INSTRUCTOR TRAINING OUTCOMES

THE MISSING LINK IN INSTRUCTOR DEVELOPMENT

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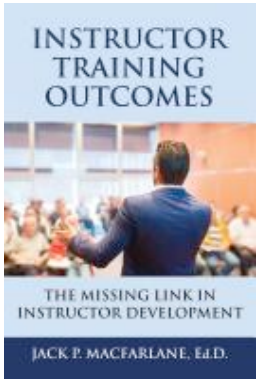

Instructor Training Outcomes will equip academic deans, training designers, and instructors with the tools needed to define learning goals in clear, measurable terms. Each chapter guides the reader through the processes of articulating smart learning outcome statements, first for college-level students, and then for the professional development of faculty. Consistent with the outcomes-driven nature of the book, chapters include the expected learning outcomes and a brief assessment to check understanding as the reader progresses.

Instructor Training Outcomes: The Missing Link in Instructor Development

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How to define clear goals for the effective delivery and assessment of instructor training and development

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1 • What in the World is an SLO?

Upon reading this Chapter, you will be able to:

a. Distinguish fundamental differences between Learning Outcomes and Lesson Objectives
b. Compare the different levels of critical thinking expressed by a variety of verbs
c. Select the most appropriate learning outcome statement from a list provided
d. Compose an SLO statement that is assessable and promotes higher-order thinking

(BIG hint: The four statements above are SLOs!)

"Many of the same tensions that characterized the accountability and improvement purposes of student learning outcomes assessment when the assessment movement began in the mid-1980s still exist today."

—Peter Ewell

An SLO is a Student Learning Outcome and its fundamental concept and intended purpose are not at all new. In essence, an SLO is a clearly defined, significant, and assessable learning goal. A learning *objective*, on the other hand, is a smaller instructional step leading to a larger *outcome*. To illustrate this important distinction, let's reflect on the kite construction example alluded to in the introduction. (1) Construct a kite frame, (2) glue paper to the frame, and (3) attach a string to the kite, for example, are all objectives leading to the larger SLO: Design, construct and fly a kite.

Over the years, SLOs have been called many different things such learning goals, overreaching objectives, and so on. While I was a Navy facilitator, for instance, we referred to SLOs as TOs (terminal objectives) and smaller bits of instruction, or objectives, as EOs (enabling objectives). Why are SLOs such a big deal now? Well, in addition to being a direct pathway to better instruction, well-defined and fully functioning SLOs in teaching, learning, and assessment are now a non-negotiable requirement for regional accreditation, at least in California and other states under the purview of the Western Association of Schools and Colleges-WASC (Beno, 2009). In order to make this book more palatable and to minimize confusion, let's define SLOs as originally proposed by the Council for Higher Education Accreditation:

> Student learning outcomes are clear statements of what students will learn and be able to demonstrate upon completing a course or program. They describe the assessable and measurable knowledge, skills, abilities or attitudes that students will attain by the end of a learning process (Ewell, 2001).

If your college or university has a well-established SLO strategy and you are already familiar with the basic principles, then you may skip right over to Chapter 2. However, if you stick around, you may discover a few new angles and illuminating ideas you hadn't considered before. For example, you may glean new insights in composing an appropriate SLO introductory heading, or determining where in the

taxonomical scale a particular verb fits. Although there are taxonomies for other learning domains (i.e., affective and psychomotor), it is important to note this book will focus only on the cognitive domain for practical reasons and, in no small measure, because of the author's preference.

SLO Headings

SLOs are not floating in a vacuum; they are firmly grounded in a specific learning environment. That is to say, an SLO by itself lacks context and also does not specify a timeline indicating when its achievement might be expected. In order to introduce context and timeline, a clearly expressed SLO heading is needed. For example, “Troubleshoot an electric circuit using a multi-meter and determine the cause of malfunction” is a strong SLO but does not, by itself, answer the questions: "Who will troubleshoot the circuit?" and, "When will that person demonstrate this task?" An appropriate SLO heading is needed to place the SLO within specific parameters.

A suitable SLO heading to introduce the above SLO might be:

> Upon completion of Basic Electricity, technical apprentices will be able to:
>
> a. Troubleshoot an electrical circuit using a multi-meter and determine causes of malfunction.

The SLO heading above announces *who* will perform the task (the apprentice) and *when* the task will be executed (upon completion of the course). Usually there are more objectives than SLOs (think about the three objectives leading to the single kite-flying SLO), so you may want to assign a letter to each SLO and a number to your objectives—this, of course, is entirely up to you and your academic team. Some SLO writers prefer to include additional information with each SLO

such as learning context, task performer, and acceptable achievement benchmark.

For example:

a. Given a circuit board and a multi-meter, the technical apprentice will be able to troubleshoot and identify faulty components in minimal time and with 80% accuracy.

Although there is nothing wrong with this SLO format, it can become redundant when one repeats the context (*given this* or *given that*) and reintroduces the task performer (the technical apprentice, the student, the graduate, etc.) in each SLO. Also, the course syllabus might be a better place for stating specific grades and performance percentages than spelled out in the SLO verbiage (such as the "80% accuracy" stated above). The key is to articulate SLOs as broadly as possible; keep the details in the syllabus, course content, lesson objectives, and in the assessment.

To recap what we've reviewed so far, following is an SLO heading, an SLO, and the lesson objectives that promote the achievement of the SLO:

Upon completion of Basic Electricity, technical apprentices will be able to:

a. Troubleshoot an electrical circuit using a multi-meter and determine causes of malfunction.

In order to achieve the above outcome, learners will accomplish the following objectives:

1. Identify and name electronic components on a circuit
2. Explain the function of various electronic components
3. Perform basic DC circuit analysis calculations including Ohm's Law
4. Use a digital multi-meter to determine electrical continuity and to measure voltage, current, and resistance.

After a brief review of college websites to ascertain how different institutions present information on their courses, I noticed a common, logically organized theme. The course title and basic information (e.g., credit hours awarded, prerequisites, etc.) were listed first, followed by a brief course description. Some institutions cleverly listed SLOs as part of the general course information. As mentioned earlier, course objectives usually outnumber SLOs. It seems the usual number of SLOs for a typical post-secondary course is between four and eight. Objectives, however, may number in the dozens. For this reason, objectives are best listed only in the course syllabus together with a course title, description, SLOs, class schedule, and so on. The following table illustrates some of the differences that come to mind when comparing course SLOs to objectives.

Table 1: Lesson Objectives vs Student Learning Outcomes

Lesson Objectives	Student Learning Outcomes
Many	Few
Short term lesson goals	Long term performance results
Evaluated via quizzes, tests, and rubrics during a course	Assessed as the aggregate of significant skills gained in an entire course or program
Steps to a goal	The goal itself
Instructor-driven	Student-centered
What is taught	What is learned (and what the learner can do as a result of it)
Lower-level learning: list, recite, name, understand, etc.	Higher-level performance: evaluate, weld, suture, diagnose, design, etc.

Although the scope of this book is narrow and focused primarily on the learning outcomes of instructor development, it is a good idea to establish a strong foundation with regard to all things SLO. With that in mind, it is important to note that colleges and universities are held responsible for meeting more than just *course* SLOs. In fact, there are also specific programmatic as well as institutional learning outcomes

that must be met. Without going into too much detail and muddying the water, let's just say (a) *course outcomes* are achieved as a result of completing a course; (b) *programmatic outcomes* are gained by attending a complete program that includes several courses; (c) *institutional outcomes* reflect the particular nuances that graduates of a specific college or university may exhibit regardless of what program they completed. And let's not forget *non-instructional outcomes* that students are expected to achieve through participation in or usage of available student services.

Assessment

It could be said the whole purpose of crafting smart SLOs hinges upon their capacity for being assessed. I find assessment and learning outcomes are mutually inclusive correlates and one defines and underscores the need for the other. Surely, time spent in determining what new skills a learner will develop is wasted if there are no means in place to demonstrate the acquisition of those skills. Conversely, crafting assessment not purposefully based on predetermined outcomes is also just as futile an endeavor.

Countless volumes have been written about the exceedingly broad topic of assessment. However, to strengthen key assessment concepts we'll see again later within the context of instructor development, only three critical and distinct assessment themes will be examined: formative, summative, and authentic. Irrespective of assessment type, all teachers, instructors, faculty members, facilitators, indeed *anyone* teaching anything to another person must be able to ascertain the achievement of the intended learning outcomes in some meaningful way.

Formative assessment refers to the type of evaluation that occurs frequently and during a learning process. A question posed during a topic review, a quiz proctored after exploring a new subject, or a group project allowing learners to showcase what they've learned so far, are all examples of formative assessment. The key here is that formative assessment is used to guide instruction, make ongoing lesson

adjustments, and gauge student progress *during* a course while the learner progresses.

Summative assessment, on the other hand, is an evaluation of the sum of all learning and usually occurs toward the end of a course. The inherently dangerous dilemma associated with summative assessment is that, unlike formative assessment, it does not allow for corrective measures along the way. Because of this hindrance, learners are awarded either a passing grade or fail an entire course based on the results. In addition, if learning is only gauged once as a final exam, then educators run the risk of promoting cohorts of students who perpetually *prepare for the test* instead of benefitting from authentic and enduring learning.

Authentic assessment, as the term suggests, is characterized by the objective demonstration of learning. Ideally, all assessment should be authentic or as close to it as possible. This type of assessment discourages multiple choice exams and other abstract, artificial forms of evaluation that do not really demonstrate the achievement of knowledge and skill. I remember whitewater rafting many years ago down the New River in West Virginia. A very brief training session took place while drifting swiftly toward the roaring narrows. This would be the equivalent of teaching someone how to skydive while freefalling. Anyway, a non-authentic assessment of our training would have been, for example, a written quiz on dry land covering what we'd learned before our adventure began. Instead, our guide opted for a more direct approach and tested our ability while we paddled for our lives down the rapids. (*Assessment just doesn't get more authentic than that*.)

Bloom's Taxonomy: The old and the new(er)

At ease everyone! The intricate features of neuropsychology and all associated aspects of cognition and brain science are indeed fascinating but will not be presented here. What will be offered instead is a succinct and practical overview of the groundbreaking work of Bloom et al. (1956) and Anderson and Krathwohl (2001) with respect to learning objectives, educational outcomes, and lesson design. These authors suggested there was a certain taxonomy, or hierarchy, of

learning goals and that the verb used in defining them was an essential component of the degree of critical thinking measured. In other words, *recognizing* a violin requires less brain power than *playing* it, and playing it requires less critical thinking than *composing* a violin concerto. Recognizing, playing, and composing, according to Bloom et al., represent three different and increasing levels of complexity in the taxonomy of educational objectives in the cognitive domain. Yes, there is a certain amount of subjectivity in all of this, but few people would argue that *recognizing* Beethoven's fifth on the radio is significantly less of a challenge than *composing* a symphony of comparable caliber.

The table below illustrates the six original levels of Bloom's taxonomy and a few corresponding verbs associated with each. The table also shows the newer alternative designed by Anderson and Krathwohl (2001) with a depiction of a critical thinking continuum to the right of the table. Please keep in mind there are perhaps hundreds of verbs associated with each of the cognitive levels and trying to pigeonhole each neatly in one category or another is a waste of valuable time. Realizing there is a significant difference in the expressed critical thinking potential of each verb and that some verbs may be more appropriate than others in framing the desired learning outcome is quite enough, it seems to me.

Table 2: Taxonomical Comparisons

Original Version	Typical Actions	Newer Version	Typical Actions	Critical Thinking
Evaluation	Contrast	Creating	Producing	Higher
Synthesis	Summarize	Evaluating	Critiquing	
Analysis	Explain	Analyzing	Organizing	
Application	Use	Applying	Implementing	
Comprehension	Recognize	Understanding	Explaining	
Knowledge	List	Remembering	Recognizing	Lower

The intent is not necessarily to eradicate from the educational vernacular all verbs in the lower rungs of the taxonomy, but to reflect and select verbs that may be more appropriate in each circumstance. For example, instead of stating "The nursing student will know how to suture," one could state, "The nursing student will suture various types of cuts on a mannequin." *Suture* soars in Bloom's *Application* level—mid-way up the taxonomy—much higher up than *know*, which is the bottom-feeder of all action verbs. (*Is* knowing *even an action? Not in my book*.)

Wiggins and McTighe (2005) recommended a backward approach to lesson design. The authors suggested we begin planning each lesson by defining the desired results first. Then, plan and prepare the assessment that checks the achievement of those results. And, lastly, compile the material and lesson content that informs the assessment. The desired results are, in no uncertain terms, the expected and demonstrable learning outcomes of the lesson.

Ready to check your skills?

The answer key for the assessment of each chapter is located in *Appendix D*.

The learning outcomes for Chapter 1 are:

a. Distinguish fundamental differences between Learning Outcomes and Lesson Objectives
b. Compare the different levels of critical thinking expressed by a variety of verbs
c. Select the most appropriate learning outcome statement from a list provided
d. Compose an SLO statement that is assessable and promotes critical thinking

Outcome assessment

a1. The Psychology instructor writes a list of brief tasks on the board due by the end of the day.

These are likely (*underline your answer*):

Outcomes Objectives

a2. As a capstone project for the end of a welding course, the student applies a variety of techniques to weld two metal parts together using a TIG welder.

This is likely (*underline your answer*):

An outcome An objective

b1. Draw a line and connect each of the verbs on the left column with the most appropriate level of Bloom's Taxonomy

Compare	Evaluation
Paraphrase	Synthesis
Recognize	Analysis
Combine	Application
Critique	Comprehension
Fabricate	Knowledge

c1. From the list below, choose the SLO you feel might be more easily assessed and is more suitable for promoting higher order thinking:

- We will teach you fractions
- You will know how to convert fractions into decimals
- Understand the concept of fractions
- Add, subtract, divide and multiply fractions

d1. Your turn to shine! Starting with an adequate verb, compose an SLO suitable to your own teaching and learning environment using the template below (optional heading provided):

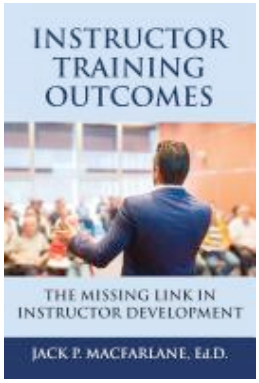
Upon completion of this_____ you will be able to:
(workshop, etc.)

- _____
  _____
  _____
  _____

Check your SLO:

- Does your SLO suggest higher order thinking?
- Is the verb adequately ranked in Bloom's taxonomy?
- Is your SLO testable?
- How would you assess it?
- See rubric in *Appendix A* to assess the quality of your SLO:
  - What is your overall score?
  - 15 (*Aced it!*), 10-14 (*Nice work*), < 10 (*Try again*)
  - Did the rubric inspire any revisions to your SLO?
  - How would you rewrite it?

_____
_____
_____
_____
_____
_____



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