
Writing Course-Level Student Learning Outcomes

SLO: A “WORKING” DEFINITION

A student learning outcome is what students can do at the end of instruction with the knowledge they have gained.

A Thought to Take With You

An SLO is what you think of when you complete this sentence:

“Ultimately, I want students to be able to . . . “

Another thought:

How would you answer a prospective student who asks you, “What will I be able to do when I finish your course?”

IMPORTANT TO REMEMBER

- ✘ The best outcomes are developed through dialogue.

IMPORTANT TO REMEMBER

- ✘ Outcomes should be consistent across sections of a given course (both on-ground and on-line).

But . . .

- ✘ You determine the scope of instruction (i.e., SLOs do not limit what you cover).

But . . .

- ✘ You determine how students are taught.

But . . .

- ✘ You determine how assessment scores will impact students' grades for your courses.

IMPORTANT TO REMEMBER, TOO

- ✘ Different courses emphasize different learning domains (i.e., cognitive, affective, psychomotor).
- ✘ Different courses emphasize different GE-level outcomes (e.g., critical thinking, aesthetic appreciation).

Strong Student Learning Outcomes

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STRONG SLOS...

- use language with **active verbs** (e.g., analyze, interpret, distinguish - see Bloom's Taxonomy in your packet);

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- use language with **active verbs** (e.g., analyze, interpret, distinguish - see Bloom's Taxonomy in your packet);
- are measurable or observable;

ONE WAY TO BEGIN

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2. Incorporate **active verbs** from Bloom's higher level categories (see your packet).
3. Begin the discussion with your discipline colleagues.

IMPORTANCE OF VERBS

× Bloom's Taxonomy

+ Cognitive Domain

- × The cognitive domain involves knowledge and the development of intellectual skills. This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. There are six major categories, which are listed in order below, starting from the simplest behavior to the most complex. The categories can be thought of as degrees of difficulties.

+ Affective Domain

- × This domain includes the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations, and attitudes.

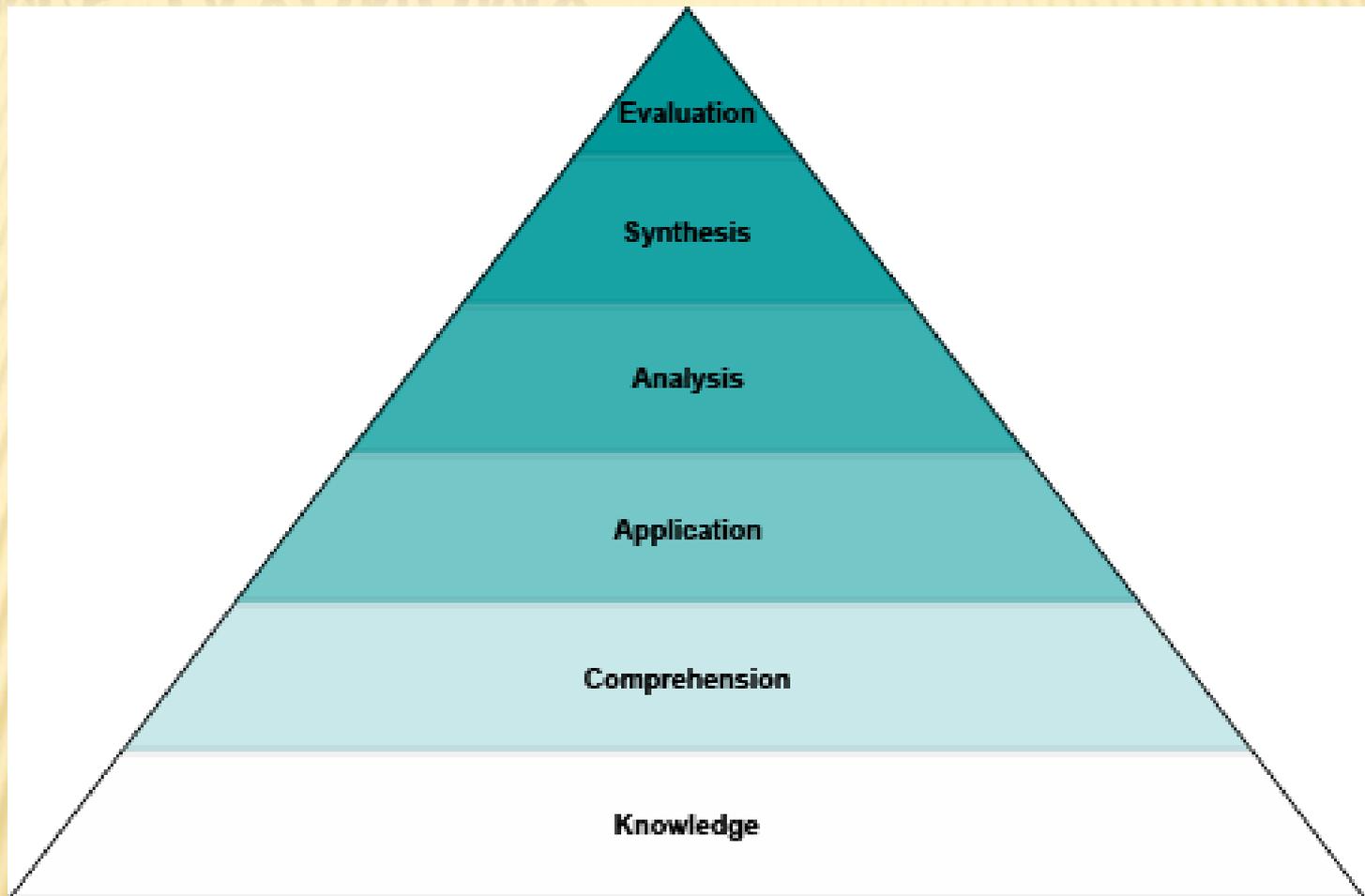
+ Psychomotor Domain

- × The psychomotor domain includes physical movement, coordination, and use of the motor-skill areas. Development of these skills requires practice and is measured in terms of speed, precision, distance, procedures, or techniques in execution.

COGNITIVE DOMAIN

- ✘ Involves knowledge and the development of intellectual skills
- + Hierarchy of objectives according to cognitive complexity
- + Higher-level objectives include, and are dependant on lower level cognitive skills

BLOOM'S TAXONOMY



Bloom's Taxonomy of learning. Adapted from: Bloom, B.S. (Ed.) (1956) Taxonomy of educational objectives: The classification of educational goals. Handbook I, cognitive domain. New York ; Toronto: Longmans, Green.

BLOOM'S – LOWER LEVELS

✘ Knowledge

- + Recalling previously learned information such as facts, terminology, rules, etc.
- + Answers may be memorized or closely paraphrased from assigned material.
- + Define, list, name, recall

BLOOM'S – LOWER LEVELS

✘ Comprehension

- + Ability to comprehend the meaning of material.
- + Answers must be in the student's own words while still using terminology appropriate to the course material.
- + Explain, summarize, distinguish between, restate

BLOOM'S – LOWER LEVELS

- ✘ Demonstrate rote or surface learning
- ✘ Declarative or Procedural Knowledge
- ✘ Answers found in the assigned materials
- ✘ 80% of HS teachers test at these levels

BLOOM'S – HIGHER LEVELS

✘ Application

- + Requires recognizing, identifying, or applying a concept or principle in a new situation or solving a new problem.
- + May require identifying or generating examples not found in assigned materials.
- + Demonstrate, arrange, relate, adapt

BLOOM'S – HIGHER LEVELS

✘ Analysis

- + Ability to break material down into its component parts and to understand its underlying structure
- + May require students to compare and contrast or explain how an example illustrates a given concept or principle.
- + Require students to identify logical errors or to differentiate among facts, opinions, assumptions, hypotheses and conclusions
- + Expected to draw relationships between ideas
- + Differentiate, estimate, infer, diagram

BLOOM'S – HIGHER LEVELS

✘ Synthesis

- + Opposite of Analysis
- + Ability to combine parts to form a new whole; to synthesize a variety of elements into an original and significant whole.
- + Produce something unique or original
- + Solve some unfamiliar problem in a unique way
- + Combine, create, formulate, construct

BLOOM'S – HIGHER LEVELS

✘ Evaluation

- + Ability to **evaluate** a total situation, to **judge** the value of material for a certain purpose, combining elements of all the other categories and also value judgments based on defined, fixed criteria.
- + The most important part of the answer is the justification and rationale for the conclusion
- + Judge, critique, justify, discriminate

BLOOM'S – HIGHER LEVELS

- ✘ Meaningful or deep learning
- ✘ Go beyond textual material in that they must be inferred or extrapolated from the material in the assigned material.
- ✘ Students' creativity, originality and critical thinking is required at higher levels
- ✘ More authentic than lower levels
 - + Thinking at this level is more likely to represent types of performances required in the real world

EXAMPLE

Analyze literature through close reading (e.g., explicate a poem).

Explain the components of a play and the purposes they serve (e.g., soliloquy, chorus, dramatic irony).

Assess the biographical and historical influences on the creation of a piece of literature.

SLO'S: CHILD DEVELOPMENT

Analyze different theoretical approaches to the study of human development and propose practical applications supporting positive outcomes.

Distinguish key characteristics across developmental realms associated with various ages and stages of human growth & development.

Describe the role that culture plays in our interpretations of developmental norms and individual differences across the lifespan.

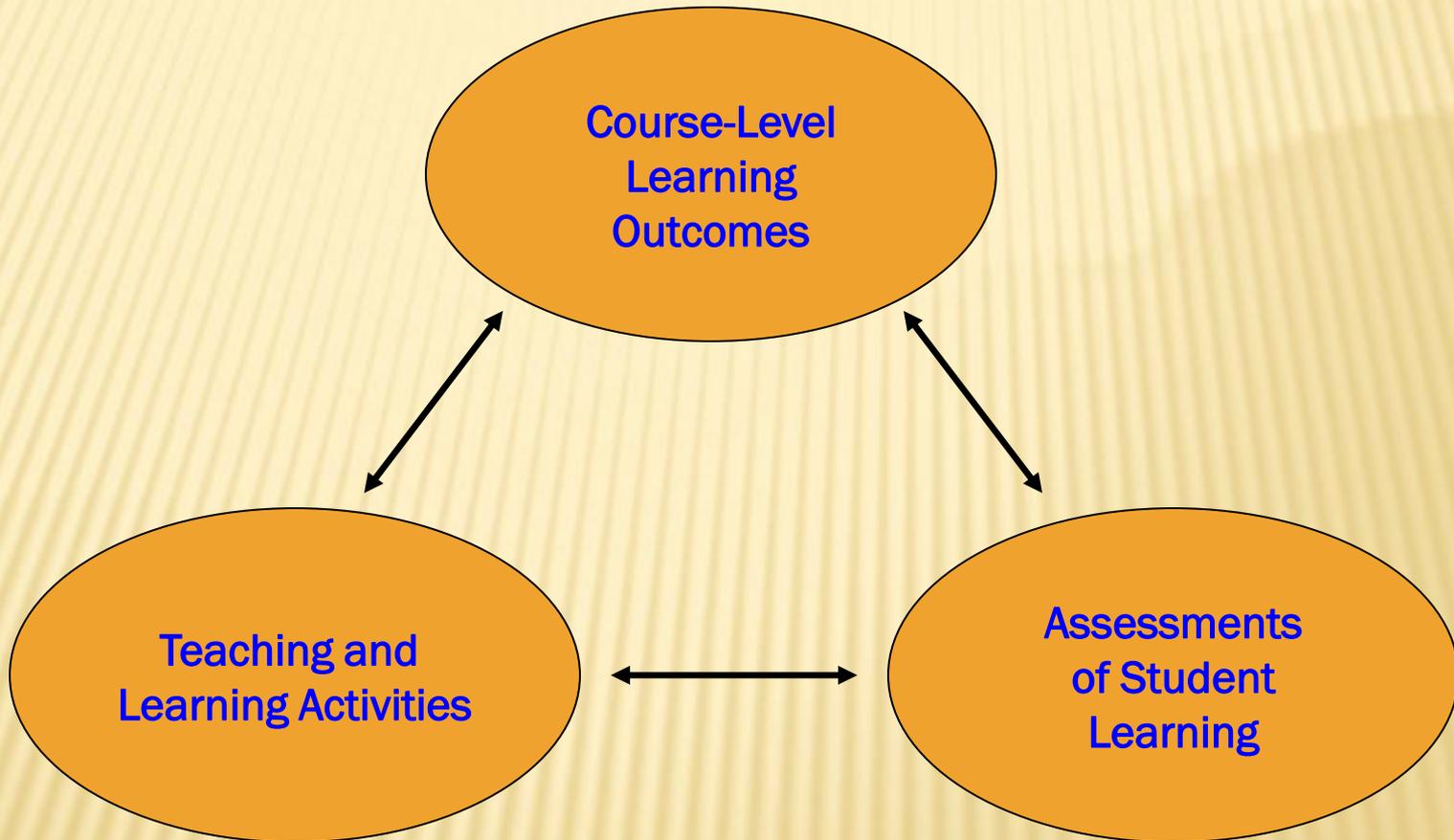
LEARNING OUTCOMES BY BLOOM'S TAXONOMY

Bloom's Taxonomy of Cognitive Categories

Course Goals/Objectives	Unit/Lesson Learning Outcomes	Student Learning Outcomes	Bloom's Taxonomy of Cognitive Categories					
			Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
1. Introduce students to inferential statistics	1.a learn the conceptual foundations of inference	1.a.1. Define the three tenets of the Central Limit Theorem		X				
		1.a.2. Describe three key distributions		X				
		1.a.2. Combine to explain the relationship between the three distributions					X	
	1.b Apply to confidence intervals	1.b.1. Outcome						
	1.c Test for difference between means	1.c.1. Outcome						
2. Introduce students to descriptive statistics	2.a Outcome	2.a.1. Outcome						
	2.b Outcome	2.b.1. Outcome						

Note: While this worksheet accommodates 7 learning outcomes, your specific course will most likely have more than this single worksheet can accommodate. The purpose of the worksheet is to provide a framework and not set parameters.

Alignment within a Given Course



THE NEXT STEP:

- ✘ Given your student learning outcomes, what specific tasks or activities will you have students complete to promote learning?
- ✘ Given these student learning outcomes, how will you know when your students have achieved the outcomes for that lesson or course (what assessments will you use)?

TEACHING & LEARNING ACTIVITIES BY OUTCOMES AND BLOOM'S TAXONOMY

Student Learning Outcomes	Bloom's Taxonomy of Cognitive Categories					
	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
1.a.1 Define the three tenets of the Central Limit Theorem		Class lecture and students will read assigned chapter.				
1.a.2. Describe three key distributions		Class lecture and students will read assigned chapter.				
1.a.3 Combine to explain the relationship between the three distributions					In class, students will calculate sample means and construct a sampling distribution. Homework will reinforce lesson.	
1.b.1						
1.c.1 Outcome						
2.a.1 Outcome						
2.b.1 Outcome						

ASSESSMENTS BY OUTCOMES AND BLOOM'S TAXONOMY

Bloom's Taxonomy of Cognitive Categories

Student Learning Outcomes	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
1.a.1 Define the three tenets of the Central Limit Theorem		Homework and examination.				
1.a.2. Describe three key distributions		Homework and examination.				
1.a.3 Combine to explain the relationship between the three distributions					Homework and examination.	
1.b.1						
1.c.1 Outcome						
2.a.1 Outcome						
2.b.1 Outcome						

STRONG SLO'S...

- explicitly or implicitly address the conditions under which the performance will be assessed (e.g., simulation, case study)

STRONG SLO'S...

- are generally amenable to assessment using a scoring rubric.

EXAMPLES OF STRONG SLO'S

ADMINISTRATION OF JUSTICE: JUVENILE

Analyze the processes for handling juvenile offenders in various correctional settings.

ENGINEERING: DRAWING

Given point descriptions, draw and label contour lines that indicate topography in land drawings, and "read" contour lines to explain land forms.

INTRODUCTION TO MICROCOMPUTER OPERATING SYSTEMS

- ✘ Install and configure the networking components of an operating system.
- ✘ Secure an operating system.
- ✘ Configure users and user profiles.

FABRIC ANALYSIS

- ✘ Discuss the manufacturing of fibers, yarns, and fabrics.
- ✘ Identify the various yarns, weaves, and knit stitches used in fabrics.

ELECTRICAL TECHNOLOGY

Analyze and interpret graphical information found on schematics, blueprints, and diagrams.

**SLO'S THAT
DON'T WORK SO WELL**

-
- × Too prescriptive: Given data on three Pre-Columbian cultures, the student will write a 1,000-1,200 word essay analyzing the geographical influences on the development of those societies.

-
- ✘ Too prescriptive: Given data on three Pre-Columbian cultures, the student will write a 1,000-1,200 word essay analyzing the geographical influences on the development of those societies.
 - ✘ Better: Given data on three Pre-Columbian cultures, the student will analyze the geographical influences on the development of those societies.

-
- ✘ Too broad: Students will analyze global political systems.

-
- × Too broad: Students will analyze global political systems.
 - × Better: Students will analyze 20th century western democracies and responsibilities of citizens in those democracies.

-
- × Too narrow: Students will use a microscope.

-
- × Too narrow: Students will use a microscope.
 - × Better: Students will use laboratory equipment to analyze tissue samples.

-
- × Not measurable: Students will understand the causes of World War II.

-
- × Not measurable: Students will understand the causes of World War II.
 - × Better: Students will evaluate the causes of World War II.

PROGRAM LEVEL OUTCOMES

PROGRAM OUTCOMES

- ✘ For degrees/certificates
- ✘ For a sequence of courses in a department
- ✘ Just like course outcomes, but relate to the program as a whole
- ✘ What the student should be able to do by the end of a program

PROGRAM OUTCOMES

- ✘ Are usually assessed near the end of the program
- ✘ Must be “mapped” to specific courses in the program

WHAT IS A CURRICULUM MAP?

- ✘ A curriculum map is a graphic that shows how courses in the curriculum for a degree program contribute to the overall goals of the program.

WHAT IS A CURRICULUM MAP?

- ✘ Curriculum maps can be used to create a global description of a variety of characteristics of a curriculum.
- ✘ A curriculum map might describe the level of development of student skills on program SLO's (introduced, reinforced, mastered, or assessed).

ALTERNATIVELY, A CURRICULUM MAP MIGHT DESCRIBE THE DEGREE OF ALIGNMENT BETWEEN THE SLOS DESCRIBED FOR EACH COURSE AND THE PROGRAM SLOS:

- ✘ Level 0 – no relationship between course SLOs and a particular program SLO.**
- ✘ Level 1 – indirect relationship between course SLOs and a particular program SLO. In this case, the course includes some elements that contribute to the achievement of this program SLO, but this learning outcome is not a major focus for the course.**
- ✘ Level 2 – direct relationship between course SLOs and a particular program SLO. Several course SLOs support the achievement of this SLO but the integration of relevant knowledge, skills, and abilities necessary for mastery of the program SLO does not occur in this course.**
- ✘ Level 3 – a direct relationship exists between the course SLO and a particular program SLO, including at least one course SLO that entails an integration of the knowledge, skills, and abilities necessary for mastery of the program SLO.**

CURRICULUM MAP

Course	Program outcome 1	Program outcome 2	Program outcome 3	Program outcome 4
101		Introduced		Introduced
102	Introduced	Practiced		Practiced
103	Practiced	Practiced	Introduced	Demonstrated
104		Demonstrated	Practiced	
105	Demonstrated		Demonstrated	

SIMPLE CURRICULUM MAP

Course	Program outcome 1	Program outcome 2	Program outcome 3	Program outcome 4
101				
102				
103			X	
104		X		
105	X			X

WHAT'S NEXT?

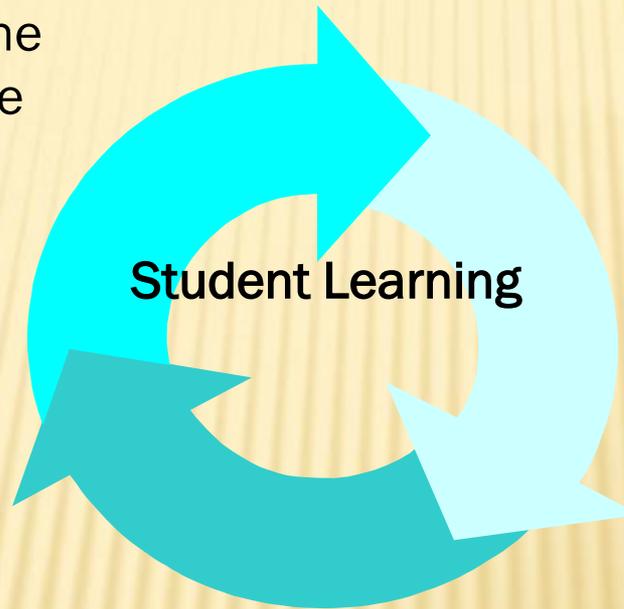
- ✘ Learn how to create assessment tools (rubrics, scoring guides)
- ✘ Assess your outcomes
- ✘ Discuss your results
- ✘ Plan changes/improvements
- ✘ Report your results

Outcomes Based Assessment

The Assessment Process: Plan-Do-Review

1. Establish goals and missions
For courses and programs

2. Write intended
Student Learning
Outcomes (SLO's)



3. Develop means of
assessment and
criteria for success
for evaluating SLO's

4. Incorporate SLO's
and assessment
tasks into
instruction

6. Use results to refine
instruction (close the
feedback loop)

5. Evaluate
assessment results

QUESTIONS FOR ASSESSMENT

1. What do you want the student to be able to do? (Outcome)
2. What does the student need to know in order to do this well? (Curriculum)
3. What activity will facilitate the learning? (Pedagogy)
4. How will the student demonstrate the learning? (Assessment)
5. How will I know the student has done this well? (Criteria)

QUESTIONS THAT DRIVE OUTCOMES ASSESSMENT

1. What must my students be able to do “out there” with what they’ve learned “in here”?

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Classroom

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Next Course

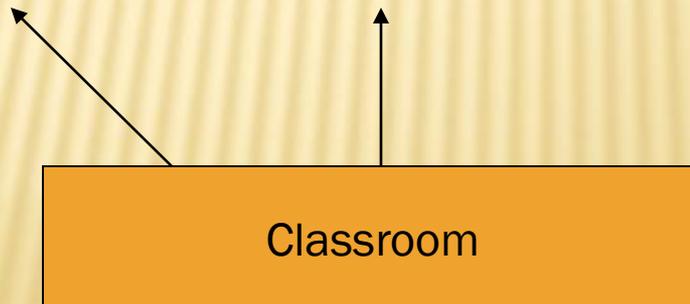


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QUESTIONS THAT DRIVE OUTCOMES ASSESSMENT

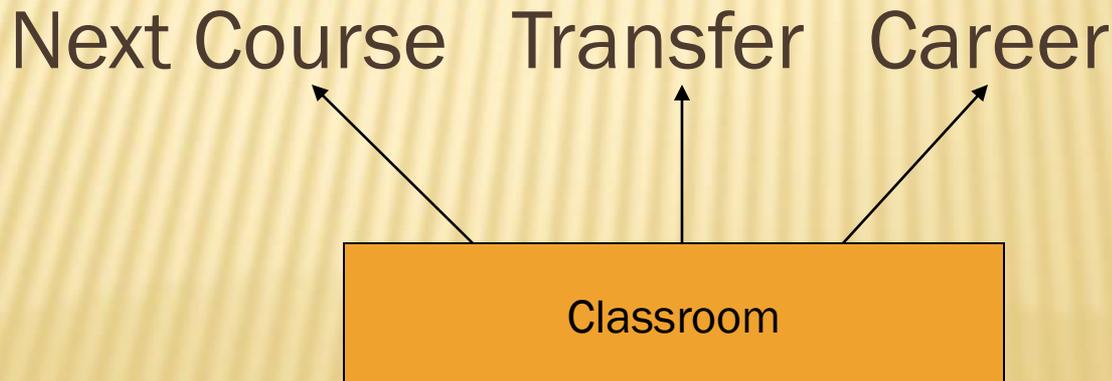
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Next Course Transfer



QUESTIONS THAT DRIVE OUTCOMES ASSESSMENT

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QUESTIONS THAT DRIVE OUTCOMES ASSESSMENT

1. What must my students be able to do “out there” with what they’ve learned “in here”?
2. How do we know they can do it?

QUESTIONS THAT DRIVE OUTCOMES ASSESSMENT

1. What must my students be able to do “out there” with what they’ve learned “in here”?
2. How do we know they can do it?
3. How can we use that information to improve learning in future semesters?

WHAT IS ASSESSMENT?

- ✘ Cyclic process
- ✘ Collection, examination, interpretation
- ✘ Feedback re: student learning
- ✘ Improvement

WHAT ASSESSMENT ISN'T

- ✘ Just administration *or* faculty
- ✘ Infringement on academic freedom
- ✘ Punishment

-
- ✘ “Student evaluation is not teacher evaluation.”
 - ✘ “It is crazy to believe that any student is the product of one teacher.”
 - ✘ “A teacher should never be blamed for a student’s performance--that should be made clear from the very beginning.”

CONSEQUENCES

- ✘ Takes time, \$ and effort
- ✘ Harmful if done improperly
- ✘ Causes controversy
- ✘ Can be used against teachers

THE PROCESS

- ✘ Goals
- ✘ Student Learning Outcomes
- ✘ Activities
- ✘ Assessment

HAVE TO START WITH A VISION

- ✘ Educational values
 - + Mission and vision
- ✘ Legally can't go outside these

GOALS

- ✘ Warm, fuzzy and global
- ✘ Examples:
 - + Increase student's knowledge of subject
 - + Increase student's employment after graduation

SMART OBJECTIVES

- ✘ Subgoals that accomplish goals
- ✘ Numerous objectives under each goal
- ✘ Example:
 - + Increase student performance on Exam 1 by 15% over 2 year period

SMART

- ✘ Specific
- ✘ Measurable
- ✘ Achievable
- ✘ Relevant
- ✘ Time-framed

ACTIVITIES

- ✘ Accomplishes the objective (SLO)
- ✘ Examples:
 - + Teach lectures
 - + Do labs

Goal: Students will have a fundamental knowledge of physiology

Outcome	Activities	Assessment
Students achieve 80% on each exam (by end of semester)	Lectures Labs, etc.	Exam Quizzes
Students show increase in creative thinking	Case Studies	Teacher observation -- Classroom discussions Case study write-ups

Goal: Students will have a fundamental knowledge of physiology

Outcome	Activities	Assessment
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Students show increase in creative thinking	Case Studies	Teacher observation -- Classroom discussions Case study write-ups
Faculty will look at random population of students to gain understanding into learning	Focus groups Dgt. meetings	Demographics survey Student interview

ON TO ASSESSMENT

- ✘ SLOs are main focus for assessment
- ✘ How do we know we're meeting SLO objectives?
- ✘ Ex. How do you know you're increasing student knowledge?

TYPES OF ASSESSMENT

- × Exams/quizzes
- × Surveys
- × Focus groups
- × Interviews
- × Psychometric instruments
- × SAT scores
- × Capstone
- × Demographics
- × Academic history
- × Documents (e.g. records of attendance)
- × Portfolio
- × Exit exam
- × Exit interviews
- × Muddiest Point
- × *iClickers*

PUTTING IT TOGETHER

- ✘ Organize data
- ✘ Present data

PRESENT DATA

- × Presentation
- × Written report
- × Department meetings

-
- ✘ Goals
 - ✘ Student Learning Outcomes
 - ✘ Assessment
 - ✘ Assessment results
 - ✘ Discussion

DIRECT VS. INDIRECT ASSESSMENT

- × Direct assessment of learning: gathers **evidence**, based on **student performance**, which demonstrates the learning itself.
 - + Examples: most classroom testing for grades or evaluation of a research paper on specific criteria
- × Indirect assessment of learning: gathers **reflection** about the learning or **secondary evidence** of its existence.
 - + Examples: student, alumni, employer surveys

ASSESSMENT IS NOT ALWAYS AN “ADD-ON”

- ✘ **Embedded assessment**: a means of gathering information about student learning that **is built into**, and is **a natural part of** the teaching-learning process.
 - + Example: as part of a course, expecting each student to complete a research paper that is graded for content and style, but is also assessed for advanced ability to locate and evaluate Web-based information (as part of a program level, or a college-wide outcome to demonstrate information literacy).

FORMATIVE VS. SUMMATIVE ASSESSMENT

- × **Formative assessment**: the gathering of information about student learning - **during the progression** of a course or program and usually repeatedly - **to improve the learning of current students.**
- × **Summative assessment**: the gathering of information **at the conclusion** of a course, program, or undergraduate career **to improve learning of the next cohort** of students or to **meet accountability demands.**

ACCOUNTABILITY AND IMPROVEMENT

- × Assessment for accountability: assessment of some unit (could be a department, program or entire institution) to **satisfy stakeholders** external to the unit itself. Results are often compared across units, compared to state and national norms, and **always summative**.
- × Assessment for improvement: assessment that **feeds directly**, and often immediately, **back into revising** the course, program or institution to improve student learning results. This can be **formative or summative**.

LEVELS OF ASSESSMENT

- ✘ **Assessment of individuals**: uses the individual student, and his/her learning, as the level of analysis.
- ✘ **Assessment of programs**: uses the department or program as the level of analysis. Ideally program goals and objectives would serve as the basis for the assessment.
- ✘ **Assessment of institutions**: uses the institution as the level of analysis. Ideally, institution-wide goals and objectives would serve as a basis for the assessment. At this level it is essential to examine institutional documents such as mission and vision statements, as well as strategic plans.

CTE Mission Statement	Discipline Mission Statement	Student Learning Outcome	Assessment Task	Expected Level of Achievement	Results of Evaluation	Use of Data/Plans
<p>“Career and Technical Education prepares students for successful employment, life enrichment and future learning.”</p>	<p><u>Child Development</u></p> <p>Students completing literature courses will acquire greater understanding of the human experience through exposure to a wide range of literary voices.</p>	<p>Analyze different theoretical approaches to the study of human development and propose practical applications supporting positive outcomes.</p>	<p>At the end of the semester, students in CD ----- will complete a 1200-1500 word, multi-source research paper.</p>	<p>82% of our students should satisfy the expectations of the criteria for success.</p>	<p>74% of our random sampling were successful at meeting the expected level of achievement in all criteria.</p> <p>The area of greatest concern was in differentiating among the various theories of human development.</p>	<p>Next semester, faculty teaching CD _____ will incorporate additional formative assessment comparing and contrasting theories on human development.</p> <p>Additionally, we have rewritten the essay instructions to achieve better clarity.</p>

CTE Mission Statement						
“Career and Technical Education prepares students for successful employment, life enrichment and future learning.”						

Discipline
Mission
Statement

Child
Development

Students
completing
literature
courses will
acquire
greater
understanding
of the human
experience
through
exposure to a
wide range of
literary
voices.

		Student Learning Outcome				
		Analyze different theoretical approaches to the study of human development and propose practical applications supporting positive outcomes.				

			Assessment Task			
			At the end of the semester, students in CD ----- will complete a 1200-1500 word, multi-source research paper.			

				Expected Level of Achievement		
				82% of our students should satisfy the expectations of the criteria for success.		

					Results of Evaluation	
					<p>74% of our random sampling were successful at meeting the expected level of achievement in all criteria.</p> <p>The area of greatest concern was in differentiating among the various theories of human development.</p>	

Use of
Data/Plans

Next semester, faculty teaching CD _____ will incorporate additional formative assessment comparing and contrasting theories on human development. Additionally, we have rewritten the essay instructions to achieve better clarity.

QUESTIONS?

OBJECTIVES VS. OUTCOMES¹

- ✘ Program/course objectives are general goals that define what it means to be an effective program/course. They are **general, indefinite, and not intended to be measured**. They set the overall agenda for the program/course.
- ✘ Student learning outcomes are **specific results** the program/course seeks to achieve in order to attain the general goals defined in the objectives. Outcomes are **definite and intended to be measured**. They establish the particular means by which the agenda (as defined by objectives) is achieved. The achievement of outcomes is evidence that our students are learning.

OBJECTIVES VERSUS SLO'S

Objectives	Outcomes
Discrete skills, tools, or content that a student will master by the end of the course.	Overarching skill that a student will be able to demonstrate by the end of a course.
Require the use of basic thinking skills such as knowledge, comprehension, and application (three lowest levels of Blooms).	Require the use of higher level thinking skills such as analysis, synthesis, and evaluation (three highest levels of Bloom's).
Do not necessarily result in a product. Most often are synthesized or combined to produce something that measures an outcome.	Result in a complex product that can be measured or observed and assessed.