The Basics of Understanding Student Learning Outcomes Assessment: New Expectations, New Opportunities

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Today’s Goals

• Part 1: To introduce, describe, and explain the basic elements of student learning outcomes, their development, and measurement
• Part 2: To share a structure for assessment planning and reporting for undergraduate, graduate, and professional programs
• Part 3: Analyze examples of undergraduate and graduate academic assessment plans, SLOs, measures, results, and use of results

Common Challenges

Size and Scope
• Multiple colleges
• Undergraduate programs
• Graduate programs
• Professional programs

Institutional Consistency
• Outcomes
• Assessment reporting
• Cycles

Management and Tools

Honoring unit autonomy, disciplinary distinctions, and institutional requirements

Faculty Comportment

Assessing Student Achievement

8.2. The Institution identifies expected outcomes, assesses the extent to which it achieves these outcomes, and provides evidence of seeking improvement based on analysis of the results in each of the following areas below:

a. student learning outcomes for each of its educational programs (Student outcomes: educational programs)
Part 1: Student Learning Outcomes

Basic Element 1: Define and Disseminate the Terms

Student Learning Outcomes (SLOs) are defined generally as “what students are expected to know and be able to do by completion of their degree program”

BASIC ELEMENT 1: define this for your faculty and ensure that this definition is consistent across campus and clearly posted.

Basic Element 2: Consider a Categorical Organizing Framework

Basic Element 3: SLOs that are Recent, Relevant, and Rigorous

Student Learning Outcomes reflect the curriculum, the discipline, and faculty expectations; as these elements evolve, learning outcomes change.

Recent - the outcome reflects current knowledge and practice in the discipline.

Relevant - the outcome relates logically and significantly to the discipline and the degree.

Rigorous - the degree of academic precision and thoroughness that the outcome requires to be met successfully.
Basic Element 4: Distinguish Outputs from Outcomes

- **OUTPUTS** describe and count what we do and whom we reach, and represent products or services we produce. Processes deliver outputs; what is produced at the end of a process is an output.

- **An OUTCOME** is a level of performance or achievement. It may be associated with a process or its output. Outcomes imply measurement - quantification of performance.

Outcomes and Outputs: What is the Difference?

We seek to measure outcomes as well as their associated outputs; however, SLOs focus on outcomes.

For example, while we produce a number of new graduates (the output), it is critical that we have a measure of the quality of the graduates as defined by the college or discipline (the outcome).

Effective Student Learning Outcomes describe, in measurable terms, these quality characteristics by defining our expectations for students.

Exercise 1: Outputs or Outcomes?

- A. Output
- B. Outcome

Our program graduated 25 students in Spring 2018.
80% of our students scored in the 95th percentile on the state teacher examination.

A. Output
B. Outcome

95% of our students achieved Level 4 (out of 5) on our presentation assessment rubric.

A. Output
B. Outcome

In 2018, our doctoral students published 10 papers in The International Journal of Psychology.

A. Output
B. Outcome

Basic Element 5: Distinguish SLOs and Program Goals

- **Student Learning Outcomes (SLOs)** describe student learning - what students will know and be able to do as a result of completing an academic program (undergraduate, graduate, professional, and certificate). Program faculty set targets for their SLOs.

- **Program Goals** describe the unit’s expectations for programmatic elements, such as admission criteria, acceptance and graduation rates, etc. - see p. 4 of your handout.
Exercise 2: Student Learning Outcomes or Program Goals?

Students identify and describe major events in American history from 1770-1800.
A. Program Goal
B. Student Learning Outcome

We will lower the student attrition rate to 10%.
A. Program Goal
B. Student Learning Outcome

Reduce the average time to degree in our undergraduate program from the 2017-18 rate of 4.5 years to 4 years in 2018-19.
A. Program Goal
B. Student Learning Outcome
A. Program Goal

B. Student Learning Outcome

Students analyze experimental data and interpret results in the cellular and molecular sciences.

A. Yes  B. No

Focus on what students will know and be able to do.

Describe observable and measurable actions or behaviors.

The key to measurability: an active verb that describes an observable behavior, process, or product.

Students design a new office building.

A. Yes  B. No

Basic Element 6: Ensure the Outcome is Measurable

Effective SLOs...

Verbs and Phrases that Complicate Measurability

**Understand**
- An internal process that is indicated by demonstrated behaviors - OK for learning goals but not recommended for program or course SLOs

**Appreciate; Value**
- Internal processes that are indicated by demonstrated behaviors closely tied to personal choice or preference; OK if the appreciation or valuing is supported by discipline-specific knowledge

**Become familiar with**
- Focuses assessment on “becoming familiar,” not familiarity
Verbs and Phrases that Complicate Measurability

**Learn about, Think about**
- Not observable; demonstrable through communication or other demonstration of learning

**Become aware of, Gain an awareness of**
- Focuses assessment on becoming and/or gaining – not actual awareness

**Demonstrate the ability to**
- Focuses assessment on ability, not achievement or demonstration of a skill

Ensure the Outcome is Measurable

Bloom’s Taxonomy (Anderson & Krathwohl, 2001, p. 67-68)

- **Remember**: Retrieve, recognize, and recall relevant knowledge from long-term memory.
- **Understand**: Construct meaning from oral, written, and graphic messages by interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.
- **Apply**: Carry out or use a procedure by executing or implementing.
- **Analyze**: Break materials into constituent parts, determine how the parts relate to one another, and to an overall structure or purpose by differentiating, organizing, and attributing.
- **Evaluate**: Make judgments based on criteria and standards through checks and critiques.
- **Create**: Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure by generating, planning, or producing.

Exercise 3: Are the Following Outcome Statements Measurable?

- A. Yes
- B. No

Students understand good writing style.
Students sight-sing a 16-measure melody with no errors.

A. Yes  
B. No

Students plan effective health education programs.

A. Yes  
B. No

Students appreciate 20th century artworks.

A. Yes  
B. No

Students design a new office building.

A. Yes  
B. No
Students define the ethical responsibilities of business organizations and identify relevant ethical issues.

A. Yes  
B. No

Direct assessments of student learning provide direct examination or observation of student knowledge or skills against measurable performance indicators.

Indirect assessments ascertain the opinion or self-report of the extent or value of learning experiences (Rogers, 2011)

Students explore geological formations.

A. Yes  
B. No

Basic Element 7: Balance Direct and Indirect Assessments

Exercise 4: Direct or Indirect Assessments?
Course midterm exam.
A. Direct
B. Indirect

Final paper graded by a faculty developed rubric.
A. Direct
B. Indirect

Senior exit interview.
A. Direct
B. Indirect

Student peer-assessment.
A. Direct
B. Indirect
Developing Measurable SLOs: A Three-level Model Example

Level 1: Establishing Learning Goals for the Degree

Learning Goals - these are found in the description of the major, or in the program mission or on the program website.
Example: Materials Science and Engineering

The major enables students to develop an understanding of materials systems and their role in engineering. Emphasis is placed on the ability to apply knowledge of mathematics, science and engineering principles to materials science and engineering; to design and conduct experiments, as well as to analyze and interpret data; and to design a program name system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints.


Level 2: Program Student Learning Outcomes for MSE

Content/Discipline Knowledge
- Apply knowledge of mathematics, science and engineering principles to materials science and engineering. (SLO1)
- Design and conduct materials science and engineering experiments and analyze and interpret the data. (SLO2)

Critical Thinking
- Design a materials science and engineering system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints. (SLO3)

Communication
- Communicate technical data and design information effectively in speech and in writing to other materials engineers. (SLO4)

MSE: Connecting Goals to Outcomes

Learning Goal
• Design a program name system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.

Student Learning Outcome
• Design a materials science and engineering system, component or process to meet desired needs within realistic economic, environmental, social, political ethical, health and safety, manufacturability and sustainability constraints.

MSE: Connecting Goals to Outcomes

Learning Goal
• Understand materials systems and their role in engineering.

Student Learning Outcomes
• Communicate technical data and design information effectively in speech and in writing to other materials engineers.

Connecting Program SLOs to Courses MSE Curriculum Map

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<th>Courses</th>
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<th>SLO 2</th>
<th>SLO 3</th>
<th>SLO 4</th>
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1 = Introduced, R = Reinforced, A = Assessed
Assessments in the boxes marked A are conducted using specific homework, exam, or assignment questions aligned with that SLO.

Source: 2018-19 Undergraduate Catalog

Level 3: Course Level SLOs

These are determined by the faculty to teach the course.

These should directly relate to the program SLOs.
Academic Assessment Plans provide a common framework for units to plan how they assess and measure student achievement of the SLOs.

- Provides faculty a focal point for the discussion of the assessment of student learning in the degree programs.
- Planning discussions provide an opportunity to revisit the curriculum and its relationship to the SLOs.
- Provides a consistent reference resource when faculty and leadership change.

Part 2: Planning and Reporting
Basic Element 8: Develop a Planning Timeline/Cycle

Basic Element 9: Develop Templates and Rubrics

SLOs
- Ensure consistent wording of outcome wherever published.
- Update as needed through approval process.

Assessment Method
- List the assignment, exam, project, etc.
- Describe sampling procedure if appropriate.

Basic Element 9: Develop Templates and Rubrics

Results
- Enter the threshold of acceptability.
- The number of students assessed
- The number of students who passed and met the outcome
- The percentage of students who passed and met the outcome
- This meets/does not meet your threshold of acceptability

Basic Element 9: Develop Templates and Rubrics

Results
- What did you find out?
- Important: If the program is offered in UF Online or as a fully online graduate program, disaggregate the results by delivery mode and compare the results achieved by the on-campus students and the UF online students.
- Attach the name-redacted data summaries you used.
Basic Element 9: Develop Templates and Rubrics

Use of Results

- What impact did your review of these results have on your program?
- What did you decide to do based on what you found out?
  - State who reviewed the results.
  - Refer to the results that were reviewed.
  - State actions taken in past tense.

Management Tools

Figure 1 - Academic Assessment Plan Review Rubrics - p. 14-16

Figures 2 and 3 - New or Modifying SLO/Academic Assessment Plan Submission form - p. 17-18

Basic Element 10: Develop an Approval and Management Process

The University of Florida SLO Approval Process (p. 19)
Basic Element 11: Develop a Cycle of Assessment and Reporting

- Plan and Gather Data
- Evaluate the Data
- Implement Plan
- Modify and Improve Assessments

Basic Element 12: Develop a Quality Assurance Process

Elements of Quality Assurance

- Multi-step, institutional review and approval process
- Templates and rubrics for guiding faculty through the process
- Review and evaluate faculty submissions
- Cross-reference plans with data reported annually
- Develop and provide professional development
- Model the process: Modify and improve based on the data you collect

Part 3: Group discussions
Quick Refresher: Which SLO modification is best?

1. The next few slides offer sample SLOs. How you would modify the SLO? (p. 8-11 in the handout offers a guide)

2. Of the choices provided, which do you feel is the best modification and why?

Students understand good writing style.

A. Students write using the appropriate style.
B. Students describe the appropriate writing style.
C. Students create papers using the appropriate writing style.

Students demonstrate that they know how to solve a physics problem.

A. Students calculate physics problems correctly.
B. Students solve physics problems accurately.
C. Students know how to solve physics problems.

Students describe their understanding of Napoleon’s role in French history.

A. Students understand Napoleon’s role in French history.
B. Students know Napoleon’s role in French history.
C. Students describe Napoleon’s role in French history.
Group discussion: Revising SLOs

Review the program’s Student Learning Outcomes.

• MS, Chemistry – p. 23

QUESTIONS FOR DISCUSSION:
Are these measurable as written? How would you revise these?

Are these measurable as written?

PG 2 - Increase international opportunities for graduate students.
• Evaluation Method: Tracking of graduate student aid.

SLO 3 - Students engage in professional research and writing activity at the PhD level, for example, conference-ready papers and/or materials appropriate for publication.
• Assessment Method: Supervisory review of professional materials.

Source: English PhD 2015-16 PG 2 and SLO 3

PG 1 - Continue to hire the best faculty, and further enhance diversity of the faculty.
• Evaluation Method: The number of voting faculty members is tabulated at each faculty meeting and

SLO 4 - Communicate technical data and design information effectively in speech and in writing to other materials engineers.
• Assessment Method: Specific homework, exam, or assignment questions in EMA 4714; Senior exit survey

Source: Mat Sci & Eng BS 2015-16 PG 1 and SLO 4

Group Discussion: Issues to Operationalize Practices

Support for assessment practices
• Leadership
• Colleagues
• Coordinators
• Faculty

Resources
Do you have the personnel, tools to manage data, audit quality, and compare changes year to year?
• What are barriers to adoption?
• What are the next steps to move forward in your process?
A Summary of Basic Elements

1. Define and disseminate the terms
2. Consider a categorical organizing framework
3. Recent, Relevant, and Rigorous
4. Distinguish Outputs from Outcomes
5. Distinguish SLOs and Program Goals
6. Ensure the outcome is measurable
7. Balance direct and indirect assessments
8. Develop a planning timeline/cycle
9. Develop templates and rubrics
10. Develop approval and management process
11. Develop a cycle of assessment and reporting
12. Develop a quality assurance process

Discussion and Questions

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