| Writing Instructional Goals and Objectives |
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This site will introduce you to instructional goals, the three types of instructional objectives you may need to create to reach your goals, and the best way to write and assess them. Enjoy!

Writing Instructional Goals and Objectives

1- What is a Goal?

Goals are broad, generalized statements about what is to be learned. Think of them as a target to be reached, or "hit."
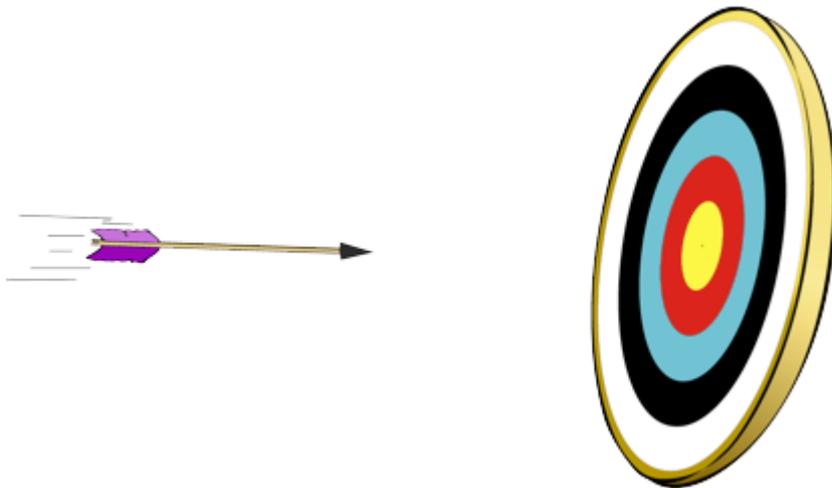

What is an Objective?

- Objectives are the foundation upon which you can build lessons and assessments that you can prove meet your overall course or lesson goals.
- Think of objectives as tools you use to make sure you reach your goals. They are the arrows you shoot towards your target (goal).

Are Goals and Objectives Really That Important?

- The purpose of objectives is not to restrict spontaneity or constrain the vision of education in the discipline; but to ensure that learning is focused clearly enough that both students and teacher know what is going on, and so learning can be objectively measured. Different archers have different styles, so do different teachers. Thus, you can shoot your arrows

(objectives) many ways. The important thing is that they reach your target (goals) and score that bullseye!
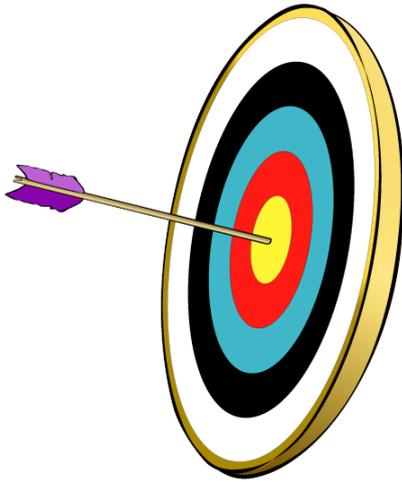
Thus, stating clear course objectives is important because:

- They provide you with a solid foundation for designing relevant activities and assessment. Activities, assessment and grading should be based on the objectives.
- As you develop a learning object, course, a lesson or a learning activity, you have to determine what you want the students to learn and how you will know that they learned. Instructional objectives, also called behavioral objectives or learning objectives, are a requirements for high-quality development of instruction.
- They help you identify critical and non-critical instructional elements.
- They help remove your subjectivity from the instruction.
- They help you design a series of interrelated instructional topics.
- Students will better understand expectations and the link between expectations, teaching and grading.

2- Types of Objectives

There are three types of objectives:

- Cognitive
- Affective
- Psychomotor

2.1 Cognitive Objectives
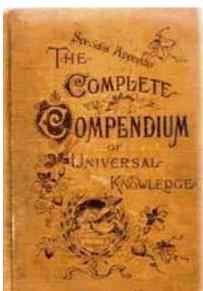
Cognitive objectives are designed to increase an individual's knowledge. Cognitive objectives relate to understandings, awareness, insights (e.g., "Given a description of a planet, the student will be able to identify that planet, as demonstrated verbally or in writing." or "The student will be able to evaluate the different theories of the origin of the solar system as demonstrated by his/her ability to compare and discuss verbally or in writing the strengths and weaknesses of each theory."). This includes knowledge or information recall, comprehension or conceptual understanding, the ability to apply knowledge,

the ability to analyze a situation, the ability to synthesize information from a given situation, the ability to evaluate a given situation, and the ability to create something new.

2.2 Affective Objectives

Affective objectives are designed to change an individual's attitude. Affective objectives refer to attitudes, appreciations, and relationships (e.g., "Given the opportunity to work in a team with several people of different races, the student will demonstrate an positive increase in attitude towards non-discrimination of race, as measured by a checklist utilized/completed by non-team members.").

2.3 Psychomotor Objectives

Psychomotor objectives are designed to build a physical skill (e.g., "The student will be able to ride a two-wheel bicycle without assistance and without pause as demonstrated in gym class."); actions that demonstrate the fine motor skills such as use of precision instruments or tools, or actions that evidence gross motor skills such as the use of the body in dance or athletic performance.

2.4 Cognitive Objectives

Cognitive objectives are designed to increase an individual's knowledge. Many refer to Bloom's taxonomy of cognitive objectives, originated by Benjamin Bloom and collaborators in the 1950's.

Examples:

- Given a description of a planet, the student will be able to identify that planet, as demonstrated verbally or in writing.
- The student will be able to evaluate the different theories of the origin of the solar system as demonstrated by his/her ability to compare and discuss verbally or in writing the strengths and weaknesses of each theory.

Bloom describes several categories of cognitive learning.


Original 1956 Hierarchy
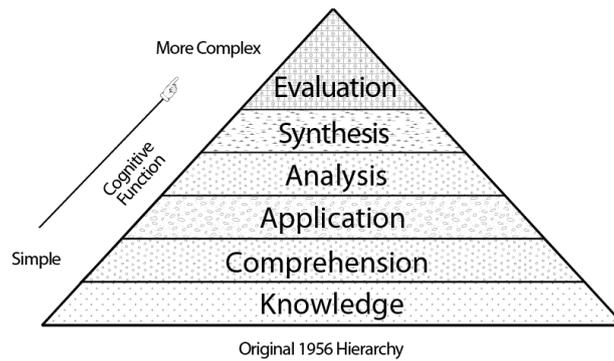
Starting with basic factual knowledge, the categories progress through comprehension, application, analysis, synthesis, and evaluation.

- Knowledge - Remembering or recalling information.
- Comprehension - The ability to obtain meaning from information.
- Application - The ability to use information.
- Analysis - The ability to break information into parts to understand it better.
- Synthesis - The ability to put materials together to create something new.
- Evaluation - The ability to check, judge, and critique materials.

In the 1990's, Lorin Anderson, a former student of Bloom, along with David Krathwohl, one of Boom's original partners, worked to revise the original taxonomy. The Anderson and Krathwohl Taxonomy was published in 2001 in the book "A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives."

Here is a comparison of the original and revised taxonomies:

Original 1956 Hierarchy   Revised 2001 Hierarchy
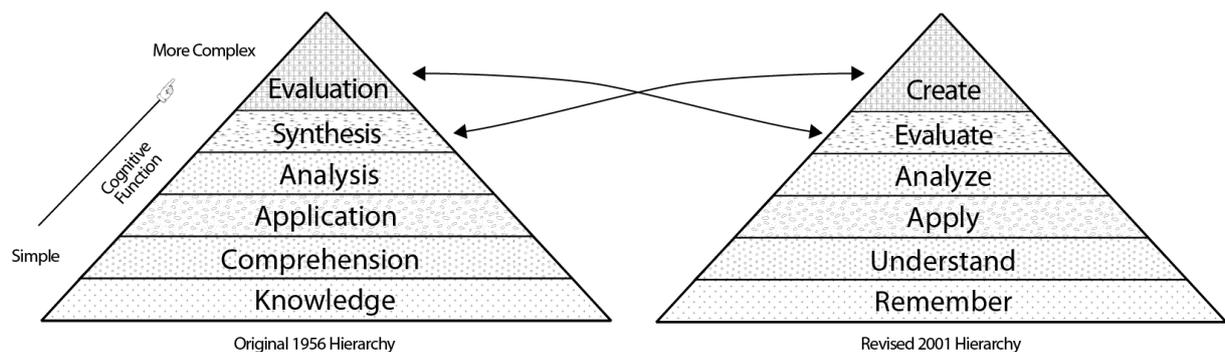
Note that in the revised taxonomy, synthesis and evaluation are switched. Also, verbs are used in place of nouns to imply the action one takes in each level.

- Remember - Using memory to recall facts and definitions.
- Understand - Constructing meaning from information.
- Apply - Using procedures to carry out a task.
- Analyze - Breaking materials into parts to determine structures and relationships.
- Evaluate - Making jugements based on checking against given criteria.
- Create - Putting materials together to form a unique product.

Whichever taxonomy you prefer, there are key verbs for each level you can use when writing cognitive objectives.

Key Verbs for the Cognitive Domain					
Remember	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**
Define Identify List Name Recall Recognize Record Relate Repeat Underline/Circle	Cite examples of Demonstrate use of Describe Determine Differentiate between Discriminate Discuss Explain Express Give in own words Identify Interpret Locate Pick Report Restate Review Recognize Select Tell Translate Respond Practice Simulates	Apply Demonstrate Dramatize Employ Generalize Illustrate Interpret Operate Operationalize Practice Relate Schedule Shop Use Utilize Initiate	Analyze Appraise Calculate Categorize Compare Conclude Contrast Correlate Criticize Deduce Debate Detect Determine Develop Diagram Differentiate Distinguish Draw conclusions Estimate Examine Experiment Identify Infer Inspect Inventory Predict Relate Solve Test Diagnose	Appraise Assess Choose Compare Critique Estimate Evaluate Judge Measure Rate Score Select Validate Value Test	Arrange Assemble Collect Compose Construct Create Design Develop Formulate Manage Modify Organize Plan Prepare Produce Propose Predict Reconstruct Set-up Synthesize Systematize Devise

Example of Questions for Each Level

Remember

- Who? What? Where? When? How?
- Describe:_____.
- What is _____?

Understand

- Re-tell _____ in your own words.
- What is the main idea of _____?
- What differences exist between _____ and _____?
- Write a brief outline.

Apply

- How is _____ an example of _____?
- How is _____ related to _____?
- Why is _____ significant?
- Describe an example of when ____ happens.

Analyze

- What are the parts of _____?
- Classify this according to _____.
- Create an outline/concept map of _____.
- Provide evidence that _____ is correct.

Evaluate

- Compare and contrast _____ to _____.
- Select the best product.
- Critique the play.
- Judge the following in these merits: _____.

Create

- Organize the following: _____.
- Predict what will happen next.
- What solutions would you suggest for _____?
- How would you design a new _____?

Additional Links

- Major Categories in the Taxonomy of Learning Objectives
- Bloom's Taxonomy (University of Georgia)
- Bloom's Taxonomy of the Cognitive Domain
- Learning Objective Verbs for Specific Disciplines
- Beyond Bloom - A New Version of the Cognitive Taxonomy

Offline References

Anderson, L.W., & Krathwohl (Eds.). (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.

Bloom, B.S. and Krathwohl, D. R. (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals, by a committee of college and university examiners. Handbook I: Cognitive Domain*. NY, NY: Longmans, Green.
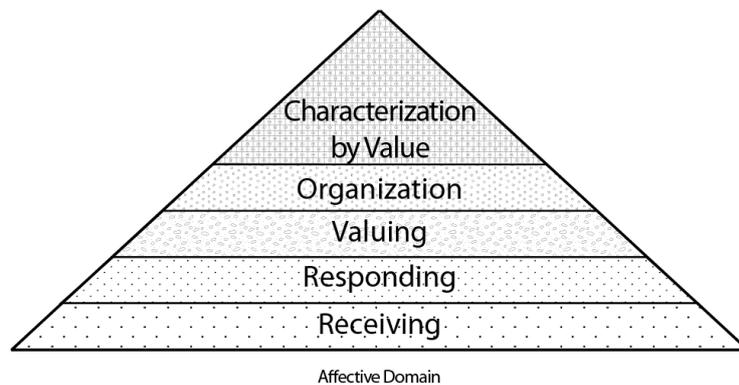
2.5 Affective Objectives

Affective objectives are designed to change an individual's attitude, choices, and relationships.

Example:

- Given the opportunity to work in a team with several people of different races, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as measured by a checklist utilized/completed by non-team members.

Krathwohl and Bloom created a taxonomy for the affective domain that lists levels of commitment (indicating affect) from lowest to highest.

Affective Domain

The levels are described as follows:

Affective Domain Hierarchy		
Level	**Definition**	**Example**
Receiving	Being aware of or attending to something in the environment.	Individual reads a book passage about civil rights.
Responding	Showing some new behaviors as a result of experience.	Individual answers questions about the book, reads another book by the same author, another book about civil rights, etc.
Valuing	Showing some definite involvement or commitment.	The individual demonstrates this by voluntarily attending a lecture on civil rights.
Organization	Integrating a new value into one's general set of values, giving it some ranking among one's general priorities.	The individual arranges a civil rights rally.
Characterization by Value	Acting consistently with the new value.	The individual is firmly committed to the value, perhaps becoming a civil rights leader.

Here are key verbs for each level you can use when writing affective objectives:

Key Verbs for the Affective Domain				
Receiving	**Responding**	**Valuing**	**Organization**	**Characterization**
• accept • attend	• complete • comply	• accept • defend	• codify • discriminate	• internalize

• develop • recognize	• cooperate • discuss • examine • obey • respond	• devote • pursue • seek	• display • order • organize • systematize • weigh	• verify

Additional Links

Behavioral Objectives - Affective Domain

Krathwohl's Taxonomy

References

Krathwohl, D.R., Bloom,B.S. and Masia, B. B. (1964).*Taxonomy of educational objectives, Book II. Affective domain.* New York, NY. David McKay Company, Inc.

2.6 Psychomotor Objectives

This domain is characterized by progressive levels of behaviors from observation to mastery of a physical skill. Several different taxonomies exist.

Simpson (1972) built this taxonomy on the work of Bloom and others:

- Perception - Sensory cues guide motor activity.
- Set - Mental, physical, and emotional dispositions that make one respond in a certain way to a situation.
- Guided Response - First attempts at a physical skill. Trial and error coupled with practice lead to better performance.
- Mechanism - The intermediate stage in learning a physical skill. Responses are habitual with a medium level of assurance and proficiency.
- Complex Overt Response - Complex movements are possible with a minimum of wasted effort and a high level of assurance they will be successful.
- Adaptation - Movements can be modified for special situations.
- Origination - New movements can be created for special situations.

Dave (1970) developed this taxonomy:

- Imitation - Observing and copying someone else.
- Manipulation - Guided via instruction to perform a skill.
- Precision - Accuracy, proportion and exactness exist in the skill performance without the presence of the original source.
- Articulation - Two or more skills combined, sequenced, and performed consistently.

- Naturalization - Two or more skills combined, sequenced, and performed consistently and with ease. The performance is automatic with little physical or mental exertion.

Harrow (1972) developed this taxonomy. It is organized according to the degree of coordination including involuntary responses and learned capabilities:

- Reflex movements - Automatic reactions.
- Basic fundamental movement - Simple movements that can build to more complex sets of movements.
- Perceptual - Environmental cues that allow one to adjust movements.
- Physical activities - Things requiring endurance, strength, vigor, and agility.
- Skilled movements - Activities where a level of efficiency is achieved.

The following list is a synthesis of the above taxonomies:

Psychomotor Domain Hierarchy		
Level	**Definition**	**Example**
Observing	Active mental attending of a physical event.	The learner watches a more experienced person. Other mental activity, such as reading may be a part of the observation process.
Imitating	Attempted copying of a physical behavior.	The first steps in learning a skill. The learner is observed and given direction and feedback on performance. Movement is not automatic or smooth.
Practicing	Trying a specific physical activity over and over.	The skill is repeated over and over. The entire sequence is performed repeatedly. Movement is moving towards becoming automatic and smooth.
Adapting	Fine tuning. Making minor adjustments in the physical activity in order to perfect it.	The skill is perfected. A mentor or a coach is often needed to provide an outside perspective on how to improve or adjust as needed for the situation.

Here are key verbs for each level you can use when writing psychomotor objectives:

Key Verbs for the Psychomotor Domain
- bend
- calibrates
- constructs
- differentiate (by touch)
- dismantles
- displays
- fastens
- fixes
- grasp
- grinds
- handle
- heats
- manipulates
- measures
- mends
- mixes
- operate
- organizes
- perform (skillfully)
- reach
- relax
- shorten
- sketches
- stretch
- write

Additional Links

Behavioral Objectives - Psychomotor Domain

Simpson's Psychomotor Domain

Offline References

Dave, R.H., in R. J. Armstrong et al., *Developing and Writing Behavioral Objectives* (Tucson, AZ: Educational Innovators Press, 1970).

Harrow, A.J. (1972). *A taxonomy of the psychomotor domain.* New York: David McKay Co.

Simpson, E. (1972). *The classification of educational objectives in the psychomotor domain: The psychomotor domain.* Vol. 3. Washington, DC: Gryphon House.

3- How To Write Instructional Objectives

Instructional objectives should specify four main things:

- **Audience** - Who? Who is this aimed at?
- **Behavior** - What? What do you expect them to be able to do? This should be an overt, observable behavior, even if the actual behavior is covert or mental in nature. If you can't see it, hear it, touch it, taste it, or smell it, you can't be sure your audience really learned it.
- **Condition** - How? Under what circumstances will the learning occur? What will the student be given or already be expected to know to accomplish the learning?
- **Degree** - How much? Must a specific set of criteria be met? Do you want total mastery (100%), do you want them to respond correctly 80% of the time, etc. A common (and totally non-scientific) setting is 80% of the time.

This is often called the ABCD's of objectives, a nice mnemonic aid!

Tip: Never use the word *understand* in an objective. It is too vague, and does not specify a measurable behavior.

Be SMART

Instructional objectives should be **SMART**:

Specific - Use the ABCDs to create a clear and concise objective.

Measurable - Write the objective so that anyone can observe the learner perform desired action and objectively assess the performance.

Achievable - Make sure the learner can do what is required. Don't, for example, ask the learner to perform complex actions if they are a beginner in an area.

Relevant - Demonstrate value to the learner. Don't teach material that won't be used or on which you will not assess.

Timely and Time Bound - Ensure the performance will be used soon, not a year from now. Also, include any necessary time constraints, such as completing a task in "10 minutes or less."

Examples of Well-written Objectives

Below are some example objectives which include Audience (A), Behavior (B), Condition (C), and Degree of Mastery (D). Note that many objectives actually put the condition first.

Audience - Green
Behavior - Red
Condition - Blue
Degree - Pink

Psychomotor - "Given a standard balance beam raised to a standard height, the student (attired in standard balance beam usage attire) will be able to walk the entire length of the balance beam (from one end to the other) steadily, without falling off, and within a six second time span."

Cognitive (comprehension level) - "Given examples and non-examples of constructivist activities in a college classroom, the student will be able to accurately identify the constructivist examples and explain why each example is or isn't a constructivist activity in 20 words or less."

Cognitive (application level) - "Given a sentence written in the past or present tense, the student will be able to re-write the sentence in future tense with no errors in tense or tense contradiction (i.e., I will see her yesterday.)."

Cognitive (creation/synthesis level) - "Given two cartoon characters of the student's choice, the student will be able to list five major personality traits of each of the two characters, combine these traits (either by melding traits together, multiplying together complimentary traits, or negating opposing traits) into a composite character, and develop a short (no more than 20 frames) storyboard for a cartoon that illustrates three to five of the major personality traits of the composite character."

Affective - "Given the opportunity to work in a team with several people of different races, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as measured by a checklist utilized/completed by non-team members."

When reviewing example objectives above, you may notice a few things.

As you move up the "cognitive ladder," it can be increasingly difficult to precisely specify the degree of mastery required.

Affective objectives are difficult for many instructors to write and assess. They deal almost exclusively with internal feelings and conditions that can be difficult to observe externally.

It's important to choose the correct key verbs to express the desired behavior you want students to produce. See the pages on cognitive objectives, affective objectives, and psychomotor objectives to see examples of key words for each level.

Typical Problems Encountered When Writing Objectives

Problems in Writing Objectives		
Problem	**Error Type**	**Solution**
Too vast/complex	The objective is too broad in scope or is actually more than one objective.	Simplify/break apart.
False/missing behavior, condition, or degree	The objective does not list the correct behavior, condition, and/or degree, or they are missing.	Be more specific, make sure the behavior, condition, and degree is included.
Only topics listed	Describes instruction, not conditions. That is, the instructor may list the topic but not how he or she expects the students to use the information	Simplify, include ONLY ABCDs.
False performance	No true overt, observable performance listed.	Describe what behavior you must observe.

Additional Links

A Quick Guide to Writing Learning Objectives

Assessment and Instructional Objectives

Assessment and instructional objectives are ideally closely bound. A well-written objective should clearly illustrate the most important criteria for assessing if the individual has accomplished the objective.

This section illustrates how a well-written objective assists one in developing valid assessment instruments. Psychomotor, affective, and cognitive types of objective are illustrated here.

Psychomotor Performance Target

Goal

Walk the length of a balance beam.

Objective Derived From Goal

Given a standard balance beam raised to a standard height, the student (attired in standard balance beam usage attire) will be able to walk the entire length of the balance beam (from one end to the other) steadily, without falling off, and within a six second time span.

Purpose of Assessment

To partially determine placement on a high school gymnastics team. Other assessments using other gymnastic devices will be used in conjunction with this assessment to determine the final ranking/placement. The criterion for acceptable performance is thus irrelevant here; higher scoring individuals simply have a better chance of being selected for the team.

Possible Biases

As males do not use the balance beam in gymnastics, this assessment is for females only. Thus, some may consider this test gender biased; but the rules of gymnastics dictate this distinction is necessary. Testing male's performance on equipment they will not use is irrelevant.

This test is biased against people who are physically incapable of mounting a balance beam and/or walking. However, these people would be incapable of performing on a gymnastics team and thus would not attempt the assessment in the first place.

Assessment Procedure

Pretest

Not needed. This is a sorting type of assessment and is designed to rank individuals, not chart their improvement and/or change in behavior.

Sole Test

The student (attired in standard balance beam usage attire) must walk the entire length of a standard balance beam raised to a standard height steadily, without falling off, and within a six second time span. **(Note how this part reflects the objective.)** A team of no less than three judges will observe a given individual perform this task three times, using a given scoring rubric to assign a score for each trial. The trial score for each trial is the average of all the judge's scores. The overall score for the individual is the average of the three trial scores.

Rubrics for Assessment

> 5 - Walks the balance beam flawlessly. Does not need to check balance, does not pause. Completes the walk within six seconds.

> 4 - Walks the beam, but is somewhat unsteady. Completes the walk within six seconds.

> 3 - Walks the beam, but is somewhat unsteady. May pause one or more times. Takes more than six seconds to complete the walk.

> 2 - Walks the beam, but is very unsteady, almost falling off, may pause one or more times, and/or takes more than six seconds.

> 1 - Falls off the beam before completing the walk.

> 0 - Falls off the beam immediately.

Conditions of Assessment

- Assessment occurs only during the walking phase, not during the mount/dismount phases.
- The individual indicates when the assessment should begin.
- The assessment ends as soon as the individual reaches the other end of the balance beam.
- A team of judges consisting of no less than three people will use the provided rubric to assess a given individual. Additional judges are optional.

- Individual judge's scores are averaged to determine a composite trial score for a given performance for a given individual.
- Each individual is given three chances to walk the beam. The combined time for these three chances should not exceed three minutes per individual.
- The average of these three trials (as determined by the judges using the provided rubric) is used to determine the overall score.

Validity Defense

- The same psychomotor task is used to assess the desired psychomotor performance.
- This type of assessment is easy to use and provides overt, non-ambiguous results.

Reliability Assessment

- Three judges are used to improve reliability of assessors. (Inter-rater reliability).
- Three trials per individual are allowed to improve reliability over time. (Test-retest reliability).

Assessment Package for Judges of the Balance Beam Exercise

Directions: Each individual must walk the balance beam. For each individual, use the following scale to assign a value to the individual's performance on the balance beam. Each individual will be given three trials or chances to walk the balance beam. Score each trial individually. After scoring each trial, hold up the numbered card in front of you that corresponds to the score you gave the individual for that trial. Your score will be averaged with the other judge's scores. Note that you must time the individuals; a maximum time of six seconds to walk the beam from one end to the other is permitted.

Scale

5 - Walks the balance beam flawlessly. Does not need to check balance, does not pause. Completes the walk within six seconds.

4 - Walks the beam, but is somewhat unsteady. Completes the walk within six seconds.

3 - Walks the beam, but is somewhat unsteady. May pause one or more times. Takes more than six seconds to complete the walk.

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Scoring Template for an Individual

Balance Beam Rubric					
	Judge 1	Judge 2	Judge 3	Trial Total (Sum of Judge's scores)	Trial Score (Trial Total/# of Judges)
Trial 1					
Trial 2					
Trial 3					
				Overall Score (Sum of Trial Scores/# of Trials) =	

Affective Learning Target

Goal - Learner's perspective on civil rights will improve.

Objectives Derived From Goal

1. Given the opportunity to work in a team with several people of different races, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as measured by a checklist utilized/completed by non-team members.
2. Given the opportunity to choose/not choose to do so, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as demonstrated by choosing to participate (at varying levels of responsibility) in the organization of a racial equality rally.
3. Given the opportunity to rank non-discrimination of race in relationship to other issues, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as demonstrated by ranking non-discrimination of race as more important than other issues.

Purpose of Assessment

To determine if an individual's attitude towards racial equality has improved. If the student's score increases at all on the posttest, they are considered successful.

Possible Biases

- People from different cultures may use different body language and facial expressions to convey the same meaning. The assessor must take this into account when assessing an individual.
- There may be other intrinsically-based (and thus difficult to quantify) motivations for participating in a rally.

Assessment Procedure - Objective 1

Objective 1 Pretest

The student being assessed would be part of a racially diverse group. The provided rubric would be employed by the instructor or by someone not actually participating in the group. To have a group member or members employ the rubric as a pretest device would invalidate it, for the individual's actions and mannerisms would change upon introduction of the rubric. This could interfere with or augment the instruction that would follow.

Objective 1 Posttest

The student being assessed would be part of a racially diverse group. The provided rubric would be employed by the instructor or by someone not actually participating in the group. Ideally, this assessor should be the same person who administered the pretest. To have a group member or members employ the rubric as a posttest device would invalidate it, for the individual's actions and mannerisms would change upon introduction of the rubric. Ideally, each student should be assessed at least two times with different groups.

Comparisons between pretest and posttest scores would be used to determine if a positive increase in attitude towards non-discrimination of race has occurred.

Rubrics/Scoresheets for Assessment

Directions: For each individual, use the following scale to assign a value to the individual's performance on each item listed in the left column. Place an X in the most appropriate square to the right of each item. Example: If you decide a student only rarely attended individuals with the same amount of interest, place an X in the box under the 2. Twenty-eight possible points. Observe each student for 10 minutes.

Affective Objective 1 Rubric				
Student Name:	**4 Most (90-100%) of the time**	**3 Usually (60 - 89%) of the time**	**2 Somewhat (30 - 59%) of the time**	**1 Rarely (0 - 29%) of the time**
Student attends to each individual with the same amount of interest.				
Student uses the same respectful tone of voice when addressing each team member.				
Student does not make culturally sensitive or				

degrading remarks. (Example: "You Brugians are always thinking about yourselves.")				
When a disagreement occurs, the student addresses the disagreement and not the other team member(s). (Example: "I don't believe that is true because..." NOT "Maybe where you come from that's true, but...")				
Student generally maintains the same body language and facial expressions for all other team members. (Example: The student frowns at Xavier all the time, but smiles at Jessica all the time.)				
Student maintains same level of eye contact with all other group members.				

Conditions of Assessment

- The student must be unaware s/he is being assessed.
- Pretest/posttest environmental conditions must be as similar as possible.
- Group size should remain constant for pre and posttests.
- Group topics should remain fairly consistent between pre and posttests.

Validity Defense

- Overt, measurable actions are used to assess the student.
- All assessment tasks work together in that they are assessing verbal and non-verbal responses (Internal structure evidence.)
- This type of assessment is easy to use and provides overt, non-ambiguous results. (Practicality evidence.)
- No negative or unexpected side effects are foreseen when this assessment is used. (Consequential evidence.)

Reliability Assessment

- The same assessor is used on the pretest and posttest. (Assessor reliability).
- Two trials per individual are allowed to improve reliability over time. (Test-retest reliability).
- Environmental factors that may affect how a student reacts are neutralized.
- Group dynamics, such as size and topic, are made as consistent as possible to neutralize possible external variations that might affect testing.

Assessment Procedure - Objective 2

Pretest

Via a paper handout, students would be asked to volunteer to work on developing a rally for racial equality. Students would return the handout having checked how they would like to (or not to) participate in the rally. The provided scoresheet would be employed by the instructor to assign a pretest score to each student.

Posttest (After instruction)

Via a paper handout, students would be asked to volunteer to work on developing a rally for racial equality. Students would return the handout having checked how they would like to (or not to) participate in the rally. The provided scoresheet would be employed by the instructor to assign a posttest score to each student.

Comparisons between pretest and posttest scores would be used to determine if a positive increase in attitude towards non-discrimination of race has occurred.

Scoresheet

Assign each individual a numeric score based on his/her indicated level of involvement on the completed handout.

5 - Master organizer of entire rally.

4 - Organize a specific part of the rally.

3 - Assistant for two or more organizers of a specific part of the rally.

2 - Assistant for one organizer of a specific part of the rally.

1 - Minimal involvement (i.e., man refreshment stand night of the rally).

0 - No involvement.

Conditions of Assessment

- No other external incentive must be provided/available to the student that might influence his/her choice of level of involvement.
- Pretest/posttest environmental conditions must be as similar as possible.

Validity Defense

- Overt, measurable actions are used to assess the student.
- This type of assessment is easy to use and provides overt, non-ambiguous results. (Practicality evidence.)
- No negative or unexpected side effects are foreseen when this assessment is used. (Consequential evidence.)

Reliability Assessment

- The same assessor is used on the pretest and posttest. (Assessor reliability).
- Environmental factors and covert incentives that may affect how a student reacts are neutralized.

Assessment Procedure - Objective 3

Pretest

Via a pencil and paper quiz, students would be asked to rank the relative importance of non-discrimination of race as compared to other social issues.

Posttest (After instruction)

Via a pencil and paper quiz, students would be asked to rank the relative importance of non-discrimination of race as compared to other social issues.

Comparisons between pretest and posttest rankings would be used to determine if a positive increase in attitude towards non-discrimination of race has occurred.

Sample Quiz

1. You are the mayor of a large city. You have a budget surplus. Please rank the following programs in order of importance. The higher-ranking items will receive more money for programs that support them, and thus will be more successful.

   __ Additional Policemen

   __ Racial Equality Programs

   __ Spouse Abuse Shelters

   __ Pollution Control Programs

2. You are the new superintendent in an inter-racial school. Several gangs exist, and there is graffiti everywhere. Teachers are afraid of some of the students. No type of security measures are in place at this time. You have a plan to change things, but you need to decide what to do first, second, etc. Please rank the following programs in order of importance.

   __ Racial Tolerance Programs

   __ Gang Control

   __ Graffiti Cleanup

   __ Security Program

3. You are the social director in a small, rural town in mid-western United States. The population of your town was 100% white until this week. A Mexican family of 10 just moved into town. Rumor has it that the father of the family has no job at this time. The mother creates and sells crafts out of her house. The 8 children's ages span between 1 and 15. As social director, what do you think you should do? Please rank the following ideas in order of importance.
   __ Advertise Available Jobs Throughout Town

   __ Host an Open House for the Mother's Crafts

___ Mexican Culture Awareness Social

___ Do Nothing Unless Asked By Someone

4. You are in an airplane with your classmates, a group of Indians, and a group of Eskimos. The plane crashes in the water, but fortunately many of you survive. The plane is sinking. You are one of the least injured people. Each group is huddled near an exit, and will be equally easy (or difficult) to rescue. Some of the less injured will probably be able to rescue themselves, but you are not sure. You have to decide who to rescue first, second, and so on. You doubt you have time to rescue everyone before the plane sinks completely. Please rank the following groups in the order you would save them.

   ___ Your classmates

   ___ The most injured

   ___ The Indians

   ___ The Eskimos

   ___ The least injured

   ___ Obviously dead bodies

5. You are in charge of a private golf club. It was open only to white people with low handicaps (10 or less). Recently, the clubhouse burnt down, and many of the members have left for other clubs. You have to rebuild the physical site, and also build up the number of members. Please rank the following decisions in order of importance.

   ___ Raise membership fees to help pay for the new clubhouse.

   ___ Open the club membership to anyone who can pay the membership fee.

   ___ Place a handicap limit on perspective members. Those people with a handicap greaterthan 20 cannot join the club.

   ___ Build a cheap, temporary clubhouse for use until the new clubhouse can be built.

Scoring

1. Item to examine for positive change is "Racial Equality Programs."
2. Item to examine for positive change is "Racial Tolerance Programs."
3. Item to examine for positive change is "Mexican Culture Awareness Social."
4. Items to examine for positive change are "Most Injured" and "Least Injured."
5. Item to examine for positive change is "Open the club membership to anyone who can pay the membership fee."

Conditions of Assessment

- No other external incentive must be provided/available to the student that might influence his/her rankings.

- Pretest/posttest environmental conditions must be as similar as possible.

Validity Defense

- Overt, measurable actions are used to assess the student.
- This type of assessment is easy to use and provides overt, non-ambiguous results. (Practicality evidence.)
- No negative or unexpected side effects are foreseen when this assessment is used. (Consequential evidence.)

Reliability Assessment

- The same assessor is used on the pretest and posttest. (Assessor reliability).
- Environmental factors and covert incentives that may affect how a student reacts are neutralized.

Cognitive Learning Target: Problem Solving/Synthesis Level

Goal - Students will be able to create a cast (using cartoon characters, modern entertainers, etc.) which reflect the personalities of the characters in a piece of literature, and explain why they have chosen the particular cast members. (The cast would be those characters, cartoon figures, entertainers, etc. that they choose to play the role of each character in an upcoming TV show, movie, play, etc.)

Objective

Given two cartoon characters of the student's choice, the student will be able to list five major personality traits of each of the two characters, combine these traits (either by melding traits together, multiplying together complimentary traits, or negating opposing traits) into a composite character, and develop a short (no more than 20 frames) storyboard for a cartoon that illustrates three to five of the major personality traits of the composite character.

Purpose of Assessment

To determine if a student in a high school setting can construct a composite character based on the personality traits of two given characters, can depict the composite character's personality, and can logically defend the composite character's personality and actions. This is a pass/fail assignment. Student receiving a score of 26 or more on the provided rubric have passed this test.

Possible Biases

Some students may not be familiar with certain cartoon characters, due to cultural differences, or simply because of lack of exposure to the cartoon genre. In these cases, the instructor may want to assist the student in choosing two characters (cartoon or otherwise, fictional or non-fictional) the student is familiar with, so the student can complete the assignment without negative bias.

Assessment Procedure

The student will list five major personality traits of each of the two characters. These are perceived traits, and are not judged by the instructor as to their correctness. The student must then combine the traits of the two characters in a logical, defensible manner. Each new trait must be defended by the student either verbally or in writing. The following three examples illustrate this:

1. Melding traits - Garfield loves lasagna. Green Lantern receives his power from a green lantern. His power is focused through a ring he wears. The ring must be recharged by the lantern every 24 hours. In the composite character, it may be necessary to recharge the Ring of Pasta with the Lasagna of Power every 24 hours.
2. Multiplying together complimentary traits - If you have two characters that both fight for justice, the composite character would fight for justice as well, perhaps at a level some would consider fanatical.
3. Negating opposing traits - If one character is good and the other evil, the composite character would be neutral. Thus he/she/it might respond to a bank robbery not because it is the right thing to do, or to share in the loot, but perhaps to collect a reward.

Then the student would develop short (no more than 20 frames) storyboard for a cartoon that illustrates three to five of the major personality traits of the composite character. The storyboard could be plain text (one paragraph would comprise a frame), rough sketches (one sketch per frame), colored drawings (one drawing per frame), or any combination thereof.

The instructor(s) would assess the storyboard by examining the listing of original personality traits and their combinations into a new composite character. The storyboard must reflect at least three of the composite traits in a story that fits the composite character. If the student offers a verbal defense, the instructor(s) must listen to this defense. If the defense is in writing, the instructor(s) must consult it at this time. The instructor(s) must use the provided rubric to assign a score to the student. Students must complete this assessment in two hours.

Conditions of Assessment

- Student must be in an environment that supports paper and pencil activities. Optionally, sketching and coloring tools may be available for students wishing to express themselves with these tools.
- Ideally, two or more instructors would assess a given student, as the assessment is partially subjective in nature.

Validity Defense

- Overt, measurable actions are used to assess the student.
- All assessment tasks work together in that they are assessing a synthesis task. (Internal structure evidence.)
- This type of assessment is easy to use and provides overt, non-ambiguous results. (Practicality evidence.)
- No negative or unexpected side effects are foreseen when this assessment is used. (Consequential evidence.)

Reliability Assessment

- Subjectivity is minimized through the use of a rubric.

- Two or more judges are recommended to improve reliability of assessors. (Inter-rater reliability).

Assessment Procedure

Read the following to the students. Also, have this available in print form:

A. Choose two cartoon characters. List five major personality traits of each of the two characters. Combine these traits (either by melding traits together, multiplying together complimentary traits, or negating opposing traits) into a composite character, and develop a short (no more than 20 frames) storyboard for a cartoon that illustrates three to five of the major personality traits of the composite character. Melding traits together, multiplying together complimentary traits, and negating opposing traits are defined in this way:

1. Melding traits - Garfield loves lasagna. Green Lantern receives his power from a green lantern. His power is focused through a ring he wears. The ring must be recharged by the lantern every 24 hours. In the composite character, it may be necessary to recharge the Ring of Pasta with the Lasagna of Power every 24 hours.
2. Multiplying together complimentary traits - If you have two characters that both fight for justice, the composite character would fight for justice as well, perhaps at a level some would consider fanatical.
3. Negating opposing traits - If one character is good and the other evil, the composite character would be neutral. Thus he/she/it might respond to a bank robbery not because it is the right thing to do, or to share in the loot, but perhaps to collect a reward.

B. After you have your combined traits list, develop short (no more than 20 frames) storyboard for a cartoon that illustrates three to five of the major personality traits of your composite character. The storyboard can be plain text (one paragraph would comprise a frame), rough sketches (one sketch per frame), colored drawings (one drawing per frame), or any combination thereof. (Show examples). You will be evaluated on how logical your combined traits are, how well you can explain/defend these traits, and how well your storyboard utilizes and illustrates those combined traits. This is a pass/fail test. You must score at least 26 out of 36 possible points to pass. (Explain rubric). You have two hours to complete this task.

Assessment Package for Judges of the Cartoon Melding Assessment

Directions: For each individual, use the following scale to assign a value to the individual's performance on each item listed in the left column. Place an X in the most appropriate square to the right of each item. 36 possible points. This is a pass/fail test. Students receiving a score of 26 or better have passed this test.

Rubric for Creation/Synthesis Cognitive Level			
Name of Student:	**3 - Excellent. The combination of traits is logical.**	**2 - Fair. The combination of traits is somewhat logical, but other interpretations are more so.**	**1 - Poor. The combination of traits is not logical.**
Student combo of Traits 1			

Student combo of Traits 2			
Student combo of Traits 3			
Student combo of Traits 4			
Student combo of Traits 5			
	3 - The student's defense of the combination is flawless.	2 - The student's defense of the combination is adequate, but open to argument.	1 - The student's defense of the combination is weak.
Student combo of Traits 1			
Student combo of Traits 2			
Student combo of Traits 3			
Student combo of Traits 4			
Student combo of Traits 5			
	3 - Excellent. The student used at least three of the combined traits in the storyboard.	2 - Fair. The student used one or two of the combined traits in the storyboard.	1 - Poor. The student used at most one of the combined traits in the storyboard.
Storyboard construction			
	3 - The story fits the composite character - i.e., it is believable for that character.	2 - The story fits the composite character but is somewhat artificial or contrived.	1 - Poor. The student used at most one of the combined traits in the storyboard. The story does not fit the composite character and is somewhat artificial or contrived.
Storyboard coherence			
		Total Score:	

Activities and Instructional Objectives

Dwyer, 1991 – "If your final objective is to have learners engage in problem-solving,you inspect the instructional unit to make sure that the content contains the appropriate facts, concepts, rules/principles, etc. which are a prerequisite for that intended learners to engage in successful problem-solving."

Activities can include writing papers, doing projects, solving problems, discussing issues, etc. Activities should flow naturally from your objectives. Here are some questions to ask yourself:

- What do the students need to do in order to achieve the course goals and objectives? Is it only memorization of concepts? Probably not. Then what activities are necessary to achieve the level of learning you expect?
- What do students need to memorize in order to perform higher-level tasks? What is the most basic? Can other information be looked up as needed or does the student need to know the information "on demand?"
- What is the ideal way to learn course content if money, time, location were not of concern? What of those ways can be incorporated into this course?
- What kind of knowledge/skills do you want to the students to apply in later courses or in their internship or jobs? Problem-solving, analysis, or what?
- What learning activities will motivate students; that is, what will convey your passion about the content?
- What will the students do in class, out of class and in recitation/small group sessions?
- What must the students, teaching assistants, and you do to support students as they learn?
- What is the nature of the class and how might that impact the range of student activities?

You want to select student activities based on the level of the objectives. Following are some examples of student activities related to different levels of cognitive learning.

Matching Objectives With Activities	
Level of Learning	**Student Activities**
Facts	Self-check quizzes, trivia games, etc.
Concepts	Have students show examples/non-examples, student generated flowchart, etc.
Rules/Principles	Design projects and prototypes, simulations, etc.
Problem Solving	Case study, small group discussion, critical thinking, teamwork, etc.

Additional Links

How to Write Learning Objectives that Meet Demanding Behavioral Criteria

TEDI Learning Activities

UMUC Teaching and Learning Activities

EKU TLC Teaching Tips, Michigan State on Objectives and Assessment

Offline References

Dwyer, F. M.(1991). A paradigm for generating curriculum design oriented research questions in distance education. *Second American Symposium Research in Distance Education*, University Park, PA: Pennsylvania State University.

Heinrich, R., Molenda, M., Russell, J.D., Smaldino, S.E. (1996). *Instructional Media and Technologies for Learning*. Englewood Cliffs, NJ: Merrill.
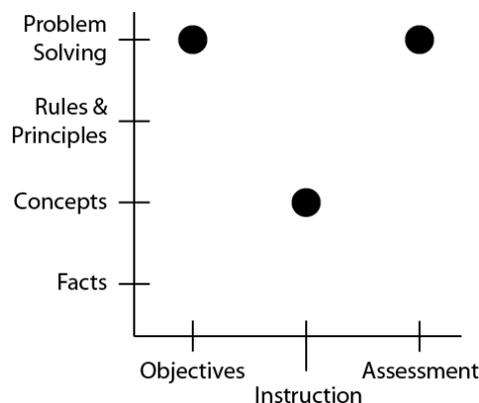
Aligning Instructional Objectives, Activities, and Assessment

A well-written objective will assist you in aligning the objective to activities and assessment.

The graphic below (Adapted from Dwyer 1991) shows a mismatch of the objectives, instruction and assessment. In this case:
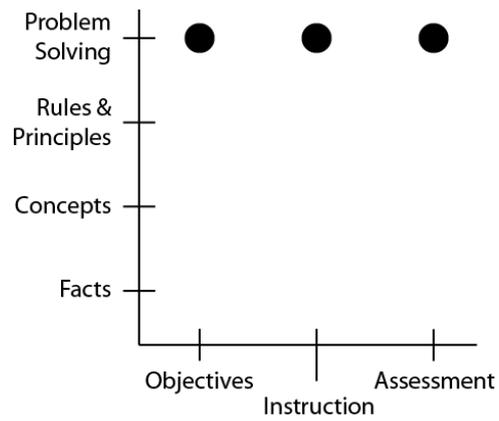
- Objectives were set to problem-solving,
- The students were assessed with problem-solving.
- However, only lower levels of learning, such as concepts, were presented to students.

Because of this students who have not been exposed to problem-solving techniques related to the course will more than likely have low-achievement when working on problem-solving assignments or problem-solving questions on an exam.

In contrast, the graphic below (Adapted from Dwyer) shows one example of matching your objectives with instruction.

- Set your objectives to teach problem-solving.
- Design your instruction and learning activities to teach or demonstrate problem-solving.
- Assess the students at the problem-solving level.

Offline References

Dwyer, F. M.(1991). A paradigm for generating curriculum design oriented research questions in distance education. *Second American Symposium Research in Distance Education*, University Park, PA: Pennsylvania State University.

Heinrich, R., Molenda, M., Russell, J.D., Smaldino, S.E. (1996). *Instructional Media and Technologies for Learning*. Englewood Cliffs, NJ: Merrill.