Assessing Student Learning Outcomes (SLOs) to Improve Learning

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Margie Hobbs
The University of Mississippi, Retired
margiehobbs@bellsouth.net

Agenda

- Assessment Perspectives
- Best Practices
- Program vs. Course Outcomes
- Six Steps in Assessment
- Questions

Perspectives on Assessment

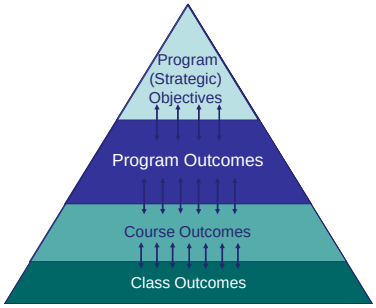
- Has become a national conversation
- Increased emphasis from regional accreditation agencies
  - Part of five-year follow-up SACS report
  - Trend to more rigorous requirements
- Institutional attention
- Emphasis will only increase

Assessment Best Practices

Assessment should:

- be ***valued*** by the institution (including faculty).
- ***begin with the end in mind.***
- be ***ongoing and cumulative, not episodic.***
- be ***driven and designed by faculty***
- be about ***evaluating what is meaningful,*** not necessarily easy to measure.

Assessment Mapping



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Getting Specific:

How to Conduct Assessment

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Six Steps in Assessment Process

Planning the Assessment:
- Mission Statements
- Program Outcomes
- Assessment Methodology
- Targets for Success

Implementing the Assessment
- Data Collection and Analysis
- Closing the Loop (Taking Action)

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I. *Mission Statement*

- Institutional Mission
  - Provides foundation, role, and scope
  - Overarching guidance
- Institutional Goals
  - Derived from mission
  - Support mission
  - Linkage to implement mission
- Departmental Goals
  - Derived from institutional mission & goals

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II. Student Learning Outcomes

- Stated in terms of what students are expected to know, think, and be able to do as result of program
- Created by program faculty
- Focused on program or course level learning

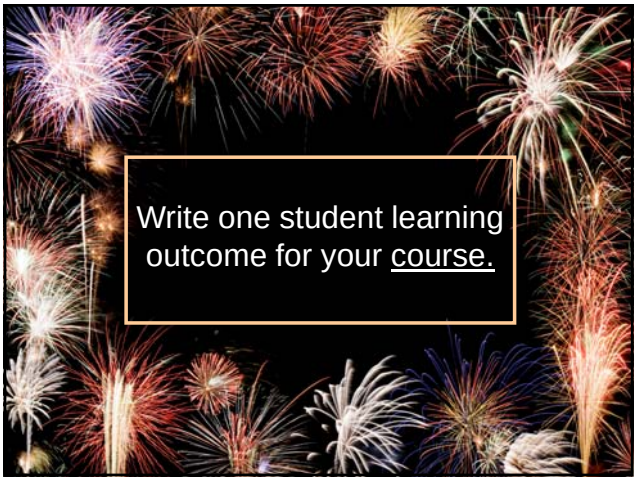
Critique These SLOs

- ***Students will apply concepts of exponentials to conduct experiments and make generalizations.***
- ***Students will communicate orally and in writing their observations of experiments.***
- ***Students will use appropriate mathematics to make predictions before conducting experiments.***

Checklist for SLOs

Student Learning Outcomes should:

- ✓ Answer the question "What are students expected to know, think or be able to do?" upon completion of program
- ✓ Be clearly and succinctly stated
- ✓ Be under the control or responsibility of the program
- ✓ Be ascertainable/measurable
- ✓ Be actionable (lead to improvements)
- ✓ Lead to results other than "yes/no"



III. Assessment Methodology

Means of Assessment should:

- Identify at least two assessment methods
- Be directly related to outcome statement
- Be measurable/ascertainable
- Consider all aspects of the outcome statement
- Provide adequate data for analysis
- Provide actionable data

Assessment Methodology (MATH)

Students in MATH 124 will submit a research project based on exponentials and logarithms.

A faculty panel will use a rubric that has a scale of 1 to 5 (where five is excellent) to assess the six components of the project on its first submission.

Panel scores will be analyzed by each component across all student work.

Direct vs. Indirect Assessment

- Based on analysis of student artifacts, performances, or behaviors
- Assessment means include tests, assignments, projects, recitals, performances, portfolios, papers
- Assessment tools include item analyses, rubrics, percentiles
- Based on reported *perceptions* of student learning
- Assessment means include attitudinal data from students, alumni, employers, faculty, fieldwork supervisors
- Assessment tools include surveys, exit interviews, focus groups
- Appropriate as **secondary** means of assessment

Quantitative vs. Qualitative Assessment

- Test construction is efficient
- May take less time to administer
- Scoring straightforward and efficient
- Analyzing data relatively easy
- Ability to judge "whole" within context
- Flexibility
- Enables student to more comprehensively demonstrate learning
- Can lead to discovery of unexpected findings

What's with Grades

Using Grades or G.P.A as Assessment Methods

- Unit of analysis is individuals, not program
- Approximates *portion* of learning each student has, not precisely what each student knows
- May include factors not related to student performance (i.e., attendance, participation)
- Objectivity of evaluator questioned
- **Generally, not accepted as a means of program assessment**

Unit of Analysis

For course and program SLO assessment:

Unit of analysis is

LEARNING COMPONENT

NOT

Individual Students Scores

Why Use Rubrics?

Well-designed rubrics:

- Increase evaluator reliability, reduce bias and increase consistency
- Provide learners with expectations for assignments, promoting self-assessment
- Help faculty clarify goals and identify most salient elements used for evaluation
- Provide rich data that can be used for program assessment and improvement

How to Create and Use a Rubric

1. Identify Student Learning Outcome
2. Identify Student Work (Artifact)
3. Identify Components of Rubric for SLO
4. Determine Scale
5. Describe Performance Levels
6. Develop Scoring Form
7. Train/Calibrate Evaluators
8. Analyze Data

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Rubric for Writing

Component	Performance Levels				
	Excellent (5)	Good (4)	Acceptable (3)	Unsatisfactory (2)	Poor (1)
Audience	Gears style and vocabulary for targeted audience	Somewhat gears style and vocabulary for targeted audience	Fluctuates in style and vocabulary	Often uses in appropriate style and vocabulary for audience	Consistently uses style and vocabulary inappropriate for audience
Organization	Logically developed with excellent transitions	Logically developed with some good transitions	Some inconsistency in logical development and transitions	Frequent inconsistency in logical development and transitions	Illogically developed with poor transitions
Research and Documentation of Courses					
Mechanics					

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Individual Student Scores vs. Component Scores - Writing Project

Component	Individual Student Scores					% Student Scores 4 or above
	Student 1	Student 2	Student 3	Student 4	Student 5	
Audience	4	3	1	4	4	60 %
Organization	5	2	2	5	3	40%
Research and Documentation of Sources	4	3	2	3	2	20%
Mechanics	5	4	3	4	4	80%
Total	18	12	8	16	13	
Student grade	**A**	**C**	**D**	**B**	**C**	

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Performance Level Descriptors

Excellent	Very Good	Satisfactory	Unsatisfactory	Poor
Always	Most often	Usually	Infrequently	Never
Synthesizes	Analyzes	Applies	Understands	Reports
Creative	Interesting	Neutral	Boring	Inaccurate
Very Original	Original	Somewhat original	Not original	Borrowed
Pleasing		Neutral		Unattractive
Complete	Nearly complete	Missing elements	Mostly incomplete	Very incomplete
Always	Usually	Sometimes	Rarely	Never

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Critique Assessment Methods (MATH)

- A faculty panel will use the Exponentials Project Rubric to evaluate student projects for each of the six learning components. The scale will be 1 to 5 where 5 is excellent. The data will be analyzed by learning component across student work.
- Students' calculator findings will be verified for each of the predicted values. Data will be analyzed across students for each question.

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Checklist for Assessment Methodology

- ✓ **Describe student work** – *Paper, performance, lab report, comprehensive test, project*
- ✓ **Describe evaluation tool(s)** – *Rubric/scale, item analysis report*
- ✓ **Define from whom or where data will be collected** – *Course embedded, senior performance, internship, standardized test*
- ✓ **Describe how data will be collected** – *First attempt, selected questions, elements of portfolio*
- ✓ **Describe data analysis plan** – *Faculty panel, scoring forms, unit of analysis (learning component, not individual student)*

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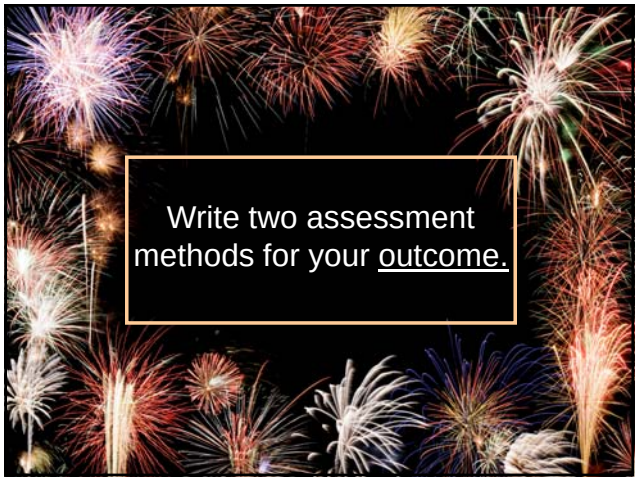

IV. Establish Target for Success

Why establish targets?

- Provides standard for determining success
- Puts data analysis in perspective
- Allows program to identify desired performance levels
- Avoid vague words - most, majority, etc.

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Example of Criteria for Success (MATH)

- 80% of scores provided by the faculty panel for each of the six elements of the Exponentials Project Rubric will be 4 (very good) or 5 (excellent).
- 75% of the overall ratings for the projects will be 4 or 5.
- The attached spreadsheet shows the aggregated data.

Checklist for Target for Success

When setting target for success:

- ✓ Use component (not individual) as unit of analysis
- ✓ Be specific (x% of student scores for each component will be 4 or 5 on a five-point scale)
- ✓ Avoid vague words such as "most" or "majority"
- ✓ Avoid "all" or "100%" targets
- ✓ Relate directly to outcome statement and assessment methodology
- ✓ Identify component and overall target scores

V. Data Collection and Analysis

- Move from planning the assessment to conducting it
- Keep detailed documentation
- Be candid in your analysis
- Report in detail sufficient to be convincing

Example of Data Collection Description (Exponentials Project)

The 24 exponentials projects were assessed by a three member faculty panel for each of the six components of the rubric and for overall performance. While the complete data table is shown below the summary of scores indicated the criterion was not met for the Methods (62.5%) and Conclusion (66.7%) components of the project.

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Example of Data Collection Description (Exponentials Project)

Component	# scores 4 or 5	Total # scores	% of 4 or 5 scores
Sources	68	72	94.4%
Methods	45	72	**62.5%**
Analysis	67	72	83.3%
Conclusion	48	72	**66.7%**
Organization	59	72	81.9%
Grammar, etc.	62	72	86.1%
Overall	54	72	75.8%

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Checklist for Data Collection and Analysis

Data collection and analysis should:

- ✓ Provide detailed data (avoid use "a majority" or "most")
- ✓ Use specific numbers (avoid rounding)
- ✓ Avoid technical language
- ✓ Directly link to and support outcome statement
- ✓ Be consistent with target
- ✓ Be clearly and succinctly presented
- ✓ Be credible and mathematically possible
- ✓ Support actions taken later to improve program

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VI. Closing the Loop –Taking Action

- Describes actions faculty have taken based on data collected or lessons learned
- If no improvements are necessary, next cycle:
  - Change target or
  - Choose another outcome to assess

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Examples of Actions Taken

- Curriculum revision
- Course modification
- Instructional methodology
- Sequence change
- Technology update
- Assessment methodology change
- Target adjustment
- Faculty development
- Procedure, process change

Example of Describing Improvements (Exponentials)

Based on the assessment data, faculty have added research projects in MATH 125 and 264 (both required courses) that emphasize research methods and formulating conclusions.

The faculty have also made revisions to some of the descriptors for performance levels in the rubric used to evaluate the project.

Checklist for Making, Describing Improvements

Improvements related to IE should:

- ✓ Address gaps found in assessment results
- ✓ Provide details (specific course number nature of the change)
- ✓ Relate to outcome statement
- ✓ Result from data collected
- ✓ Be substantive, not trivial
- ✓ Be stated in *past* tense
- ✓ Avoid words like "continue," "maintain"

Assessment Matters!

Questions?

Contact:

Margie Hobbs
margiehobbs@bellsouth.net

Assessment Matters Consulting Group

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