Designing and Assessing Learning

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Agenda

1. The Higher Education Landscape and HLC
2. Determining Learning Outcomes
3. Designing Assessment
4. Learning-Centered Values
The world in which we function:

- Declining Resources
- Standards (often industry)
- Assessment Mandates
- Performance Accountabilities
- Agility Expectations
- JIT Needs of the Workforce
- Time Constraints (personal, off-the-job, etc.)
Current Drivers

• The Higher Education Re-authorization Act Testimonies in USA, 2002 and 2006

• Response to NCLB Legislation
  • Spellings Commission on the Future of Higher Education
    • Demand for Public Information about Performance
      • Transparency of outcomes and results
      • Comparable measures of quality
      • Demonstration of value-added of the entire educational experience

• Calls for greater accountability from state and federal officials

• Criticisms of peer-review processes

• Accreditation changes
  - CRAC – 2003, 2004

• Social Inequities
The new reality . . .

• Deming is reported to have said,

“In God We Trust, All Others Bring Data.”
Recent Initiatives to Respond

• USDOE FIPSE funding to AAC&U, NASULGC, and AASCU for “Rising to the Challenge”
  – To collectively build campus leadership and capacity to implement meaningful student learning assessment approaches and use assessment results to improve levels of student achievement.

• Voluntary System of Accountability (VSA)
  – Core educational outcomes task forces – AASCU led
  – To identify a small number of educational outcome assessment instruments, one of which each member of VSA must use
Your observations?
Are the drivers the right ones?

- Other ways to think about the issues:
  - Desire to move from compliance to commitment
  - Many believe that if assessment leads to learning improvements, then it is the right thing to do.
  - We know much more about how people learn and how to create successful learning environments.
Learning Colleges

Within the context of their missions, learning colleges:

Focus on learners
Document learning results
Strive for learning and teaching excellence
Continually improve effectiveness

Based on teachings of Terry O’Banion

Source of this and following 4 slides: www.Wids.org
Why do we do it?

Learning design is very hard work!
Why? Because we’re trusted to . .

- Help learners build the skills, knowledge and attitudes they need to succeed professionally and personally

- Deliver excellence in teaching and learning – in all learning environments (classroom, online, lab, workplace. . .)
Why? Because we’re trusted to . . .

- Determine performance expectations for learners
- Design assessments that measure performance
- Align performance expectations, assessments, and learning activities
Why? Because we’re trusted to . . .

- Infuse industry standards
- Better prepare a high performing workforce
Why? Because we’re trusted to . . .

- Facilitate articulation with others
- Build a case for transfer of credit
- Contribute to the development of our communities
Focus of Accreditation

- To assess the quality of an institution and its effectiveness
- To assist the institution in making improvements in its operations and effectiveness
- To provide mission-driven accreditation
HLC Mission: Serving the common good by assuring and advancing the quality of higher learning
Fundamental Shifts

...from inputs and resources to results,
...from teaching to teaching and learning,
...from a look backwards to a future focus
...from autonomy to connection and
...from uniformity/stratification to distinctiveness, flexibility, and differentiation

-Source of this and next five slides: Lynn Priddy, HLC Commission
Cross-Cutting Themes

The Future-oriented Organization
♦ focuses on futures of constituents
♦ engages in planning
♦ is driven by mission
♦ understands social/economic change
♦ integrates new technology

The Learning-focused Organization
♦ student & organizational learning
♦ assesses student learning
♦ supports learning
♦ supports scholarship
♦ creates capacity for lifelong learning
♦ strengthens organizational learning

The Connected Organization
♦ serves the common good
♦ serves constituents
♦ creates a culture of service
♦ collaborates
♦ engages in healthy internal communication

The Distinctive Organization
♦ has unambiguous mission
♦ appreciates diversity
♦ is accountable
♦ is self-reflexive
♦ is committed

The themes ... holistic way to see across... capture the intent of the accrediting relationship.
Criteria

Core Components

Analysis
Provides evidence for the criteria

Synthesis
Provides way to see across criteria

Holistic Themes

Assure

Advance

Trend data from Operational Indicators
The Holistic Themes

• Future-oriented
  – Engages in planning
  – Is driven by mission
  – Understands social and economic change (external scans)
  – Focuses on the needs of constituents (surveys, incoming assessment)

• Learning-focused
  – Assesses student learning
  – Supports learning
  – Supports scholarship
  – Creates the capacity for lifelong learning
  – Strengthens organizational learning (acquire, share, utilize knowledge)
• The Connected Organization
  – Serves the common good
  – Serves constituents
  – Creates a culture of service
  – Collaborates
  – Engages in healthy internal communication

• The Distinctive Organization
  – Has an unambiguous mission
  – Appreciates diversity
  – Is accountable
  – Is self-reflective
  – Is committed to improvement
Mission

Core Components

Future Preparation

Student Learning & Effective Teaching

Engagement & Service

Acquisition, Discovery, Application of Knowledge

Mission & Integrity

Student Learning & Effective Teaching

Engagement & Service

Mission & Integrity

Acquisition, Discovery, Application of Knowledge

Future Preparation

Mission & Integrity

Acquisition, Discovery, Application of Knowledge
Criterion Three – Student Learning and Effective Teaching

Criterion Statement

The organization provides evidence of student learning and teaching effectiveness that demonstrates it is fulfilling its educational mission.
Core Components provide further elaboration on our accreditation expectations

- 3A: The organization’s goals for student learning outcomes are clearly stated for each educational program and make effective assessment possible.
  
  “In crafting this Core Component, the Commission unambiguously embedded into its accreditation program its decade-long program to challenge affiliated organizations to create a culture of assessment. An organization needs to be accountable to itself and to its constituencies, to be clear about what it intends students to know and to do, and to find ways of learning whether, as a result of the education provided, students actually know and can do.”
Most Basic Understanding

STUDENTS...

Have Learned

Are able to do

And are becoming

And intended for them to

Publicly committed to

What has been collectively defined

Learn, do, and become.
Characteristics of Assessment

Assessment is systematic and ongoing. It is the collection, review, and use of evidence about academic and administrative/educational support programs and services provided by the college for improving student learning and development.

Assessment examines quantitative and qualitative evidence regarding student competence, uses this evidence to improve learning for current and future students, and presents results to stakeholders.

Data is collected, analyzed and shared to determine skills, knowledge and values students have gained from the college experience. Assessment results are used to determine changes to improve programs and services. The impact of those changes is analyzed to close the loop.

Source: Texas A & M University
Institutional Effectiveness Practitioner’s Manual
Team Expectations re: Assessment

1. A clear philosophy statement regarding general education as developed and agreed upon by the faculty of the college.

2. Specific outcome competency expectations for each of the areas of general education identified as necessary by the faculty of the college.

3. Quantifiable measures of student attainment of competency for each area of emphasis in general education and strategies, timelines, and individuals responsible for gathering each set of information.

4. Specific program outcome competency expectations for each separate career program.

5. Evidence of data collected from direct measures of student academic achievement along with data from any indirect measures.
Expectations (cont.)

6. Evidence that the assessment process is communicated to students

7. A plan to cycle assessment data and information back and to link that information to a plan for improving instructional effectiveness in each area

8. A clear plan for connecting needs as identified through the assessment process to the annual budgeting effort at the college

9. A section of the budget specifically devoted to the various aspects and needs in developing and sustaining an effective assessment program.
Educational Design Simplified

Plan (or design)

Do (or Teach)

Check (or assess)

Act (or improve)
What Assessment is Not

Assessment is not an “add-on” – it is central to the teaching and learning process.
Learning *happens most consistently when there is good instructional planning.* Some characteristics:

- Understanding of the learners
- Clearly identified learning expectations or outcomes that answer the question *“What will the learner know or be able to do as a consequence of the learning activities?”*
- Motivating content – it has meaning in the learner’s life
- Appropriate learning activities that provide practice and feedback
- Relevant (authentic) assessments
The Learning Design Cycle

1. Assess performance
2. Determine learning needs
3. Analyze learner needs
4. Specify learning outcomes
5. Plan learning activities
6. Curriculum Development
Determining Learning Needs
Learning Outcomes

- Guided by:
  - DACUM
  - Task Analyses
  - Professional Standards
  - Advisory Committees
  - Expert guidance (often the faculty)
  - Professional Practice
  - Industry Expectations – Standards
  - Learner Feedback
OUTCOMES SHOULD:

• Clearly connect with institutional mission:
  • Mission ➔ College ➔ Program ➔ Course

• Be measurable
• Be clear
• Be useful to learners
• Be assessed regularly, but not all the time
The Learning Design Cycle

- Assess performance
- Determine learning needs
- Analyze learner needs
- Specify learning outcomes
- Plan learning activities

Curriculum Development
Learner Differences

- Experiential
- Academic
- Cultural
- Political
- Intellectual
- Learning preference or style
- Personal
- Physical
A Learning Design Hierarchy

Course or Module Goal

Unit or Module 1

Competency or Outcome 1

- Objective 1 (enabling)

- Objective 2

Learning Activity 1

Unit 2

Competency or Outcome 2

Unit 3

Learning Activity 2 – Practice and feedback
The Learning Design Cycle

1. Assess performance
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6. Curriculum Development
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<thead>
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<th>Project 3</th>
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<td>Outcome 4</td>
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# A Course Map or Matrix

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<th>Activity 4</th>
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<tr>
<td>Outcome 4</td>
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<td></td>
<td>R</td>
<td>A</td>
</tr>
</tbody>
</table>

Key:  I = introduce; R = Reinforce; A = Assess  
Or:  IPE, etc.
Exercise – Course Map

In groups of 3-4, create a “course map” or concept map or hierarchy for a course one of you now teaches.

A Chunking Exercise . . .
Share some examples
Competencies (or Outcomes)...

- What should learners know or be able to do as a result of completing learning activities?
  - Begin with a verb . . .
  - Assure that they can be measured or observed.
  - Define at minimum of application level in Bloom’s Taxonomy
Competency/Outcome Checklist

- describe one of the major skills that is an intended outcome for a course or program
- represent a skill that a competent individual would use outside the context of the course
- begin with an action verb describing what the learner will be able to do upon completion of this course
- are measurable and observable
- require application of skill, knowledge, or attitude/value
- present a clear, concise, and precise statement describing the action
- specify a single performance/outcome, not a combination
- describe learner performance, not the instructor's activities, learning plans, or instructional strategies
Bloom’s Taxonomy Refresher

1. Knowledge
2. Comprehension
3. Application (*minimum level for competency or outcome*)
4. Analysis
5. Synthesis
6. Evaluation
**Bloom’s Taxonomy**

1. **Know**
   - You tell me and I can tell it back to you. I can define basic terminology.

2. **Comprehend**
   - I can tell it back to you and I can explain it. I can tell you why it works this way.

3. **Apply**
   - I can tell it back, explain, give examples, and DO something with it. I apply what I know and test it out in a specific situation. I bring theory into practice.

4. **Synthesize**
   - I can tell, explain, give examples, apply, take apart and examine, and put it together with other things I know to create something new of my own. I explore the impact of theories or applications. I develop and refine new ways of thinking.
I can tell, explain, give examples, apply, take apart and examine, put together in new ways, and judge its value. I can do it with several complex ideas and choose the best one. I judge and evaluate the outcome. I pause for personal reflection on what I learned.
Student learning outcomes describe what the learner will know and/or be able to do, not what the teacher is doing!
Sample Competency Statements or Outcomes

Psychology

• Summarize how biological, hereditary, and environmental factors influence behavior
• Apply psychological principles to personal and professional relationships.
• Determine the impact psychological and social factors have in shaping human behaviors.

Critical Thinking

• Use induction to create a generalization from implicit or explicit information about a topic [issue, process, situation, etc.]
• Construct support for or against a specific claim [idea, recommendation, etc.]
More examples

Quality Principles
• Develop a personal philosophy of quality
• Follow procedures for handling non-conforming products
• Report non-conformance problems to suppliers
• Develop a plan for continuous process improvement
• Develop a plan for identifying and meeting customer needs

Biotechnology
• Evaluate current ethical and legal issues in biotechnology.
• Examine federal, state, local and industry regulations.
• Perform basic biotechnology laboratory techniques.
• Perform cell biology techniques.
History

- Analyze the major factors that shaped the development of initial human communities
- Analyze the major developments in the growth of the river civilizations
- Analyze the reasons for the formation and decline of the great empires
- Assess the validity of either an economic or religious explanation for the unification of independent European kingdoms
- Explore an aspect of the Renaissance that represents the new way of looking at the world in Europe
Exercise – Recognizing Good Statements

• Translate a paragraph of Spanish into English
• Understand the role of Irish immigrants in America’s industrialization
• Learn three practical applications of the use of solar energy
• Start an IV in a patient
• Create a spreadsheet
• Know how to mix sauces
• View videotape on brake adjustments
• Define, describe, and assess the role of nursing in a changing health care environment.
• Construct a staircase.
• Practice rolling out pie dough.
Table Exercise

• Using your checklist for what good learning outcomes look like, and your experience with having just identified some simple examples. . . .

• Review the selected examples for outcomes. . . . What changes, if any, would you suggest?
Exercise: Develop an Outcome . . .

• Develop an outcome for YOUR course . . .
  – Use the checklist as a guide
  – Select one that is critical for your students

• In groups of 2 or 3, seek feedback on your outcome, and make refinements

You will later design a performance assessment task to go with it.
The Learning Design Cycle

1. Assess performance
2. Determine learning needs
3. Analyze learner needs
4. Specify learning outcomes
5. Plan learning activities

Curriculum Development
Planning Learning Activities
Thinking about learning activities . . .

• Some questions to ask as you plan:
  – How do these activities contribute to the achievement of the objectives?
  – How do they (the activities and the objectives) contribute to development of the competencies or outcomes
  – To what extent do they accommodate different learning and thinking styles?
  – Are these the most effective and/or efficient ways for learners to achieve the objectives and competencies?
  – How do the expectations fit with what I know about the learners?
The Learning Design Cycle

1. Assess performance
2. Determine learning needs
3. Analyze learner needs
4. Specify learning outcomes
5. Plan learning activities
6. Curriculum Development
Four Types of Evaluation

- Formative evaluation of student learning
- Summative evaluation of student learning
- Formative evaluation of instruction
- Summative evaluation of instruction
Assessing Learning

- **Direct Measures**
  - Must be indicators of the learning, not proxies, such as grades.
- **CAAP, WorkKeys, CLA or Other Tests**
- **Authentic Assessments**
- **Standards and Benchmarks**
Performance assessment is most essential at the competency level.
As you consider assessments. . .

• Some questions to ask:
  – Does the assessment reflect what the learner should be able to know or do in another context?
  – Are standards for performance established?
  – Does the assessment require learners to perform at high levels on Bloom’s taxonomy?
Another way to look at the design of a course
An Assessment Design

- Assessment
- Performance Standards
  - Criterion 1
  - Criterion 2
  - Criterion 3
    - Condition(s)
    - Performance Task
The new vision of learning and evaluation of student learning reflected in the term “multidimensional assessment” is broad-based, relevant to real life, process oriented, and based on multiple measures which provide a rich portrayal of student learning.

Kulieke, Bakker, Collins, Fennimore, Fine, et al
“Why Should Assessment Be Based on a Vision of Learning”
Authentic Assessment (AA)

- Assessments are authentic when they have meaning in themselves—when the learning they measure has value beyond the classroom and is meaningful to the learner.

- AAs address the skills and abilities needed to perform actual tasks.

Examples of Assessment Options

- Pre-post “testing”
- Standardized examinations (such as CAAP, COMP, Analogies Test, etc.)
- Portfolios
- Projects
- Essays
- Research Papers
- Interviews
- Oral Presentations
- Case Studies
- Board Game
- Interview
- Lab Report

- Classification List
- Concept Map
- Comparison Paper
- Critique
- Data Analysis
- Electronic Presentation
- Error Analysis Report
- Essay
- Flowchart
- Graph
The Iterative Assessment Cycle

FIGURE 2-1

The Iterative Assessment Cycle
(Sources: Adapted from Maki, 2001 and Bresciani, 2003a.)
As you consider assessments. . .

• Some questions to ask:
  – Does the assessment reflect what the learner should be able to know or do in another context?
  – Are standards for performance established?
  – Does the assessment require learners to perform at high levels on Bloom’s taxonomy?
Emphasize

• Important outcomes
• Varied approaches – not just M/C, such as essays, problems, speeches
• Pre- and Post-test approaches can be used at any level – the module, the course, the program
  – More on pre-post later
Designing a Performance Assessment Task (with Scoring Guide or Rubric) . . .

Taking the Leap . . .

See separate sheets
Assessment Performance
Task Example – Case Study

About this assessment
- Developer(s) Jefferson College Team
- Evaluator(s) Instructor

Your target performance - competencies
Analyze communication situations

Linked External Standards
- State standard related to human relations or communications
- Industry standard related to profession (such as teaching, nursing, manufacturing)

Linked Program Outcomes
C. Communicate with colleagues in a professional manner

Linked General Education Outcomes
A. Share meaning through writing, speaking, and listening

Linked Core Abilities
1. Think critically and creatively
7. Communicate clearly
Instructions to Learner

How to complete this assessment

For this performance assessment you will be given a case study to analyze and choose a course of action.

1. Read through the case study.
2. Identify the alternative course(s) of action suggested by the case study.
3. Select the best course of action. Provide relevant evidence for choosing that course of action.
4. Document your course of action in a short written response. Make sure your work meets the criteria on the scoring guide.
5. Submit your written response and scoring guide to your instructor for evaluation.
You must achieve a rating of at least "3" on each criterion to demonstrate competence.

**Rating Scale**

0  No evidence of the criterion
1  Little evidence of the criterion
2  Beginning or some evidence of the criterion
3  Detailed and consistent evidence of the criterion
4  Highly accurate, creative, inventive, or mature evidence of the criterion
Scoring Guide/Rubric

Criteria / Ratings

Case study response demonstrates a thorough understanding of relevant aspects of the case
 4 3 2 1 0
Case study response outlines in detail the decision selected by the learner
 4 3 2 1 0
Case study response includes an explanation of why the decision was selected
 4 3 2 1 0
Case study response is supported by relevant evidence
 4 3 2 1 0
Case study response is well organized
 4 3 2 1 0
Case study response evidences correct grammar, punctuation, and spelling
 4 3 2 1 0

Total Points ____________
Grade ____________
Name ____________________________ Date _______________
Evaluator’s Signature ____________________________ Date _______________
Comments:
Exercise

1. Prepare a performance assessment task assignment with scoring guide for the outcome specified earlier.

2. Be prepared to share!
### Rubric Template

<table>
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<tr>
<th>Criterion</th>
<th>4 Exceeds Expectations</th>
<th>3 Meets Expectations</th>
<th>2 Somewhat Below Expectations</th>
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# Regis McCord Rubric

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</table>
The Rubric Guide

- List criteria for evaluating the performance
- Determine weighting for criteria
- Assess against the standard – not others’ performance
- Provide a framework so the student knows the expectations
Pre- and Post-Testing Uses

- To demonstrate “value-added”
- To identify current knowledge or skills for adapting instruction (including required prerequisite skills)
- To establish base-line data
“pre-post” Example 1

Philosophy Department annually collects representative samples of initial and final essays for evaluation by a faculty panel. The panel evaluates the student’s ability to compare and contrast other historical positions on the issue, state his or her position on the issue, and develop a persuasive argument.

Source: http://www.uky.edu/Assessment/mpre.shtml
At the beginning of their program, music majors are asked to play three pieces of contrasting styles. Student performances are rated according to a detailed rubric developed by a faculty panel. As a condition of graduating from the program, students are again asked to play three pieces that mirror the styles reflected in their initial assessment. Scores from the entering and exiting exams are compared to assess the technical and interpretive skills acquired in the program.

Source: http://www.uky.edu/Assessment/mpre.shtml
A multiple choice test calls on individuals to utilize higher-level skills (Bloom’s) and assesses the most important learning outcomes in an area of study. The results from the pre-assessment are used to guide instruction throughout the semester, spending more time on less well understood concepts and utilizing supplemental approaches to assist all students.
Pre- Post Cautions

• Plan to emphasize the important learning outcomes – not necessarily low levels on Bloom’s taxonomy.

• Be aware of the confounding variables (not all gain (or loss) can be attributed to the intervention.

• Don’t rely on the value-added to the exclusion of target standards.
In 1998, Bill Flynn, then of Palomar College, writes:

"The result of this paradigm shift is a college where faculty are the designers of powerful learning environments, where curriculum design is based on an analysis of what a student needs to know to function in a complex world rather than on what the teacher knows how to teach, where the college is judged, not on the quality of the entering class, but on the quality of aggregate learning growth possessed by its graduates, where compartmentalized departments are replaced by cross-disciplinary cooperatives, and where every employee has a role to play and a contribution to make in maintaining a learner-centered environment (p. 5)."
“The exhilarating thing about a spring garden is its incredible variety. As I view the freshness of this new spring from my window, I see roses, and iris, and pansies, and lilies. And I see trees, and shrubs, and vines. Each has its preferred location, and each requires my understanding of how it grows. But their common needs have impressed me this spring, as I weed and how and water, trying to create an environment in which each can grow and prosper according to its needs.”

» Patricia Cross, Cross Papers, Volume 2, 1995, On Learning