Defining Learning Objectives

Overview

Consider these general best practices when defining learning objectives for a new course:

Big goals first

Learning objectives should be defined first at the course level, then for each course unit, and finally for each individual lesson or video. Each unit or lesson goal should further one or more of the course-level goals.

Measurable and specific

Use specific, action-oriented verbs, and think about how learner success will be measured against the objective. For example, "Solve a simple linear equation" is a specific, action-oriented, and measurable objective; "Understand basic linear equations" is vague and difficult to measure.[1]

Plan to communicate

Learners appreciate being presented with learning objectives at the beginning of a course, and before each lesson, to help them focus on key skills and concepts. Define objectives in simple, clear language, and avoid jargon or references to advanced topics.[2]

Defining course-level objectives

Course-level learning objectives help prospective learners see the value in a course, and provide motivation for continued engagement and focused study.

When defining course-level learning objectives, take a learner-centered approach by asking questions like, "How will a learner be different after completing this course?" Answers might include:

- Learners will be able to demonstrate knowledge in a field

- Learners will be able to apply new creative or technical skills

- Learners will appreciate a broader range of perspectives on an event or topic

Learner-centered objectives are best expressed in terms of specific action verbs and tasks.3 Use course-level objectives to communicate the value of the course by articulating concrete gains in knowledge and skill, and provide learners with a standard against which they can measure their progress (e.g., by asking "can I do this yet?") throughout the course.

The table below provides several examples of how broad, vague objectives might be translated into specific objectives that articulate clear value to the learner. For more examples, visit the Carl Wieman Science Education Initiative Learning Goals page.

Original Objective	Specific, Learner-Centered Objective
Learn how the physical and chemical attributes of the brain affect learning	Be able to list three techniques for better studying that are derived from physical and chemical attributes of the brain
Be able to write basic programs in the Python programming language	Be able to write programs to solve problems which require: sequential execution (like a cooking recipe), repeated execution (like modelling an analog clock), and conditional execution (like checking if your password is correct)
Understand and solve problems with conditional probability	Identify situations and questions in which laws of conditional probability should be used and explain the impacts
Learn about common star constellations	Appreciate and enjoy stargazing through an understanding of how star constellations have been used throughout the ages and techniques for finding them in the night sky

These examples illustrate the replacement of general verbs ("learn," "understand") with more specific action-oriented verbs ("identify," "explain," "write," "appreciate"). The table below provides examples of verbs, grouped according to the level of cognitive

understanding that they communicate, that may work well in learning objective definitions. For additional verb suggestions and supporting materials, visit this page.

Level of cognitive understanding	Description	Representative verbs
Factual knowledge	Remember and recall factual information	Define, list, state, label, name
Comprehension	Demonstrate understanding of ideas and concepts	Describe, explain, summarize, interpret, illustrate
Application	Apply comprehension to unfamiliar situations	Apply, demonstrate, use, compute, solve, predict, construct, modify
Analysis	Break down concepts into parts	Compare, contrast, categorize, distinguish, identify, infer
Synthesis	Transform and combine ideas to create something new	Develop, create, propose, formulate, design, invent
Evaluation	Think critically about and defend a position	Judge, appraise, recommend, justify, defend, criticize, evaluate

Defining module objectives

A course *module* usually corresponds to a single conceptual unit or about one week's worth of content. Clear and specific learning objectives for each module help learners visualize their learning trajectory and retain motivation as they progress through the course. As with course-level objectives, learners should be able to easily evaluate their individual progress against the module objectives.

When defining module objectives, consider the following checklist:

- Does the learning goal identify what students will be able to do after the topic is covered? (e.g., Complete the sentence "After completing this module, you will be able to...")

- Is it clear how you would test achievement of the learning goal?

- Do chosen verbs have a clear meaning?

- Is the verb aligned with the level of cognitive understanding expected of students? Could you expect a higher level of understanding?

- Is the terminology familiar or common? If not, is knowing the terminology a goal?

- Is it possible to write the goal so it is relevant and useful to students (for example, connected to their everyday life), or does it represent a useful application of the ideas?

As with course-level objectives, module objectives benefit from careful selection of the most appropriate action-oriented verb. Refer to the table in the previous section for specific verb choice suggestions.

Once defined, the objectives for each module may be presented to learners in a video or text resource. Objectives may also be captured in the module title; module titles that allude to specific objectives tend to be more descriptive and compelling, as illustrated with the titles below:

Basic Module Title	Explicit, Descriptive and Inviting Module Title
Introduction to Academic Writing	Academic Writing: What is it and Why is it Different?
Impromptu Speeches	How to Design, (Practice!), and Critique an Impromptu Speech

When designing modules, estimate the time required for each. Divide objectives and content within each module into smaller chunks (lessons) that can be completed in 20-30 minutes. Coursera learners, who often fit coursework into small windows of free time, will benefit from this approach.

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