From Maps to Methods of Assessment

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## Foci

- Rationale for and importance of curricular-co-curricular mapping
- Development of maps and inventories of educational practices
- Identification of methods of assessment along the chronology of learning

Research on Learning That Informs the Relationship among Teaching, Learning, and Assessment

- Learning is a complex process of interpretation--not a linear process
- Learners create meaning as opposed to receive meaning
- Knowledge is socially constructed (importance of peer-to-peer interaction)

- People learn differently—prefer certain ways of learning (learning inventories, such as Kolb or Vark)
- Deep learning occurs over time transference

- Meta-cognitive processes are a significant means of reinforcing learning (thinking about one's thinking)
  - Learning involves creating relationships between short-term and long-term memory

 Transfer of new knowledge into different contexts is important to deepen understanding

 NRC. 2001. Knowing What Students Know: The Science and Design of Educational Assessment. Washington, D.C. How Knowledge about Learning Shapes
Teaching and Inquiry into Student Learning

- What do you expect your students to demonstrate, represent, or produce by the end of their program of study?
- How do the curricula and other educational experiences contribute to your expectations?
- What do you do in your classes or in your program to promote the kinds of learning or development that your program seeks?

## Questions (con'd)

- Which students benefit from various classroom teaching strategies or educational experiences?
- What educational processes are responsible for the intended student outcomes the institution seeks?
- How can you help students make connections between classroom learning and experiences outside of the classroom?

### Questions, con'd:

- What pedagogies/educational experiences develop knowledge, abilities, habits of mind, ways of knowing/problem solving, and dispositions?
- How are curricula and pedagogy designed to develop knowledge, abilities, habits of mind, ways of knowing, and dispositions?
- How do you intentionally build upon what each of you teaches or fosters to achieve program-level learning outcomes?

What methods of assessment capture desired student learning--methods that align with pedagogy, content, and curricular design?



## Curricular-Co-Curricular Maps

- Help us determine coherence among our educational practices that enables us, in turn, to design appropriate assessment methods
- Identify gaps in learning opportunities that may account for students' level of achievement
- Provide a visual representation of students' journey

- Help students make meaning of the journey and hold them accountable for their learning over time
- Help students develop their own learning map

## Inventories of Educational Practice

- Reveal how we translate outcomes into pedagogy and assessment practices
- Occasion discussion about models of teaching and learning, philosophies of teaching in a discipline, assumptions that underlie teaching and learning
- Provide a chronological profile of what and how students learn and demonstrate their learning

### Methods of Assessment

"Every assessment is also based on a set of beliefs about the kinds of tasks or situations that will prompt students to say, do, or create something that demonstrates important knowledge and skills. The tasks to which students are asked to respond on an assessment are not arbitrary. They must be carefully designed to provide evidence that is linked to the cognitive model of learning and to support the kinds of inferences and decisions that will be based on the assessment results." (NRC)

National Research Council. <u>Knowing what students know: The</u> <u>science and design of educational assessment</u>. Washington, D.C.: National Academy Press, 2001, p. 47. What Tasks Elicit Learning You Desire?

Tasks that require students to select among possible answers (multiple choice test)?

Tasks that require students to <u>construct</u> answers (students' problem-solving and multi-disciplinary thinking abilities)?

## Approaches to Learning

Surface Learning







## **Direct Methods**

- Focus on how students represent or demonstrate their learning (meaning making)
- Align with students' learning and assessment experiences
- Align with curricular-and co-curricular design verified through mapping

## **Standardized Instruments**

- Psychometric approach—historically has valued quantitative methods of interpretation
- History of validity and reliability
- Quick and easy adoption and efficient scoring
- One possible source of evidence of learning

## Do Not Usually Provide

- Evidence of strategies, processes, ways of knowing, understanding, and behaving 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 previous assessment experiences
- Provide opportunity for students to generate responses as opposed to selecting responses
- Provide opportunity for students to reflect on their performance



E-Portfolios—likely the norm in higher ed

Capstone projects (mid-point and end-point) or culminating projects (solo or team-based)

Demonstrations

Visual representations (mind mapping, concept) mapping, charting, graphing)

 Disciplinary or professional practices, such as laboratory reports or field reports

- Agreed upon embedded assignments
  - Written response to a prompt
  - Question on a final exam
  - Assigned paper (duplicate handed in for departmental review using a scoring rubric)
- Writing to speaking to visual presentation

Team-based or collaborative projects

- Internships and service projects
- Critical incidents
- Chronological responses to a problem or issue
- Field-Tested Learning Assessment Guide (http://www.flaguide.org/extra/download.php)

### Externally or internally juried review of student projects

### Externally reviewed internship

- Performances on a case study/problem
- Performances on a case study accompanied with students' analysis

 Performance on national licensure examinations

Locally developed tests

Standardized tests

Pre-and post-tests/samples/case studies

#### Learning Logs or Journals

- Oral defense/response (sometimes as part of a capstone project)
- Self-reflective writing (often accompanies student work or occurs after feedback) that demonstrates that students have internalized criteria and standards of judgment
- De-construction of a problem or issue

Problem with solution and ask for other solutions

- Inferences from a discourse selection
- Interactive virtual simulations (geography, chemistry, medical fields, physics—PHET Simulations, for example)

 Concept inventories, such as in physics and other sciences

- Data mining (learning object sites, such as Merlot in immersive environments)
- Visual representations (mind mapping, charting, graphing)

 Projects (mid-point and end-point) or culminating projects (solo or team-based)

- Performances, productions, creations, such as in service learning
- Observations of behavior (videotaped?)
- Expectations about "x" beforehand and comparison after experiencing "x"

# Video-taping of interaction such as in a meeting

 Performance on normed instruments that align with your outcomes and educational practices

# Inventories of self-perception, attitudes, values

 Sentence or story completion tests (consider the validity of responses in relation to actual behavior)
(http://www.ryerson.ca/~mjoppe/Research Process/841process6bl1c4bf.htm)

### Technology-based methods

- Virtual simulations
- Virtual labs and journals
- On-line case studies
- Role-playing
- Web-based learning labs
- Clicker results
- Gaming
- o Wikis

Indirect Methods (companion with direct methods)

- Focus groups (representative of the population)
- Interviews (representative of the population)
- Locally designed surveys

### Audits of transcripts--Course-taking patterns

- SALG—Student Assessment of Learning Gains
- SGID—Small Group Instructional Diagnosis

### Identify Methods to Assess Outcomes

- Referring to pages 22-35, identify both direct and indirect methods you might use to assess one or more of the outcomes you have articulated:
  - Determine the kinds of inferences you will be able to make based on each method.
  - Identify other institutional data that might be useful when you interpret results

## References

Maki, P. 2004. Assessing for Learning: Building a Sustainable Commitment across the Institution. Stylus Publishing, LLC. (Material in this module is from this book and the forthcoming revision due out in 2010).

 National Research Council. 2001. Knowing What Students Know: The Science and Design of Educational Assessment. Washington, D.C.: National Academies Press.