Creating Practical and Meaningful Course level Assessment of Student Learning

office of
educational
effectiveness
assessment

rit.edu/outcomes

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Mission and Goals

The Office of Educational Effectiveness Assessment (EEA) provides leadership and centralized support for assessment processes focused on fostering academic quality and advancing institutional effectiveness. We collaborate with the campus community to facilitate meaningful, manageable, and sustainable assessment practices.

The Educational Effectiveness Assessment Office has the following goals:

- **Support** effective assessment processes (planning, implementing, analyzing, summarizing, sharing, and using results) to improve student learning and academic programs

- **Support** achievement of RIT's General Education Student Learning Outcomes by implementing RIT's Gen Ed Assessment Plan and Faculty Engagement Model

- **Advance** institutional effectiveness within Academic Affairs administrative units

- **Collaborate** with campus community to ensure the university meets the required assessment standards for accreditation

- **Utilize** integrated technologies to support meaningful and sustainable outcomes assessment and reporting practices

Course Assessment Overview

Student Learning Outcomes Assessment

Assessment of student learning is an integral piece to the learning experience. Course based assessment refers to methods of assessing student learning within the classroom environment, using course goals, student learning outcomes, and content to gauge the extent to which specific learning outcomes are being met. Effective teaching and learning includes: integrated course goals and student learning outcomes, curricular alignment, and embedded assessments.

Three Key Elements to Successful Course Level Assessment

★ Establishing course goals that map to the program goals and student learning outcomes for the course

★ Measuring whether these goals have been met

★ Using the results to improve teaching and learning in the course

Key Questions

How do I define course learning goals and student learning outcomes that are meaningful and measurable?

How do I align program/course goals and outcomes to course syllabi?

How do I determine what assessment methods I already use? How can I improve my methods?

How can I be more deliberate and transparent about the assessment in my courses?

How can I use the data to improve curriculum, instruction, and assessment?

I.   Course Goals and Student Learning Outcomes (SLO's)

Adapted from California State University, Bakersfield, PACT Outcomes Assessment Handbook *(1999) and UMass-Amherst Handbook (2001), and L. Suskie's Assessing Student Learning: a common sense guide (2009).*

❖ **Course Analysis Inventory: A place to start**

- Review your teaching goals to become more aware of what you want to accomplish in your course. Do you know the overall goals for the program and how your course contributes to overall program goals?

- Be open to being as explicit as possible about student learning goals. **Use a Planning Worksheet to help get you started (See Attachment A).**

❖ **Establish or Revise Learning Goals/SLO's**

- Remember: goals describe broad learning outcomes in terms of skills and concepts. Competencies, learning outcomes, proficiencies all describe what we want students to know and be able to do and are expressed in more measurable terms (e.g., demonstrating problem-solving skills or writing skills).

- Goals state what you, your colleagues, or your college aim to achieve and SLO's indicate the observable and measurable ways to demonstrate the goals are met.

- Explicit goals can help you focus the design and structure of your course and guide your development and implementation of specific and measurable course objectives.

Ask yourself, "What are the major learning goals I want students to achieve in this course?" Remember that the goal statements can be slightly broad and theoretical. You will become more specific when you develop the student learning outcomes for the course.

If you are having trouble identifying course goals, try answering these questions:

Questions	Responses = Concepts for Course Goals
In general, what are the most important things a student gains or achieves in your course?	
What knowledge, skills, and dispositions qualities and capabilities) do you strive to foster in your students?	
What is the most important knowledge that your students acquire from your course or from working with you?	
Why do you use current assignments, readings, and activities? What is it you want to help students learn through these course elements?	
Where do students have difficulty in your course; what do they consistently not get?	

❖ **Establish or Revise Learning Goals/SLO's**

Developing Course Goals

Use the concepts identified in the chart above to develop your course goals. Course goals come first; student learning outcomes flow from these goals.

Connecting Course Goals to SLO's: How do I do this?

SLO's describe specific learning behaviors that students should demonstrate in the course. Course SLO's transform goal generalizations into specific student performance and behaviors that demonstrate student learning and skill development. Measurable SLO's must begin with an active verb **(see Attachment B - Bloom's Taxonomy).**

Sample Course Goals and SLOs
Too vague: **Demonstrate information literacy skills (so many skills – which ones)**
Too specific: **Use the college's online services to retrieve information (only one skill is too narrow)**
Better: **Locate information and evaluate it critically for its validity and appropriateness**

If you are having trouble identifying course SLO's, try answering the following questions:

1. For each of your stated goals, what are the specific student behaviors, knowledge, skills, or abilities that would tell you this goal is being achieved?

2. Ideally what evidence needs to be present or what specific behavior needs to be visible in order to see that your students are achieving the major goals you have established?

3. In your experience, what evidence tells you when students have met these goals – how do you know when they're "getting" it?

Course Goals	SLOs
Sample Goal for Biology	❖ Conduct an experiment including: use of an hypothesis, controlling variables, operationally defining terms, and
Demonstrate use of the scientific method for original scientific research	❖ Produce a scientific report for an in-class experiment

II. Assessment Methods - Identify and Review Existing Assessment Techniques

What do you currently use for gathering information on your students and their performance (e.g. mid-term project, capstone, writing assignments) in your course?

Try answering the following questions to help with your answer:

4. What information on student learning/performance do you currently collect (e.g., first-day survey, class assignment, test, project)? **See direct methods** (next page)**.**

5. Are the assessments directly related and aligned to your learning goals and SLO's?

6. Do you have some type of benchmark or standard for achievement (e.g. percentage, statement of student success)

7. Are there gaps between the information you collect, course goals, and SLO's?

8. What other information do you need to have to understand whether students are meeting these SLO's?

❖ **Assessing Student Learning - Direct and Indirect Methods**
   Suskie, L. (2009). Assessing student learning: A common sense guide (2nd ed.). San Francisco: Jossey-Bass.

Direct Methods of Assessing Student Learning (Clear and Compelling Evidence)

- "Capstone" experiences such as research projects, presentations, theses, dissertations, oral defenses, exhibitions, or performances, scored using a rubric

- Other written work, performances, or presentations, scored using a rubric

- Portfolios of student work

- Scores on locally-designed multiple choice and/or essay tests such as final examinations in key courses, qualifying examinations, and comprehensive examinations, accompanied by test "blueprints" describing what the tests assess

- Score gains between entry and exit on published or local tests or writing samples

- Summaries/analyses of electronic discussion threads

- Classroom response systems (clickers)

- Knowledge maps

- Student reflections on their values, attitudes and beliefs, if developing those are intended outcomes of the course

Indirect Methods of Assessing Student Learning (Signs that Students Are Probably Learning, But Exactly What or How Much They Are Learning is Less Clear)

- Course grades*

- Assignment grades, if not accompanied by a rubric or scoring guide

- Student ratings of their knowledge and skills and reflections on what they have learned in the course or program

- Questions on end-of-course student evaluation forms that ask about the course rather than the instructor

* Grades and Assessment

There is a difference between assessment and grading, but they do have one common characteristic as they both intend to identify what students have learned. Grades alone do not always give direct evidence because often grades don't identify which specific student learning outcomes and at what levels students have learned. Some course grades also include additional student behaviors that are not related to student learning outcomes (e.g. attendance and participation). For example, a grade of B in a mathematics course indicates a student learned an acceptable level of math, but not the specific math knowledge or skills that the student mastered well or what areas need improvement. A project or assignment grade would be a better link to the evidence of student learning, but a rubric for the project or assignment would provide the best direct evidence and the level at which the student learned and is an ideal source for assessment purposes. Grades are based on direct evidence of student learning such as the evaluations of tests, papers, and projects, but need to be clearly linked and aligned to learning goals and rubrics to suffice as direct evidence for assessment purposes.

Need help? The EEA website has resources and links to help with your assessment planning.

rit.edu/outcomes

III. Reviewing the Course Syllabus – Course Curriculum Map and Course Assessment Plan

At this point, adapting your course to include classroom-based assessment will be much easier as you have developed specific course goals for student learning and outlined SLO's to help you measure knowledge, skills, and dispositions or habits of the mind. You have also identified your current assessment techniques.

Now, look critically at whether your existing syllabus explicitly outlines anticipated learning outcomes and ties course content and requirements to these outcomes. This is your first step in using the assessment process to improve communication between you and your students. Students will benefit from clearly stated goals and SLO's that are linked to class content.

To accurately assess student learning, you need an effective syllabus that details the course goals, SLO's, expectations, and requirements. These elements of the syllabus will serve as a starting point for implementing classroom assessment in your course.

Putting it all Together – Curriculum Map for your Course

You may find using the **Course Curriculum Map (Attachment C)** and **Course Assessment Plan (Attachment D)** may help you map your goals, SLO's, and assessment methods.

IV. Design or Refine Rubrics/Scoring Guides

❖ Why Use Rubrics?

- Rubrics make clear the criteria by which student work will be assessed. Students, faculty, and other university stakeholders all benefit from explicit expectations and assessment criteria.

- Rubrics can inform teaching, helping faculty clarify expectations and guide decisions about curriculum, course, and assignment design.

- Rubrics produce assessments that are far more detailed than a single, holistic grade.

- Rubrics can make scoring easier and faster as they help you focus on what you want to measure.

- Rubrics make scoring more accurate and consistent and ensure the same criteria for all students.

- Rubrics provide concepts and vocabulary to support constructive discussions about learning and reflections on the learning process.

- Students can use rubrics to self-evaluate to see where they are and where they are headed.

- Rubrics give students a reference point for deeper engagement and peer assessment.

- Rubrics offer faculty a way to give students useful feedback and can help track student performance.

- Rubrics help gather direct evidence about student learning.

Sources: *Assessing Student Learning: A Common Sense Guide by Linda Suskie (2009), Washington State Teaching Center for Teaching, Learning, and Technology, and Understanding Educational Measurement by Peter McDaniel (1994)*

In best practices, rubrics, like other forms of assessment, are part of a cycle of reflection; they evolve based on input from users and the on-going refinement of learning goals and course activities. See **Attachment E** for template and steps for designing analytical rubrics.

What are the different types of Rubrics?

- **Checklists** – list of accomplishments or present in an assignment. Better for self-assessment or observation.

- **Rating Scales**- checklist with a scoring scale along a continuum shows the degree to which the things you are looking for are present in completed assignment. Quick and easy to create and score.

- **Descriptive Rubrics /Analytical Scoring Guides** – replace check boxes - descriptors describe what is expected at each level of performance. Explicitly documents standards and levels of performance. Breaks task into parts and articulates levels of performance for each criterion.

- **Holistic Scoring Guides** - short narrative descriptions to focus on the entire performance rather than components. Assesses performance across multiple criteria as a whole. Better for larger scale projects (150 essays or portfolios).

- **Structured Observation Guides –** a rubric without a rating scale, more subjective, qualitative, but still direct and valid.

V.   Benchmarks and Standards – Measures of Success

❖   Statements of Student Success – How well are my students learning?

Each student learning outcome should have an established baseline measure which indicates an acceptable level of student achievement. Benchmarks or standards determine what the acceptable level of achievement is for each outcome. Defining acceptability or unacceptability will depend upon the importance of the outcome and type of measure (direct/indirect).

In order for any score or average to have meaning, it needs to be compared to something. Setting benchmarks is a multiple step process to help explain how well your students are learning. The first step is to: (1) choose the kind of standard or benchmark, (2) set the appropriate standard or benchmark, and (3) set targets for students' collective performance.

A few tips to help you get started:

- Do some research - appropriate disciplinary associations, web search for examples, colleagues, peer programs.

- Benchmarks can be established from local (competency-based or criterion-referenced) or external (certification or licensure examinations) standards.

- Involve others in the standards-setting process - work with faculty, students, employers

- Use samples of student work to inform your discussion - implement assessment on a small scale and gather work samples to help determine exemplary to inadequate work.

Benchmarking is a continuous process so once you have set your initial standards and targets, you may want to adjust or modify based on your implementation.
(Assessing Student Learning: A Common Sense Guide by Linda Suskie. 2009)

VI. Timelines and Assessment Cycles

Consider when you will collect assessment data on an established cycle. When is the best time to measure and collect student learning outcomes data? Plan so you are collecting student data throughout the course – beginning, middle, and end. Determine if you want to collect annually or on a staggered schedule.

VII. Data Analysis and Key Findings

The analysis of assessment data provides evidence of student learning. Assessment data can distinguish patterns of consistency, evidence of learning within distinct student populations, and identify gaps in or achievement of program outcomes.

VIII. Using Your Data to Inform or Reform

❖ Closing the Loop

How do I use my course data to improve curriculum, instruction, and assessment? You have finally collected your data and now you want to use it. The following steps as outlined will help you summarize and analyze your assessment results.
(Assessing Student Learning: A Common Sense Guide by Linda Suskie. 2009).

- What questions are to be answered? Why did you conduct the assessment?
- Compare your results to the benchmarks you established. Are there any meaningful differences? You can also summarize the quality of the assessment process and strategies.
- Aggregate – summarize results into overall scores and sub-scores as appropriate.
- Use tables and charts with short explanations- brevity and clarity are important
- Identifying meaningful differences – statistical and practical
- Identify areas of improvement or refinement

For more information on using results see Attachment F.

Need Assistance? Contact EEA for Consultation, Resources, and Support

EEA Office: 585.475.2310
Email: outcomes@rit.edu
rit.edu/outcomes

Attachment A: Planning Worksheet

Program Mission
(initial point of reference, concise statement of the general values and principles which guide the curriculum, statement of program vision)

Program Goals
(bridge to the mission, more concrete concepts, narrowed and focused to the discipline and key concepts and competencies)

1.

2.

3.

4.

5.

Program Student Learning Outcomes
(linked to program goals, student focused, goal oriented, measurable (action verbs), observable, emphasize knowledge, skills, and dispositions that all students in the program should demonstrate)

1.

2.

3.

4.

5.

Attachment B: **Bloom's Taxonomy of Cognitive Skills with Action Verb List**

			Critical Thinking		
Knowledge	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**
Count	Associate	Add	Analyze	Categorize	Appraise
Define	Compute	Apply	Arrange	Combine	Assess
Describe	Convert	Calculate	Breakdown	Compile	Compare
Draw	Defend	Change	Combine	Compose	Conclude
Identify	Discuss	Classify	Design	Create	Contrast
Labels	Distinguish	Complete	Detect	Drive	Criticize
List	Estimate	Compute	Develop	Design	Critique
Match	Explain	Demonstrate	Diagram	Devise	Determine
Name	Extend	Discover	Differentiate	Explain	Grade
Outlines	Extrapolate	Divide	Discriminate	Generate	Interpret
Point	Generalize	Examine	Illustrate	Group	Judge
Quote	Give	Graph	Infer	Integrate	Justify
Read	examples	Interpolate	Outline	Modify	Measure
Recall	Infer	Manipulate	Point out	Order	Rank
Recite	Paraphrase	Modify	Relate	Organize	Rate
Recognize	Predict	Operate	Select	Plan	Support
Record	Rewrite	Prepare	Separate	Prescribe	Test
Repeat	Summarize	Produce	Subdivide	Propose	
Reproduces		Show	Utilize	Rearrange	
Selects		Solve		Reconstruct	
State		Subtract		Related	
Write		Translate		Reorganize	
		Use		Revise	
				Rewrite	
				Summarize	
				Transform	
				Specify	

Attachment C: **Course Curriculum Map**

Name of Course_____Program/College_____
Program Goals _____

Course Goals	Student Learning Outcomes	Assessment
Overall goals for students in the course	Students will be able to:(task, capability, knowledge, skills, and dispositions)	Assessment opportunity and method (assignment and rubric)

Attachment D: **Course Assessment Plan**

Name of Course_____Program/College_____

Program Goal(s) _____

Course Goals	Student Learning Outcomes	Performance Criteria/Benchmarks		Timeline		Use of Results		
Overall goals for students in the course – key concepts in the discipline	Students will be able to: (task, capability, knowledge, skills, and dispositions)	Standard, target, or achievement level	Assessment opportunity and method (assignment and rubric)	When collected during course	Data analysis	Major Findings	Recommendations	Actions and Follow-up

Attachment E: **Template for Designing Analytic Rubrics**

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Rating
Criteria #1	Description reflecting beginning level of performance	Description reflecting movement toward mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting highest level of performance	
Criteria #2	Description reflecting beginning level of performance	Description reflecting movement toward mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting highest level of performance	
Criteria #3	Description reflecting beginning level of performance	Description reflecting movement toward mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting highest level of performance	
Criteria #4	Description reflecting beginning level of performance	Description reflecting movement toward mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting highest level of performance	
				Overall Rating	

*Course/Assignment Title*_____ _____

*Course Goal/Learning Outcome*_____

Attachment E cont'd: **Template for Designing Analytic Rubrics**

Steps in the Design of Scoring Rubrics – Analytical

Step 1	**Re-examine the student learning outcomes/course goals to be addressed by the assignment.** This allows you to match your rubric with your objectives and actual instruction.
Step 2	**Identify specific observable attributes that you want to see (as well as those you don't want to see) your students demonstrate in their product, process, or performance.** Specify the characteristics, skills, or behaviors that you will be looking for, as well as common mistakes you do not want to see.
Step 3	**Brainstorm characteristics that describe each attribute.** Identify ways to describe above average, average, and below average performance for each observable attribute identified in Step 2.
Step 4	**For analytic rubrics, write thorough narrative descriptions for excellent work and poor work for <u>each individual attribute</u>.** Describe the highest and lowest levels of performance using the descriptors for each attribute separately.
Step 5	**For analytic rubrics, complete the rubric by describing other levels on the continuum that ranges from excellent to poor work <u>for each attribute</u>.** Write descriptions for all intermediate levels of performance for each attribute separately.
Step 6	***Share rubric with students prior to assignment and return a copy of the completed rubric with assignment.*** This will help students understand and clarify the expectations of the assignment.
Step 7	**Collect samples of student work that exemplify each level.** These will help you score in the future by serving as benchmarks.
Step 8	**Revise the rubric, as necessary.** Be prepared to reflect on the effectiveness of the rubric and revise it prior to its next implementation – usually revised a few times.

Information for the steps was adapted from various sources *(Airasian, 2000 & 2001; Mertler, 2001; Montgomery, 2001; Nitko, 2001; Tombari & Borich, 1999).*

Attachment F: **Collect, Analyze, and Use Data to Inform or Reform**

Collection and Analysis of Data

Consider how you will collect course-embedded assessment data on an established cycle. This cycle should be established in your Course Assessment Plan. The easiest method is to collect the scoring guides or rubrics, aggregate the data, and create simple data tables using some type of organized system/spreadsheet/database. Once data are aggregated and analyzed, faculty can identify major findings, recommendations, actions, and follow-up. Consult with EEA for recommendations and strategies.

Assessment Reporting *(adapted from Cal State Chico, 1998)*
1. Which outcomes and goals were you focusing on in the course?
2. What assessment methods did you use? Why did you select these? Are you planning on revising or modifying for the next year?
3. How well did students meet the benchmarks that you set?
4. What was the most valuable thing you learned?
5. Discuss your findings - what are the three most important things you would like to share with others about the results?
6. Using the Results - how will the results impact decisions on curriculum, instruction, or assessment in your course? Who do/will you share your findings with – students, faculty, chair, etc.
7. Is your course/assignment part of the program-level assessment plan? What additional process is needed to report the findings?

Evaluating the Assessment Process
1. Did you have a positive or negative experience implementing your assessment methods?
2. What were your students' reactions to the assessment process?
3. What did you find especially effective in the assessment process?
4. What did you particularly dislike about the process?
5. What would you change about the process and why?
6. Were you able to "close the loop" and use the data for improvements to the course?

Sharing Results

You have collected and analyzed data – what can you do with the assessment findings? Here are some ways academic programs share findings from their assessments:
- Publicize results to combinations of faculty, students, alumni, prospective students, administrators, donors
- Department Websites – post summaries of relevant results related to course goals, program goals, current department or college initiatives
- Alumni or departmental newsletters
- Accreditation agencies
- Recruiting/admissions brochures
- Student orientation materials
- Awards ceremonies
- Publications or research forums

(Adapted from Northern Arizona University and Linda Suskie)

Glossary

Assessment is the systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development. *(Palomba & Banta, 1999)*

Course level Assessment refers to methods of assessing student learning within the classroom environment, using course goals, outcomes and content to gauge the extent of learning that is taking place.

Curriculum Mapping is an analytical approach that allows faculty to identify important components of program curricula, place them in relation to each other in a visual format, and then capture an overarching curricular structure to support cognitive scaffolding for further analysis. A curriculum map is a visual tool that can be used to introduce new students and faculty to the program, curriculum discussion, accreditation requirements, and provides an approach to systematically study the curriculum. Curriculum mapping is especially helpful in implementing an assessment plan. *(Cuevas, Matwev & Feit, 2009)*

Direct Assessment of Learning occurs when measures of learning are based on student performance or demonstrates the learning itself. Scoring performance on tests, term papers, or the execution of lab skills are examples of direct assessment of learning. Direct assessment of learning can occur within a course (e.g., performance on a series of tests) or could occur across courses or years (comparing writing scores from sophomore to senior year).

Embedded Assessment is a means of gathering information about student learning that is integrated into the teaching and learning processes. Results can be used to assess individual student performance or they can be aggregated to provide information about the course or program. These assessments can be formative or summative, quantitative or qualitative. Example: as part of a course, expecting each senior to complete a research paper that is graded for content and style, but is also assessed for advanced ability to locate and evaluate web-based information and the use of appropriate technology.

Formative Assessment refers to the gathering of information or data about student learning during a course or program that is used to guide improvements in teaching and learning. Formative assessment activities are usually low-stakes or no-stakes; they do not contribute substantially to the final evaluation or grade of the student or may not even be assessed at the individual student level. For example, posing a question in class and asking for a show of hands in support of different response options would be a formative assessment at the class level. Observing how many students responded incorrectly would be used to guide further teaching.

Indirect Assessment of Learning uses perceptions, reflections or secondary evidence to make inferences about student learning. For example, surveys of employers, students' self-assessments, and grades are indirect evidence of learning.

Learning Outcomes are operational statements describing specific student behaviors that evidence the acquisition of desired knowledge, skills, abilities, capacities, attitudes or dispositions. Learning outcomes can be usefully thought of as behavioral criteria for determining whether students are achieving the educational objectives of a program, and, ultimately, whether overall program goals are being successfully met. Outcomes are sometimes treated as synonymous with objectives, though

objectives are usually more general statements of what students are expected to achieve in an academic program. *(Allen, Noel, Rienzi & McMillin, 2002)*

After articulating a mission statement, a department creates goals and outcomes, or locates already existing ones, and connects them to the mission statement, as well as the broader mission and goals of the school and college. Helpful tips on creating learning outcomes and goals from the Middle States Handbook can be found at http://www.msche.org/publications/SLA_Book_0808080728085320.pdf

Rubrics are scoring tools that explicitly represent the performance expectations for an assignment or piece of work. A rubric divides the assigned work into component parts and provides clear descriptions of the characteristics of the work associated with each component, at varying levels of mastery. Rubrics can be used for a wide array of assignments: papers, oral presentations, artistic performances, group projects, etc. Rubrics can be used as scoring or grading guides, to provide formative feedback to support and guide ongoing learning efforts, or both.

Summative Assessment is the gathering of information at the conclusion of a course, program, or undergraduate career to improve learning or to meet accountability demands. When used for improvement, impacts the next cohort of students taking the course or program. Examples: examining student final exams in a course to see if certain specific areas of the curriculum were understood less well than others; analyzing senior projects for the ability to integrate across disciplines.