CHAPTER 3: LEARNING GOALS

Understanding and clearly stating what your program is trying to accomplish serves as a foundation for a successful assessment plan.
(University of Central Florida, 2008, p.16)

Topics Presented in Chapter 3

◊ Creating learning goals
◊ Examples of good and not-so-good learning goals

Creating Learning Goals

Fresno State University (n.d.) provides the following overview of effective learning goals (also known as learning outcomes and learning objectives):

> Learning objectives are brief, clear statements of learning outcomes of instruction that are related to and flow from the program goals. While goals express intended outcomes in broad, global language, ***learning objectives use precise terms that focus on the students,*** rather than the curriculum. Learning objectives should be written using active verbs, such as: *identify, explain, translate, construct, solve, illustrate, analyze, compose, compile, design.* Specific use of verbs such as *to know* or *understand* should be avoided, since they are too vague to provide needed clarity.

The University of Connecticut (n.d.) expands upon this discussion:

> ### Outcomes
>
> ***Learning outcomes*** are statements that describe significant and essential learning that learners have achieved, and can reliably demonstrate at the end of a course or program. Learning outcomes identify what the *learner will know and be able to do* by the end of a course or program – the essential and enduring knowledge, abilities (skills), and attitudes (values, dispositions) that constitute the integrated learning needed by a graduate of a course or program.
>
> The ***learning outcomes approach to education*** means basing program and curriculum design, content, delivery, and assessment on an analysis of the integrated knowledge, skills, and values needed by both students and society. In this outcomes-based approach to education, the ability to demonstrate learning is the key point.

An effective set of learning outcomes statements informs and guides both the instructor and the students:

For teaching staff*:* It informs…

- The content of teaching.
- The teaching strategies you will use.
- The sorts of learning activities/tasks you set for your students.
- Appropriate assessment tasks.
- Course evaluation.

For students*:* The set of learning outcomes provides them with…

- A solid framework to guide their studies and assist them in preparing for their assessment.
- A point of articulation with graduate attributes at course and/or university (i.e., generic) level.

Learning outcome statements may be broken down into three main components:

- An ***action*** word that identifies the performance to be demonstrated
- A ***learning statement*** that specifies what learning will be demonstrated in the performance
- A broad statement of the ***criterion*** or standard for acceptable performance

For example:

ACTION WORD *(performance)*	**LEARNING STATEMENT** *(the learning)*	**CRITERION** *(the conditions of the performance demonstration)*
Produces	Documents	Using word processing equipment
Analyzes	Global and environmental factors	In terms of their effects on people

Examples of Goals, Objectives, and Outcomes		
Goal	**Objective**	How This Objective Might Be Reformulated as a **Learning Outcome**
(Geology) To develop knowledge, understanding, and skills related to the recognition and interpretation of igneous and metamorphic rocks.	To explain the different magma geochemistries derived from partial melting of the mantle in different tectonic regime.	Students should be able to demonstrate how magma geochemistry relates to partial melting of the mantle by contrasting the outcomes of this process in different tectonic regimes through the critical analysis of specific case studies.
(Biochemistry) To explain the biochemical basis of drug design and development.	To demonstrate the application of molecular graphics to drug design.	Students should be able to apply the principles underpinning the use of molecular graphics in the design of drugs to illustrate general and specific cases through a computer-based presentation.
(English) To introduce students to modes of satiric writing in the eighteenth century.	To familiarize students with a number of substantive 18th century texts. Students will be trained in the close reading of language and its relation to literary form.	Students should be able to analyze the relationship between the language of satire to literary form by the close examination of a selected number of 18th century texts in a written essay.
(Engineering) This course introduces senior engineering students to design of concrete components of structure and foundation and the integration of them into overall design structures.	The student is able to function in teams.	Functioning as a member of a team, the student will design and present a concrete structure which complies with engineering standards.

Examples of Goals, Objectives, and Outcomes (cont.)		
Goal	**Objective**	How This Objective Might Be Reformulated as a **Learning Outcome**
(Geology) Become acquainted with topographic maps and their usage.	Use topographic maps and employ these maps to interpret the physiography and history of an area.	Students should be able to: • Locate and identify features on topographic maps by latitude and longitude and township and range. • Contour a topographic map and construct a topographic profile. • Identify major landform features on topographic maps and relate them to basic geologic processes of stream, groundwater, glacial, or marine erosion and deposition. • Interpret geologic maps and geologic cross-sections.

Measurable student outcomes are specific, demonstrable characteristics – knowledge, skills, values, attitudes, interests – that will allow us to evaluate the extent to which course goals have been met.

Example Translating a Course Goal Into Measureable Student Outcomes	
Dental Health 101	
Course Goal	**Measurable Student Outcomes**
The Student: • Understands proper dental hygiene.	The Student can: • *Identify* the active ingredient in toothpaste. • *Explain* why teeth should be cleaned at least twice per year. • *Describe* how poor dental hygiene can lead to poor overall health.

Example Showing a Link Between Objectives and Assessment	
Refining a Goal Into Measurable Objectives	
Goal: Students will be familiar with the major theories of the discipline. Does this goal convey any information? • Would a student know what was expected of his/her work? • Would a colleague know the focus of your department's teaching? • Would an employer know what your students could do?	
Refining the goal into a measurable objective	**Explanation of the process**
Students will be familiar with the major theories of the discipline.	Objective = **verb** (active behaviors) **+** **object** (products, skills/performances, content/knowledge, attitudes/dispositions) Objective = (be familiar with) + (major theories of the discipline) Start with the **object** aspect of the objective. Suppose five major approaches (theories) to conflict resolution are: withdrawal, smoothing, forcing, compromising, and problem solving.
Students will be familiar with *withdrawal, smoothing, forcing, compromising, and problem solving.*	Specifying what the department views as *the major approaches (theories)* is an improvement in the wording of the objective.
Students will be familiar with withdrawal, smoothing, forcing, compromising, and problem solving.	Sharpening the **verb** will also make it better – what does "be familiar with" imply about a student's knowledge or skills? Objective = (be familiar with) + (withdrawal, smoothing, forcing, compromising, …) • Avoid vague phrases: appreciate, understanding, have an awareness of, etc. • Use action verbs: generalize, produce, evaluate, etc. Action oriented verbs make objectives more concrete. This objective might be revised into two objectives: • Students **will summarize** … • Students **will choose and defend** …

Example Showing a Link Between Objectives and Assessment (cont.)
Objectives obtained through the revision of the original *Goal*: • Students **will summarize** the five major approaches to conflict resolution: withdrawal, smoothing, forcing, compromising, and problem solving. • Students **will choose and defend** a conflict resolution approach appropriate for a given situation.

Checklist to Review Program-Level Draft of Learning Outcome Statements*

	Outcome #1	*Outcome #2*	*Etc.*
Describes what students should represent, demonstrate, or produce?			
Relies on active verbs?			
Aligns with collective intentions translated into the curriculum and co-curriculum?			
Maps to curriculum, co-curriculum, and educational practices?			
Is collaboratively authored and collectively accepted?			
Incorporates or adapts professional organizations' outcome statements when they exist?			
Can be assessed quantitatively and/or qualitatively?			

*Based on *Assessing for Learning: Building a Sustainable Commitment Across the Institution* (Maki, 2004)

The University of Central Florida (2008) notes that learning outcomes should be **SMART**:

Specific

- Define learning outcomes that are *specific* to your program. Include in clear and definite terms *the expected abilities, knowledge, values, and attitudes* a student who graduates from your program is expected to have.
- Focus on *intended outcomes* that are *critical to your program*. When the data from the assessment process are known, these outcomes should create an *opportunity to make improvements* in the program that is being offered to your students.

Measurable

- The *intended outcome* should be one for which it is *feasible* to collect accurate and reliable data.
- Consider your *available resources* (e.g., staff, technology, assessment support, institutional level surveys, etc.) in determining whether the collection of data for each student learning outcome is a reasonable expectation.
- Include *more than one measurement method* that can be used to demonstrate that the students in a particular program have achieved the expected outcomes of that program.

Aggressive but Attainable

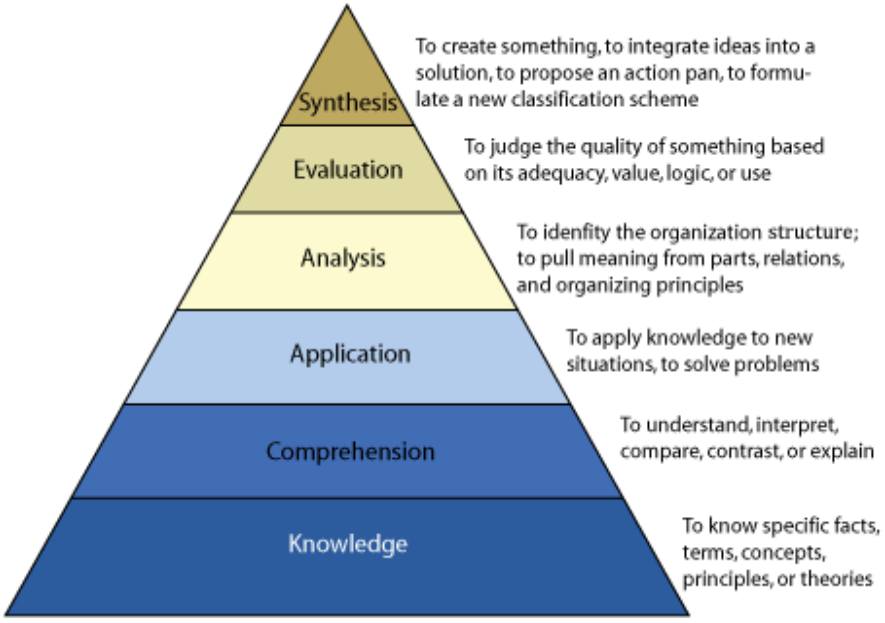
- "Don't let the perfect divert you from what is possible." When defining the learning outcomes and setting targets, use targets that will move you in the direction of your vision, but do not try to "become perfect" all at once.
- The following is a collection of *questions* that might help you to formulate and define aggressive but attainable outcomes for your program.
    - How have the students' experiences in the *program contributed* to their abilities, knowledge, values, and attitudes? Ask:
        - Cognitive skills: What does the student know?
        - Performance skills: What does the student do?
        - Affective skills: What does the student care about?
    - What are the knowledge, abilities, values, and attitudes expected of graduates of the program?
    - What would the *perfect program* look like in terms of outcomes?
    - What would a *good program* look like in terms of outcomes?

Results-Oriented and Time-Bound

- When defining the outcomes, it is important to describe *where you would like to be* within a *specified time period* (e.g., 10% improvement in exam scores within 1 year, 90% satisfaction rating for next year, 10% improvement in student communication performance within 2 years). Also, determine what *standards are expected* from students in your program. For some learning outcomes, you may want 100% of graduates to achieve them. This expectation may be unrealistic for other outcomes. You may want to determine what *proportion of* your *students achieve a specific level* (e.g., 80% of graduates pass the written portion of the standardized test on the first attempt). If you have previously measured an outcome, it is helpful to use this as the baseline for setting a target for next year.

The University of Virginia (n.d.) provides details about levels of cognitive learning outcomes:

> Learning outcomes can be classified using Bloom's Taxonomy (below), which categorizes student performance into six cognitive levels, organized from basic (*Knowledge*) to complex (*Synthesis*). You can match active verbs to each cognitive level as you write your student learning outcomes.



The University of Central Florida expands the illustration of levels of outcomes to also include affective and skill outcomes:

Affective:

Affective learning is concerned with attitudes, values, interests, appreciation and feelings toward people, ideas, places, and objects. Values refer to views and ideas that an individual believes in. Affective outcomes range from receiving (or willingness to participate in an activity) to adopting a value system that directs behavior.

Affective	Description
Accepting	Willingness to participate in an activity or to attend to a stimulus; getting and holding the attention of students
Responding	Actively participates; demonstrates interest in an object, activity, or phenomena; seeks or pursues this object, activity, or phenomena
Valuing	Value or worth attached to an object, activity, or phenomena; varies from simple acceptance to commitment
Organization	Compare and contrast and resolve conflict to build a consistent value system; emphasis on comparing and synthesizing values
Characterization by Value	Adopt a value system for a length of time that contributes to a particular "lifestyle" (i.e., directs behavior)

Skills:

The original researchers did not develop a classification method for the skills domain. Other researchers, including Harrow (1972) and Simpson (1972), provided two classification methods. The one proposed by Simpson is used in this workbook to describe the psychomotor (skills) domain. The skills domain is used to classify movement patterns and behaviors.

Skill	Description
Perception	Uses sense organs to obtain cues to guide action; ranges from awareness of stimulus to translating cue perception into action
Set	Readiness to take action; includes mental, physical and emotional set (or readiness to act)
Guided Response	Knowledge of the steps required to perform a task; includes imitation and trial-and-error
Mechanism	Perform tasks in a habitual manner, with a degree of confidence and proficiency
Complex Overt Response	Skillful performance of motor acts involving complex patterns of movement
Adaptation	Skillful performance of motor acts involving complex patterns of movement; modifies movement patterns to account for problematic or new situations
Origination	Creating new movement patterns to account for problematic or new situations; creates new tasks that incorporate learned ones

The University of Central Florida also provides the following lists of key words to use within each level of each type of learning outcomes:

Key Words: Cognitive	
Knowledge	Arrange, define, describe, duplicate, enumerate, identify, indicate, know, label, list, match, memorize, name, read, recall, recognize, record, relate, repeat, reproduce, select, state, view, underline
Comprehension	Classify, cite, convert, defend, describe, discuss, distinguish, estimate, explain, express, generalize, give examples, identify, indicate, infer, locate, paraphrase, predict, recognize, report, restate, review, rewrite, select, suggest, summarize, tell, trace, translate, understand
Application	Act, administer, apply, articulate, assess, change, chart, choose, collect, compute, construct, contribute, control, demonstrate, determine, develop, discover, dramatize, employ, establish, extend, give examples, illustrate, implement, include, inform, instruct, interpret, investigate, manipulate, operate, organize, participate, practice, predict, prepare, preserve, produce, project, provide, relate, report, schedule, shop, show, sketch, solve, teach, transfer, translate, use, utilize, write
Analysis	Analyze, appraise, break down, calculate, categorize, compare, contrast, correlate, criticize, debate, determine, diagram, differentiate, discriminate, distinguish, examine, experiment, focus, identify, illustrate, infer, inspect, inventory, limit, outline, point out, prioritize, question, recognize, relate, select, separate, subdivide, solve, test
Synthesis	Adapt, anticipate, arrange, assemble, categorize, collaborate, collect, combine, communicate, compile, compose, construct, create, design, devise, develop, explain, express, facilitate, formulate, generate, incorporate, individualize, initiate, integrate, intervene, manage, model, modify, negotiate, organize, perform, plan, prepare, produce, propose, rearrange, reconstruct, reinforce, relate, reorganize, revise, set up, structure, substitute, validate, write
Evaluation	Appraise, argue, assess, attach, choose, compare, conclude, contrast, criticize, critique, decide, defend, enumerate, estimate, evaluate, grade, interpret, judge, justify, measure, predict, rate, reframe, revise, score, select, support, value

Key Words: Affective	
Accepting	Ask, choose, describe, follow, give, hold, identify, locate, name, point to, reply, select, use
Responding	Answer, assist, compile, conform, discuss, greet, help, label, perform, practice, present, read, recite, report, select, tell, write
Valuing	Complete, describe, differentiate, explain, follow, form, initiate, invite, join, justify, propose, read report, select, share, study, work
Organization	Adhere, alter, arrange, combine, compare complete, defend, explain, generalize, identify, integrate, modify, order, organize, prepare, relate, synthesize
Characterization by Value	Act, discriminate, display, influence, listen, modify, perform, practice, propose, qualify, question, revise, serve, solve, use, verify
Key Words: Skills	
Perception	Choose, describe, detect, differentiate, distinguish, identify, isolate, relate, select, separate
Set	Begin, display, explain, move, proceed, react, respond, show, start, volunteer
Guided Response	Assemble, build, calibrate, construct, dismantle, display, dissect, fasten, fix, grind, heat, manipulate, measure, mend, mix, organize, sketch, work
Mechanism	Assemble, build, calibrate, construct, dismantle, display, dissect, fasten, fix, grind, heat, manipulate, measure, mend, mix, organize, sketch, work
Complex Overt Response	Assemble, build, calibrate, construct, dismantle, display, dissect, fasten, fix, grind, heat, manipulate, measure, mend, mix, organize, sketch, work
Adaptation	Adapt, alter, change, rearrange, reorganize, revise, vary
Origination	Arrange, combine, compose, construct, design, originate

Examples of Good and Not-So-Good Learning Goals

The University of Central Florida also provides the following examples of poor, better, and best outcome statements:

Example 1:

Poor: Students completing the undergraduate program in Hypothetical Engineering will have knowledge of engineering principles.

This is a weak statement because it does not specify which engineering principles a graduate from the program should know. Also, it does not define what is meant by "have knowledge." Are they supposed to be able to simply define the principles, or be able to apply the principles, etc.?

Better: Graduates will be competent in the principles of engineering design, formulating requirements and constraints, following an open-ended decision process involving tradeoffs, and completing a design addressing a hypothetical engineering need.

This statement is better because it lists the specific areas in hypothetical engineering in which a student must be competent. However, it is still vague, as the level of competency is not stated. Are they expected to understand these concepts and how they will apply them?

Best: Graduates will be able to apply and demonstrate the principles of engineering design, formulating requirements and constraints, following an open-ended decision process involving tradeoffs, and completing a design addressing a hypothetical engineering need.

This is a much better learning outcome statement for two reasons. First, the specific requirements are listed; and second, the level of competency is also stated. A student must be able to apply and to demonstrate the listed engineering principles.

Example 2:

Poor: Ph.D. students of Hypothetical Engineering will be successful in their research.

This statement is very vague and provides no indication of what "successful" means. It does not specify what type or quality of research skills is expected from the student.

Better: Ph.D. students of Hypothetical Engineering will be successful in conducting high-quality research.

Although the quality of research expected from the doctoral students is identified, there is no indication of specific research capabilities that a student should possess. Therefore, even though it provides more detail than the previous statement, it is still lacking.

Best: Ph.D. graduates of Hypothetical Engineering will be able to conduct high-quality, doctoral research as evidenced by their results of experiments and projects, dissertations, publications, and technical presentations.

What is expected of a doctoral student in this program is clearly defined and stated, making this an effective learning outcome statement. The quality of research expected as well as the specific research requirements are articulated in the outcome statement.

Example 3:

Poor: Students should know the historically important systems of psychology.

This is poor because it says neither what systems nor what information about each system students should know. Are they supposed to know everything about them or just names? Should students be able to recognize the names, recite the central ideas, or criticize the assumptions?

Better: Students should understand the psychoanalytic, Gestalt, behaviorist, humanistic, and cognitive approaches to psychology.

This is better because it says what theories students should know, but it still does not detail exactly what they should know about each theory, or how deeply they should understand whatever it is they should understand.

Best: Students should be able to recognize and articulate the foundational assumptions, central ideas, and dominant criticisms of the psychoanalytic, Gestalt, behaviorist, humanistic, and cognitive approaches to psychology.

This is the clearest and most specific statement of the three examples. It provides even beginning students an understandable and very specific target to aim for. It provides faculty with a reasonable standard against which they can compare actual student performance.

Example 4:

Poor: Students should be able to independently design and carry out research.

The problem with this is that the statement does not specify the type or quality of research to be done.

Better: Students should be able to independently design and carry out experimental and correlational research.

This specifies the type of research, but not the quality students must achieve. If a student independently does any research that is experimental or correlational, it would be viewed as acceptable.

Best: Students should be able to independently design and carry out experimental and correlational research that yields valid results.

Here, the standard for students to aim for is clear and specific enough to help faculty agree about what students are expected to do. Therefore, they should be able to agree reasonably well about whether students have or have not achieved the objective. Even introductory students can understand the outcome statement, even if they don't know exactly what experimental and correlational research methods are.

Northern Arizona University (2006) provides the following examples of learning goals from its academic programs prefaced with, "Students will be able to…"

- Articulate the role of communication in a diverse and democratic society.
- Develop detailed lesson plans for teaching secondary or junior college levels.
- Demonstrate an introductory knowledge of works of art, history, music, philosophy, literature, and religion as expressions of the Humanities.
- Present physical and human geography content knowledge, description, analyses, and syntheses through the use of oral presentations.
- Develop the skills necessary to collect, analyze, interpret, and present data.
- Carry out important laboratory procedures in chemistry.
- Think critically and globally, being able to analyze problems and develop solutions with little direction from outside sources.
- Evaluate the quality of reported Justice research.
- Apply the scientific method to conduct and interpret research inquiries using a combination of qualitative and quantitative research methods.
- Apply the discussion to policy and real-world applications.
- Demonstrate the knowledge of mental structures and processes that underlie individual human experience and behavior.
- Organize and orally deliver content based on audience and purpose.
- Communicate effectively with employees and guests in hospitality industry settings.

Walvoord (2010, p. 14) provides examples of poor learning goals:

> Goals must be in the "students will be able to..." format. Here are some goal statements that are *not acceptable* for this purpose (though they may be perfectly fine statements for other purposes):
>
> - The curriculum emphasizes X,Y,Z.
> - The institution values X,Y,Z.
> - The institution prepares its students for X,Y,Z.
> - Students are exposed to X, Y,Z.
> - Students participate in X,Y,Z.