly to a learning outcome.[2] These measures should be explicitly linked to appropriate artifacts and tools for measuring learning gain. The artifacts may be in the form of standardized test questions that cover the appropriate range

[1] Note also that as unit plan mission statements should be aligned with the University's mission, program level SLOs should be aligned with the unit plan mission statement.

[2] Note that this discussion ties closely to Bloom's Taxonomy for categorizing learning goals, offering a bias toward the capstone project as the most sophisticated and capable artifact for reaching the top of the taxonomy – creating.

Exhibit 1
Bloom's Taxonomy



of knowledge, concepts and skills with some emphasis on analysis and evaluation. They may also be in the form of written assignments (responding to a problem presented) that require understanding and application of the range of knowledge, concepts and skills, with emphasis on application of knowledge, concepts and skills that would necessitate significant demonstration of analytical and evaluative capacities. Or, the artifacts may be in the form of a long-term project or a significant research paper– a capstone – in which the student is ultimately required to develop (create) the issue to be addressed.

Tools used to evaluate these artifacts range from multiple choice responses to a set of test questions to relatively complex rubrics for evaluating student-created artifacts. For any kind of written work and certainly for artistic creations, at whatever level of sophistication, rubrics are a required tool. Rubrics need to be carefully designed. Once data has been collected on the artifacts, an analysis (evaluation) of that data should be undertaken. That analysis should be detailed enough so that it provides useable information. We will provide more detail on ways to make the data useable later in this guide. Nonetheless, the results of that analysis can then be used to improve a course or the program in general.

PART III: WHY PROGRAM LEVEL LEARNING OUTCOMES ASSESSMENT IS IMPORTANT

Learning outcomes assessment in the general sense is central to the teaching and learning process. You instruct. You assess. You evaluate. You make adjustments to instruction (and/or assessment). The circle starts again. Program level learning outcomes assessment is a somewhat higher level iteration of this same circle where the unit of analysis is the program itself, rather than a single course. It ultimately assesses whether all of that teaching

and learning that occurred across all courses amounted to fully trained and equipped program completers. It insures that outcomes of instruction and assessment at the course level is aligned with those skills and capacities to be held by a fully trained and equipped program completer.

Outcomes assessment is important to students, faculty and administrators. For students, clearly articulated outcomes communicate clear expectations about what's important in a course or program. The outcomes inform students that they will be evaluated in a consistent and transparent way. Clearly articulated outcomes reassure students that there is common core content across all sections of a course. And, the outcomes assessment process facilitates students making better decisions about programs based on outcomes assessment results.

For faculty, participating in outcomes assessment helps them determine what's working and what's not working in their courses and programs. Agreed upon outcomes provides assurances that all faculty teaching a particular course agree to address certain core content. Assessment facilitates valuable intra-disciplinary and interdisciplinary discussions. Ultimately, the assessment process provides evidence to justify needed resources to maintain or to improve a program.

For administrators, implementing college-wide outcomes assessment demonstrates an institutional commitment to continually improving the academic programs and services offered by the college. It provides valuable data for academic planning and decision-making. From an accountability standpoint, it enables administrators to inform elected officials, public oversight agencies, accreditors, and potential donors about the University's impact on students. Finally, it provides valuable data to support requests for funds from governmental entities and private donors.

An oft-asked question is, "why can't we just use grades. There are two key problems with grades. First, instructors do not all necessarily grade the same, so they cannot provide meaningful data across sections for the same course or experience. Second, grades do not provide specific information on students' acquisition of discrete elements that need to be learned. Ultimately, the data provided through grades cannot be used for course or program improvement.

PART IV: UM'S IDEAL SLO ASSESSMENT PROCESS

There are four main steps in developing a learning outcomes assessment process for a program: (1) defining program learning outcomes; (2) aligning course outcomes with program learning outcomes (mapping); (3) planning and executing the assessment of an outcome; and (4) using the evidence gathered to improve programs and courses. The following provides at some level of detail how to effect each of these four components. Note that a core assumption in this guide is that all courses at the University of Montevallo have clearly defined course outcomes that can or will be mapped to the program level learning outcomes.

Developing Program Level Learning Outcomes

The process begins with the identification of a set of general learning goals for your programs. These are general statements of what program students will be able to do upon completion of the program. For each goal, the knowledge, skills, abilities, capacities, attitudes or dispositions you expect students to acquire in your program should be identified. These latter are generally considered program objectives. These objectives ought to be measurable at the level of a specific outcome. It is at this third level that we are talking about program SLOs. We provide seven real examples of program learning outcomes below and a discussion follows of their shared attributes – i.e., key elements shared by all or most of the chosen statements.

Example 1: Program Learning Outcomes, Bachelor of Arts in Music[3]

By graduation, majors will do the following:

Develop and defend musical judgments.

Demonstrate the ability to realize a variety of musical styles.

Demonstrate technical skills requisite for artistic self-expression at a level appropriate for the particular music concentration.

Demonstrate knowledge and skills sufficient to work as a leader and in collaboration on matters of musical interpretation.

Demonstrate an understanding of musical forms, processes and structures and the ability to place music in historical, cultural and stylistic contexts.

Example 2: Goals and Program Learning Outcomes, Bachelor of Science in Biology [4]

GOAL 1. FOUNDATIONS OF INTERDISCIPLINARY KNOWLEDGE

The Biology Program provides a comprehensive curriculum that includes core interdisciplinary knowledge and the integration of new knowledge.

Student Learning Outcomes:

Students who graduate with a Biology degree will be able to:

Demonstrate understanding of core patterns and principles of biology

Integrate and apply knowledge across scientific disciplines

Incorporate contemporary research into existing conceptual framework

GOAL 2. PROFESSIONAL SKILLS

The Biology Program expects students to behave and communicate in a professional manner (confident, competent, respectful, and civil) in all situations.

Student Learning Outcomes:

Students who graduate with a Biology degree will be able to:

Communicate effectively in a professionally accepted manner

Demonstrate effective oral and written scientific communication

Discuss the merits of alternative hypotheses

GOAL 3. ANALYTICAL SKILLS

The Biology Program provides a comprehensive curriculum that requires students to apply all aspects of the scientific method.

Student Learning Outcomes:

Students who graduate with a Biology degree will be able to:

Demonstrate the ability to use discipline specific research techniques

Analyze and interpret data and scientific literature

Synthesize data and draw appropriate inferences

[3] Source: https://www.redlands.edu/study/schools-and-centers/school-of-music/current-students/program-learning-outcomes/

[4] Source: https://www.adams.edu/academics/undergraduate/biology/learning-outcomes/

Example 3: Program Learning Outcomes, Bachelor of Arts or Science in Political Science[5]

Students completing the bachelor of arts or science in political science generally specialize in either American politics or a global approach.

In general, successful political science majors will:

Understand and be able to interrelate the leading theories, literature, and approaches in the subfields of American government, political theory and methods, international relations, and comparative politics.

Have a competence in the basic methodology of research and analysis in political science and be able to analyze and formulate effective argumentation about the political world in writing and oral presentation, making use of that competence.

Critically assess the actions of actors in the political process and determine their motives.

Understand the decisions human beings make in political settings, including those regarding the forms of government available and understand the philosophical underpinnings of political systems, major ideologies, and political parties.

Students successfully completing a specialization in the study of American politics will:

Understand the foundations of American government, including the structure of and relationships between the branches of government.

Be able to identify the differences between major political parties in the United States and how the electoral process functions.

Know how laws are made, policies are developed, programs implemented, and what influences and constraints are placed upon the process.

Students successfully completing a specialization in the study of world politics will:

Be able to describe and explain political theory, political systems around the world, and politics in the international arena,

Understand the fundamental concepts, issues, and theories central to comparative politics and international relations,

Be able to explain the similarities and differences between various types of polities and how they affect their behavior

Note: Learning goals are subject to regular review and revision. [sic]

Example 4: Program Learning Outcomes, Bachelor of Science in Psychology[6]

1. Application of knowledge with critical thinking skills: Students should be able to use critical thinking to evaluate and interpret evidence, and to apply psychological concepts, theories, and research findings to individual, social, and cultural issues.

2. Application of research methods with values and integrity: Students should be able to apply basic research methods in psychology, with sensitivity to ethical principles.

3. Communication skills: Students should be able to demonstrate effective communication skills following professional conventions in psychology appropriate to purpose and context.

4. Awareness of sociocultural diversity and societal inequality: Students should be able to understand the complexity of sociocultural diversity and societal inequality in the inquiry and analysis of psychological issues.

[5] Source: https://www.elmira.edu/academics/programs/majors_minors/Political_Science/Learning_Outcomes.html
[6] Source: https://psychology.ucsc.edu/undergraduate/program-learning-outcomes/program-learning-outcomes-psyc.html

Example 5: Program Learning Outcomes, Bachelor of Science in Psychology[7]

Goal 1: Knowledge Base of Psychology
Students will demonstrate familiarity with the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology.

Goal 2: Research Methods in Psychology
Students will understand and apply basic research methods in psychology, including research design, data analysis, and interpretation.

Goal 3: Critical Thinking Skills in Psychology
Students will respect and use critical and creative thinking, skeptical inquiry, and, when possible, the scientific approach to solve problems related to behavior and mental processes.

Goal 4: Application of Psychology
Students will understand and apply psychological principles to personal, social, and organizational issues.

Goal 5: Values in Psychology
Students will be able to weigh evidence, tolerate ambiguity, act ethically, and reflect other values that are the underpinnings of psychology as a discipline.

Goal 6: Information and Technological Literacy
Students will demonstrate information competence and the ability to use computers and other technology for many purposes.

Goal 7: Communication Skills
Students will be able to communicate effectively in a variety of formats.

Goal 8: Sociocultural and International Awareness
Students will recognize, understand, and respect the complexity of sociocultural and international diversity.

Example 6: Program Learning Outcomes for a Bachelor Degree in Accounting[8]

The following are the learning outcomes of the accounting program:

Graduating accounting students will be able to use financial statements to make decisions.

Graduating accounting students will be able to help managers make decisions using internal and external information.

Graduating accounting students will be able to evaluate accounting systems.

Graduating accounting students will be able to file tax returns for individuals and businesses.

Graduating accounting students will be able to communicate verbally and in writing.

Example 7: Program Learning Outcomes for a Bachelor Degree in Accounting:[9]

PLO #1 Core Knowledge and Skills:

Demonstrate fundamental knowledge in core functional areas of business.

Apply business research skills.

Demonstrate competency in key accounting areas.

PLO #2 Critical Thinking:

Create evidence-based solutions to business problems or opportunities.

[7] Source: https://psychology.ucsd.edu/undergraduate-program/advising/learning-outcomes.html
[8] Source: https://www.uwrf.edu/Administration/loader.cfm?csModule=security/getfile&PageID=94945
[9] Source: https://seaver.pepperdine.edu/business/undergraduate/accounting/accounting-plo-standard.htm

Example 7 (continued): Program Learning Outcomes for a Bachelor Degree in Accounting

PLO #3 Ethics:

Determine appropriate response to a business situation in light of professional standards.

PLO #4 Communication:

Produce effective written business reports.

Deliver effective oral business presentations.

PLO #5 Teamwork:

Demonstrate effective and collaborative interpersonal skills in a team setting.

PLO #6 Diversity:

Understand the dynamics, benefits, and challenges of diversity and inclusion within teams or organizations.

What do these examples suggest? A general area (sometimes referred to as a Goal) encompasses one or more of the specific program level learning outcomes. These goal areas range from the very broad goal areas like "professional skills, "analytical skills, and "core knowledge and skills" to somewhat more specific groupings like "ethics, "communication skills, and "research methods." Sometimes the program learning outcome is not embedded in a stated goal, but constitutes a distinct program learning outcome and Goal, all in one statement (see example 6). Any of these approaches are legitimate approaches to articulating program level learning outcomes at the University of Montevallo.

Learning outcomes are typically articulated in terms of what students will be able to do. The action words used include but are not limited to: demonstrate, analyze, evaluate, apply, produce, use, interpret, communicate, discuss, integrate, synthesize, describe, identify, reflect and understand. The Bloom's Taxonomy diagram earlier in this Guide provides other words that define appropriate action words for student learning outcomes statements. See Appendix B for a more comprehensive example of useful action words for SLOs.

The objects of these actions may be broadly stated and include but are not limited to: "fundamental knowledge, "concepts, "theories, "evidence, "technique, "patterns, "principles, "historical trends, and "creative thinking." The objects may also be more specific and include but are not limited to: "business report, "financial statements, "research methods, "data analysis, "societal inequality, and even "leading theories" and "literature" in a field.

Careful and effective use of action words and their objects should move one onto the path of measurable outcomes.

At the end of the day, we do want to be able to actually measure whether students have achieved the learning outcomes. So, it cannot be the case that learning outcomes are established without some thought given to how attainment of the outcome will be measured. *Preliminary thought* should be given to the actual measure and to the possible instrument associated with each outcome adopted.

How many outcomes. In the seven examples above, the number of discrete outcomes ranged from a low of 4 stated outcomes in Example 4 to 9 stated outcomes in Example 2. However, deeper examination of even example 2 shows that there are multiple outcomes being stated in each of the four statements. There is no hard rule on how many discrete outcomes a program should state. The number will depend on how expansive a program is, how discrete those developing the statements want the statements to be, and generally just the writing style of the authors. What fundamentally matters is that the outcomes rather grouped under a fewer set of statements or listed in discrete statements should cover all of the knowledge, skills and competencies that program leaders think define the program.

An inclusive process. For program learning outcomes to work there must be sufficient faculty engagement in the program SLO development process itself. After all, the program's faculty will be the ones primarily engaged in the collection and analysis of learning outcomes data. Faculty have already developed courses with, even if unstated, a set of ultimate outcomes toward which the course or set of courses are working. These course level outcomes are an important source of information for determining what a set of program level learning outcomes should look like. In addition, these courses are already collecting data that may very well be used (or at least inform) data collection for a new or revised set of program level learning outcomes.

Furthermore, note that faculty at different institutions may have a very different view of what the key outcomes of their programs ought to be. We purposely provided two sets of accounting and two sets of psychology program level learning outcomes as examples above. A key reason was to demonstrate that two programs ostensibly preparing students for a future in the same fields can have wildly different sets of program learning outcomes. The first accounting program (Example 6) strikes one as a rather more practical (line level accountant) program than the second accounting program (Example 7) which appears to be preparing more managerial level accountants. Similarly, the psychology program in example 4 is preparing a very different psychology student from the student in Example 5. Learning outcomes statements matter in terms of setting a program's agenda. Faculty must be involved in that process.

Ideally, current students and even members of the wider community should be involved in program learning outcomes development. In the near term, we are most interested in faculty being engaged in the program SLO development process. We may want some student feedback on a close to final set of outcomes – after all, these statements are a statement of what the students have learned.

It would behoove programs to consult at a minimum with any professional organizations associated with their programs. These associations (local, state or national) can provide important guidance on what skills and professional attributes are critical in the preparation of future practitioners in a field. Some of this information can be gathered from websites. A discussion with one or two influential representatives may be useful. How ever the process is conducted, some level of an external scan should be conducted.

Review Questions Related to Program Level Learning Outcomes
Do your outcomes address the most important knowledge, skills and competencies that you expect every student to gain from completing your program?
Are your outcomes clearly articulated statements composed of full sentences with proper action words and objects?
Are your outcomes observable from a behavioral science standpoint and therefore unambiguous, measureable and quantifiable?
Are your outcomes a result of an as inclusive process of development as possible?

Curriculum Mapping

Once a set of student learning outcomes are devised the next step in the program SLO assessment process is to identify where in the curriculum instruction is occurring to meet the stated outcomes. Ideally, a curriculum is structured to introduce key learning opportunities early and to reinforce this learning throughout. The MATRIX is a tool commonly used to summarize the relationship between program components (curriculum, courses) and

Exhibit 2

Simple Curriculum Map

Required and Elective Courses in Program		Program Level LEARNING OUTCOMES								
		Learning Outcome 1	Learning Outcome 2	Learning Outcome 3	Learning Outcome 4	Learning Outcome 5	Learning Outcome 6	Learning Outcome 7	Learning Outcome 8	Learning Outcome 9
Required	Course 100 - Title	I, A		I			I		I	
Required	Course 120 - Title		I		I			I		I
Required	Course 140 - Title	I		I		I			I	I
Required	Course 200 - Title	R				R				
Required	Course 220 - Title		R		R					
Required	Course 240 - Title	R				R			R	
Elective	Course 260 - Title		R	R			R			
Elective	Course 280 - Title	R			R	R		R		R
Required	Course 300 - Title		R				R			
Required	Course 320 - Title			R						
Required	Course 340 - Title							R	R	
Elective	Course 360 - Title			R						R
Elective	Course 380 - Title		R			R				
Required	Course 400 - Title	R							R	
Required	Course 420 - Title			R			R			
Elective	Course 440 - Title				R			R		R
Elective	Course 460 - Title				R		R			R
Internship	Course 480 - Title	M	M	M,A	M	M	M,A	M	M,A	M,A
Capstone	Course 490 - Title	M,A	M,A	M	M,A	M,A	M	M,A	M	M
I=Introduced	***R=Reinforced***	***M=Mastery***	***A=Assessment Opportunity***							

program learning outcomes. Because it is typically not the case that a learning outcome can be achieved in one course, partly because any one outcome may be associated with multiple skills and competencies, specifying whether a student is to be introduced to skill/competency (I), reinforced (R) or mastered (M) is often used in the matrix. (I = Introduced, R = Reinforced, M = Mastered, A=Assessment Opportunity).[10] It is at the level of mastery that attainment of a program level learning outcome is generally assessed.

Note that the curriculum map can be as simple as that depicted in Exhibit 2 or more complex. More often than not complexity is driven by the amount of information that a matrix contains. For example, some programs may decide that they want to include clear targets of success on their matrix (e.g., 80 percent of students will perform at the highest level on a specified learning outcome). The matrix may specify process and instrument to be used in assessing the learning outcome (e.g., Test in Senior Seminar). The matrix may even specify the specific course outcomes that are aligned with the program learning outcome. However, getting to this higher level of complexity requires undergoing some of the other steps discussed later in this Guide.

We recommend, then, that programs doing this for the first time focus on the simple level of mapping shown in Exhibit 2. Align your program courses with the learning outcomes and take a moment to log where there may be gaps. Later steps in this Guide will then be used to determine some of the more complex elements of your map – but, only for the few outcomes that you are intending to assess in a given year. Over time – i.e., over the course of multiple annual assessment cycles on an as you go basis - the more complex elements can be added to your matrix or simply logged in a separate but related document (e.g., a multi-year schedule of assessment).

Review Questions Related to Your Curriculum Map

Does your curriculum map capture every course in your program that moves students toward attainment of your program level student learning outcomes?

Does your map identify *the levels of competence in* your program outcomes expected upon completion of each course?

Does your map identify the key courses that represent opportunities for assessment?

Does your map identify any gaps in your curriculum toward meeting your program level outcomes?

Planning to Execute an Assessment of an Outcome

Good assessment is manageable and sustainable over time. For this reason, we recommend that programs focus on no more than 3 or 4 outcomes per year, depending on the total number of outcomes. It is important to understand that every program learning outcome cannot be assessed in a given year. Ideally, however, every program learning outcome should be assessed at least twice between program review cycles (a 5-year cycle).[11]

Programs should identify in any given year outcomes that are high priority because the department is most interested in seeing students achieve on those chosen outcomes, or because the department may be concerned that success is less than optimal on the chosen outcomes. Programs should also consider (decide) whether their formal assessment of a program learning outcome will only happen at the level of mastery or may also involve

[10] Note that programs can use a different breakdown of competency level at their discretion. For example UM's College of Business uses Introduction (I), Comprehension (C) and Mastery (M).

[11] This does not preclude as any matter of policy assessing all program level outcomes, every year if a program chooses to do so. This often makes sense when comprehensive capstone projects or performances are the primary venue for assessment of all learning outcomes.

Exhibit 3

Examples of Direct Methods

Capstone Courses: could be a senior seminar or designated assessment course. Program learning outcomes can be integrated into assignments.

Case Studies: involve a systematic inquiry into a specific phenomenon, e.g. individual, event, program, or process. Data are collected via multiple methods often utilizing both qualitative and quantitative approaches.

Classroom Assessment: is often designed for individual faculty who wish to improve their teaching of a specific course. Data collected can also be analyzed to assess student learning outcomes for a program.

Collective Portfolios: Faculty assemble samples of student work from various classes and use the "collective" to assess specific program learning outcomes. Portfolios can be assessed by using scoring rubrics; expectations should be clarified before portfolios are examined.

Content Analysis: is a procedure that categorizes the content of written documents. The analysis begins with identifying the unit of observation, such as a word, phrase, or concept, and then creating meaningful categories to which each item can be assigned. For example, a student's statement that "I learned that I could be comfortable with someone from another culture" could be assigned to the category of "Positive Statements about Diversity." The number of incidents that this type of response occurred can then be quantified.

Embedded Questions to Assignments: Questions related to program learning outcomes are embedded within course exams. For example, all sections of a course could include a question or set of questions relating to your program learning outcomes. Faculty score and grade the exams as usual and then copy exam questions that are linked to the program learning outcomes for analysis.

Locally developed essay questions: Faculty develop essay questions that align with program learning outcomes. Performance expectations should be made explicit prior to obtaining results.

Locally developed exams with objective questions: Faculty create an objective exam that is aligned with program learning outcomes. Performance expectations should be made explicit prior to obtaining results.

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 objectives.

Primary Trait Analysis: is a process of scoring student assignments by defining the primary traits that will be assessed, and then applying a scoring rubric for each trait.

Reflective Essays: generally are brief (five to ten minute) essays on topics related to identified learning outcomes, although they may be longer when assigned as homework. Students are asked to reflect on a selected issue. Content analysis is used to analyze results.

Scoring Rubrics: can be used to holistically score any product or performance such as essays, portfolios, recitals, oral exams, research reports, etc. A detailed scoring rubric that delineates criteria used to discriminate among levels is developed and used for scoring. Generally at least two raters are used to review each product.

Standardized Achievement and Self-Report Tests: Select standardized tests that are aligned to your specific program learning outcomes.

Source: https://academicprograms.calpoly.edu/content/assessment-method

assessment at the introductory or reinforcement levels of competency. Including an assessment at lower levels of competency may help to identify emerging problems or may help to explain assessment results *at the level of presumed mastery, where assessment must occur*.

Having selected your outcomes, you will need to make a number of additional decisions in order to execute a successful assessment. (1) What methods (measures and instruments) will you use? (2) What artifacts and what venue will you use? (3) What level of accomplishment (target) define success on your measure? (4) Who will do the actual assessing? (5) How are you going to collect and store your data.

Choosing Direct or Indirect Methods. Methods will vary depending on the learning outcome(s) to be measured. **Direct methods** involve students demonstrating that they have achieved a learning outcome or objective on a final exam, in a final or capstone paper, project or presentation, or even on a standardized externally developed exam. Direct measures are highly correlated to the learning outcome, independent of any other influences. When internally generated tests are used, programs should only use questions directly related to the learning outcome being assessed.[12] **Indirect methods** involve students (or others) reporting perceptions of how well students have achieved an outcome, like post-graduate employer feedback, or may involve accomplishments only partly correlated to specific program learning outcomes, like acceptance rates into post-graduate studies in the same field.

For UM's purposes and for this guide we are primarily interested in direct methods. Ideally, there should be more than one measure for any given program level learning outcome assessment. That second measure could be a more indirect measure, if a program chooses. Nonetheless, see Exhibit 3 for a listing of direct assessment methods. Note that while "Scoring Rubrics" is set apart from other methods in the list, many of the other methods will require the use of a rubric for evaluation and scoring. *So, rubrics require special considerations*.

A few other things to consider in selecting an assessment method include the extent to which the method will provide data that is actionable, the extent to which the measure correlates with the identified program learning outcome, and how cost-effective the approach is. A main element of actionable is simplicity. Measures should be understandable to the average person. They should not require complex calculations. Correlation to the program learning outcomes should be apparent. In being apparent they become more actionable. Finally, keeping the measures simple and closely linked to program level outcomes starts us on the path toward cost-effectiveness. The other key to cost effectiveness is to use existing resources – tests in existing courses, projects and other artifacts that derive from the standard work students are completing over the course of their tenure at the university. Keep it simple.

Artifacts and Venues. The choice of method (and associated measures) then informs what the venue for assessment will be and what artifacts need to be collected. We might decide to embed key questions in a final exam for a mastery level course, which may be multiple choice or an open-ended set of questions. A program may even decide to administer an externally validated assessment in an identified course or in a special session outside of any class. A program may use more performative artifacts, ranging from final papers to portfolios, performances and projects.

In the use of the latter types of artifacts (and open-ended test questions), programs should set aside sufficient time to insure that rubrics are established for evaluating the artifacts on the learning outcome. Internal rubric development requires serious input from faculty, and successive levels of validation. **We strongly recommend that programs first try to identify existing rubrics for assessment that have already been validated**. If rubrics must be developed internally, expect the process of validating the instrument to take multiple assessment cycles to complete. Most importantly, all faculty who may be involved in implementing the rubrics should be part of the

[12] This warning is also true for externally developed assessment instruments. Only use the questions (items) that matter to the learning outcome being assessed.

rubrics development process, and whether the rubric is new or existing, should be trained on use of the rubric to insure a sufficient level of interrater reliability.

Setting Targets for Your Outcomes. Targets are intended as the primary means of evaluating whether you have met your learning goals or not. Targets ideally have 3 components: (1) a minimum performance level established for each student on the assessment, (2) the level, typically a percentage, of students who met that minimum standard and (3) a baseline level of success, typically established the last time the outcome was assessed. To the extent that this may be first time assessing a specific outcome (or using a specific measure), a baseline may not be practical. However, if there are standards for the assessment instrument, those standards may constitute your baseline.

Communication to Key Faculty. At the end of the day, program faculty have to administer the tests or exams, evaluate artifacts and collect the data. Key faculty should be identified early in the planning process. If their courses are being used for assessment, they should be intimately involved in determining the when, the where and the how. At a minimum, all of these choices should to be made clear in writing and communicated to relevant faculty prior to annual plan implementation and with sufficient time to develop instruments or related processes. The timing of UM's SLO assessment submissions outlined below will have some implications on the timing of communications and planning with faculty.

Data Collection and Storage Strategies. So, having decided which outcomes to assess in an annual cycle, the measure, venue and instrument, and then engaged the faculty who will be involved in doing the assessment, programs should consider how the data will be collected and stored. We strongly recommend that to the extent that artifacts can be electronically stored that programs **attempt to store the artifacts used in the assessment** process. So, for example, video of a final presentation or performance, photographs of art work and other fixed types of performance, should be digitally catalogued. This may require sophisticated technology that UM does not currently have available. Still, that would be the ideal and we should work toward that.

At an absolute minimum, the performance scores associated with the evaluation of these artifacts must be stored electronically with clear relationship between a score and the criteria on which the score is based (specifically, what rubric and items were used) for each subject (student) whose output is being assessed. If a score is composed of a set of sub-scores (an aggregated or summary score) all of the sub-scores should be collected and stored, as well. A similar process should be applied to simple test question scores. At minimum, the score for the key items from the test should be compiled electronically. Furthermore, those test item scores should be clearly identified with the question (item) that relates to the learning outcome. Finally, electronic storage should facilitate easy analysis. The spreadsheet is the best and simplest way to go. It allows analysis within excel itself and allows for easy transfer to other more sophisticated analytical systems.

Review Questions Related to Planning to Execute an Assessment of an Outcome
Have you selected your specific outcomes to assess in this assessment cycle?
Have you decided whether you are assessing only at the level of mastery or will you include assessment at the introductory and/or reinforcement levels?
Have you selected a method (measures, venue and instruments) for conducting your assessments that are simple, discrete and strongly correlated with the learning outcome?
Have you established targets for all of your measures?
If you are using a rubric, have you established sufficient time to develop and validate the rubric, and train appropriate faculty in its use?
Have you decided how you are going to store your data results?

Analyzing the Data toward Curricula Improvement

This step starts prior to data collection and ideally starts with the establishment of measures and targets. As stated earlier, the measures themselves should be as simple as possible. This also means that calculations should be easy to do. Pre-established targets provide the base for your first level analysis: did your students meet or exceed the thresholds having been pre-established in your targets.

You may want to get a little more sophisticated in your analysis, particularly if your targets are not met. To the extent that your assessment involves multiple items (test or rubric items, e.g.) that determine an overall score, analysis of the data at this second level may be helpful. Is there consistency across subjects in the particular items that registered the weakest scores? Is there consistency in terms of high scores on items? Are there differences in performance by student characteristics. This level of analysis starts to tell us what elements of our program curriculum need work.

A third level of analysis now asks where those elements that need work are taught in the curriculum. It is at this point that the concrete value of the curriculum maps emerge. While affected course faculty should be involved in all levels of analysis, their involvement is vitally important at this third level. Again, those faculty members are the ones who will need to make the necessary changes. It should never be that program coordinators or department chairs are unilaterally making decisions around next steps.

Nonetheless, this is how ongoing, systematic assessment can lead to curricula improvement.

PART V: SCHEDULING YOUR PROGRAM LEVEL SLO ASSESSMENT OVER TIME

Ideally, assessment planners would develop a full schedule for assessing all of a program's student learning outcomes in the same decision-making processes that produced the program level SLOs and the curriculum maps. Ultimately, UM would prefer that all programs operate with that level of foresight. However, and especially, for programs that do not have strong history of formal program level learning outcomes assessment, we envision a schedule developing over time, scheduling one academic year's worth of work at a time.

The SLO assessment process at UM operates on an academic year basis. The key reporting point in time occurs in May of each academic year, at the end of the Spring semester. At this point typically around the third week in the month academic programs are expected to report the results of their assessments for the current academic year, and produce a statement about their plans for assessing outcomes in the next academic year. This reporting point in time occurs simultaneously with the development of the following fiscal year (academic year) unit plan. This concurrent timing allows academic programs to consider embedding changes they want in their program curriculum into their annual unit plans as a unit plan goal or as an aspect of a broader goal.

Exhibit 4 provides an example of how a fully developed assessment schedule ought to appear. The key unit of time is the semester (fall, spring and summer). There are six key activities that go into the assessment of any outcome and each of these activities should be scheduled in the proper sequence:

(1) developing the instrument (see direct methods in exhibit 3);

(2) identifying an outcome for assessment in the Spring submission of the program's plan for the following year;

(3) reviewing and revising the instrument, if needed;

(4) doing the actual assessment or more precisely collecting the data;

(5) reporting on the results including interpreting the results and identifying implications for curricular improvement; and

(6) implementing the suggested improvements.

Exhibit 4

Sample Program Level Learning Outcomes Assessment Schedule

Semester	Program Level LEARNING OUTCOMES								
	Learning Outcome 1	**Learning Outcome 2**	**Learning Outcome 3**	**Learning Outcome 4**	**Learning Outcome 5**	**Learning Outcome 6**	**Learning Outcome 7**	**Learning Outcome 8**	**Learning Outcome 9**
Spring 2020	Identified for Assessment						Identified for Assessment		
Summer 2020	Review/Revise instruments						Review/Revise instruments		
Fall 2020		Develop Instruments					Assess	Develop Instruments	
Spring 2021	Assess and Report	Identified for Assessment					Report	Identified for Assessment	
Summer 2021		Review/Revise Instrument						Review/Revise Instrument	
Fall 2021		Assess	Develop Instruments				Implement Changes		Develop Instruments
Spring 2022	Implement Changes	Report	Identified for Assessment					Assess and Report	Identified for Assessment
Summer 2022			Review/Revise Instrument						Review/Revise Instrument
Fall 2022		Implement Changes		Develop Instruments					Assess
Spring 2023			Assess and Report	Identified for Assessment				Implement Changes	Report
Summer 2023				Review/Revise Instrument					
Fall 2023				Assess	Develop Instruments				Implement Changes
Spring 2024			Implement Changes	Report	Identified for Assessment				
Summer 2024					Review/Revise Instrument				
Fall 2024				Implement Changes					
Spring 2025					Assess and Report				

As the Exhibit 4 shows, collecting data (Assess) occurs either in the Fall or Spring semesters. Reporting of results and identifying the outcomes to be assessed in the following year occurs only in the Spring semester. While developing the instruments and reviewing the instrument have been placed in this hypothetical chart in the fall and summer semesters, respectively, those activities may occur in other semesters as is practical. Finally, implementing changes based on results in this hypothetical chart does assume that collecting of data for all of the outcomes is associated with specific courses that are taught in specific semesters in the curriculum, and that the needed changes need to be implemented in only those classes. These assumptions may not be entirely true. As noted earlier, if the fundamental problems identified from the results suggest changes in an introductory or reinforcement course then the change implementation term may vary.

Overall, what Exhibit 4 shows is that even nine (9) outcomes can be assessed at least once over a 5 year timeframe without massive levels of energy expended, if scheduled properly. Moreover, where that hypothetical schedule only leads to 2 outcomes at most being assessed in any given year, there is still room if we are assessing 3-4 outcomes per year to reassess key outcomes.

PART VI: ENTERING SLO ASSESSMENT PLAN AND RESULTS INTO CAMPUSLABS (ANTHOLOGY) SYSTEM

This section is framed by UM's planning and evaluation system's (Campus Labs/Anthology) data entry requirements. The purpose of this section is to discuss narrowly what that system requires, emphasizing that it only involves a fraction of the assessment process described above. In short, the CampusLabs system is and will be used merely to document the assessment that a program is conducting in any given year. Learning outcomes statements, curriculum maps and schedules do not have to be uploaded into the system, although the system does allow supporting documents to be uploaded. They should however be kept on file and a copy of each document should be forwarded by email to the office of Institutional Research, Planning and Assessment.

Note that in the SLO Assessment module in CampusLabs there are currently only two templates available: the two templates are reporting on student learning outcomes goals (SLO and SLOapprovedJan2020). The template discussed below is the latter template (SLOapprovedjan2020). There are 11 headers in this template in which programs/departments are expected to enter data regarding their student learning outcomes to be assessed in an academic year. Some information is entered into the template prior to the start of the assessment year indicating what outcomes the program intends to assess (Plan) and some information is entered at the end of the cycle after data has been collected and analyzed (Report).

Number (Plan)

This field asks that the program enter a number that reflects the sequence of SLOs in the document. Whatever entered into this field as a number or string will determine where in the overall document the particular SLO will fall in alphanumeric order. So, if you want to change the order of goals after the fact, you can simply change the numbers on the goals you want to move.

Providing Department (Plan)

The official name of the department in which a program is located should be put in this field. Note that currently, units for SLO's are defined at their lowest aggregation at the departmental level.

Start (Plan)

This date will be pre-populated and reflects the first day of the fiscal year associated with the SLO assessment process in question (October 1).

End (Plan)

This date will be pre-populated and reflects the last day of the fiscal year associated with the SLO assessment process in question (September 30).

In the previous academic year's SLO report, the following planned changes to the program based on the analysis of the data were indicated.[13] (Plan)

This field is completed in the planning phase of the Campus/Labs process: i.e., when the program is reporting what outcomes it plans to assess in the upcoming year. This field should be completed by the program for each planned change from the current Report year based on the current year's results. If the program decided to keep the same outcomes for assessment in the upcoming year from the current year, then the program can enter in this field information directly from the same goal for the current year only. If a different set of goals are selected for the upcoming year then the program should determine under what new goal they will bring this information into the plan for the upcoming year. Note that compiling this information should entail nothing more than copying and pasting from the second to last field in the current year's report, "What changes will be made to the program…" Finally, if there are planned changes, we strongly recommend that programs plan to re-assess the same learning outcome in the upcoming year.

Were the planned changes from the previous academic year's report successfully implemented as indicated?[14] (Report)

This field is completed in the final report for the current year. The expectation is that for each planned change in the above field the program will report whether the changes themselves were made and whether the changes were successful, where successful is defined by expected improvement in SLO assessment results. However, it is not always the case that planned changes can produce the expected results one year after implementation. For example, some changes may be upstream from the point of assessment opportunity – changes in introductory or reinforcement courses – so much that the next cohorts to be assessed did not experience the changes implemented. Nonetheless, good faith effort should be made to report re-assessment results.

Student Learning Outcome Description (Plan)

This description should hew closely to the language of the program level learning outcome as articulated in your program SLO statements. Moreover, to the extent that the statement encompasses more than one aspect as some do in the examples earlier in this guide, this description should be clear regarding the aspects being assessed. If it would be helpful, providing a sentence or 2 explaining why you will focus on only certain aspects of the SLO chosen would help to clarify the choices made. See Appendix C for the basic questions/criteria related to effectively writing your SLO in your Annual SLO assessment plan.

[13] This field may be moved to a template devoted to planned changes, where all planned changes across goals are compiled into one area of the SLO module. Expect this change to be in place for May 2022 SLO planning.
[14] Ibid.

Describe the assessment of the Student Learning Outcome (Plan)

This field should reflect in brief the hard work program planners did in *planning to execute an assessment of an outcome*. It should reflect their selection of method as described earlier. There should be more than one measure. From a scheduling standpoint, the submission here should reflect significant forethought about the instrument and sufficient time having been spent thinking about and developing that instrument, collaboratively with key faculty in the program. It should describe the artifacts and venues for doing the assessment. It is here in the system where the program identifies its targets as described above – success defined for individual student scores, and proportion of students meeting that threshold, and baseline data, if available. The requirements of this item in the plan mean that planning for the upcoming year cannot abruptly start in May. Thinking about SLOs for the upcoming year should really start in the fall semester. Finally, organize the writing of this so that the writing clearly identifies all of the elements of the assessment plan – use paragraphing and bullet points, for example.

What does the data from the current academic year tell you about student learning? (Report)

This section reflects the program's analysis of data collected in either the fall or spring semesters. This is where a collaboration of all faculty involved in assessing the outcome engages in analyzing the data toward curricular improvement. Does the data show the targeted proportion of students meeting the defined level of success on all of the relevant measures? Are there differences in performance on different items or by student characteristics? Where are concepts that seem to be lacking in the assessed subjects, introduced, reinforced and presumed mastered in the curriculum? And finally, do our measures provide us with useful information? All of these findings and the key implications from these findings should be documented in this section.

What changes will be made to the program in the upcoming academic year to improve or further improve student learning based on the analysis of the data? (Report)

This is where all of the reason for the hard work of collecting the data is documented. We want to make improvements in our program. This where that collaboration of faculty define what they will collectively do to improve the program curricula. In what courses do we need to make adjustments? What are those adjustments? Will those changes cost money? And, what do we expect the impact of those changes will be on our current measures at re-assessment.

Will assessment of this particular Student Learning Outcome continue in the upcoming academic year? (Report)

This is generally a yes/no question. However, as stated above, the level in the curriculum at which changes need to be made may suggest that re-assessment occur a year, a half-year or two years down the road.

The program level student learning outcomes assessment documentation process is now complete and the full Student Learning Outcomes Assessment cycle can be closed.

BIBLIOGRAPHY

Fulks, Janet; Chaplot, Priyadarshini; Pacheco, Bob. June, 2010. *Inquiry Guide: Assessing Student Learning Outcomes*. Bridging Research, Information and Culture (BRIC); an Initiative of the Research & Planning Group (RPG) for California Community Colleges. (www.rpggroup.org).

Middaugh, Michael F. 2010. *Planning and Assessment in Higher Education: Demonstrating Institutional Effectiveness*. John Wiley & Sons; San Francisco, CA.

Sedlacek, William E. 2004. *Beyond the Big Test: Noncognitive Assessment in Higher Education*. John Wiley & Sons; San Francisco, CA.

Suskie, Linda. 2004. *Assessing Student Learning: a Commonsense Guide*. Anker Publishing Company; Bolton, MA.

APPENDIX A: STUDENT LEARNING OUTCOMES ASSESSMENT UNITS

Academic Affairs (Academic Units Only)

College of Arts and Sciences

- Behavioral and Social Sciences
  - History
  - Political Science
  - Psychology
  - Social Work
  - Sociology
- Environmental Studies
- Biology, Chemistry, Mathematics and Comp Sci
  - Biology
  - Chemistry
  - Mathematics
  - Computer Science
- Communication Science and Disorders
- English and Foreign Languages
  - English
  - World Languages
- Game Studies and Design

College of Business

- Accounting
- Business Administration

College of Business (Cont)

- Computer Informatics
- Management
- Marketing

College of Education

- Collab-DHH (Special Ed)
- Counseling
- Elementary Education
- EXNS-HP
- EXNS – Nutrition and Wellness
- EXNS – PE Teacher Prep
- Family and Consumer Science (FCS)
- Instructional Leadership Ed.S.
- Instructional Leadership M.Ed.
- Instructional Technology
- Leadership – Teacher Leadership
- Secondary Education
- Teacher Education Services

College of Fine Arts

- Art
- Communication
- Mass Communication
- Music
- Theatre

Honors Program

APPPENDIX B: USEFUL VERBS FOR DEVELOPING LEARNING OUTCOMES

This list of useful verbs for creating learning outcomes is arranged according to Bloom's Taxonomy of Educational Objectives, which identifies different cognitive domains associated with levels of learning. Bloom's taxonomy was developed in 1956, and was revised in 2001 by Bloom's colleagues, Lorin Anderson and David Krathwahl.[15]

REMEMBERING: recall of information

- arrange
- cite
- collect
- define
- describe
- duplicate
- enumerate
- find
- identify
- locate
- memorize
- record
- recognize
- match
- relate
- select
- name
- label
- list
- order
- quote
- recall
- repeat
- reproduce
- select
- show
- state

UNDERSTANDING: demonstration of comprehension

- associate
- classify
- compare
- contrast
- convert
- describe
- estimate
- explain
- extend
- generalize
- give examples
- identify
- interpret
- justify
- locate
- outline
- paraphrase
- predict
- recognize
- report
- restate
- review
- select
- summarize
- trace
- translate

APPLYING: applying knowledge in a new context

- apply
- calculate
- chart
- choose
- classify
- complete
- compute
- construct
- contribute
- develop
- discover
- dramatize
- employ
- experiment
- extend
- illustrate
- implement
- instruct
- interpret
- modify
- operate
- participate
- practice
- predict
- show
- solve
- teach
- test
- use

ANALYZING: supporting assertions through use of evidence and arguments identifying causes and patterns

- advertise
- analyze
- break down
- categorize
- classify
- collect
- compare
- connect
- contrast
- correlate
- criticize
- diagram
- differentiate
- distinguish
- divide
- establish
- examine
- explain
- identify
- illustrate
- infer
- investigate
- order
- outline
- prioritize
- question
- select
- separate
- verify

[15] Adapted from list found at University of Victoria; 3800 Finnerty Road; Victoria BC V8P 5C2; Canada. Website at http://www.coun.uvic.ca/learn/program/hndouts/bloom.html.

EVALUATING: coming to a judgment on the value of information or the validity of arguments

- appraise
- argue
- assess
- choose
- conclude
- convince
- criticize
- critique
- debate
- decide
- defend
- determine
- discriminate
- evaluate
- grade
- integrate
- interpret
- judge
- justify
- predict
- prioritize
- rate
- recommend
- reframe
- score
- select
- support
- value

CREATING: combining or grouping knowledge to come to new conclusions

- adapt
- anticipate
- arrange
- assemble
- collect
- combine
- compile
- construct
- decide
- design
- develop
- facilitate
- formulate
- generate
- generalize
- imagine
- incorporate
- individualize
- integrate
- invent
- modify
- negotiate
- organize
- plan
- propose
- rearrange
- reconstruct
- reorganize
- revise
- select
- structure
- substitute
- validate

APPENDIX C: ABCD METHOD FOR WRITING LEARNING OUTCOMES

There are several methods to write learning outcomes. They share the recommendation that outcomes are written so that the student learning is observable, thus is measurable.

- Sets clear expectations for students and colleagues. Clear learning objectives state what the learner will be able to do upon completing the educational activity, in terms of behavioral change
- Ensures that what you intend students to learn is what they actually learn
- Improves alignment between assessments (measures) and instruction (teaching methods and materials) and desired goal state (learning outcome).

ABCD Method

Although there is no such thing as a perfectly written learning outcome, some learning outcomes are more effective than others. Including all components into the statement makes it easier to align assessments and learning outcomes.

Components

- **Audience** – What population are you assessing? Who is learning?
- **Behavior** – What action do you expect from the participant?
- **Conditions** – Under what circumstances will the individual perform the behavior?
- **Degree** – How well must the individual perform the behavior?

Example

Learning Outcome: Using the ABCD Method and Bloom's Taxonomy, the workshop participant will be able to write a measurable learning objective with at least 75% accuracy.

Assessment: Each workshop participant will write a learning outcome, and then will identify each component within the learning outcome. The student must correctly identify at least 3 of the components for successful completion.

Instruction: Demonstrate how to identify each component in the workshop learning outcome. Have participants identify components within several example learning outcomes while working in pairs. Then each person will write a learning outcome and have their neighbor identify the components.

Answer Key:

- Audience is "workshop participants"
- Behavior is "write a measurable learning objective"
- Condition is "Using the ABCD Method and Bloom's Taxonomy"
- Degree is "at least 75% accuracy"