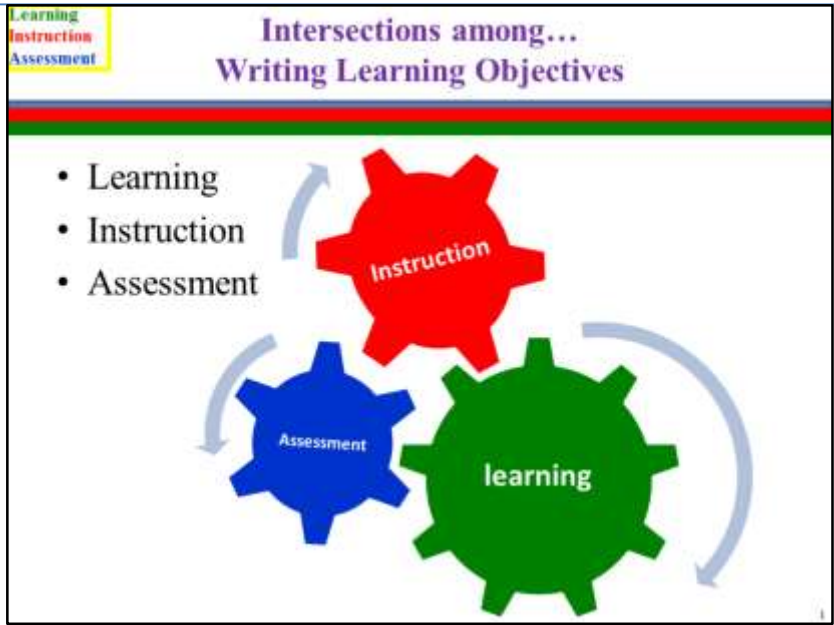


Writing Learning Objectives



There are interconnections among creating successful and effective instruction and having a deep understanding of learning and assessment (measuring progress in learning)... One key aspect at the foundation of effective instruction is the expected learning outcomes, or objectives

Writing Learning Objectives

Learning
Instruction
Assessment

Informing learning objectives... Types of learning

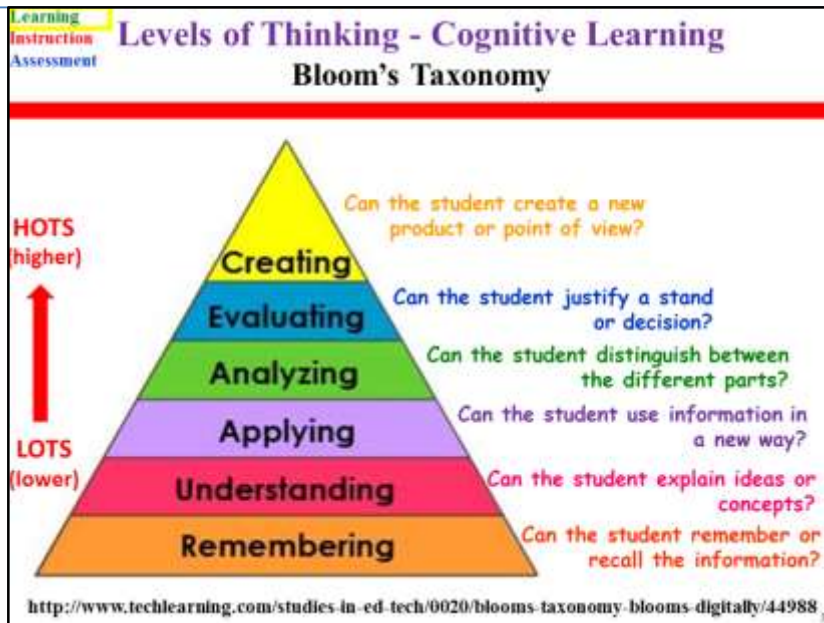
LOTS
(lower)
↓
HOTS
(higher)

- **Declarative Knowledge** --“knowing that” thinking skills
 - Learning outcomes: recall in verbatim, paraphrased or summarized from facts, lists, names or organized information
- **Intellectual skills** – higher order thinking skills
 - Learning outcomes: concept and principles learning, federal learning, applying analyzing, problem solving, creating, evaluating
- **Cognitive Strategies** – effective mental sets
 - Learning outcomes: meta-cognitive characteristics for learning how to learn, meta-cognitive
- **Attitudes (Affective)** – Disposition towards or away from something
 - Learning outcomes: a combination of cognitive (beliefs), affect (feelings) and behavioral (intent) constructs that interact with each other
- **Psychomotor skills** – specified, purposeful movement
 - Learning outcomes: muscular actions, with or without equipment to, achieve specified results.

These are ALL learned characteristics, thus can be influenced by instruction

Before thinking about creating objectives we need to know that there are 5 types of learning... cognitive process of thinking/knowing (declarative knowledge, intellectual skills, cognitive strategies), attitude or affective, and psychomotor perspectives. Each of these, knowledge, attitude, and psychomotor skills are learned responses... meaning that instruction can be designed and offered to develop knowledge, attitude, and skill.

Writing Learning Objectives



In thinking, often referred to as cognition, levels of learning are pictured as a pyramid indicating that you must master the lower order levels of thinking to prepare you for the higher order levels of thinking ... doing so indicates that you move from a lower or surface level of knowledge, skill, or affect to a deeper level of knowledge, skill or affect of the content.

Bloom created a taxonomy of the cognitive aspects of learning ... at the bottom of the pyramid, the lower order skills are those in which learners demonstrate recall of information... this continues to learners understanding or being able to explain new information.. And up towards higher order thinking like applying, analyzing, evaluating, and creating new information.

The questions on the side of the pyramid help to clarify that types of questions you are asking of your students in their learning... and can provide a guideline for creating sound learning objectives.

Remembering: can the student recall or remember the information? Sample verbs: define, duplicate, list, memorize, recall, repeat, reproduce, state.

Understanding: can the student explain ideas or concepts? Sample verbs: classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase.

Applying: can the student use the information in a new way? Sample verbs: choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write.

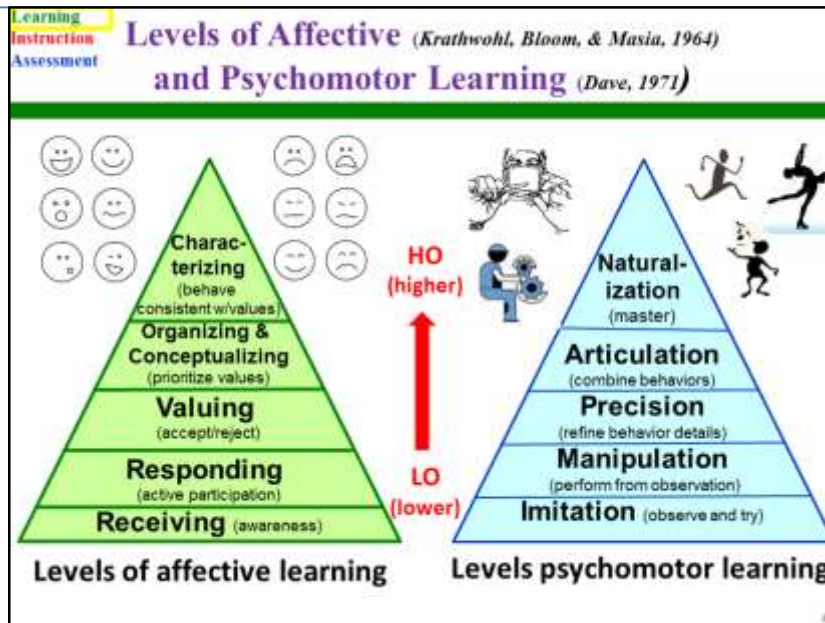
Analyzing: can the student distinguish between the different parts? Sample verbs: appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test.

Evaluating: can the student justify a stand or decision? Sample verbs: appraise, argue, defend, judge, select, support, value, evaluate.

Creating: can the student create a new product or point of view? Sample verbs: assemble, construct, create, design, develop, formulate, write.

Adapted From: (Lorin Anderson) http://www.odu.edu/educ/roverbaw/Bloom/blooms_taxonomy.htm

Writing Learning Objectives



Similar pyramids were developed to show lower order to higher order levels of affect and psychomotor learning.

Affective learning... levels include:

Receiving (low) - Awareness and willingness to pay attention to learning

Responding - Active participation in instructional activities, awareness and willingness to respond.

Valuing - Accepting or rejecting the worth or attaching value to a particular object, phenomenon, or behavior.

Organizing and Conceptualizing - Organize values into priorities, then create own value system by comparing different values.

Characterizing/ Internalizing (high) - Make behaviors consistent with value system.

Adapted From: Krathwohl, Bloom, & Masia, 1964

Psychomotor learning ... levels include:

Imitation (low) - Observe and imitate behaviors from others

Manipulation - Perform behaviors according to previous experiences or instructions

Precision - Refine behaviors through paying attention to details

Articulation - Combine a series of behaviors to finish a new task

Naturalization (high) - Master a high level performance and do it naturally

Adapted From: Dave, 1971

These breakdowns in level help to guide the development of instruction that helps learners progress from low levels of knowledge, affect, or skills -- to higher levels or depth of knowledge in the instructional content.

Writing Learning Objectives

Learning Instruction Assessment		
Cognitive learning and objectives (Bloom's Taxonomy with sample verbs)		
LEVEL	DEFINING QUESTION	VERBS FOR OBJECTIVES
Creating	Can student create a new product or point of view?	
Evaluating	Can student justify a stand or decision?	
Analyzing	Can student distinguish between the different parts?	
Applying	Can student use information in a new way?	
Understanding	Can student explain ideas or concepts?	
Remembering	Can student remember or recall the information?	

Bloom's taxonomy is also articulated in ways that help to guide in the development of learning outcomes or objectives...

From the level of thinking and the defining questions, a list of appropriate verbs were created to guide the development of learning objectives... Remember, if you are asking students to analyze information in a subject matter, for example, they must already gone through levels of remembering, understanding, and applying... to attain a level of being able to analyze.

They may have learned the lower levels from previous courses or experiences... however if you are designing a course that required higher order thinking, it is important to make sure the learners have the background and or prerequisites...

Remembering: can the student recall or remember the information? Sample verbs: define, duplicate, list, memorize, recall, repeat, reproduce, state.

Understanding: can the student explain ideas or concepts? Sample verbs: classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase.

Applying: can the student use the information in a new way? Sample verbs: choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write.

Analyzing: can the student distinguish between the different parts? Sample verbs: appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test.

Evaluating: can the student justify a stand or decision? Sample verbs: appraise, argue, defend, judge, select, support, value, evaluate.

Creating: can the student create a new product or point of view? Sample verbs: assemble, construct, create, design, develop, formulate, write.

Similar tables can be developed for the Affective and Psychomotor types of learning, at this point cognitive development will be used as the example...

Adapted From: (Lorin Anderson) http://www.odu.edu/educ/roverbau/Bloom/blooms_taxonomy.htm

Writing Learning Objectives

Learning
Instruction
Assessment

With content in mind... Start to design instruction...

- **STEP 1:** Develop general or broad instructional goals to address the identified learning gaps... instructional goals help guide curriculum development (content for instruction)
- **STEP 2:** Develop specific measurable learning objectives that address each of the goals ... learning objectives become the guides for assessments and instructional strategies



Once the type and level of learning is determined the first step in designing instruction is to develop instructional goals FOR the instruction. Instructional goals define the purpose of the instruction ...

In step 2, measurable learning objectives are developed FOR each of the instructional goals. Objectives further define what the learner should learn as a result of participating in the instruction to meet the instructional goals.

Together the goals and objectives help to guide how the instruction will prompt learners to interact with content of the instruction and define what the learners should be learning. It is the alignment of these critical aspects of instructional goals and learning objectives that instructors (or instruction) to help learners achieve success in closing a knowledge, attitude, or skill gaps.

Let's look at some examples of these two steps ...

Learning
Instruction
Assessment

With content in mind...

Instructional goals and learning objectives

- **Goals**
 - **EXAMPLE:** Prepare students to operate a microscope.
 - **EXAMPLE:** Prepare students to write descriptively.
 - **EXAMPLE:** Engage students in exploring the history of the instructional design field.
 - **EXAMPLE:** Support students in developing argumentation skills.
 - **EXAMPLE:** Engage students learning procedures to prepare for and conduct a civil lawsuit case.
- **Objectives:** measurable learning outcomes for each goal ...
 - **Learning objectives can be about ...**
 - cognitive outcomes (knowledge)
 - affective outcomes (attitudinal)
 - psychomotor outcomes (skill & performance)

STEP 1: It is important to begin with develop instructional goals which are driven by the content of the curriculum.. For example... (see slide)

STEP 2: Developing learning objectives come from those goals... objectives define what the learner should be able to know, do, or feel as a results in participating in the instruction. In other words, objectives can be cognitive, affective, or psychomotor.

Let's look at specifics characteristics of well written learning objectives...

Writing Learning Objectives

Learning
Instruction
Assessment

Writing sound learning objectives

- **What is a “learning objective”?**
 - A statement that tells learners what they **should be able to DO, in measurable terms, AFTER instruction.**
- **How should a learning objective be written?**
 - the **terminal behavior** or actions that will demonstrate learning
 - the **condition** of demonstration of that action
 - the **standard** or criterion for the demonstrated learning

STEP 1: Instructional Goal: Prepare students to operate a microscope

STEP 2: Objectives - Understand the uses of microscopes. *Is this a good objective?*

Better Objective: *To describe the 8 major parts of a microscope in the science laboratory.*

Better Objective: *Focus the microscope, at 3 different strengths, on a cell slide with enough clarity to draw the features of a cell.*

No, not clear what is being measured

A learning objective is a statement that tells learners what they **should be able to DO, in measurable terms, AFTER instruction.**

Learning objectives should be written in a format that includes: the **terminal behavior** or actions that will demonstrate learning; the **condition** of demonstration of that action; and the **standard** or criterion for the demonstrated learning.

Learning objectives support or align with the established Instructional Goals for the unit of instruction. For example consider the instructional goal: Prepare students to operate a microscope.

A common objective seen in such goals is “Understand the uses of microscopes.” Given the format of learning objectives is this a good objective for this instructional goal?

Not really... the performance to be measures is not clearly stated, leading to possible misconceptions of the learning. A better way to state this objective is... “*To describe the 8 major parts of a microscope in the science laboratory.*” This is a knowledge-based objective. This format include all three components of the objectives and clearly defines an expected knowledge outcome, however may not fully define the learning.

Adding another objectives for this goal, like “*Focus the microscope, at 3 different strengths, on a cell slide with enough clarity to draw the features of a cell*” addresses the psychomotor skills aspect of this instruction and rounds out the objectives to better describe the learning intent of the instructional goal.

Thus, clarity of the learning objective and alignment of the objective(s) with the goal helps to further define what the instruction is about (content) and what the learners will accomplish by successfully completing the instructional unit.

Learning
Instruction
Assessment

In summary... Creating learning objectives

- Start with **content**...create instructional **goals** ... create learning **objectives**...
- **Goals** .. Overall content **instruction is to cover**.
- **Objectives** .. what learners **should be able to DO AFTER instruction**
 - Statements include terminal **behavior, standard, and condition**.

The image contains three pyramids representing different levels of learning. The first pyramid, 'Levels of Cognitive learning', has five levels: Remembering (orange), Understanding (red), Applying (purple), Analyzing (green), and Evaluating (blue). The second pyramid, 'Levels of Affective learning', has five levels: Receiving (green), Responding (yellow-green), Valuing (yellow), Organizing & Conceptualizing (orange), and Characterizing (red). The third pyramid, 'Levels psychomotor learning', has four levels: Imitation (blue), Manipulation (light blue), Precision (light green), and Naturalization (light yellow).

- **Instruction should fully engage learners with content** based on expected type (cognitive, affective, skill) and level of learning ...
- Learners should be able to **demonstrate and apply new knowledge**...

In summary...

Learning is based on our experiences in the world and how we process them...

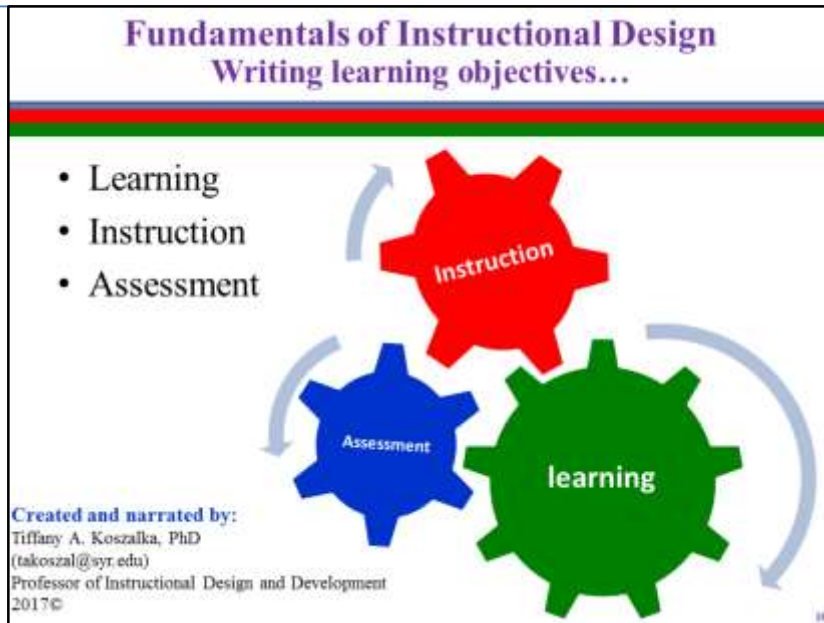
Designing instruction is best done by starting with the content and **Defining** instructional **goals** and learning **objectives**

Instructional goals define the content of the lesson and give a overview of the purpose of the instruction. Learning objectives define what the learners should be able to do (from a cognitive, affective, and/or psychomotor perspective) as a result of actively and effectively participating in the instruction.

Learning objectives are statements that define the learner outcome by providing a description of the terminal behavior, standard of performance, and description of the conditions under which the performance is accomplished. Learning objectives are informed by the type of learning (cognitive, affective, psychomotor) and the level of learning ... given the content of the instruction.

It is important that learners be given the opportunity to demonstrate and apply their new knowledge and skills within the instructional unit.

Writing Learning Objectives



In the end, it is the interconnections among creating successful and effective instruction and having a deep understanding of learning ... This begins with establishing instructional goals and learning objectives that engage students in deep learning about your subject area... these must be aligned and supplemented with resources to scaffold the learning process and engage learners in thinking, connecting, analyzing, creating, etc. The next step will be to use the learning objectives as a guide to create learning assessments and then define the instructional strategies that will lead learners to successfully accomplish learning objectives.