

Writing Measurable Student Learning Outcomes

Steve Atkins

Office of Institutional Assessment

September 24, 2018

Outcomes

An outcome is the desired effect of a program, service, or intervention but is more specific than a goal. It is participant centered

Types of Outcomes

- Student learning outcomes: Cognitive or affective abilities/characteristics demonstrated
- Program outcomes: what your program accomplishes
- Operational outcomes: metrics regarding how well the operation works (financial metrics)

What is a student learning outcome?

- A **clear** statement in **specific** and **measurable** terms of what a student will know or be able to do as the result of having successfully **completed** a program or course of study.
- Start with the “end in mind.”

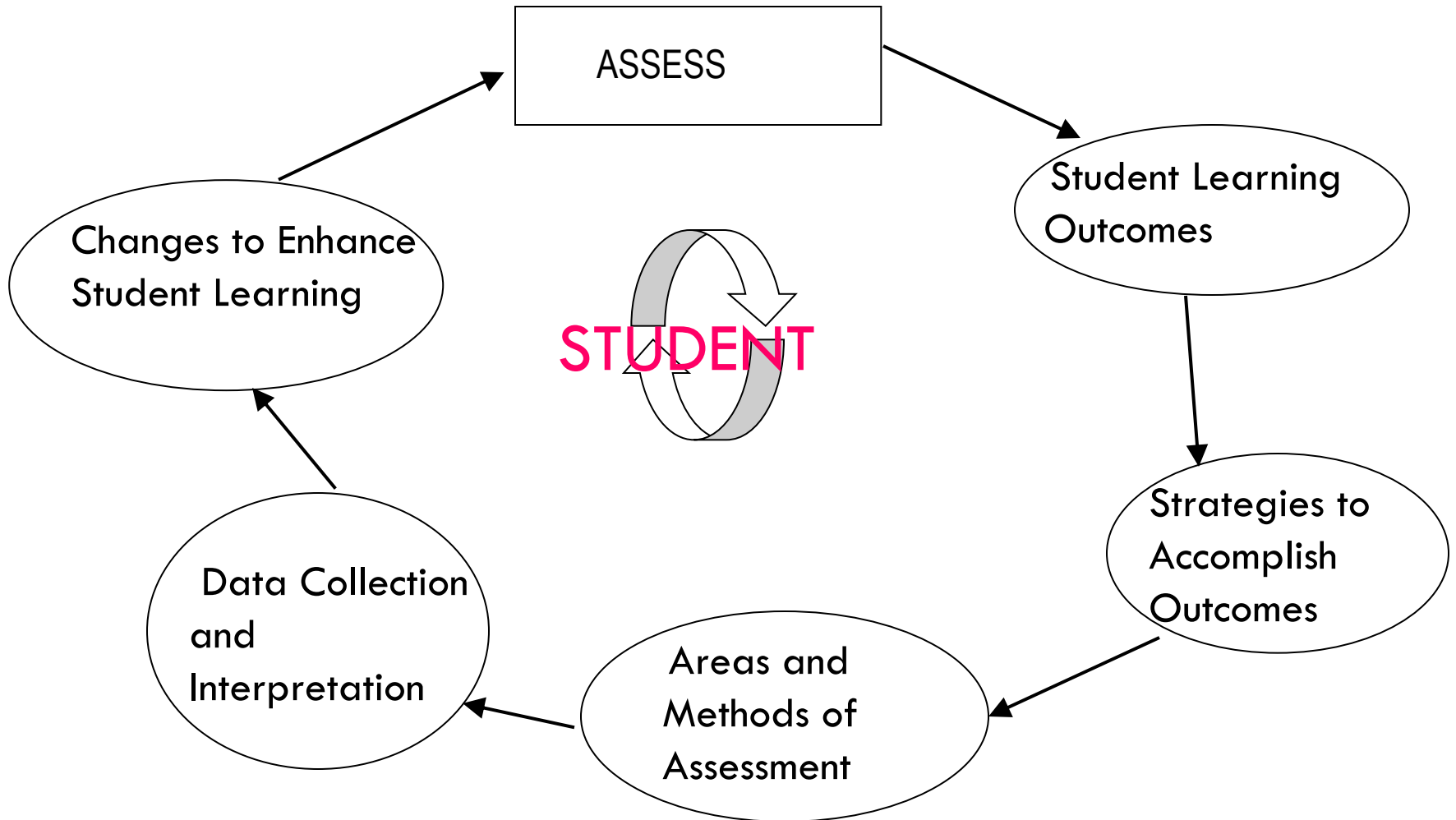
Purpose of learning outcomes

- Inform students of knowledge and skills they will gain from a course or a degree program.
- Communicate expected performance standards
- Provide structure for evaluating student learning.
 - Are we heading in the right direction?
 - What are students learning?
- Facilitates program coherence

Assessment's core questions

- What do you want students to know/do/value as a result of completing your program?
- How do you know whether your students know/do/value these things?
- If they know/do/value these things...you've got something to report!
- If *NOT*, you have useful information to guide changes to improve learning.

ASSESSMENT – LOOP



In other words...

- We identify learning outcomes
- We design ways to measure the learning
- We provide learning opportunities
- We gather, analyze, and interpret evidence to determine how well learning matches our expectations
- We use the results to understand and improve student learning

Levels of generality

- Institutional level: Students will communicate effectively in writing to variety of audiences
- Program level:
 - Students completing the business major will communicate effectively to professional and lay audiences, using the common business formats
- Course level:
 - Students who complete the finance course will be able to write such-and-such kinds of financial reports

Writing Effective Learning Outcomes

- Clear – unambiguous and sufficient detail
- Measurable and Observable - evidence that the outcome was or was not achieved.
Focused on the behavior by selecting verbs such as create, compose, calculate, build, develop, interpret. or evaluate.
- Meaningful
- Manageable (6-8 goals) - INTEGRATIVE
- Relevant to the Goals of the Program
- Transferable – can be applied to what students will be do later

VERBS/PHRASES TO AVOID

- **acknowledge**
- **appreciate**
- **be aware of**
- **believe**
- **capable of**
- **cite**
- **comprehend**
- **conscious of**
- enjoy
- experience
- exposed to
- familiar with
- know/have knowledge of
- learn
- memorize show
- interest in
- Understand
- http://adulterated.about.com/gi/dynamic/offsite.____.htm?site=http%3A%2F%2Fwww.naacls.org%2Fdocs%2Fannouncement%2Fwriting-objectives.pdf

Cognitive Domain Verbs

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
<p>Definition: Ability to recall previously learned material.</p> <p>Sample Verbs: identify label recall reproduce state</p>	<p>Definition: Ability to show a basic understanding of material.</p> <p>Sample Verbs: define describe explain paraphrase provide example</p>	<p>Definition: Ability to apply learning in new situations.</p> <p>Sample Verbs: apply demonstrate determine prepare use</p>	<p>Definition: Ability to logically differentiate between the content and structure of material.</p> <p>Sample Verbs: analyze compare/contrast differentiate distinguish investigate</p>	<p>Definition: Ability to create new content and structures.</p> <p>Sample Verbs: construct create design develop generate</p>	<p>Definition: Ability to judge the value of material for a given purpose.</p> <p>Sample Verbs: assess critique evaluation justify support</p>

Adapted from: Bloom B. S. (1956). *Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain*. New York: David McKay Co Inc.

ABCD METHOD FOR WRITING LEARNING OUTCOMES

A Audience—Who is the learner?

B Behavior—What is the measurable behavior?

C Condition—Under what circumstances should the learner be able to perform?

D Degree—At what level does the behavior need to be performed? Quantification, standards, criteria, concepts

Example: ABCD Outcome

- At the end of their field research (*Condition*), students (*Audience*) will be able to write a research paper (*Behavior*) in the appropriate scientific style (*Degree*).
-

Let's evaluate outcomes:

- Our Standards:
 - 1. Clear, Measurable, Meaningful?
 - 2. Audience, Behavior, Condition, Degree?

Degree of achievement

- ✓ Quantification (e.g. number of concepts to identify)
 - *Music students will be able to identify and analyze **four** elements of music in a given piece*
- ✓ Standard (e.g. relevant, precise, significant, etc.)
 - *Music students will be able to **accurately** identify and analyze four elements of music in a given piece*
- ✓ Criteria
 - *Music students will be able to identify and analyze elements of music in a **given live** music piece.*
- ✓ Concept
 - *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.*

Analysis of Outcomes

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

WHY?

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 recognize the names, recite the central ideas, or criticize the assumptions?

Analysis of Outcomes

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

WHY?

This is better because it says what theories students should know, but it still does not detail what exactly they should know about each theory, nor how deeply they should understand whatever it is they should understand.

Analysis of Outcomes

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.

WHY?

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.

Analysis of Outcomes

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

WHY?

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

Analysis of Outcomes

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

WHY?

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.

Analysis of Outcomes

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

WHY?

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 sentence, even if they don't know exactly what experimental and correlational research methods are.

SLO

- Students will understand the science behind psychology
- At the end of the course, students will be able to ... describe how social scientists follow the scientific method to understand social phenomena....”

University of Connecticut: *Assessment*

<http://assessment.uconn.edu/docs/HowToWriteObjectivesOutcomes.pdf>

SLO

Students will demonstrate knowledge of the history, literature and function of the theatre, including works from various periods and cultures.

Student completing the senior dramatic literature course will be able to explain the theoretical bases of various dramatic genres and illustrate them with examples from plays of different eras.

SLO

The student will be able to discuss philosophical questions.

The student is able to develop relevant examples and to express the significance of philosophical questions

SLO

Students will understand how to use computer technology effectively.

Each student will be able to use word processing, spreadsheets, databases, and presentation graphics in preparing their final research project and report.

SLO

Students will understand Newton's three laws of motion

Use Newton's three laws of motion to predict motion in three dimensions.

SLO

Appreciate the difference between various forms of graphical representation.

Given a set of data, construct a time series, scatter plot, or histogram to show relationships between quantities.

Compare Your Answers

Express numbers in scientific notation using the correct number of significant digits.

Express and manipulate numbers effectively using the concepts of scientific notation, significant digits, and SI unit measurements.

SLO

Diagnose failures in the vacuum, mechanical components, and controls of HVAC systems and determine necessary action for repairs.

This statement meets all the criteria

SLO

Identify unknown bacteria using gram stain, biochemical, and other microbiological methods for identification.

This statement meets all the criteria.

Now... You Write the Outcomes

- **Complete Activity 3 in the Writing Learning Outcomes Handout; Consult with your small group as desired:**
- Write at least one or two learning outcomes for at least one of your courses, using the observable actions and behaviors you just identified.
- Think about the learning
- By the end of the program, students will be able to
+ action verb + descriptive learning statement.
- outcomes “formula”:

Walvoord's Three Steps of Assessment

2. Gather evidence about how well students are meeting the goals.

- *Direct measures*
- *Indirect measures*

“Evidence includes qualitative as well as quantitative information.”

*(Barbara Walvoord, *Assessment Clear and Simple*)*

Direct and Indirect Assessment of Learning

- *Direct* evidence of student learning is tangible, visible, and compelling evidence of exactly what students have and have not learned.
- *Indirect* evidence consists of proxy signs that students are probably learning. Indirect evidence is less clear and convincing.

Adapted from: Sweet, J. and Meents-Decaigny. (2015) *Direct assess of student Learning* .DePaul University

Resources

Richard Paul and Linda Elder's *The Miniature Guide for Those Who Teach on How to Improve Student Learning* (2002). Pp. 43-44.

Gerald Nosich's *Learning to Think Things Through: A Guide to Critical Thinking Across the Curriculum* (2005). Pearson, Prentice Hall.

Seattle Central Community College: *Curriculum Coordinating Council*
http://seattlecentral.edu/users/crc/Assessment/IA_Writing_Course_Outcomes.htm

University of Connecticut: *Assessment*
<http://assessment.uconn.edu/docs/HowToWriteObjectivesOutcomes.pdf>

League for Innovation: *Istream*
http://www.league.org/istreamSite/lens_index.cfm?gr=yes&visible=block

Ruth Stiehl's *The Outcomes Primer: Reconstructing the College Curriculum* (2002). The Learning Organization.

WEAVEonline: *Assessing Achievement on Institutional Mission*
http://www.weaveonline.com/PHPages/wp-content/uploads/2010/04/Newsletter_Spring_2010.pdf#page=2
