# Academic Management Manual

# Section L

Learning Outcomes, Mapping, and Assessment

Academic Affairs
2017-18

# Section L: Table of Contents

# List of Tables

# The Teaching, Learning, and Assessment Cycle:
# Building a Common Understanding

Think of a class you teach.  What can students do that will help them in another class, on the job, or in life, as a result of successfully completing your class?  You have just named a "learning outcome."  In order to achieve a learning outcome, students must master particular skills. When in your course do you ensure students can master the skills associated with the outcome you named?  You have just "mapped" your outcome to the curriculum.

A few more questions. In your class, how do you communicate intended learning outcomes to students?  What do you ask students to do to prove to you that they have achieved a given outcome? This is "assessment." We often overlook the need to explicitly tell students what we expect them to learn and how we expect them to demonstrate they have learned it, yet this is a critical part of teaching and learning.

Learning outcomes, curriculum maps, and assessment are critical components of teaching and learning. The focus of this section of the Academic Management Manual is learning outcomes. However, a discussion of learning outcomes makes little sense if curriculum maps and assessment are not included, so Section L will also offer some coverage on those topics.
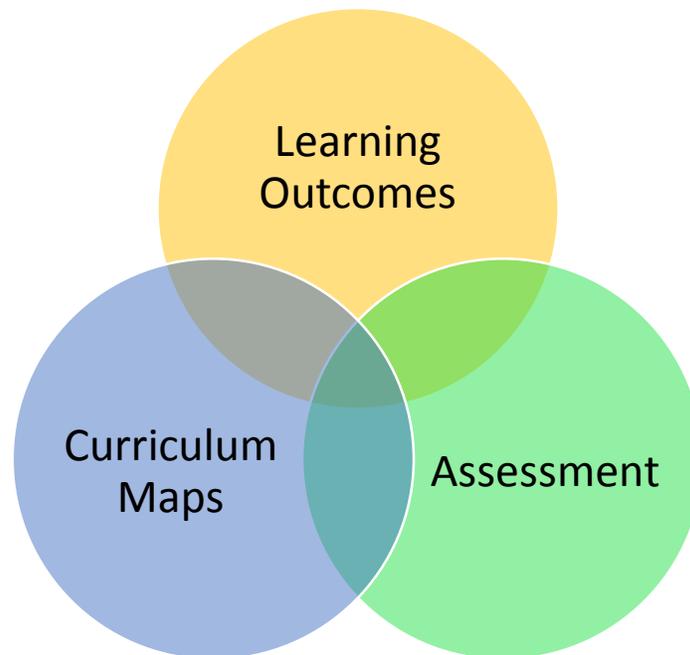


**Figure 1. Critical Components of Learning**

First, another question. What do you do when you realize students are *not learning* what you want them to learn? If you described a process to determine what might be done to help them learn better, you have described how you use results to develop improvement strategies. This is also an important part of the learning outcomes conversation.  Outcomes, mapping, assessment, using assessment results, and teaching must all be used in concert to improve

student learning.  Fulcher, Good, Coleman, and Smith (2014) say it like this: "Assessment, pedagogy, and curriculum are not mutually exclusive. In fact, they should work hand in hand, yet most institutions have yet to intentionally connect them effectively." They add, "higher education should strive for a culture of learning rather than a culture of assessment" (p.4).

> *"Assessment, pedagogy, and curriculum are not mutually exclusive. In fact, they should work hand in hand, yet most institutions have yet to intentionally connect them effectively. For these reasons… higher education should strive for a culture of learning rather than a culture of assessment" (p.4).*
>
> *Fulcher, Good, Coleman, & Smith (2014)*

Resources such as this section of the Academic Management Manual, meetings with peer faculty, and assessment workshops are part of the College's intentional effort to merge assessment with instruction and curriculum. Please join the many faculty who have already begun the effort to improve the *process* of assessment, striving in fact to create such a culture of learning at Palm Beach State College.

## Defining Learning Outcomes

Terms such as goals, objectives, competencies, and proficiencies, are too often used interchangeably with the term outcomes.  These terms do not always have the same meaning, so we begin by defining learning outcomes.  In short, learning outcomes are statements that, if well-written, clearly articulate what students are expected to be able to do after they successfully complete an activity, course, program, or degree.

> *Learning outcomes are statements that, if well-written, clearly articulate what students are expected to be able to do after they successfully complete an activity, course, program, or degree.*

At the institution or program level, learning outcomes are usually expressed broadly or in general terms. General education learning outcomes and program learning outcomes are examples of broad learning outcomes.  Learning outcomes at the course level are more specific.  In all cases, learning outcomes communicate value to students and the public, and these expectations for student performance provide a framework that allows faculty to build the curriculum.

## Why Learning Outcomes are Necessary

Learning outcomes keep the College focused on student learning. Additionally, by using learning outcomes, the College remains in compliance with its regional accreditor, the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC), and supports the College's mission.

### Focus on Student Learning

Learning outcomes and their assessment essentially answer two important questions about an institution, a program, or a course:  (1) What do we want students to learn? and (2) How do we know they have learned it?

Learning outcomes have been a part of the conversation for a few years at Palm Beach State College, so it may seem obvious to some, but these answers are not always apparent within the curriculum. Consider, for example, what might be referred to as the three types of curriculum (Prideaux, 2003): what is stated in the catalog, what instructors present to students, and finally, what students actually learn.

| Declared | • What is stated in catalog |
| Taught | • What is presented to students |
| Learned | • What students actually learn |
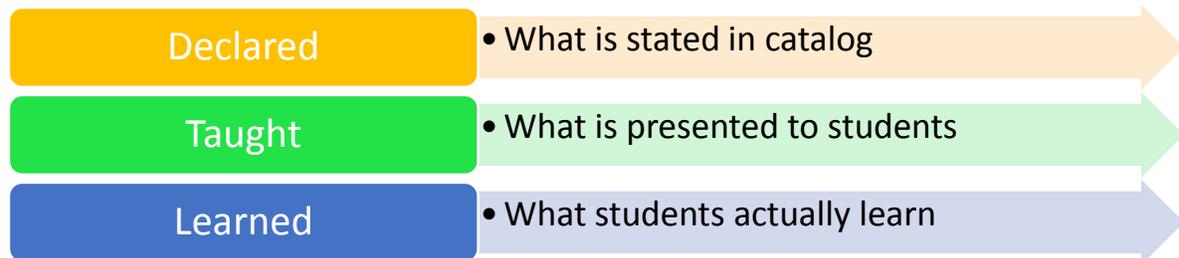
Figure 1. Three Types of Curriculum

The declared, taught, and learned curriculum types should, in theory, be the same, but without outcomes and assessment, there is no way to know if they are the same or not. Well-written outcomes help align the curriculum we declare and teach, and well-written outcomes provide the foundation for both the expectations of student learning and good assessment. Outcomes and assessment that are focused on student learning help instructors and an institution demonstrate that learning has occurred in a measurable way. This is a documented best practice that informs good teaching[1]. *The process informs good teaching!* This should be the most compelling reason to include learning outcomes and their assessment in the Palm Beach State College curriculum.

> *The process informs good teaching! This should be the most compelling reason to include learning outcomes and their assessment in our curriculum.*

**Regional Accreditation**

The College is regionally accredited by SACSCOC. This agency emphasizes the importance of learning outcomes and requires learning outcomes assessment as part of reaffirmation. The College must demonstrate every five years that it has a process for developing and assessing learning outcomes and that it uses assessment results to improve learning on a regular basis.[2] If we use outcomes and assessment to focus on and improve learning, meeting the requirements of SACSCOC will be inherent to the process.

**Supporting the Palm Beach State College Mission**

Palm Beach State College's mission is *to create and sustain a dynamic teaching and learning environment that provides a high quality, accessible, affordable education, preparing students to contribute and compete ethically and successfully in a diverse global community.* Learning

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[1] Angelo, T.A. & Cross, K.P. (1993). *Classroom assessment techniques: A handbook for college teachers.* San Francisco, CA: Jossey-Bass; Maki, P.L. (2004). *Assessing for learning: Building a sustainable commitment across the institution.* Sterling, VA: Stylus Publishing, LLC.; Suskie, L.A. (2009). *Assessing student learning: A common sense guide.* San Francisco, CA: Jossey-Bass

[2] SACSCOC publishes its Principles of Accreditation on its webpage, http://www.sacscoc.org/principles.asp.

outcomes help fulfill this mission because, when written well and aligned to assessment and curriculum, learning outcomes lead to a dynamic and high quality teaching and learning environment.

# Learning Outcomes at Palm Beach State College

Palm Beach State College has learning outcomes at three levels: general education and institutional learning outcomes, program learning outcomes, and course learning outcomes. Outcomes are developed by faculty and are published online. Web links are provided with the brief descriptions that follow.

## General Education and Institutional Learning Outcomes

The general education outcomes and philosophy were first developed by faculty in 2006-2007 and last reviewed and revised in 2013. Currently, the College has five general education and four institutional learning outcomes.  The general education outcomes reflect intended outcomes within the five major areas of general education, and the institutional outcomes represent a broad scope of learning expected within the Associate in Arts degree.  Many of these outcomes are also an integral part of other credit degree and PSAV programs at the College.

<u>General Education Outcomes</u>
- Communication
- Humanities
- Mathematics
- Natural Sciences
- Social Sciences

<u>Institutional Outcomes for AA Degree</u>
- Critical Thinking
- Ethics
- Global Awareness
- Information Literacy

The next review will begin in Fall 2017.  See Appendix A for the most recent version of the general education and institutional learning outcomes, or view them online: http://www.palmbeachstate.edu/learningoutcomes/general-education-learning-outcomes.aspx.

## Program Learning Outcomes (PLOs)

Developing learning outcomes from the existing objectives in the state curriculum frameworks at the program level (AS, ATD, CCC, ATC, and PSAV) was a major focus in the 2006-07 academic year and continues to be an ongoing practice that now includes bachelor degree programs also. Outcomes at this level are reviewed annually during program review, and faculty go through a curriculum process when there is a need to revise PLOs. The PLOs for each program are available online at http://www.palmbeachstate.edu/learningoutcomes/program-learning-outcomes/default.aspx.

## Course Learning Outcomes (CLOs)

Course objectives were transformed into CLOs in 2007-2008.  Having measurable and meaningful CLOs is an ongoing process that is gaining momentum. Every spring since 2014, faculty have been encouraged to review their outcomes, specifically looking to ensure adequate representation of what is expected of students in each course.  Faculty must go through a

curriculum process to revise learning outcomes.  Course outlines are searchable by course in an online database http://www.palmbeachstate.edu/academicservices/curriculum-and-programs/course-outlines.aspx.

# Benefits of a Curriculum Driven by Learning Outcomes

Learning outcomes provide an opportunity for faculty to evaluate course and program offerings in terms of student learning.  Faculty can make a difference in the learning experiences of students at Palm Beach State by collaborating with each other to define clear expectations for learning that can then be communicated to students.  The implementation of learning outcomes has been and continues to be a transformative experience of how we examine students and learning as the focus has turned to what students learn and how we can improve student learning. The process is also evolutionary, and we are constantly learning. The key is that a partnership in learning develops – students know what they will be able to do as the result of the learning, and faculty will have the tools to ensure that students are learning the stated outcomes. By focusing on learning outcomes, this partnership has other benefits for both the faculty and students.

**By focusing on student learning outcomes, FACULTY can**

1. Know exactly what students are expected to learn in each course, and recommend outcomes for programs and courses.
2. Provide focus for developing appropriate learning experiences for students so that they have the knowledge, skills, and abilities to succeed.
3. Empower students to become more involved with their learning experiences.
4. Assess students' learning and use results as a tool for improvement.
5. Grow professionally as they step away from traditional teaching formats and try innovative pedagogies to get students more involved in the learning process.

> *The key is that a partnership in learning develops – students know what they will be able to do as the result of the learning, and faculty will have the tools to ensure that students are learning the stated outcomes.*

**By focusing on student learning outcomes, STUDENTS can**

- Know exactly what is expected of them.
- Become more involved in their learning experiences.
- Apply knowledge, skills, and abilities from one class to the next or to the workplace.

Using common terms when we speak of learning helps our understanding; Appendix B contains our working definitions for terms related to learning outcomes.

# Developing, Mapping, and Assessing Learning Outcomes

There are many issues to consider when developing outcomes and aligning them to assessment and curriculum. To borrow a concept from Stephen Covey, it is important to begin this process

with the end in mind.[3]  This will be true whether we are writing outcomes at the institutional level, such as for general education, or at the program or course level, and to do this, it is helpful to answer these questions and know why the answers are indeed useful (Table L-1). Each question may even be considered a "step" in the process and will be examined as such.

**Table L-1. Questions to Answer when Developing Learning Outcomes**

| Question | Answer facilitates development of…. |
|---|---|
| What will the students be able to do upon successful completion (of the degree, the program, or the course)? | Learning outcomes |
| In what program, course, or session will students be introduced to and master the necessary skills? | Curriculum maps |
| How will students demonstrate they have achieved the outcome? | Assessment |
| To what degree is demonstration of the outcome necessary? | Student achievement targets |

**Step 1. Identify and write the learning outcomes.**

Begin by asking, "What will the students be able to upon successful completion (of the degree, the program, or the course)?" There may be several outcomes, and there is no magic number of outcomes for an institution, a program, or a course. What is important is that the essential components of learning are represented. Once a desired outcome is identified, it must be written.

**Components of Characteristics of Good Learning Outcomes**
- Good learning outcomes include action verbs.
- Good learning outcomes clearly state who is to do the action.
- Good learning outcomes clearly state what action is to be done.
- Good learning outcomes are achievable.
- Good learning outcomes are observable.
- Good learning outcomes are measurable.
- Good learning outcomes are aligned to the curriculum.

Good outcomes may also include the expected result of the action, or the result may be stated separately as a target or benchmark.  Examples follow using an actual outcome from a health class at Palm Beach State College. The examples assumes a 100-point test to measure related skills is administered by all faculty who teach the course, and that all faculty have common evaluation criteria to score the test (Table L-2).

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[3] Covey, S.R. (2003). *The seven habits of highly effective people: Restoring the character ethic.* New York: Free Press. Covey says that to "begin with the end in mind" is Habit 2.

**Table L-2. Options for Writing Learning Outcomes**

| Outcome and target written separately | Target integrated into outcome |
|---|---|
| Outcome: *Students will identify consumer, political, and economic issues influencing health disparities in diverse populations.*<br><br>Target: *At least 80% of students will score 75 points or more on the 100-point unit test that requires demonstration of the skill stated in the outcome.* | *At least 80% of students will identify consumer, political, and economic issues influencing health disparities in diverse populations by scoring 75 points or more on the related 100-point unit test.* |

In each case, faculty teaching this health class know what they expect students to be able to do after a particular unit in the class, and they know what students must do to prove they have accomplished the outcome. Faculty also know what to look for in the assessment results (assessment will be covered in greater detail later in this section). The outcome has provided the foundation to align what the College should declare, what faculty should teach, and what students should learn.

**Verbs to avoid.** When writing learning outcomes, stay away from verbs or phrases that are not easily observed or measured. Verbs such as *understand, appreciate*, *comprehend*, and *learn,* are very difficult to measure or observe. When faculty lean toward using one of these words, Stiehl and Sours (2017) suggest a way out. Begin with the phrase, "*Use their understanding of _____ to…*" They provide as an example an outcome for a geriatric program: *"(Use their understanding of the aging process to) observe and respond to subtle living patterns and behaviors,"* and they add that one can drop the first part to begin the outcome with the action verbs. The outcome immediately becomes observable and measureable: "*Observe and respond to subtle living patterns and behaviors"* (Stiehl & Sours, 2017. p 49).

**Verbs to use.** Use verbs that represent observable and measurable behaviors. These are verbs such as *apply, demonstrate, describe, compute, explain, analyze, evaluate, compare, conclude, defend, and construct.* Many educational institution use Bloom's taxonomy (1956) or some variation as a resource because it enables faculty to rely on precise language for expressing the learning outcomes of programs and courses.

> **Tempted to write, "Students will understand?" Stop! Instead, follow the advice of Stiehl and Sours (2017).**
>
> Begin with the phrase, "*Use their understanding of _____ to…*" They provide as an example an outcome for a geriatric program: *"(Use their understanding of the aging process to) observe and respond to subtle living patterns and behaviors,"* and they add that one can drop the first part to begin the outcome with the action verbs. The outcome immediately becomes observable and measureable: "*Observe and respond to subtle living patterns and behaviors"* (p 49).

The six categories of Bloom's taxonomy allow a faculty member to assess a different type of skill or behavior in the course, starting from the lowest level of learning, the knowledge level, to the highest level, evaluation. The taxonomy is often presented visually as a pyramid (Figure 2). In

this representation, the most basic methods of cognition occur at the lowest levels; learning outcomes at the college level should focus on higher levels as often as possible.
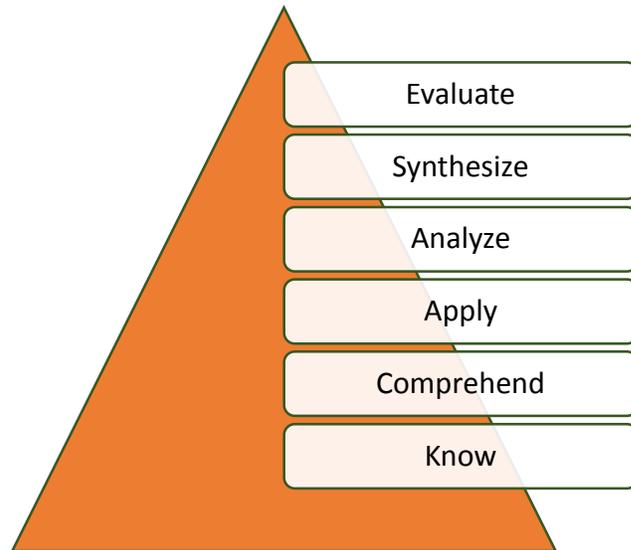


Figure 2: Bloom's Taxonomy Pyramid

While many faculty are familiar with the levels in Bloom's taxonomy, it is usually helpful to examine the variety of verbs that may be used to construct outcomes, assignments, and assessments when the goal is to articulate the type of behaviors that are desired. Three resource tables follow to provide examples of verbs that may be selected.

First, Table L-3 defines what is meant at each level of the taxonomy, and it provides related behaviors as verbs that can be selected when developing outcomes and related activities.

**Table L-3. Bloom's Taxonomy: Definition and Related Behaviors**

| Category | Definition | Related Behaviors |
|---|---|---|
| Knowledge | recalling or remembering something without necessarily understanding, using, or changing it | define, describe, identify, label, list, match, memorize, point to, recall, select, state |
| Comprehension | understanding something that has been communicated without necessarily relating it to anything else | alter, account for, annotate, calculate, change, convert, group, explain, generalize, give examples, infer, interpret, paraphrase, predict, review, summarize, translate |
| Application | using a general concept to solve problems in a particular situation; using learned material in new and concrete situations | apply, adopt, collect, construct, demonstrate, discover, illustrate, interview, make use of, manipulate, relate, show, solve, use |

| Category | Definition | Related Behaviors |
|---|---|---|
| Analysis | breaking something down into its parts; may focus on identification of parts or analysis of relationships between parts, or recognition of organizational principles | analyze, compare, contrast, diagram, differentiate, dissect, distinguish, identify, illustrate, infer, outline, point out, select, separate, sort, subdivide |
| Synthesis | relating something new by putting parts of different ideas together to make a whole. | blend, build, change, combine, compile, compose, conceive, create, design, formulate, generate, hypothesize, plan, predict, produce, reorder, revise, tell, write |
| Evaluation | judging the value of material or methods as they might be applied in a particular situation; judging with the use of definite criteria | accept, appraise, assess, arbitrate, award, choose, conclude, criticize, defend, evaluate, grade, judge, prioritize, recommend, referee, reject, select, support |

When reviewing options for verb use, the same verb may be used in more than one level. This is true because the outcome or activity to learn the associated skills influence how the verb is applied. Table L-4 provides several verbs to help construct outcomes (or assignments, assessments, or learning activities) at each level of the taxonomy.

**Table L-4. Suggested Verbs to Use in Each Level of Bloom's Taxonomy**

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| Change | Account for | Apply | Analyze | Arrange | Appraise |
| Choose | Change | Assess | Appraise | Assemble | Assess |
| Define | Cite examples of | Change | Calculate | Collect | Choose |
| Identify | Demonstrate use of | Compute | Categorize | Compose | Compare |
| Label | Describe | Demonstrate | Compare | Construct | Confirm |
| List | Determine | Dramatize | Conclude | Create | Consider |
| Match | Differentiate between | Employ | Contrast | Design | Critique |
| Name | Discriminate | Generalize | Correlate | Develop | Estimate |
| Organize | Discuss | Illustrate | Criticize | Devise | Evaluate |
| Outline | Estimate | Initiate | Debate | Enlarge | Judge |
| Recall | Explain | Interpret | Deduce | Explain | Measure |
| Recognize | Express | Modify | Detect | Formulate | Qualify |
| Record | Identify | Operate | Determine | Manage | Rate |
| Recount | Interpret | Practice | Develop | Modify | Review |
| Relate | Justify | Predict | Diagnose | Organize | Revise |
| Repeat | Locate | Produce | Diagram | Plan | Score |
| Reproduce | Modify | Quantify | Differentiate | Predict | Select |
| Select | Pick | Quantify | Distinguish | Prepare | Test |

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| Underline | Practice | Relate | Draw conclusions | Produce | Validate |
| | Recognize | Schedule | Estimate | Propose | Value |
| | Report | Shop | Evaluate | Reconstruct | |
| | Respond | Solve | Examine | Re-organize | |
| | Restate | Suggest | Experiment | Set-up | |
| | Review | Use | Identify | Synthesize | |
| | Select | Utilize | Infer | Systematize | |
| | Show | Verify | Inspect | | |
| | Simulate | | Inventory | | |
| | Summarize | | Predict | | |
| | Tell | | Question | | |
| | Translate | | Relate | | |
| | Use your own words | | Separate | | |
| | | | Test | | |

Stiehl and Sours (2017) recommend outcomes be written to represent what students should be able to do after leaving the current academic experience. In other words, an outcome should indicate what students will be able to do in another course, in a subsequent degree program, on a job, or even in life. Table L-5 provides ideas to promote such transferability.

**Table L-5. Using Verbs to Construct Outcomes that Translate Outside the Classroom**

| Transferable Skill(s) | Verbs that Lead to Evidence of the Skills |
|---|---|
| Creativity | originate, imagine, begin, design, invent, initiate, state, create, pattern, elaborate, develop, devise, generate, engender |
| Psycho-motor skills | assemble, build, construct, perform, execute, operate, manipulate, calibrate, install, troubleshoot, measure, transcribe |
| Self-appraisal or reflection on practice | reflect, identify, recognize, evaluate, assess, criticize, judge, critique, appraise, discern, judge, consider, review, contemplate |
| Planning or management of learning | plan, prioritize, access, use, select, explore, identify, decide, strategize, organize, delegate, order, manage, propose, design |
| Problem-solving | identify, choose, select, recognize, implement, define, apply, assess, resolve, propose, formulate, plan, solve |
| Communication or presentation skills | communicate, express, articulate, question, examine, argue, debate, explain, formalize, respond, rebut, justify, defend, listen, illustrate, demonstrate, organize, pace, model, summarize, inform, persuade |

| Transferable Skill(s) | Verbs that Lead to Evidence of the Skills |
|---|---|
| Interactive, interpersonal, or group skills | accommodate, interact, collaborate, participate, cooperate, coordinate, structure, arbitrate, initiate, lead, direct, guide, support, decide, set goals, motivate, reflect, evaluate, recognize, enable, redirect, mediate |

In developing learning outcomes, faculty may need to consult existing course outlines as these list current outcomes. The State Course Numbering System webpage provides a search tool to find all approved and existing course numbers. Program faculty should ensure alignment to curriculum frameworks at the state level and specialized accreditors (if applicable). Links are below.

- Palm Beach State Course Outlines: http://www.palmbeachstate.edu/course-outlines.aspx
- State Course Numbering System Website: http://scns.fldoe.org/
- State Curriculum Frameworks: http://www.fldoe.org/workforce/dwdframe/

Table L-6 provides sample outcomes at the institution, program, and course levels. Some examples are taken from actual outcomes at Palm Beach State College, while others are modified versions or written explicitly as an example for the table.

**Table L-6.  Sample Outcomes (may or may not exist at PBSC)**

| INSTITUTION LEVEL SAMPLES |
|---|
| <ul><li>Critical thinking: Engage in purposeful reasoning to reach sound conclusions.</li><li>Ethics: Make informed decisions based on ethical principles and reasoning.</li><li>Information literacy: Find, evaluate, organize, and appropriately use information from diverse sources.</li><li>Communication: Employ writing, speaking, presenting, and reading skills to communicate appropriately and professionally to a variety of audiences.</li><li>Civility:  Respectfully collaborate with diverse persons.</li><li>Mathematics:  Use mathematical concepts to solve problems.</li><li>Humanities: Analyze creative arts and cultural perspectives.</li></ul> |
| **PROGRAM LEVEL SAMPLES** |
| <ul><li>Accounting: Prepare basic financial statements.</li><li>Computer Programming:  Develop application software that can access files and databases.</li><li>Environmental Science Technology: Explain the importance of ethics and data integrity in scientific studies.</li><li>Human Services:  Apply knowledge of mental health and human service trends, issues, and regulations to inpatient, outpatient, and other programs within the human services delivery system.</li><li>Interior Design Technology:  Plan interior spaces that efficiently address client needs, furniture and equipment requirements, budgets, and environmental issues.</li><li>Law Enforcement Officer: Demonstrate proficiency in all high liability skills (firearms, defensive tactics, vehicle operations, first aid, and dart firing stun gun).</li></ul> |

- Massage Therapy: Competently communicate with massage therapists, clients, patients, and health care providers.
- Nursing: Appraise patient or client health status through analysis and synthesis of relevant data.
- Paralegal: Use both print and technology modes that are typically found in legal settings, including pleading texts and research programs.
- Surgical Technology: Demonstrate the skills required for surgical procedures.

**COURSE LEVEL SAMPLES**

- BSC2420: Describe the major applications of modern molecular biotechnology and the implications of those applications.
- ENC1102: Compose non-fictional prose with a degree of formality appropriate to its subject, audience, and purpose.
- LIT2110: Identify significant ideas contributed to the world by international authors.
- MAC2233: Use integration to solve applications for business and economics.
- MUL1010: Analyze the stylistic characteristics of musical compositions.
- POS1041: Analyze national and domestic interests and foreign policy-making practices in the United States.
- PSY2012: Compare and contrast theoretical principles that formed the field of psychology.

### Step 2. Map Learning Outcomes to the Curriculum

Begin by asking, "In what program, course, or session will students be introduced to and master the necessary skills?" How a map is created really depends on the level of outcomes being mapped, and specific terms used may vary among institutions that use curriculum mapping. Curriculum maps "front-load" a lot of work in planning a course or program, but once a curriculum map is complete, it provides clear direction for instruction and assessment.

When it comes to describing how the curriculum is related to the outcome, most institutions use the terms "introduce" and "reinforce" to describe the first two levels. The highest degree may be described by what the faculty will do (emphasize, provide extra coverage) or what the students will do (master). For the purpose of consistency, the term "curriculum mapping" will be used to describe the process, and the terms introduced, reinforced, or emphasized will be used to describe the actions that occur as outcomes are mapped to the curriculum.

Table L-7 describes curriculum maps at each level. Examples follow in Tables L-8 through L-10.

**Table L-7. Curriculum Map Descriptions**

| Level | Process | Product |
|---|---|---|
| Institutional learning outcomes (ILOs) | Faculty who teach each course determine whether students learn skills required to achieve a given ILO in the course and, as applicable, whether the skills are introduced, reinforced, or emphasized. | Chart that matches each ILO with the courses in which students will learn the skills required to achieve that ILO, indicating further whether the skills are introduced, reinforced, or emphasized for a given outcome in a given course. |

| Level | Process | Product |
|---|---|---|
| Program learning outcomes (PLOs) | Program faculty determine in which courses students learn skills required to achieve each PLO, and in each case, whether the skills are introduced, reinforced, or emphasized. Additionally, PLOs may be mapped to ILOs when faculty believe that the skills required to achieve a PLO are also required to achieve an ILO. | Chart that matches each PLO to the program courses, indicating in each applicable course, whether the skills required to achieve the PLO are introduced, reinforced, or emphasized. Additionally, PLOs are matched to ILOs as applicable. |
| Course learning outcomes (CLOs) | Faculty who teach the course determine when in the course the skills required to achieve each CLO are introduced, reinforced, or emphasized (e.g., in a particular unit of content, point in time, textbook chapter, etc.). | Chart that matches each CLO to the course content, indicating when skills required to achieve each CLO are introduced, reinforced, or emphasized. |

**Table L-8. Sample Curriculum Map for Institutional Learning Outcomes (ILOs)**
**Selected Courses and Sample ILOs Only[4]**

| Course | ILO #1 Communication | ILO #3 Civility | ILO #2 Critical Thinking | ILO #4 Numeracy | ILO #5 Technology |
|---|---|---|---|---|---|
| AMH2010 | I | R | | | |
| BSC1010 | | | E | R | I |
| ENC1101 | E | | E | | |
| FIL2000 | | | R | | R |
| MAC2312 | | | R | E | |
| SPC1017 | E | E | R | | I |

**Table L-9. Sample Program Map (Possibility for Paralegal ATC)[4]**

| Course | PLO #1 Theory | PLO #2 Communication | PLO #3 Technology | PLO #4 Solve Problems | PLO #5 Legal Systems |
|---|---|---|---|---|---|
| PLA1003 | E | I | I | | I |
| PLA1104 | | E | | | |
| PLA2114 | | | | I | I |
| PLA2209 | | | | R | R |
| PLA2229 | | | E | E | E |
| ILOs Supported | | Communication | | Civility Critical Thinking | Critical Thinking |

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[4] I = Introduced        R = Reinforced        E = Emphasized

**Table L-10. Sample Curriculum Map for Course Learning Outcomes**
**(Possibility for TRA1154 Supply Chain Management)**

| Unit | CLO #1 Business Functions | CLO #2 Problem Solving | CLO #3 Key Processes | CLO #4 Issues and Challenges | CLO #5 Customer Value Logistical Decisions |
|---|---|---|---|---|---|
| Business | I | | | I | |
| 2 | | | I | | I |
| 3 | | I | | R | R |
| 4 | | R | | R | E |
| 5 | | | | E | E |
| ILOs Supported | | Critical Thinking | | Critical Thinking | Communications Critical Thinking |

I = Introduced          R = Reinforced          E = Emphasized

In each case, the curriculum map assures faculty and the College that all outcomes are covered within the curriculum and at various levels of depth. Maps also provide a foundation for developing appropriate assessment, which, ideally, is developed at the same time. Templates for mapping outcomes to the curriculum and documenting an assessment plan are provided online at http://www.palmbeachstate.edu/learningoutcomes/.

- Program faculty should check under the "BAS, BSN, AS Degree, and PSAV Programs" heading.
- Course faculty should check under the "Support" heading.


**Step 3. Determine or develop the assessment.**

Assessment is a tool to help us know and articulate how well students are achieving the learning outcomes of our programs and courses. Prior to the learning outcomes model currently in place, assessment efforts were more focused on indirect measures and assessments of achievement, such as GPA and transfer rates. Although these measures are still monitored, the current model provides greater benefits for faculty and students by incorporating direct measures such as assignments and assessments that are embedded at the course level.  Suskie (2009) reminds readers that perfect assessment does not exist (p.37). There are, however, some clear guidelines such as the following.

- Assessment should be used to improve learning. Learning may be done by the student or the institution.
- Assessment should be based on intended and desired outcomes.
- The assessment process should be based on authentic assessment and multiple measures that use rubrics and other tools to assess learning outcomes.
- The assessment process should not be punitive, but it should produce measureable objectives when results are less than desirable.

Viewed another way, Suskie (2009) adds that assessment should be useful, and to be that, it requires four particular characteristics: Assessment must "yield reasonably accurate and truthful information…have a clear purpose…engage faculty and staff…flow from and focus on clear and important student learning goals…" (p.37).

When developing assessment at all levels (institutional, program, course), assessment of learning outcomes should include both measures and benchmarks or achievement targets for every outcome (Table L-11) and should be evaluated for clarity and connection to the curriculum (see Appendix B for an evaluation rubric).

**Table L-11. Choosing Measures and Achievement Targets**

| Component | What to Choose | Examples |
|---|---|---|
| Measure | An instrument rating, such as a rubric, that measures performance on an assignment or assessment<br><br>Grades or scores on assignments or assessment<br><br>*Note: Assignments or assessments should specifically capture the skills required to achieve the outcome, and they should include agree-upon evaluation criteria.* | • Quiz scores<br>• Test scores<br>• Correct answers to specific question on a test or quiz<br>• Project grades<br>• Licensure or certification exams<br>• Presentation grades<br>• Lab performance<br>• Hands-on skill demonstrations |
| Achievement Target | An acceptable percent of students who meet minimum criteria | 80% of students will achieve a B or higher on the exam.<br><br>95% of students will accurately and safely demonstrate the skills in a lab setting. |

Sample assessment plans for programs and courses are provided using three outcomes in each case (Tables L-12 through L-13).

**Table L-12. Sample Program Assessment Plan (adapted from Electrical Power Technology)**

| | PLO # 1:<br>*Perform inspection and maintenance of industrial measuring equipment and transmitters, final control elements, and transducers.* | PLO # 2:<br>*Troubleshoot instruments and controls equipment and systems.* | PLO # 3:<br>*Interpret P&D diagrams and control loops.* |
|---|---|---|---|
| **Measure(s)** (How will the PLO be assessed?) | Scores on "Inspection and Maintenance" exam in ETS2530C<br>*0=Not taken*<br>*1=Unsuccessful*<br>*2=Partially successful*<br>*3=Successful, but exceeds 60 minutes to complete*<br>*4=Successfully completes all tasks in 75 minutes* | Scores on lab assignments 1 and 2 ("Troubleshooting") in EET2930<br>*0=Not completed*<br>*1=Unsuccessful*<br>*2=Partially successful*<br>*3=Successful, but exceeds 60 minutes to complete*<br>*4=Successfully completes all tasks in 75 minutes* | Scores on lab assignments 3 and 4 ("Diagrams and Control Loops") in EET2930<br>*0=Not completed*<br>*1=Unsuccessful*<br>*2=Partially successful*<br>*3=Successful, but exceeds 60 minutes to complete*<br>*4=Successfully completes all tasks in 75 minutes* |

| | PLO # 1: Perform inspection and maintenance of industrial measuring equipment and transmitters, final control elements, and transducers. | PLO # 2: Troubleshoot instruments and controls equipment and systems. | PLO # 3: Interpret P&D diagrams and control loops. |
|---|---|---|---|
| | 5=Successfully completes all tasks in 60 minutes. | 5=Successfully completes all tasks in 60 minutes. | 5=Successfully completes all tasks in 60 minutes. |
| **Achievement Target(s)** (What is an acceptable performance level?) | 80% of students who take the "Inspection and Maintenance" exam in ETS2530C will score a 4 or 5. | 80% of students who complete the "Troubleshooting" labs in EET2930 will score a 4 or 5 on each one. Scores will be reported separately for each lab, and the outcome is achieved only if targets are met on both labs. | 80% of students who complete the "Diagrams and Control Loops" labs in EET2930 will score a 4 or 5 on each one. Scores will be reported separately for each lab, and the outcome is achieved only if targets are met on both labs. |

**Table L-13. Sample Course Assessment Plan (Adapted from ETS2530C)**

| | CLO # 1: Describe the Fundamentals of Process Control. | CLO # 2: Describe set point and error. | CLO # 3: Explain input and output. |
|---|---|---|---|
| Measure(s) (How will the PLO be assessed?) | Free response answer to "Process Control" question on Test 1. 0=Does not take test or does not describe at all. 1=Provides related but incorrect description. 2=Provides partially correct and partially complete description. 3=Provides complete response that is mostly correct. 4=Provides complete and accurate description. | Free response answer to "Set Point and Error" question on Test 4. 0=Does not take test or does not describe at all. 1=Provides related but incorrect description. 2=Provides partially correct and partially complete description. 3=Provides complete response that is mostly correct. 4=Provides complete and accurate description. | Explanation during end of term project presentation 0=Does not complete project or does not include explanation of input and output at all. 1=Provides related but incorrect explanation. 2=Provides partially correct and partially complete explanation. 3=Provides complete explanation that is mostly correct. 4=Provides complete and accurate explanation. |
| Achievement Target(s) | At least 80% of students will score a 3 or 4. | At least 80% of students will score a 3 or 4. | At least 80% of students will score a 3 or 4. |
| Which, if any, GELO(s) or ILO(s) are supported? | | Numeracy | Critical Thinking |

Above all else, and again at all levels, assessment results should be reviewed on a regular basis. In education, reviewing assessment results and planning for the next teaching, learning, and assessment cycle is often referred to as closing the loop. When the loop is closed on each cycle, the discussion typically includes a review of the continued appropriateness of the learning outcomes, measures, and targets. Table L-14 provides examples of questions to ask during a review of these components and the assessment results. Examples of improvement strategies are included.

**Table L-14. Closing the Loop on the Teaching, Learning, and Assessment Cycle**

| |
|---|
| **Ask questions about application and administration of assessment.** |
| <ul><li>Did we all administer the assessment the same way?</li><li>What is the best way to use this assessment? Should it be homework or a quiz/test? Should it be an in-class assignment? Should it count toward the course grade as much as other assignments?</li><li>Were there any changes to how the assessment was implemented this year that may have influenced results?</li></ul> |
| **Ask questions about the results for each outcome.** |
| <ul><li>Are we satisfied with student performance? Why or why not?</li><li>Comparing the data to last year, what can we glean from the results?</li><li>How do the results help or hinder our conclusions about student learning?</li><li>Do the results mirror student performance on other assignments in the course?</li><li>How does assessment help us measure the outcome?</li><li>Do we believe students are performing as well as our results might suggest?</li><li>What are our expectations of students going forward? Do we reflect those expectations in this assessment?</li><li>Did we set a reasonable benchmark? Should it be changed?</li></ul> |
| **Ask questions about the outcomes.** |
| <ul><li>Are faculty who teach the course satisfied that the existing outcomes adequately reflect the knowledge, skills, and abilities expected of students by the time they complete the course?</li><li>Are the outcomes still relative to the discipline or industry?</li><li>Should any of the outcomes be revised based on related and emerging trends, technology, or issues?</li></ul> |
| **Ask questions about communication with part-time faculty and instructors.** |
| <ul><li>How, if at all, can we ensure better consistency among part-time faculty as it relates to outcomes, mapping, and assessment?</li><li>What, if anything, can we do differently to communicate assessment requirements to our part-time faculty?</li><li>What was done this cycle to encourage part-time faculty to participate?</li><li>What, if anything, can we do to as faculty to support our part-time faculty?</li></ul> |
| **Ask questions about how to implementing change in the next cycle.** |
| <ul><li>Do we need assessment changes, such as additional questions or new questions that require higher-order thinking skills, rubric alignment, or more rigorous evaluation?</li><li>Do we need process changes, such as a new schedule for when the assessment is administered, new value for how much credit students earn?</li><li>Do we need changes in professional practice, such as increased collaboration with colleagues to ensure consistent delivery or scoring of student work?</li><li>Do we need instructional changes, such as new or revised presentations, handouts, group activities, projects, content sequence, or homework requirements?</li></ul> |

**Assessment at Palm Beach State College**

To ensure continuous improvement and in accordance with SACSCOC, the College assesses all programs and units. These include general education, all workforce certificate and degree programs, educational support service areas, administrative units, and community/public service areas. It is beyond the scope of this section of the Academic Management Manual to include details about each of these assessed areas, but faculty and staff may contact the Office of Institutional Research and Effectiveness to learn more as needed.

# Support for Learning Outcomes, Mapping, and Assessment

Section L has focused on learning outcomes, adding that it is necessary to align outcomes to the curriculum, develop good assessment, and review results on a regular basis to develop improvement strategies. This section concludes with some additional resources to facilitate these ongoing endeavors and an added comment that the section is intended to be an introduction and overview to learning outcomes. There is much to know and do in order to develop and continuously improve a rigorous college curriculum.

## Assessing the Quality of Learning Outcomes

Previously, it was suggested that all outcomes be achievable, observable, measurable, and that they are aligned to the curriculum. Additionally, each outcome should include action verbs, clearly state who is to the action, and clearly state what action is to be done. As a final check, it is wise to assess the quality of learning outcomes. The scoring guide below (Table L-15) is adapted from Stiehl and Sours (2017, p. 51).

**Table L-15. Scoring Guide to Assess Learning Outcomes (LOs)**

Scores:   1 = Not true at all;   2 = Partially true;   3 = Completely true.

| Characteristic of LO | 1 | 2 | 3 | Suggestions for Improvements |
|---|---|---|---|---|
| **Achievable:** Students can master the skills sufficiently by the end of the program or course. | | | | |
| **Observable:** Faculty can observe student demonstration of the outcome. | | | | |
| **Measurable:** Faculty can articulate the degree to which students have accomplished the outcome. | | | | |
| **Aligned to the Curriculum:** A curriculum map has been created and shared with all program or course faculty. | | | | |
| **Verb use:** Action verbs are used. | | | | |
| **Verb use:** It is clear what action is expected of the students. | | | | |
| **Verb use:** It is clear that the students are the ones expected to do the action. | | | | |

Faculty who wish to also evaluate the assessment of the outcomes may be interested in a rubric for this purpose, adapted from Fulcher, Sundre, and Russell (2013) at James Madison University (see Appendix A).

**Workshops**

Faculty-developed workshops on learning outcomes, curriculum mapping, and assessment will be expanded in 2017-2018 and will be offered at the campus level and online. Some sessions will be general and open to anyone, while others will target particular audiences, such as program managers, general education faculty, department chairs, and staff or administrators.

**Websites**

Palm Beach State College – A page to further the understanding of assessment of learning outcomes is available on the Palm Beach State website, and is currently under review to improve usefulness. http://www.palmbeachstate.edu/learningoutcomes

National Institute for Learning Outcomes Assessment. This organization is based at the University of Illinois and Indiana University, and it exists to help institutions effectively use assessment data to inform and improve education at the undergraduate level. Visit this link to view several topics related to outcomes, mapping, and assessment.
http://www.learningoutcomesassessment.org/publications.html

James Madison University. Known throughout the country for successful implementation and research of robust assessment practices, JMU offers a variety of resources.
http://www.jmu.edu/assessment/Visitor/AssessmentResources.shtml

University of Hawai'i at Manoa.  On the assessment webpage, the University of Hawai'i Manoa presents many valuable tools including "how to" pages, examples, templates, and handouts.
http://manoa.hawaii.edu/assessment/

**Faculty Review**

Annual campus meetings are offered by faculty on the General Education and Assessment Committee during spring semesters. Further review is conducted at the cluster meetings, and in some cases, with course-specific faculty teams to develop improvement strategies.

**Program Review**

Learning outcomes are a central component of annual program review to support institutional effectiveness.  For a detailed explanation of this process, please see Section K of the Academic Management Manual (http://www.palmbeachstate.edu/sectionk.pdf).

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# Appendix A:  General Education Philosophy and Learning Outcomes

**Philosophy Statement**

The General Education program at Palm Beach State College prepares students for lifelong intellectual pursuit and responsible participation in a complex global society through a core curriculum that incorporates values, shapes attitudes and offers students a depth and breadth of learning that transcends the content of any one specific discipline.

**General Education Learning Outcomes**

- Communications:  Demonstrate effective communication skills for a variety of audiences.

- Humanities:  Demonstrate an awareness of and an ability to effectively analyze creative works.

- Mathematics:  Demonstrate an understanding of mathematical concepts to solve real-world problems

- Natural Sciences:  Demonstrate comprehension of fundamental concepts, principles or processes about the natural world.

- Social Sciences:  Understand and apply sociological, cultural, political, psychological, historical and economic principles to a global environment.

**Institutional Learning Outcomes**

- Critical Thinking:  Engage in purposeful reasoning to reach sound conclusions.

- Ethics:  Demonstrate the ability to make informed decisions based on ethical principles and reasoning.

- Global Awareness:  Exhibit a sense of social, cultural and global responsibility.

- Information Literacy:  Demonstrate the ability to find, evaluate, organize and use information.

# Appendix B: Outcomes & Assessment Evaluation Rubric

**Adapted from the Assessment Progress Template (APT) Evaluation Rubric**

James Madison University © 2013 Keston H. Fulcher, Donna L. Sundre & Javarro A. Russell

Full version: https://www.jmu.edu/assessment/_files/APT_Rubric_sp2015.pdf

| 1 – Beginning | 2 – Developing | 3 – Good | 4 – Exemplary |
|---|---|---|---|
| **1. STUDENT-CENTERED LEARNING OUTCOMES** | | | |
| **Clarity and Specificity** | | | |
| No outcomes stated. | Outcomes present, but with imprecise verbs (e.g., know, understand), vague description of content/skill/or attitudinal domain | Outcomes generally contain precise verbs, rich description of the content/skill/or attitudinal domain | All outcomes stated with clarity and specificity including precise verbs, rich description of the content/skill/or attitudinal domain |
| **2. COURSE/LEARNING EXPERIENCES THAT ARE MAPPED TO OUTCOMES** | | | |
| No activities/ courses listed. | Activities/courses listed but link to outcomes is absent. | Most outcomes have classes and/or activities linked to them. | All outcomes have classes and/or activities linked to them. |
| **3. SYSTEMATIC METHOD FOR EVALUATING PROGRESS ON OUTCOMES** | | | |
| **A. Relationship between measures and outcomes** | | | |
| Seemingly no relationship between outcomes and measures. | At a superficial level, it appears the content assessed by the measures matches the outcomes, but no explanation is provided. | General detail about how outcomes relate to measures is provided. For example, the faculty wrote items to match the outcomes, or the instrument was selected "because its general description appeared to match our outcomes." | Detail is provided regarding outcome-to-measure match. Specific items on the test are linked to outcomes. The match is affirmed by faculty subject experts (e.g., through a backwards translation). |
| **B. Types of Measures** | | | |
| No measures indicated | Most outcomes assessed primarily via indirect (e.g., surveys) measures. | Most outcomes assessed primarily via direct measures. | All outcomes assessed using at least one direct measure (e.g., tests, essays). |
| **C. Specification of desired results for outcomes** | | | |
| No a priori desired results for outcomes | Statement of desired result (e.g., student growth, comparison to previous year's data, comparison to faculty standards, performance vs. a criterion), but no specificity (e.g., students will perform better than last year) | Desired result specified. (e.g., student performance will improve by at least 5 points next cycle; at least 80% of students will meet criteria) "Gathering baseline data" is acceptable for this rating. | Desired result specified and justified (e.g., Last year the typical student scored 20 points on measure x. Content coverage has been extended, which should improve the average score to at least 22 points.) |

| 1 – Beginning | 2 – Developing | 3 – Good | 4 – Exemplary |
|---|---|---|---|
| **3. SYSTEMATIC METHOD FOR EVALUATING PROGRESS ON OUTCOMES** *(continued)* | | | |
| **D. Data collection and research design integrity** | | | |
| No information is provided about data collection process or data not collected. | Limited information is provided about data collection such as who and how many took the assessment, but not enough to judge the veracity of the process (e.g., thirty-five seniors took the test). | Enough information is provided to understand the data collection process, such as a description of the sample, testing protocol, testing conditions, and student motivation. Nevertheless, several methodological flaws are evident such as unrepresentative sampling, inappropriate testing conditions, one rater for ratings, or mismatch with specification of desired results. | The data collection process is clearly explained and is appropriate to the specification of desired results (e.g., representative sampling, adequate motivation, two or more trained raters for performance assessment, pre-post design to measure gain, cutoff defended for performance vs. a criterion) |