Learning Objectives: In-Depth & Best Practices

What are Learning Objectives?
Learning objectives/outcomes are specific statements that tell the student what they will be able to do at the conclusion of a learning experience.

The learning experience is identified as either a program of study or major, a specific course within a program, a specific module or learning component within a course, or specific lesson within a single class session.

Why should we use Learning Objectives?

- Effective teaching relies on effective planning and design.
- Preparing a high-quality course should first start with clearly defined educational goals.
- In planning your course, you should write explicit statements that outline what your students will be able to do at the end of the course.
- This includes the concepts that need to be learn, and the skills they need to acquire and be able to apply.

Writing learning objectives helps teachers…

- Plan appropriate teaching strategies.
- Plan the sequencing for instruction and/or recognize needed scaffolding for complex topics.
- Identify needed materials for lessons.
- Determine assessment methods.

Writing learning objectives helps students…

- Know what is expected of them.
- Know what they will get from an educational experience.
- Know in advance how they will be assessed.

How to write learning objectives?
Writing learning objectives should be **SMART**:

- **S**tudent-centered & Specific
- **M**easurable
- **A**ttainable & Achievable
- **R**elevant & Realistic
- **T**ime-bound
  * Add Concise

Statement Construction
Simple statement construction: (Who) + (measurable action verb) + (content area).

Here is an example:
At the conclusion of this course, students will be able to:

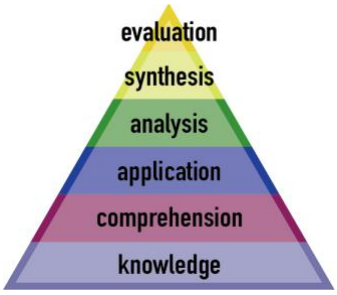
- Evaluate the use of design elements and principles within his/her own artwork and the artwork of others.
- Demonstrate skills in using a working vocabulary of design terminology.
- Demonstrate the proper and skillful use of a variety of materials, tools, and techniques.

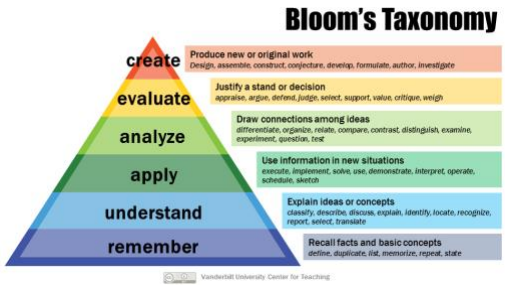
Bloom's Taxonomy
Benjamin Bloom and others wrote a book called "Taxonomy of Educational Objectives: The Classification of Educational Goals" in 1956.

Bloom's Taxonomy provided six categories that described the cognitive processes of learning: **knowledge, comprehension, application, analysis, synthesis, and evaluation**.

The categories were meant to represent educational activities of increasing complexity and abstraction.

Aim for higher cognitive levels rather than simple recall. Use verbs such as analyze, synthesize, evaluate, explain, etc.





Best Practices
Keep statements short and focused on a **single outcome**. Not only does this make it easier for the student to understand what is expected of them but it helps the instructor be able to determine if an objective has been met rather than partially met.

Learning objectives **must be measurable**. Use action verbs that describe what a student will be able to do once learning has happened. When writing, keep in mind how you might measure the learning objective. Align the objective with an instrument for assessment, such as: test, paper, project, presentation. Likewise, think of the types of artifacts that can be collected as evidence of said learning.

Learning objectives should be student-focused and target the expected student outcome. To help with this, start learning objectives with the phrase "At the end of this course, the learner/student will be able to. . ."

Best practice is that each course will have 4-6 learning objectives.

Overt and Covert Objectives
In addition, be sure to write learning objectives that are overt, meaning that they can be directly observed. Whereas, learning objectives that are covert are not directly observable. Terms like "understand" or "determine" are very difficult to directly observe; thus, making it challenging to assess.

Avoid using verbs that are vague or cannot be objectively assessed such as: believe, improve, increase, know, learn, or understand. It's not to say this can't be said or identified as a goal of the course, but this type should be included under a general course goals and not as learning objectives that must be measurable.

Here is an Example:

This course strives to meet these program learning outcomes (PLO):

1. Demonstrate the ability to critically evaluate visual solutions.
2. Demonstrate competency in using terminology of the discipline.
3. Demonstrate competency in visual skill sets and tools.
4. Demonstrate conceptual development, creative thinking and visual problem solving.
5. Demonstrate an appreciation for the historical framework regarding principles and purposes of visual works.

Course Objectives: At the conclusion of this courses, students will:

A. Demonstrate a working vocabulary of design terminology (PLO 2);
   Assessment: Critique, Homework Assignments, and Writing Assignments
B. Use theories in visual language and communication to create visual solutions (PLO 1, 2, 4, 5);
   Assessment: Critique, Homework Assignments, and Projects
C. Design visual solutions (PLO 1, 3 ,4);
   Assessment: Assignments, Homework Assignments, and Projects
D. Evaluate the use of design elements and principles within his/her own artwork and the artwork of others (PLO 1, 2, 5);
   Assessment: Critique and Writing Assignments
E. Demonstrate the proper and skillful use of a variety of materials, tools, and techniques (PLO 3).
   Assessment: Assignments, Homework Assignments, and Projects

What are Module Level Learning Objectives?

MODULE/UNIT LEVEL LEARNING OBJECTIVES

Module/unit level learning objectives are the next smaller unit of learning under course objectives. Think of it like how you create might scaffold a complex idea into parts to help a student better learn.

Here is an example:
Course Outcomes/Objective: Upon completion of this course, learners will demonstrate the mastery of rules of punctuation.

Module-Level Objectives:

1. Learners will write sentences that demonstrate correct use of commas, semicolons, and periods.
2. Learners will use apostrophes when, and only when, needed.
3. Learners will use double and single quotation marks correctly in quoted material.

Check List

To double-check that you have written strong learning objectives, ask yourself these questions:

____ Does this statement describe what the student(s) will be doing?
____ Does this statement use an action verb?
____ Is this statement short, concise and student centered?
____ Is this statement an action that is measurable?
____ What might be the sources of assessment from this statement?

Additional Resources

Iowa State University: Revised Bloom's Taxonomy
Frameworks & Taxonomies of Learning
Johns Hopkins University: Guide to Bloom's Taxonomy
Module Objectives University of Wisconsin - Madison
Course Mapping

Examples of Learning Objective Statements

At the end of this course, students will be able to…

- identify and explain major events from the Civil War. (American History)
- analyze kinetic data and obtain rate laws. (Chemical Engineering)
- interpret DNA sequencing data. (Biology)
- discuss and form persuasive arguments about a variety of literary texts produced by Roman authors of the Republican period. (Classics)
- evaluate the appropriateness of the conclusions reached in a research study based on the data presented. (Sociology)
- design their own fiscal and monetary policies. (Economics)
- demonstrate good comprehension of text in areas of the student's interest or professional field.
- demonstrate the ability to apply basic research methods in psychology, including research design, data analysis, and interpretation.

- identify environmental problems, evaluate problem-solving strategies, and develop science-based solutions.
- demonstrate the ability to evaluate, integrate, and apply appropriate information from various sources to create cohesive, persuasive arguments, and to propose design concepts.
- identify, formulate and solve integrative chemistry problems. (Chemistry)
- build probability models to quantify risks of an insurance system and use data and technology to make appropriate statistical inferences. (Actuarial Science)
- create basic vector, images in the creation of works of art. (Art)
- apply differential calculus to model rates of change in time of physical and biological phenomena. (Math)
- identify characteristics of certain structures of the body and explain how structure governs function. (Human Anatomy lab)
- calculate the magnitude and direction of magnetic fields created by moving electric charges. (Physics)
- describe the research process in social interventions
- evaluate critically the quality of research by others
- formulate research questions designed to test, refine, and build theories
- identify and demonstrate facility in research designs and data collection strategies that are most appropriate to a particular research project
- formulate a complete and logical plan for data analysis that will adequately answer the research questions and probe alternative explanations
- interpret research findings and draw appropriate conclusions
- identify and describe the major literary movements of the 20th century
- perform close readings of literary texts
- evaluate a literary work based on selected and articulated standards

*These examples have been directly taken from a variety of sources, refer to the references.

Bloom's Taxonomy of Educational Objectives (1956): Cognitive Skills

Benjamin Bloom with a group of other educators created a hierarch of cognitive skills: knowledge, comprehension, application, analysis, synthesis, and evaluation. Students beginning to learn should be expected to meet introductory or basic skills. As students continue to learn, they should progress through the hierarchy to more advanced cognitive skills. Below is a list of measurable verbs to assist you in writing your course objectives.

Knowledge Level

The successful student will recognize or recall learned information.

List	Label	Repeat	Memorize
State	Record	Select	Recognize
Name	Define	Underline	Reproduce
Tell	Relate	Arrange	
Recall	Recall	Describe	

Comprehension Level
The successful student will restate or interpret information in their own words.

Explain	Reference	Critique	Illustrate
Translate	Describe	Interpret	Estimate
Identify	Express	Report	Reiterate
Restate	Classify	Summarize	
Discuss	Locate	Discuss	
Tell	Review	Compare	

Application Level
The successful student will use or apply the learned information.

Apply	Complete	Conduct	Role-play
Use	Sketch	Dramatize	Execute
Practice	Solve	Perform	Employ
Demonstrate	Construct	Respond	

Analysis Level
The successful student will examine the learned information critically.

Analyze	Experiment	Measure	Extrapolate
Distinguish	Inspect	Relate	Theorize
Differentiate	Categorize	Test	Debate
Appraise	Catalogue	Critique	
Calculate	Quantify	Diagnose	

Synthesis Level
The successful student will create new models using the learned information.

Develop	Organize	Integrate	Prepare
Plan	Revise	Modify	Devise
Build	Formulate	Compose	Manage
Create	Propose	Collect	
Design	Establish	Construct	

Evaluation Level
The successful student will assess or judge the value of learned information.

Review	Assess	Report on	Appraise
Justify	Defend	Investigate	Argue

Rate	Measure	Compare	Support
Score	Choose	Evaluate	
Select	Conclude	Interpret	

References

"Appendix A: Examples of Learning Outcomes." *Centre for Teaching Support & Innovation*, University of Toronto, 19 Aug. 2015, teaching.utoronto.ca/teaching-support/course-design/developing-learning-outcomes/appendix-a-examples-of-learning-outcomes/. Accessed 29 Jan. 2019.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, E. J., & Krathwohl, D. R. (Eds.). (1956). Taxonomy of educational objectives: The classification of educational goals. New York, NY: Longmans, Green and Co.

"Course Objectives & Learning Outcomes." Teaching Commons: Center for Teaching and Learning, DePaul University, resources.depaul.edu/teaching-commons/teaching-guides/course-design/Pages/course-objectives-learning-outcomes.aspx. Accessed 29 August 2020.

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Hall, Macie. *The Innovative Instructor*, 20 July 2016, ii.library.jhu.edu/2016/07/20/writing-effective-learning-objectives/. Assessed 31 Jan. 2019.

McDaniel, Rhett. "Bloom's Taxonomy." *Vanderbilt University*, Vanderbilt University, 25 Mar. 2020, cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/.

"Writing Quality Learning Objectives" Park University, captain.park.edu/facultydevelopment/writing_learning_objectives.htm. Assessed 31 January 2019.

Please complete the chart below to demonstrate learning objective alignment in your online course.

MODULE/UNIT LEVEL LEARNING OBJECTIVES

Here you will be more specific about what students are doing to meet the larger course objectives.

Here is an example:

Course Outcomes/Objective: Upon completion of this course, learners will demonstrate mastery of rules of punctuation.

Module-Level Objectives:

1. Learners will write sentences that demonstrate correct use of commas, semicolons, and periods.
2. Learners will use apostrophes when, and only when, needed.
3. Learners will use double and single quotation marks correctly in quoted material.

MODULE/UNIT ACTIVITY/ASSESSMENT

Here you will include activities/assessments that reflect course/module objectives (and have point values associated with them).

Here is an example:

Course Outcomes/Objective: Upon completion of this course, learners will demonstrate mastery of rules of punctuation.

Module-Level Objectives:

1. Learners will write sentences that demonstrate correct use of commas, semicolons, and periods.
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3. Learners will use double and single quotation marks correctly in quoted material.

Activity/Assessment: Essay on favorite author (first draft).

Your Course Learning Objectives / Outcomes

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Alignment Worksheet: Aligning my Objectives, Assessments, and Classroom Activities

Class / Unit / Module / Week	Course Learning Objective/Outcome	Module-level learning objectives/Outcomes	Module/Unit Assessment (s)	Teaching & Learning Activity	Resource(s)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					

14.					
15.					
16.					

Bloom's Taxonomy Action Verbs

Level	Definition	Sample verbs					Sample behaviors
KNOWLEDGE	Student recalls or recognizes information, ideas, and principles in the approximate form in which they were learned.	arrange define describe duplicate	identify label list match	memorize name order outline	recognize relate recall repeat	reproduce select state	The student will define the 6 levels of Bloom's taxonomy of the cognitive domain.
COMPREHENSION	Student translates, comprehends, or interprets information based on prior learning.	explain summarize paraphrase describe illustrate classify	convert defend describe discuss distinguish estimate explain	express extend generalized give example(s) identify indicate	infer locate paraphrase predict Recognize	rewrite review select summarize translate	The student will explain the purpose of Bloom's taxonomy of the cognitive domain.
APPLICATION	Student selects, transfers, and uses data and principles to complete a problem or task with a minimum of direction.	use compute solve demonstrate apply construct	apply change choose compute demonstrate discover dramatize	employ illustrate interpret manipulate modify operate	practice predict prepare produce relate schedule	show sketch solve use write	The student will write an instructional objective for each level of Bloom's taxonomy.
ANALYSIS	Student distinguishes, classifies, and relates the assumptions, hypotheses, evidence, or structure of a statement or question	analyze categorize compare contrast separate apply	change discover choose compute demonstrate dramatize	employ illustrate interpret manipulate modify operate	practice predict prepare produce relate schedule	show sketch solve use write	The student will compare and contrast the cognitive and affective domains.
SYNTHESIS	Student originates, integrates, and combines ideas into a product, plan or proposal that is new to him or her.	create design hypothesize invent develop arrange assemble	categorize collect combine comply compose construct create	design develop devise explain formulate generate plan	prepare rearrange reconstruct relate reorganize revise	rewrite set up summarize synthesize tell write	The student will design a classification scheme for writing educational objectives that combines the cognitive, affective, and psychomotor domains.
EVALUATION	Student appraises, assesses, or critiques on a basis of specific standards and criteria.	Judge Recommend Critique Justify Appraise Argue	Assess Attach Choose Compare Conclude Contrast	Defend Describe Discriminate Estimate Evaluate Explain	Judge Justify Interpret Relate Predict	Rate Select Summarize Support Value	The student will judge the effective-ness of writing objectives using Bloom's taxonomy.

Reference: http://chiron.valdosta.edu/whuitt/col/cogsys/bloom.html