From Outcomes and Maps to Developing A Plan to Assess Student Learning

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- Visualizing a Cycle of Inquiry to Develop An Assessment Plan
- Assessing for Enduring Learning
- Determining What You Want to Learn about Your Students’ Learning: Questions That Matter to You
- Identifying When You Want to Learn
- Identifying or Designing Aligned Methods of Assessment
- Developing Criteria and Standards of Judgment—What’s Good Enough?
- Analyzing, Interpreting, and Acting on Results to Improve Student Learning and Solve the Problem You Initially Raised (Report Format)
- Implementing Proposed Changes/Innovations
- Re-entering the Assessment Cycle
- Appendices
Levels of Learning Outcome Statements

- Institution-level Outcome Statements (GE)
- Department- or Program-level Outcome Statements
- Course or Educational Experience Outcome Statements

Assessing Enduring Learning

- Cognitive
- Psychomotor
- Affective
- Expressive
Determining What You Want to Learn about Your Students’ Learning Products and Processes—Questions That Matter to You

- Integrate
- Transfer
- Apply or re-apply
- Re-use
- Synthesize
- Analyze
- Create
- Re-position their understanding

Sample Questions......

- What misconceptions do students carry with them or hold onto even with repeated opportunities to learn?
- What mental models or representations do students carry with them or hold onto that prohibit them from learning?
- Why do students have difficulty shifting from successfully doing mathematical drills to solving word problems that require they use those drills?

- What’s the relationship between students’ study habits and their levels of performance?

- What patterns of weakness in thinking, writing, interpreting, for example, persist over time?

- How do time restrictions or demands for increased program “coverage” inhibit students’ abilities to develop sustained or enduring learning?

- What forms of animation or non-verbal communication enable students to overcome learning barriers?
What kinds of representational models develop complex conceptual understanding?

How effective are hypermedia technologies in fostering complex problem solving?

Couple Your Outcome with a Research or Study Question

- Open-ended; not closed ended: You may have a hunch about the answer
- Collaboratively developed based on discussions, water cooler conversations, at the end of a semester after you have graded student work, or a taxonomy (see Appendix A)
Identifying When You Want to Learn

- **Baseline**—at the beginning? For example, to identify what students do and do not know as a basis upon which to ascertain progress.

- **Formative**—along the way? For example, to ascertain progress or development.

- **Summative**—at the end? For example, to ascertain mastery level of achievement.

Identifying or Designing Methods to Assess Learning

- **Product-focused**: What and how students make meaning in various contexts.

- **Process-focused**: How students think, reason, learn, construct meaning, or experience learning.
Alignment

Assumptions Underlying Teaching

Actual Practices

Assumptions Underlying Assessment Tasks

Actual Tasks

Approaches to Learning and Assessment of Learning

- Surface Learning
- Deep Learning
What Tasks Elicit Learning You Desire?

- Tasks that require students to select among possible answers?
- Tasks that require students to construct answers (students’ problem-solving and thinking abilities)?

Direct Methods

- Focus on how students represent or demonstrate their learning (meaning making)
- Align with students’ learning experiences and assessment experiences
- Align with curricular design verified through mapping
- Invite collaboration in design (faculty and students)

Standardized Instruments

- Psychometric approach—values quantitative methods of interpretation
- History of validity and reliability
- Quick and easy adoption and efficient scoring
- One possible source of evidence of learning
May Not Provide…..

- Evidence of strategies, processes, ways of knowing and understanding that students draw upon to represent learning

- Evidence of complex and diverse ways in which humans construct and generate meaning

- Highly useful results that relate to pedagogy, curricular design, sets of educational practices

Authentic, Performance-based Methods

- Focus on integrated learning

- Directly align with students’ learning and assessment experiences

- Provide opportunity for students to generate responses as opposed to selecting responses

- Provide opportunity for students to reflect on their performance
Do Not Provide...

- Immediate reliability and validity (unless there has been a history of use)
- Usually do not provide easy scoring unless closed-ended questions are used

Some Options

- E-portfolios
- Capstone projects (mid-point and end point?)
- Performances, productions, creations
- Visual representations (mind mapping, concept mapping, charting, graphing)
Case studies with Analysis/Self-Reflection

Disciplinary or professional practices, such as delivering a paper, having a paper jury reviewed for publication, preparing a laboratory report, writing a position paper

Agreed upon embedded assignments that provide evidence of students’ progress or mastery

Writing, to speaking, to visual representation

Team-based or collaborative projects

Internships or Practica or Service Projects

Internally or externally juried review of projects

Oral examinations or defenses or responses
- Simulations/virtual simulations

- Computer-generated scenarios

- Performance on a national exam or locally developed exam

- Learning logs or journals (online)

- Data Mining projects (webquests)

- Think Aloud Protocol

Methods to Learn about Students’ Learning or Meaning-making Processes

- Students’ documentation of their learning meaning-making processes:
  - Flip phone documentation
  - Comment features in Word
  - Social networking results
• Tagging in Personal Learning Environments

• Chronological perceptions of learning
  - SALG (Open-ended questions in Student Assessment of Their Learning Gains)

Indirect Methods of Assessment

- Students’ perception of their learning, such as SALG--Student Assessment of Their Learning Gains
- SGID (small group instructional diagnosis)
- Focus group (representative of the population)
- Interviews (representative of the population)
Other Useful Data

- Syllabi Audits (where and how often do students have the opportunity to learn x?)
- Grades over Time
- Course-taking Patterns
- Other data at UW-Stevens Point?

Identify Methods to Assess Your Outcomes

- Identify both direct and indirect methods you do or might use to assess an outcome statement you have already agreed upon. (See Appendix B)
- Based on each method, identify the kinds of inferences you can or will be able to make about students’ achievement of that outcome as well as those you cannot (validity issue).
Developing Standards and Criteria of Judgment

Scoring rubrics—A set of criteria that identifies the:

1. expected characteristics/traits of student work/behavior

2. levels of achievement along those characteristics/traits

• Are criterion-referenced, providing a means to assess the multiple dimensions of student learning.

• Are collaboratively designed based on how and what students learn (based on curricular-co-curricular coherence)

• Are aligned with ways in which students have received feedback (students’ learning histories)
- Are useful to students, assisting them to improve their work and to understand how their work meets standards (can provide a running record of achievement).

- Raters use them to derive patterns of student achievement to identify strengths and weaknesses and thus verify the efficacy of educational practices as well as those that need to be changed.

**Interpretation through Scoring Rubrics**

- Criteria descriptors (ways of thinking, knowing or behaving represented in work)
  - Creativity
  - Self-reflection
  - Originality
  - Integration
  - Analysis
  - Disciplinary logic
Criteria descriptors (traits of the performance, work, text)

- Coherence
- Accuracy or precision
- Clarity
- Structure

Performance descriptors (describe how well students execute each criterion or trait along a continuum of score levels). Use numbers or words with descriptive elaboration, such as:

- Exemplary—Commendable—Satisfactory—Unsatisfactory
- Excellent—Good—Needs Improvement—Unacceptable
- Expert—Practitioner—Apprentice—Novice
Example of Criteria for Conceptual Attainment in Mathematics:

- Conceptual understanding apparent
- Consistent notation, with only an occasional error
- Logical formulation
- Complete or near complete solution/response

(See Appendices C,D,E)

Development of Scoring Rubrics

- Emerging work in professional and disciplinary organizations or in research projects
- Research on learning (from novice to expert)
- Student work itself—derive traits and levels beginning with high to low achievement
- Interviews with students or integration of students in the creation of a scoring rubric

- Observations based on previous student work

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**Pilot-test Scoring Rubrics**

- Apply to student work to assure you have identified all the dimensions with no overlap

- Schedule inter-rater reliability times:
  - independent scoring
  - comparison of scoring
  - reconciliation of responses
  - repeat cycle
Meaningful Use of Data: Answering the Question You Raised about Student Learning

- Collect data from different sources to answer the question you have raised (for example, assessment of graduate student portfolios as well as results of focus group meetings or interviews or surveys).

- Collect data you believe will be useful to answering the question you have raised.

- Organize reports around issues, not solely data.

Interpretation

- Establish soft times and neutral zones to interpret collaboratively

- Seek **patterns** against criteria and cohorts

- Tell the story that explains the results based on triangulating evidence and data you have collected

- Determine what you wish to change, revise, or how you want to innovate
Interpret your data so that results of that collaborative process inform pedagogy, practices, budgeting, planning, decision-making, or policies

Analyzing, Interpreting, and Acting on Results to Answer Your Research or Study Question

Analysis and Presentation of results during a common institutional time through an Assessment Brief

- Verbal Summary of findings
- Visual Summary of findings
Comparison of Scores on Chronological Exams for Students Enrolled in The Traditional or Online B.S. Program in Health Sciences Beginning in 2006

Results of Holistic Scoring of Junior Level Lab Reports in Biology

Emerging: 61%
Developing: 20%
Proficient: 11%
Exemplary: 8%
Critical Thinking Scores - 4 Classes w/ the Rubric vs. 4 Classes w/o the Rubric

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Average Gains on BME 301 Assignments over Time by Dimension

Note: Scale is 1 to 5, positive numbers represent improvement over time.
Collaborative Interpretation

- Establish soft times and neutral zones to engage in interpretation across a program or a division

- Seek patterns against criteria and cohorts

- Tell the story that explains the results—triangulate data

- Aggregate and disaggregate data to guide focused interpretation (changes for “all” students or cohorts?)

- Interpret your data so that your interpretation informs pedagogy, educational practices, curricular design, budgeting, planning, decision-making, or policies

- Determine what you wish to change, revise, or how you want to innovate (Report formats in Appendices F and G)
Implement Changes and Re-Enter the Assessment Cycle

- Implement agreed upon changes

- Re-assess to determine efficacy of changes

- Focus on collective effort—what we do and how we do it