Defining, Assessing and Documenting Student Learning Outcomes at Senior Institutions

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Agenda

- Concept definitions
- Defining student learning outcomes
- Assessing student learning outcomes
- Documenting student learning outcomes
- Online learning: what to assess
Assessment Defined

- **Assessment**: “The systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development” (Ted Marchese).

- ‘Uniform’ and ‘unique’ impacts: uniform impact assessment explores what students learn in common; unique assessment impact explores what each student learns that is qualitatively different from each other student (Steve Ehrmann).
Varied Perspectives on Assessment (Suskie, 2004)

- Benchmark
- Standards-based (internal/external)
- Peer or Norm-referenced
- Best in class
- Value-added/pre-post test
- Historical trends
- Strengths/weaknesses
- Capability/potential
- Productivity/return on investment
Student Learning Outcomes

- The term used here for
  - “Faculty expectations for student learning” or
  - “student learning objectives” or
  - “expected student competencies.”

- Put simply: The really important things faculty think students should know, believe, be disposed towards, or be able to do when they receive their degrees.
Section I: Defining Student Learning Outcomes
Why Describe Student Learning Outcomes?

- To focus on student learning as core to educational mission.
- To clarify and understand what we want to find out: if we don’t know what we’re looking for, odds are we won’t find it.
- To engage program faculty in the process of institutional effectiveness and use of evidence (not anecdotes) to improve student learning.
- To emphasize collective ownership and intentionality in design and delivery of curriculum (*cf.* Jon Wergin’s *Departments that Work*, 2003).
- To inform and motivate students.
- To meet external standards for accountability.
Developing Program-Level Student Learning Outcomes

- **Approach**: Top-down or bottom-up: (Palomba and Palomba, 2001)
  - **Top Down**: As a group of scholars, decide what are the important faculty expectations for students in the program.
  - **Bottom Up**: Identify recurring course-level faculty expectations of core and capstone courses in the program, and use this list to develop overarching program-level expectations. *IDEA: Use a Wiki to gather ideas!*
  - **Combo**: Combines both approaches by stating what is now and then figuring out what else is needed; useful for jump-starting the process.
Example: Course-Level vs. Program-Level Student Learning Outcomes

- **Course-Level Examples:**
  - Students will be able to analyze simple resistive circuits.
  - Students will be able to compute the transient response of first order circuits by inspection.

- **Program-Level Example:**
  - Graduates of the program will be prepared to demonstrate technical competence in analysis and design of electrical systems.
Differentiate Student Learning Outcomes from Operational Objectives

- **Student Learning Outcome:**
  - Student work will demonstrate competent use of diagnostic problem-solving model.

- **Program Operational Objective:**
  - The program will admit 10% more students next year, with 5% higher overall SAT scores.

- Both are important; both describe different functions.
Student Learning Outcomes in a Tasteful Context...

Apple Pie

- PIE DOUGH
- 5-6 cups APPLES
- ¾–1 cup SUGAR
- ¾ tsp. SALT
- ¼ tsp. CINNAMON
- 1–1½ Tbsp. CORNSTARCH
- 1 ½ Tbsp. BUTTER
- 1 Tbsp. LEMON JUICE

Line a 9-inch pie pan with crust. Peel, core and slice apples. Combine sugar, salt, cinnamon and cornstarch and sift over the apples. Only very tart apples need more sugar. Very juicy apples need more cornstarch. Stir apples gently until well coated. Place them in layers in pie shell. Dot apples with butter and sprinkle with sugar. Cover pie with crust and prick with fork. Bake at 450°F for 10 minutes. Reduce heat to 350°F and bake 35–45 minutes or until golden brown.
Describing Our Expectations for Apple Pie…

- What are our expectations for a great apple pie?
- What criteria would we use to ascertain if our expectations are met?
- What would be some good methods for us to check and see if our expectations are being met?
- What point(s) would be a good time to do so?
- What would we call success? What would it look like?
Describing Our Pie Expectations...

- What’s one criterion for a good pie?
  - *It’s baked all the way through.*

- How can you tell if it’s baked?
  - *Direct method: taste test.*
  - *Indirect method: color of crust.*

- When would we check this out?
  - *End of baking cycle.*

- What would success look like?
  - *First bite melts in mouth (direct measurement).*
  - *Crust is golden brown color (indirect indicator).*
From Apple Pie to Students: Describing Relevant Learning Outcomes

- Think in terms of end results. What do faculty think is really important for students to learn?
- How can the faculty structure a curriculum to address those expectations for learning?
- Consider ways to evaluate expectations: how will faculty know if expectations are met?
- When would evidence be collected/analyzed?
- What level of performance do faculty think meets their standards?
- How will results be shared? With whom? For what purpose?
- How will results be used?
SLO Example: Master’s in Music Composition

- **Outcome**: Master’s composition graduates will successfully synthesize the musical language of 20th Century composers in their work.

- **Some possible sources of evidence**: student portfolios, course portfolios which include student work

- **Possible ways to measure**: 3 faculty raters use a simple rubric designed for this purpose to rate student work; panel of judges rates student compositions in live performances.

- **When to Measure**: end of 1st year; master’s performance of their works at end of 2nd year.

- **Possible Standard for Success**: successful synthesis (defined in rubric) of harmonic, rhythmic, formal and scalar materials into student’s compositional vocabulary. Evidence may include student work from selected courses, culminating experiences (e.g., exam/performance, composition portfolio).

- **Possible Uses of Results**: an instructor redesigns an assignment, the faculty restructures the sequencing of courses (adds a new course), the dean allocates resources for software (a new faculty line).
Common Student Learning Outcomes in Academic Degree Programs

Students will demonstrate professional and attitudinal skills, including:

- Oral, written, and graphic communication skills;
- Knowledge of key concepts in the discipline;
- Critical and reflective thinking skills;
- Knowledge of the social, cultural, and economic contexts of the discipline;
- Ability to apply theory to professional practice;
- Ability to use appropriate technologies;
- Ability to work with others, especially in teams;
- Ability to articulate an individual vision for one’s work.
Your Turn!

Develop Student Learning Outcome

- Get together in small groups.
- With your group, develop a student learning outcome related to communication skills. Use the worksheet “Defining Learning Outcomes for Student Communication – 1”
- Consider: What dimensions of communication are important for students to be able to demonstrate?
Section II: Assessing Student Learning Outcomes

- Basic approach
- Selection criteria and methods to consider
- Further steps
How to Begin: Basic Approach

- Faculty define student learning outcomes
- Take inventory of what’s already being done
- Faculty define measurement selection process
  - One structured approach: develop selection criteria, develop selection matrices
- Procure and/or develop instrumentation and approaches
- Pilot test and refine
- Implement
- Reflect on results, reconsider approaches as necessary, and start the next cycle.
Inventory Current Activities

- What do units/departments do already?
- What is locally done? Institution-wide?
- What internal examples of best practices can be adapted and/or adopted?
- Centralize activities where feasible for economies of scale; use everybody’s input.

Examples of good assessment inventories:
- Sharron Ronco, Florida Atlantic University ([http://iea.fau.edu/inst/air00.pdf](http://iea.fau.edu/inst/air00.pdf))
Possible Method Selection Criteria

- Relevant: Match to curriculum?
- Useful: program-level information obtained, appropriate to the degree level?
- Can it be used to provide feedback to students?
- Trustworthy data produced?
- Understandable information produced?
- Technical quality: valid and reliable?
- Development/preparation time involved?
- Costs versus benefits?
- Will students perceive it of value and cooperate?
- Fair procedure?
- Human subjects protection?
Direct Assessment Opportunities: Examples

- Written exams
- Oral exams
- Performance assessments
- Standardized tests
- Licensure exams
- Oral presentations
- Projects
- Demonstrations
- Case studies
- Simulations
- Portfolios
- Juried activities with outside panels
Using Student Works for Assessment

- 45-Hour Review
- Seminar Presentation
- 15-Hour Review
- Course Project

Jimmy, LaShondra, Hariyanto, Priya
Using Student Works for Assessment

Seminar Presentation

Jimmy LaShondra Hariyanto Priya

Seminar Presentation Assessment

- current knowledge in field
- oral communication
- quality of graphics used
- knowledge of material
- ability to respond to questions
Indirect Assessment Methods: Examples

- Questionnaires
  - Mailed
  - Web
  - Telephone
  - In-class
- Interviews
- Focus groups
- Employer satisfaction studies
- Advisory board
- Job/grad school placement data
Assessment with Extant Data Sources: Examples

- Retention and transfer studies
- Length of time to degree
- Progression, graduation rates and transfer rates
- Transcript analysis: course taking patterns
  - See Clifford Adelman’s work for NCES, such as The Tool Box Revisited (2006).
## Matrix of Student Learning Outcomes to Possible Methods

<table>
<thead>
<tr>
<th>SLOs</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write at a scholarly level</td>
<td>Term Paper</td>
</tr>
<tr>
<td>Adapt verbal messages to a specific audience</td>
<td>Questionnaire</td>
</tr>
<tr>
<td>Display lifelong learning skills</td>
<td>Speech</td>
</tr>
</tbody>
</table>

Source: Palomba and Banta, 1999
Further Steps

Once we have developed or selected our instrumentation…

- Pilot test and refine

- Implement:
  - Define responsibility for implementation
  - Keep it simple!
  - Start now – it’s iterative, not perfect!

- Reflect on results, reconsider approaches as necessary, and start the next cycle.
Your Turn! Assess Student Learning Outcome on Communication

- Get together in small groups again.
- With your group, develop a list of the **assessment methods** you might use to assess the student learning outcome related to communication skills developed earlier. Use the worksheet “Defining Learning Outcomes for Student Communication – 2.”
- Consider: how, where, and when to assess that faculty expectation, and how to take action on the findings.
Section III: Documenting Assessment of Student Learning Outcomes

- What do we document?
- At what programmatic level?
- At what depth do we document?
- Documenting assessment using a web-based system
What Do We Document and At What Level?

- For each degree program:
  - The student learning outcomes faculty consider most important, whether collective or individual
  - How these outcomes are defined in practice
  - How these outcomes are assessed
  - What results are gained (summary level)
  - Based on results gained, what actions are being taken. How are we using the results?
At What Depth Do We Document?

- Start simple and go for the low-hanging fruit.
- Keep it focused: Assess those student learning outcomes that are central to the core courses in the curriculum.
- Explore higher order and unique outcomes as assessment experience is gained.
- Demonstrate that an ongoing, systematic, periodic process is in place.
- Document repeated cycles of assessment, analysis, reflection, and action.
Leveraging Information Technology for Assessment

- The number of courses and programs frequently makes using IT solutions for documenting assessment a necessity.
- Creates a historical record of student learning in the program.
- Adopting online systems for assessment data management forces decisions and change: be aware of that and plan for it.
- Know the organizational culture and politics before introducing a systemic change.
- Broad representation across campus is essential.
- End goal is sustainability: make it easy to use, responsive to specialized user needs, intuitive, etc.
Common Online Assessment Data Management Systems

- Developed in preparation for a regional or specialized accreditation study (OATS, WEAVE online, UAOPS, AIMS, PRISM/PEARL, Eidos).
- Developed by vendors who have responded to the need to prepare for specialized accreditation requirements, especially NCATE (TracDat 4.0, e-Lumen, LiveText, TaskStream, Tk20, etc.).
- Developed by LMS vendors response to the need to aggregate information across courses in online programs (Angel Learning Outcomes Management).
Strategic questions to consider

- What decisions do we aim to effect, and what should we therefore measure?
- What level of assessment are we talking about? Institutional, program, course level, and/or individual student?
- Are we to integrate this application with others for reporting purposes?
Tactical Questions: What do we want the system to do?

- Map assessment data to student learning outcomes? At what level – institutional, programmatic, course-level?
- Integrate with an online LMS/CMS such as Angel, and map to individual courses taught in the institution each term?
- Facilitate assessment data collection online? If so, what kinds of data? (DOING assessment online)
  - Enable faculty to conduct and record individual student assessments?
  - Facilitate recording of program-level assessment of student work by groups of faculty?
  - Online exams?
  - Electronic portfolio information?
Operational/Logistical Questions: How should the system work?

- Data entry and maintenance process
  - how will data be entered into the system?
  - how will data be organized within the system?
  - how may data and information be viewed from within the system?
  - who will maintain the data and the system?

- Annual or periodic data collection and update process
  - who will collect the data?
  - who will enter the data?
  - who will organize the data and analyze it?
  - who will report the results?
  - who will discuss the data and develop an action plan around the results?
Section IV: Online Learning: What to Assess and What Tools to Use

Assessing Online Courses & Curricula: Concepts, Tools, & Frameworks
Why Make Evaluation Theory-Based?

- To clarify and understand what we want to find out: the bottom line is that life is too short for data fishing expeditions.
- To avoid having our evaluation system get outdated whenever a new technology comes along.
What are Important Areas to Assess in Online Learning?

- Learner characteristics and background
- Student learning, demonstration of competencies relative to faculty expectations
- Student satisfaction
- Faculty experience
- Faculty-student interaction and feedback
- Student-student interaction
- Interaction with content
- Interaction with interface
- Comparative performance, progress, retention, etc.
- Program outcomes (placement, further education, etc.)
What learning activities may be included – and assessed?

- Use **online learning activities** that allow learners to demonstrate their competence:
  - Discussion forums, real-time chats
  - Collaborative creation (e.g., through MS SharePoint)
  - Internal email
  - Online journal/notes
  - Whiteboard capture features
  - Blogs
  - Self-assessments
  - Student e-portfolios (course-level; program-level)
What “active” assessment tools do we use?

- **Indirect methods:**
  - Online surveys, questionnaires
  - Focus groups

- **Direct methods:**
  - Rubrics for evaluating student projects/work/presentations
  - E-portfolios
  - Inventories, diagnostic instruments
  - Online concept mapping (see Trochim, 1989)
  - Situations where student produces a work that displays competencies
What “passive” assessment tools are available?

- Basic idea: Data-mine the online environment for signs and artifacts of the learner’s inquiry and expression (Gibson, 2005). May include:
  - automated testing and scoring
  - online competency-based testing data
  - Content/thematic analysis of textual data from online discussion threads

Learner Characteristics: What to Assess

- Create learner profile:
  - demographic information (gender, ethnicity, etc.)
  - motivation, educational goals
  - prior DE experience
  - perceptions/expectations about DE
  - native language
  - computer skills/technical background
  - learning style preferences

- Track and relate to course/program success
Learner Characteristics: How to Assess

- Screening tools: See University of Maryland University College orientation to course management systems, [http://www.umuc.edu/distance/de_orien/](http://www.umuc.edu/distance/de_orien/) or Northern Virginia Community College’s self-test, “Is DE for me?” at [http://eli.nvcc.edu/orientation/distance-learning-for-me.htm](http://eli.nvcc.edu/orientation/distance-learning-for-me.htm)
- Front-end pre-course or pre-program surveys
- Drexel University uses a pre-program essay for their online MSIS program
- Online learning style inventories, such as [http://www.engr.ncsu.edu/learningstyles/ilsweb.html](http://www.engr.ncsu.edu/learningstyles/ilsweb.html)
Student Learning: What to Assess

- General Education skills (communication, writing, etc.)
- Collective construction of knowledge
- Deep learning (critical thinking, reflective learning)
- Course content mastery
- Mastery of program-level learning objectives
Thank You!

- Questions and further discussion?
- Please complete the evaluation!
- Contact information:
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