How Student Learning Outcomes Can Strengthen Teaching and Learning

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Learning Outcomes for this Workshop

By the end of this session, participants will be able to:
- Explain the difference between general course goals and specific student learning outcomes.
- State three reasons why we need to use student learning outcomes in every course.
- Be able to articulate five different measures of student learning outcomes for course assessment.

Agenda

- How Student Learning Outcomes (SLOs) Relate to Course Design or Redesign
- A Quick Review of Creating SLOs
- Why SLOs are important for Teaching and Learning
- Some Assessment Options based on SLOs
  - Knowledge Surveys
  - Structured Focus Groups
- Conclusion

Teaching is a lifelong art, that ... involves continuous learning not just for the student but for the teacher as well.

—Joseph Katz and Mildred Henry

Faculty Involvement

“Faculty should be influential in the substantive determination of key learning outcomes at all levels: institutional, program, and course.”

(Middle States, 2006, p.56)

Stages in the Backward Design Process

1. Identify desired results.
2. Determine acceptable evidence.
3. Plan learning experiences and instruction.
   (Teachers must build in appropriate assessment procedures to determine if the evidence for learning exists.)

Clearly describe and communicate goals for the course. What do you want your students to “look like” by the end of the semester? Five years after the course has ended?

- What should they know about the subject?
- What should they be able to do with what they know?
- What should they value about the discipline?

Teaching Goals Inventory

Cyber Cats

http://www.uiowa.edu/~centeach/tgi

To begin with the end in mind means to start with a clear understanding of your destination. It means to know where you’re going so that you better understand where you are now so that the steps you take are always in the right direction.

Stephen Covey, 7 Habits of Highly Effective People

Establishing Curricular Priorities

Worth being familiar with
Important to know and be able to do
“Enduring” understanding

Dee Fink’s book, Creating Significant Learning Experiences is an Excellent Tool for Re-thinking your Course Design.

http://www.deefinkandassociates.com/GuidetoCourseDesignAug05.pdf

Key Components of Interactive Course Design

Learning Goals
Teaching & Learning Activities
Feedback & Assessment
Situational Factors
A Review:
Course Goals vs. Student Learning Outcomes

- Course goals are general statements that define an effective course (what the course should do).
- Student learning outcomes are specific results the students must achieve in order to attain the course goals (what student can do).

Good Student Learning Outcomes are:
- Student-focused rather than professor-focused
- Focused on the learning resulting from an activity rather than on the activity itself
- Focused on skills and abilities central to the discipline and based on professional standards of excellence
- General enough to capture important learning but clear and specific enough to be measurable
- Focused on aspects of learning that will develop and endure but that can be assessed in some form now

Writing Student Learning Outcomes

Student Learning Outcomes must be measurable.
1. Performance. What is the learner expected to be able to do and/or produce to be considered competent?
2. Conditions. What are the important conditions (if any) under which the performance is to occur?
3. Criterion. What is an acceptable level of performance? How well must the learner perform the task in order to be considered competent?

(Mager, 1997)

Example of goals that are admirable, but not measurable as phrased:
- I want students to achieve a life-long interest in my subject
- I want students to develop self-assessment skills
- I want students to understand the nature of critical thinking

Example of outcomes that are action statements:
"Students will be able to”:
- describe the scientific method and provide an example of its application;
- pick a single theory from the science represented by this course and explain its historical development;
- provide two examples of testable hypotheses;
- provide two specific examples that illustrate why it is important to the everyday life of an educated person to be able to understand science;
- describe two current examples of the relationship between physical science and public policy… (4 more)"

Source: Ed Nuhfer, CSU-Channel Islands

Roundtable
- The teacher poses an open-ended question.
- Each group has one piece of paper and one pen.
- The first student writes one response, saying it out loud.
- He or she passes the paper to the left where a second student writes a response, etc.
- The “brainstorm” continues until time elapses.
- Students may say “pass”
Roundtable Question

Why are Student Learning Outcomes Important? What purpose do they serve?

Why are Student Learning Outcomes Important?

For the institution: Data on student learning outcomes can be used to:
- Facilitate understanding of student needs
- Document effectiveness of instruction
- Guide course/program improvement
- Meet the requirements of accrediting bodies

For your teaching: Data on student learning outcomes can be used to:

Where do We Start?

Put Student Learning Outcomes in your Syllabus to Create a Learning-Centered Approach

Three Components of a “Promising Syllabus” as outlined by Kenneth Bain in his book "What the Best College Teachers Do, 2004"

1. A promise to students
2. The activities used to fulfill that promise
3. A conversation about student learning

A Promise to Students

- There should be an explanation of the course’s promises to students—what will they have gained, in terms of knowledge and skills, by the end of the semester?
- The focus moves away from what the teacher will cover to what the student will take away from the course.
The Second Part of a “Promising Syllabus”

It describes the activities in which students will engage in order to help them fulfill that promise: the readings, the class activities, the assignments.

Third Component of a “Promising Syllabus”

It begins a conversation about how the teacher and student would best come to understand the nature and the progress of the student’s learning:

- Not about grading policy per se
- Focus on learning to think within a given discipline
- Focus on evidence that the student has achieved that kind of thinking.

What we want to teach - what students see

Outcomes
Enduring Concepts

Why not give them a map...

to those destinations we want them to reach?

Clearly Mapped and Shared Student Learning Outcomes can Promote You:

Good Teachers and Good Teaching: Nine Characteristics that Students and Faculty Agree On:

- Knowledge of the subject/discipline
- Course preparation & organization
- Clarity and understandability
- Enthusiasm for subject/teaching
- Sensitivity to and concern with students’ level and learning progress

Nine Characteristics, Cont.

- Availability and helpfulness
- Quality of examinations
- Impartiality in evaluating students
- Overall fairness to students

Teaching for Learning & Satisfaction

<table>
<thead>
<tr>
<th>Instructional Dimension</th>
<th>% Variation Explained</th>
<th>Importance Shown by Correlation (and Rank) with Student Achievement</th>
<th>Importance Shown by Rank with Overall Evaluations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher's preparation; organization of the course</td>
<td>30 – 35%</td>
<td>.57 (1)</td>
<td>(6)</td>
</tr>
<tr>
<td>Abstract, narrative, or subject of instruction</td>
<td>25 – 30%</td>
<td>.56 (2)</td>
<td>(2)</td>
</tr>
<tr>
<td>Perceived outcome or impact of instruction in the course and its subject matter</td>
<td>15 – 20%</td>
<td>.46 (3)</td>
<td>(3)</td>
</tr>
<tr>
<td>Teacher's encouragement of questions, discussion, and openness to opinions of others</td>
<td>10 – 15%</td>
<td>.38 (4)</td>
<td>(1)</td>
</tr>
<tr>
<td>Intellectual challenge and encouragement of independent thought (by teacher &amp; course)</td>
<td>10 – 15%</td>
<td>.36 (5)</td>
<td>(11)</td>
</tr>
<tr>
<td>Teacher's sensitivity to, and concern with class level and progress</td>
<td>5 – 10%</td>
<td>.25 (13)</td>
<td>(4)</td>
</tr>
</tbody>
</table>

Teacher's preparation; organization of the course

Table Courtesy of Ed Nuhfer, CSU, Channel Islands

Middle States Standard 14

“Assessment of student learning demonstrates that, at graduation, or other appropriate points, the institution’s students have knowledge, skills, and competencies consistent with institutional and appropriate higher education goals.”

(Middle States, 2006, p. 78)

The Assessment Process

Formulate statements of intended learning outcomes

Discuss and use assessment results to improve learning

Develop or select assessment measures

Create experiences leading to outcomes


Establishing Measurable Student Learning Outcomes Allows Faculty to Undertake Meaningful Assessment of Students’ Knowledge, Skills, and Abilities

Think-Pair-Share

What is a rubric?
An assignment blueprint

<table>
<thead>
<tr>
<th>Literature Course</th>
<th>Basic level</th>
<th>Applied level</th>
<th>Advanced level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Literary Terms</td>
<td>Vocabulary Quiz</td>
<td>In-class Discussions</td>
<td></td>
</tr>
<tr>
<td>A Lesson Before Dying</td>
<td>Reading Quiz</td>
<td>In-class Discussions</td>
<td>Comparison Contrast Paper on A Lesson and Antigone</td>
</tr>
<tr>
<td>Antigone</td>
<td>Homework; Graphic Organizer on character traits plus evidence (Creon, Antigone, Ismene, Haemon)</td>
<td></td>
<td>Comparison Contrast Paper on A Lesson and Antigone</td>
</tr>
</tbody>
</table>

Using Rubrics

- Use rubrics to explain your grading
  - After but also before students do the assignment
- Have them apply the rubrics
  - To a sample work
  - To their own work before submission
  - To peer work
- Have them develop the rubrics


How do we know we ended up where we wanted to be?

Snow Ball Discussion

- The teacher poses an open-ended question.
- Working together, two students generate as many responses as possible.
- Joining another pair, the foursome (quad) combines the list and generates other ideas.

Assessment at the Course Level:

How do you measure student learning in your courses?

Course Level Assessment

<table>
<thead>
<tr>
<th>Direct measures:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework assignments</td>
</tr>
<tr>
<td>Examinations and quizzes</td>
</tr>
<tr>
<td>Standardized tests</td>
</tr>
<tr>
<td>Projects</td>
</tr>
<tr>
<td>Case study analysis</td>
</tr>
<tr>
<td>Rubric scores for writing, oral presentations and performances</td>
</tr>
<tr>
<td>Artistic performances and products</td>
</tr>
<tr>
<td>Grades that are based on explicit criteria related to clear learning goals</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indirect Measures:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Evaluation</td>
</tr>
<tr>
<td>Test blueprints (outlines of the concepts and skills covered on tests)</td>
</tr>
<tr>
<td>Number of student hours spent at intellectual or cultural activities related to the course</td>
</tr>
</tbody>
</table>

There are more…

- Published tests (Standardized test)
- Locally developed test
- Course embedded assignments and activities
- Capstone evaluation
- Portfolios
- Videotape and audiotape evaluation
- Pre-test/Post-test
- Competence interview
- Thesis evaluation
- Curriculum and syllabus analysis (input assessment)
- External reviewers (peer review)
- Surveys
- Reflective essay
- Interview
Two Assessment Tools that Measure Student learning Outcomes

Knowledge Surveys
http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/knowlsurvey.htm

Structured Focus Groups
http://www.utsa.edu/tlc/Focus_Groups.html

Knowledge Survey Concepts

1. = I have insufficient knowledge to answer this question.
2. = I have partial knowledge or know where to quickly (20 minutes or less) obtain a complete answer to this question.
3. = I can fully answer this question with my present knowledge.

Is the course appropriately challenging?

Once it is over, how did students do across different levels of challenge?

Use correlation coefficient on pre-post measures. Which course changed minds the most?

Bloom’s Taxonomy of Educational Objectives

Evaluation
Synthesis
Analysis
Application
Comprehension
Knowledge


Cognitive Process Dimension

- Create
- Evaluate
- Analyze
- Apply
- Understand
- Remember
The Knowledge Dimension

- Metacognitive knowledge
- Procedural knowledge
- Conceptual knowledge
- Factual knowledge

Matching your plan to your students level of challenge

Rate each knowledge survey item’s Bloom Level. Reflect on whether our general course plan for levels of thinking challenge matches that of the needs of students in class.

Coding Knowledge Survey Items by Bloom Level

<table>
<thead>
<tr>
<th>Bloom Level</th>
<th>KS Item #</th>
<th>KS Item</th>
<th>Bloom Level</th>
<th>KS Item #</th>
<th>KS Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>Distinguish between a natural and a technological hazard. Why is this distinction sometimes difficult to make?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>Hazards are often described in terms of magnitude, frequency, duration, areal extent, and onset speed. What do each of these mean and why are we interested in these characteristics?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>To what degree are disasters a natural phenomenon?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>Describe the disaster management cycle.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>List and explain the range of human adjustments to hazards.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>Where is the most dangerous place to live in the U.K. with regards to hazards? Be sure to provide evidence.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>11</td>
<td>How does the media influence what the general population knows about hazards?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On the index card, write one word or phrase to describe your impressions of the course. Below this word, please write a number from 1-5 that describes your satisfaction with the course:

1 = Low, 5 = High
Outcomes section of 3x5 cards

• Two #s: of the two outcomes best met:
• Two #s: of the two outcomes least met:

Psychology 211 Outcomes
1. Demonstrate knowledge and understanding of theory and research in learning, perception, and cognition
2. Evaluate the appropriateness of conclusions presented in disseminated research relevant to psychology.
3. Construct examples of how psychological theories and principles relate to everyday life
4. Explain and defend against common thinking fallacies.
5. Explain behavior using different cognitive and learning theories or models

Roundtable/Ranking
Passing a sheet of paper rapidly from one person to another, please jot down all strengths of the course, saying them aloud as you write.

Passing a sheet of paper rapidly from one person to another, please jot down all the things about the course that might be changed or improved, saying them aloud as you write.

Working as a team, please rank order the top three strengths you identified, with the most important strength at the top of your list. Now rank order the top three drawbacks of the [course] conference—the things you would change—with the most important at top of your list.

Focus Group
Title: DSM/BA Student Preparation/Professionalism Employer
Date: 8/01/07 – 11:30 am

<table>
<thead>
<tr>
<th>Rank-Ordering of Strengths</th>
<th>Team One</th>
<th>Team Two</th>
<th>Team Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence</td>
<td>Bright</td>
<td>Professional</td>
<td></td>
</tr>
<tr>
<td>Confidence</td>
<td>Competitive</td>
<td>Reliable</td>
<td></td>
</tr>
<tr>
<td>Hardworking</td>
<td>Outgoing</td>
<td>Responsible</td>
<td></td>
</tr>
<tr>
<td>Quick to learn</td>
<td>Aggressive</td>
<td>Good time management skills</td>
<td></td>
</tr>
<tr>
<td>Technical knowledge</td>
<td>Efficient</td>
<td>Practical</td>
<td></td>
</tr>
<tr>
<td>Traits</td>
<td>Extra</td>
<td>Ambitious</td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>Teamwork</td>
<td>Teamwork</td>
<td></td>
</tr>
</tbody>
</table>
Thread (Strengths) | Color Code | Number of Occurrences
--- | --- | ---
Intelligence | 4 | 
Personality | 3 | 
Technical knowledge | 2 | 
Implementing | 2 | 
Aggressive | 2 | 
Motivated | 1 | 
Professionalism | 1 | 
Reliable | 1 | 
Team players | 1 | 
Good time management skills | 1 | 

Rank-Ordering of Weaknesses

<table>
<thead>
<tr>
<th>Team one</th>
<th>Team two</th>
<th>Team three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrealistic expectations</td>
<td>People skills</td>
<td>Unprepared for work</td>
</tr>
<tr>
<td>Occasional reliability issues</td>
<td>Culturally unaware</td>
<td>Conflict resolution</td>
</tr>
<tr>
<td>Impatient</td>
<td>High expectations</td>
<td>Communication</td>
</tr>
<tr>
<td>Lack of people skills</td>
<td>Knowledge of the top</td>
<td>Perception code</td>
</tr>
<tr>
<td>Quality</td>
<td>Information with business world (Know a lot)</td>
<td>Enthusiastic teaching</td>
</tr>
<tr>
<td>Meeting with customers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thread (Weaknesses) | Color Code | Number of Occurrences
--- | --- | ---
Lack of people skills | 5 | 
Expectations | 4 | 
Occasional reliability issues | 1 | 
Impatient | 1 | 
Culturally unaware | 1 | 
Unprepared for work | 1 | 
Conflict resolution | 1 | 
Communication | 1 | 
Negotiation skills | 1 | 

Instructional Dimensions | % Variation Explained | Importance Shown by Correlation (and rank) with Student Achievement | Importance Shown by Rank with Overall Evaluations
--- | --- | --- | ---
Teacher's preparation; organization of the course | 30 – 35% | .57 (1) | (6)
Clarity and understandability | 25 – 30% | .56 (2) | (2)
Teacher's stimulation of interest in the course and its subject matter | 15 – 20% | .50 (3) | (3)
Teacher's encouragement of questions, discussion, and openness to opinions of others | 10 – 15% | .48 (4) | (11)
Intellectual challenge and encouragement of independent thought (by teacher & course) | 5 – 10% | .36 (5) | (11)
Perceived outcome or impact of instruction | 10 – 15% | .36 (6) | (4)
Teacher's sensitivity to, and concern with; class level and progress | 5 – 10% | .30 (10) | (5)

Use Multiple Measures

- Different instruments measure different types of outcomes
- Use more than one type of assessment so they complement each other.
- Each type of assessment instrument has its own strengths and weaknesses.

Build Redundancy into the System

- Multiple courses within a program
- Multiple projects or other measurements within a course

Chart courtesy of Ed Nuhfer, CSU Channel Islands
Some Advice about Strengthening Teaching and Learning through Student Learning Outcomes

Why are Student Learning Outcomes Important?

- They help students appreciate your organizational skills
- They guide development of the course syllabus
- They guide decisions about content and coverage
- They guide development of evaluation methods (test and assignments).
- They allow you to undertake broader assessments
- They result in convergence of content, assignments, and grading!

Definition of Rubric

“As applied to student work, a rubric reveals . . . the scoring ‘rules.’ It explains to students the criteria against which their work will be judged. More importantly, . . . It makes public key criteria that students can use in developing, revising, and judging their own work.”