Writing Objectives

Financial Disclosure Statement

I have no financial interest or conflicts relative to this presentation.

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Objectives for this Program

• Describe the four elements of an instructional objective
• Describe the three types of learning
• Identify the taxonomic levels of learning
• Evaluate objectives

Why Write Objectives?

• The Board of Regents says so!
• Objectives tell the student what to do, how, when, or where to do it, and what is satisfactory performance

Why Write Objectives?

• Instructor’s evaluation must be directly related to specific objectives.
• Multiple choice questions and other evaluations are then matched to the objectives.
Why Write Objectives?

"Tell the students what you want them to know and then test them on it!"

-W. K. Metcalf, MD
Emeritus Professor and Distinguished Teacher

The Four Elements of an Objective

- Audience
- Behavior
- Conditions
- Degree

Audience

- A: Audience: To whom the objective is addressed
  - Student
  - Resident
  - Fellow
  - Participant

Behavior: use action verbs!

- B: Behavior:
  - Specific, observable actions or behaviors that the learner is to perform or exhibit
  - Identify, describe, demonstrate, evaluate, operate, criticize, correlate, select, choose, compute, etc.

Behavior: Major Problem Verbs

- Verbs such as “understand” and “know” are unacceptable because they are not measurable.

Conditions

- C: Conditions: These are the relevant factors affecting the actual performance (the “givens”).

Or, “Where and how will this task be accomplished?”
Conditions

• in the classroom, laboratory, or clinical setting
• upon completion of assignment or learning task
• after reviewing instruction
• following a lecture
• without use of notes, text, laboratory manuals
• when provided with certain materials or equipment

Conditions

• given a case study, diagram, clinical problem
• on a model, classmate, patient, simulated patient

Conditions may be implied, as in a series of objectives for a lecture or small group.

Degree

Identifies the level of achievement that constitutes acceptable performance:

how the outcome will be evaluated or judged

Degree

This, too, is often implied as in the score for a passing grade in a multiple choice question examination. However, it may be quite specific:

• to a degree of accuracy e.g. 90% or + or - 1 standard deviation
• to a stated proportion e.g. within 2 cm of mercury
• within a given time period
• within a given number of trials
Degree

• to a standard of clinical acceptability

• in accordance with recommendations or suggestions of some external organization or authority

Degree

• to be verified by an external agency, panel, person

• according to criteria set forth in a laboratory manual, standard operating policy, skill analysis, or other document

Degree

• consistent with any specifiable quantity e.g. 5 factors, at least 2 examples

• in compliance with criteria presented by the instructor

Class Exercise

Evaluate the following sample objectives as to audience, behavior, condition, and degree.

Class Exercise

“Understand the approach to the patient with an anemia.”

Class Exercise

“Following a lecture on the morphologic classification of anemia and given patient peripheral blood data, the student will be able to determine the morphologic type of anemia.”
Class Exercise
Evaluate your own written objective.
How could you improve it?
Care to share?

Protons have spin!

The Three Domains (Types) of Learning

- **Cognitive**
- **Psychomotor**
- **Affective (Professional Behavior)**

(Objectives can be written for each of these.)

Cognitive Domain

- Knowledge, comprehension, or ability to correlate information related to a topic.

This is what is mostly tested at UNMC: objective-driven multiple choice questions. . . BUT there are two more domains!

Psychomotor Domain

- This is the ability of the student to perform motor skill tasks
  - Physical examination
  - Dental procedure
  - Manual laboratory test

Affective Domain

- This is the student’s professional behavior.
  - Attitudes
  - Values
  - Commitment
  - Enthusiasm

Of late, has undergone increasing emphasis in Medicine
The Three Domains (Types) of Learning Summarized

- **Cognitive**: Knowledge, comprehension, or ability to correlate information related to a topic
- **Psychomotor**: Ability to perform motor skill tasks
- **Affective (Professional Behavior)**: Attitudes, values, commitment, enthusiasm

Water on Mars

Taxonomic Levels

- **Level #1: Knowledge**
- **Level #2: Application**
- **Level #3: Problem Solving**

Knowledge: Level 1

- **Cognitive**: Recall lists or facts
- **Psychomotor**: Observe or imitate actions
- **Affective**: Awareness of, receive and respond to task
Application: Level 2
- Cognitive: classify, compute, define
- Psychomotor: Perform, operate, demonstrate
- Affective: Value, appreciate importance of

Application: Level 2
- Now, can you rewrite your objective to a level 2?
- How did you do?
- Care to share?

Problem Solving: Level 3
What do you expect the student to be/do when he/she is in the practice of Medicine, Medical Technology, Nursing, Pharmacy, Clinical Perfusion, Physical Therapy, etc.?

Problem Solving: Level 3
Cognitive Domain
- Analyze
- Synthesize
- Correlate information
- Evaluate information

Problem Solving: Level 3
Psychomotor Domain
- Adapt to different circumstances
- Develop new skills

Problem Solving: Level 3
Affective Domain
- Integrate values into internally consistent system:
- Decisions are based upon a value system that is an integral part of life and actions
Problem Solving, Level 3

An example of problem solving in Medicine in the cognitive domain:

“Following a patient history and physical examination, and laboratory data, the student will be able to evaluate a patient with an anemia.”

Problem Solving, Level 3

Okay, take a deep breath and now try to rewrite your objective to a level 3!

How did that go? Care to share?

Now, think!

Taxonomy/ Domains of Learning

<table>
<thead>
<tr>
<th>Domains/ Levels</th>
<th>COGNITIVE</th>
<th>PSYCHOMOTOR</th>
<th>AFFECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>KNOWLEDGE</td>
<td>Recalling</td>
<td>Observing</td>
<td>Receive</td>
</tr>
<tr>
<td></td>
<td>Comprehend</td>
<td>Imitating</td>
<td>Respond</td>
</tr>
<tr>
<td>APPLY</td>
<td>Applying</td>
<td>Practicing</td>
<td>Value</td>
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<td></td>
<td>Using</td>
<td></td>
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</tr>
<tr>
<td>PROBLEM-SOLVING</td>
<td>Analyze</td>
<td>Adapting</td>
<td>Organizing</td>
</tr>
<tr>
<td></td>
<td>Synthesize</td>
<td>Originating</td>
<td>Characteristics</td>
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<tr>
<td></td>
<td>Evaluate</td>
<td></td>
<td>Integrating</td>
</tr>
</tbody>
</table>

Web Sites on Writing Objectives

American Physiological Society
https://www.the-aps.org/education/medphys/objective.htm

Case Western Reserve CME
https://www.cwu.edu/continuing/distance/learn_obj_eh_0809-1209.pdf

Thank you!
Writing Instructional Objectives

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Writing Objectives

On completion of the session, using the guidelines outlined in the presentation and handout, as well as actively writing instructional objectives, participants will be able to:

1. Describe the **four elements** of the well structured objective.
2. Discuss the three **domains** or types of learning.
3. Identify the **taxonomic levels** of learning that progress from the simple to complex learning skills for each domain.
4. Write and evaluate instructional objectives.

**Introduction:** The purpose of this presentation is to acquaint the participant with the basic components of instructional objectives.

**Why should we write instructional objectives?**

1. The University of Nebraska Board of Regents says so!
2. Instructional or behavioral objectives tell the student what to do, how, when, or where to do it, and how they know the task if satisfactorily accomplished.
3. Further, the instructor’s evaluation must be directly related to the specific objective.
4. Most commonly at UNMC evaluation is in the form of multiple choice questions matched to the objectives. However, other forms of evaluation may be used such as in observation of a student doing an evaluation of a patient, performing a laboratory procedure, mastering a psychomotor skill, etc.

“Tell the students what you want them to know and then test them on it!”

- W. K. Metcalf, MD
Emeritus Professor (Anatomy)
Distinguished Teacher
1. Describe the **four elements** of the well structured objective.

   A. **Audience**: To whom is the objective addressed? “The student.....” (Or resident, fellow, participant, etc.)

   B. **Behavior**: There need to be specific, observable actions or behaviors that the learner is to perform or exhibit. (These are usually organized from simple to more challenging.)

   1. Identify
   2. Describe
   3. Demonstrate
   4. Operate
   5. Evaluate
   6. Select
   7. Criticize
   8. Choose
   9. Compute
   10. Correlate

   **Major problem verbs**: Understand, know, (accurately or skillfully) are not clearly measurable.

   C. **Conditions**: These are the relevant factors affecting the actual performance (the “givens”). Answer the question: Where or how will this task be accomplished?

   1. in the classroom, laboratory, or clinical setting
   2. upon completion of assignment or learning task
   3. after reviewing instruction
   4. following a lecture
   5. without use of notes, text, laboratory manuals
   6. when provided with certain materials or equipment
   7. given a case study, diagram, clinical problem
   8. on a model, classmate, patient, simulated patient

   D. **Degree**: This identifies the level of achievement that constitutes acceptable performance: how the outcome will be evaluated or judged. (This is often implied as in the score for a passing grade in a multiple choice question examination.)

   1. to a degree of accuracy e.g. 90% or + or - 1 standard deviation
   2. to a stated proportion e.g. within 2 cm of mercury
   3. within a given time period
   4. within a given number of trials
   5. to a standard of clinical acceptability
   6. in accordance with recommendations or suggestions of some external organization or authority
   7. to be verified by an external agency, panel, person
   8. according to criterial set forth in a laboratory manual, standard operating policy, skill analysis, or other document
   9. consistent with any specifiable quantity e.g. 5 factors, at least 2 examples
10. in compliance with criteria presented by the instructor

E. Evaluate the following sample objectives as to audience, behavior, condition, and degree.

1. “Understand the approach to a patient with anemia.”

2. “Following a lecture on the morphologic classification of anemia, and given patient peripheral blood data, the student will be able to determine the morphologic type of anemia.”

3. Now evaluate your own written objective.

2. Describe the three domains or types of learning.

A. Cognitive: This refers to the student’s knowledge, comprehension, or ability to correlate information related to a topic. This is what we usually think about when writing instructional objectives.
   1. This is what we usually think of in writing instructional objectives.
   2. But, there are two more domains of learning:

B. Psychomotor: This is the student’s ability to perform motor skill tasks: e.g.
   1. Physical examination
   2. Dental procedure
   3. Manual laboratory test

C. Affective: This is the student’s behavior: attitudes, values, commitment, enthusiasm: Professional behavior. This domain generally receives less attention by faculty than it should, but there is now activity to improve this situation.

3. Identify the taxonomic levels of learning that progress from the simple to complex learning skills for each domain (Knowledge, level 1; Application, level 2; Problem solving, level 3). Note: In the USMLE, only levels 2 and 3 are utilized.

A. Knowledge Level - Level one or entry level objective (There is a tendency to overuse level 1 objectives.)

   Cognitive domain: Recall lists or facts

   Psychomotor domain: Observe or imitate actions

   Affective domain: Awareness of, receive and respond to task
B. **Application Level** - Level two or intermediate level objective ("If this is true, what about this?")

- **Cognitive domain:** Classify, compute, define
- **Psychomotor domain:** Perform, operate, demonstrate
- **Affective domain:** Value, appreciate the importance of

C. **Problem Solving Level** - Level three or terminal objectives (What do you expect the student to do/be when he/she is in the practice of Medicine, Nursing, Physical Therapy, etc?)

- **Cognitive domain:** Analyze, synthesize, correlate information, evaluate information
- **Psychomotor domain:** Adapt to different circumstances, develop new skills
- **Affective domain:** Integrate values into internally consistent system; decisions are based upon a value system that is an integral part of life and actions

**Appendix I**

Taxonomy/Domains of Learning
<table>
<thead>
<tr>
<th>Domains/Levels</th>
<th>COGNITIVE</th>
<th>PSYCHOMOTOR</th>
<th>AFFECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>KNOWLEDGE</td>
<td>Recall, Comprehend</td>
<td>Observe, imitate</td>
<td>Receive, respond</td>
</tr>
<tr>
<td>APPLY</td>
<td>Apply, use</td>
<td>Practice</td>
<td>Value</td>
</tr>
<tr>
<td>PROBLEM-SOLVING</td>
<td>Analyze, synthesize, evaluate</td>
<td>Adapting, originating</td>
<td>Organize, characterize, integrate</td>
</tr>
</tbody>
</table>

Appendix II

List of Action Verbs that can be used in writing objectives: Some may be used at more than one level depending upon the domain.

<table>
<thead>
<tr>
<th>Knowledge Level</th>
<th>Application Level</th>
<th>Problem-Solving Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attend</td>
<td>Recall</td>
<td>Apply</td>
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<tr>
<td>Define</td>
<td>Recite</td>
<td>Classify</td>
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<tr>
<td>Demonstrate</td>
<td>Recognize</td>
<td>Compute</td>
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<tr>
<td>Describe</td>
<td>Record</td>
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<td>Discuss</td>
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<td>Determine</td>
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<td>Explain</td>
<td>Report</td>
<td>Draw</td>
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<tr>
<td>Identify</td>
<td>Restate</td>
<td>Employ</td>
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<td>Imitate</td>
<td>Return</td>
<td>Find</td>
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<td>Indicate</td>
<td>Review</td>
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<td>Label</td>
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<td>Locate</td>
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<td>List</td>
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<td>Measure</td>
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<td>Locate</td>
<td>Summarize</td>
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<td>Name</td>
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<td>Note</td>
<td>View</td>
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</tr>
<tr>
<td>Observe</td>
<td>Watch</td>
<td></td>
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</tbody>
</table>
Web sites on Objectives

American Physiological Society
http://www.the-aps.org/education/medphysobj/template.htm

Case Western Reserve CME
http://cme.case.edu/documents/learn_obj_jh09-12-05.pdf