Measuring & Improving Student Learning in Higher Education

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Outline

1. Accountability, accreditation, and assessment of learning
2. Outcomes assessment basics
3. Some measurement issues
4. Examples of closing the loop
5. New resources

Accrediting Associations

- must be approved by USDOE
- are currently criticized for not being more
  - accountable
  - open and transparent
  - focused on measuring quality
  - responsible for student learning

Assessment of Individual Student Development

- ***Assessment of basic skills for use in***
  - ***Placement***
  - ***Advising***
- ***Periodic review of performance in courses***
- ***End-of-program certification of competence***
  - ***Licensing exams***
  - ***External examiners***

Key Results of Individual Assessment

- ***Faculty can assign grades***
- ***Students learn their own strengths and weaknesses***
- ***Students become self-assessors***

A Second Look

- **Across students**
- **Across sections**
- **Across courses**

- ***Where is learning satisfactory?***
- ***What needs to be retaught?***
- ***Which approaches produce the most learning for which students?***

Group Assessment Activities

- *Classroom assignments, tests, projects*
- *Questionnaires for students, graduates, employers*
- *Interviews, focus groups*
- *Program completion and placement*
- *Awards/recognition for graduates*
- *Monitoring of success in graduate school*
- *Monitoring of success on the job*

ASSESSMENT . . .

“a rich conversation about student learning informed by data.”

-- Ted Marchese -- AAHE

Use of Results of Group Assessment

- ***Program improvement***
- ***Institutional and / or state peer review***
- ***Regional and / or national accreditation***

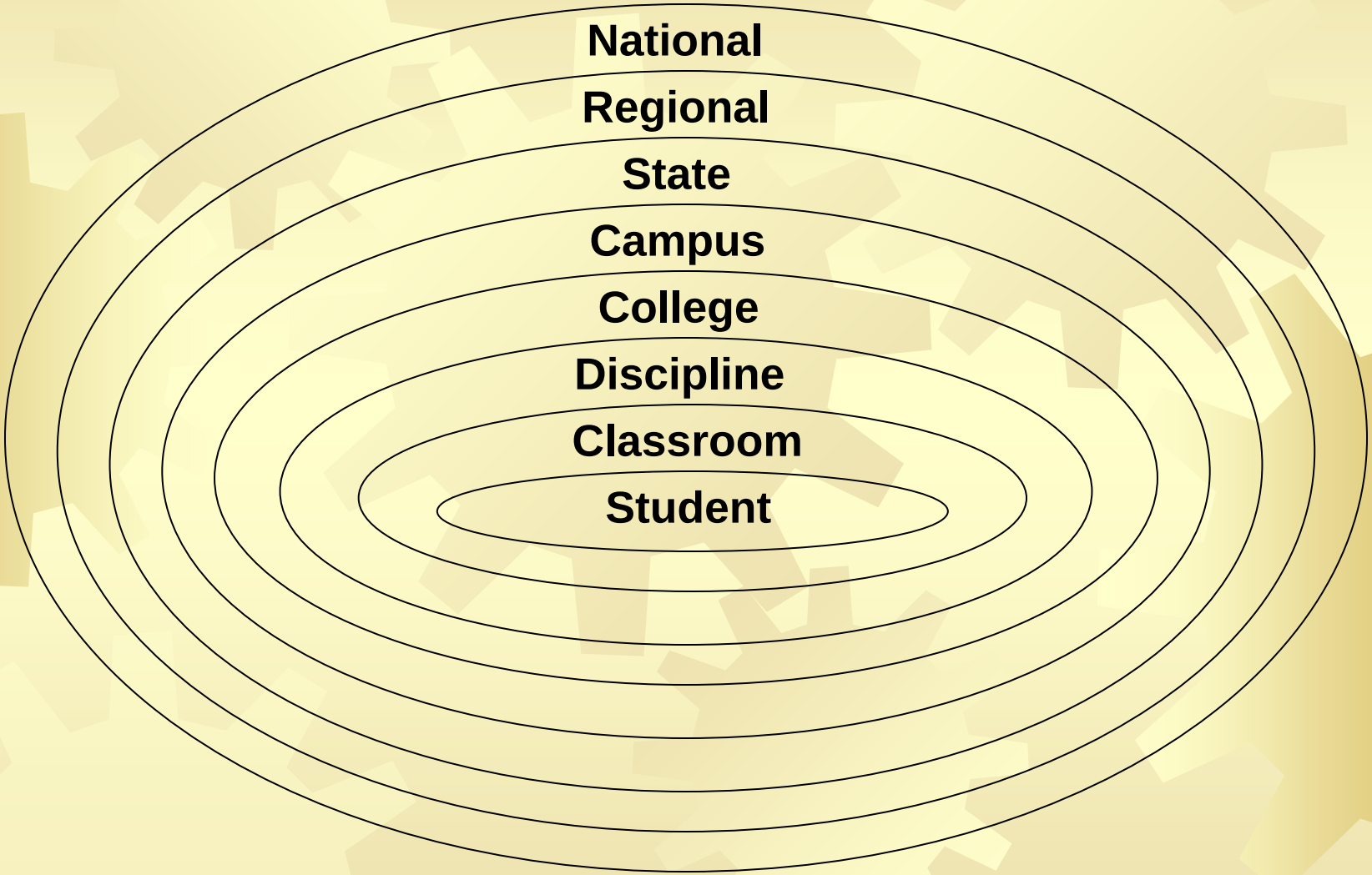
Colleagues May Ask:

Will GRADES provide good evidence for outcomes assessment?

YES if based solely on measures of knowledge and skills

NO if based in part on extra credit (e.g., class participation, attendance)

Organizational Levels for Assessment



Evidence at the Classroom Level

- Background Knowledge Probe
- Minute paper in class
- Just-in-time teaching on line

Background Knowledge Probe
(Pre-Test – Indirect Measure)

1. Cultural Competence
   - A. Have never heard of this
   - B. Have heard of it, but don't really know what it means
   - C. Have some idea what it means, but not too clear
   - D. Have a clear idea what this means and can explain it

- Classroom Assessment
  Angelo and Cross

Evidence at the Program Level

- Individual and team projects
- Research papers
- Experiential learning performance
- Electronic portfolios

Clerkships

Evaluated against specific criteria by

- Students
- Faculty
- Preceptors

To assess ethical behavior

Defining Issues Test

(James Rest 1979, 86, 93)

Measure of Moral Reasoning

(Choose course when facing moral dilemma)

See Mental Measurements Yearbook

Evidence at the Institutional Level

- Learning outcomes
- Questionnaires, interviews, focus groups
- Productivity measures
- Cost analyses
- Management ratios
- Program evaluation
- Peer review
- Accreditation

Engage Stakeholders in

- Developing and reviewing curriculum
- Contributing assessment data
- Evaluating students

Stakeholders in Pharmacy Education

- Faculty
- Students
- Graduates
- Preceptors
- Employers

Most Faculty Are Not Trained as Teachers

Faculty Development

Can Help Instructors:

- *Write clear objectives (outcomes) for student learning in courses and curricula*
- *Connect learning outcomes to assignments in courses.*
- *Develop assessment tools that test higher order intellectual skills*

Taxonomy of Educational Objectives (Bloom and Others, 1956)

Cognitive domain categories	***Sample verbs for outcomes***
Knowledge	*Identifies, defines, describes*
Comprehension	*Explains, summarizes, classifies*
Application	*Demonstrates, computes, solves*
Analysis	*Differentiates, diagrams, estimates*
Synthesis	*Creates, formulates, revises*
Evaluation	*Criticizes, compares, concludes*

Pharmacy graduates must

- provide patient-centered care
- manage resources
- communicate with patients
- provide drug information
- perform legally & ethically

Organizing for Assessment

Goal	Course	Measure	Findings	Uses
Write		Portfolio		
Speak		Speech		
Behave Professionally		Behavioral Professionalism Assessment		

Planning for Learning and Assessment

1. What general learning outcome are you seeking?	2. How would you know it (the outcome) if you saw it? (What will the student know or be able to do?)	3. How will you help students learn it? (in class or out of class)	4. How could you measure each of the desired behaviors listed in #2?	5. What are the assess-ment findings?	6. What improve-ments are warranted by assess-ment findings?

Direct Measures of Learning

Assignments, exams, projects, papers

Indirect Measures

Questionnaires, inventories, interviews

- Did the course cover these objectives?
- How much did your knowledge increase?
- Did the teaching method(s) help you learn?
- Did the assignments help you learn?

GOOD ASSESSMENT INCLUDES BOTH

Standardized tests

CAN

initiate conversation

Presumed Advantages

of standardized tests of generic skills

- readily available
- promise of increased reliability & validity
- norms for comparison

2006
Commission on the Future of Higher Education

- We need a simple way to compare institutions

- The results of student learning assessment, including value added measurements (showing skill improvement over time) should be . . . reported in the aggregate publicly.

Now We Have

the

Press to Assess with a Test

2007
Voluntary System of Accountability

~ Assessment of Learning ~

defined as

critical thinking, written communication, analytic reasoning

VSA Recommendations
(over my objections)

- Collegiate Assessment of Academic Proficiency (CAAP)
- Measuring Academic Proficiency & Progress (MAPP) (now Proficiency Profile)
- Collegiate Learning Assessment (CLA)

TN = Most Prescriptive
(5.45% of Budget for Instruction)

1. Accredit all accreditable programs (25)
2. Test all seniors in general education (25)
3. Test seniors in 20% of majors (20)
4. Give an alumni survey (15)
5. Demonstrate use of data to improve (15)

100

At the University of Tennessee

CAAP

Academic Profile (MAPP, PP)

COMP (like CLA and withdrawn by 1990)

In TN We Learned

1) No test measured 30% of gen ed skills
2) Tests of generic skills measure primarily prior learning
3) Reliability of value added = .1
4) Test scores give few clues to guide improvement actions

An Inconvenient Truth

.9 = correlation of CLA and SAT/ACT means at institutional level

thus

81% of the variance in institutions' scores Is due to students' prior learning

How Much of the Variance in Senior Scores is Due to College Effects?

- Student motivation to attend that institution (mission differences)
- Student mix based on
  - age, gender
  - socioeconomic status
  - race/ethnicity
  - transfer status
  - college major

How Much of the Variance in Senior Scores is Due to College Effects? (continued)

- Student motivation to do well
- Sampling error
- Measurement error
- Test anxiety
- ✶ College effects

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19 %

Word from Measurement Experts

Given the complexity of educational settings, we may never be satisfied that value added models can be used to appropriately partition the causal effects of teacher, school, and student on measured changes in standardized test scores.

- Henry Braun & Howard Wainer

  Handbook of Statistics, Vol. 26: Psychometrics

  Elsevier 2007

Employing currently available standardized tests of generic skills to compare the quality of institutions is not a valid use of those tests.

VSA Staff @ APLU & AASCU 2012

Engaged methodologists who proposed alternatives:

* GRE General Test
* AAC&U VALUE rubrics
  - Written Communication
  - Critical Thinking

If We Must Measure Learning Let's Use:

1. Standardized tests in major fields
    - licensure and certification tests
2. Objective structured clinical exams
3. Clerkship performance
4. Electronic portfolios
5. External examiners
6. Peer assessment
7. Self assessment

Primary Trait Scoring

Assigns scores to attributes (traits) of a task

STEPS

- Identify traits necessary for success in assignment
- Compose scale or rubric giving clear definition to each point
- Grade using the rubric

Can Develop a Research Paper

1. **Narrows and defines topic**
2. **Produces bibliography**
3. **Develops outline**
4. **Produces first draft**
5. **Produces final draft**
6. **Presents oral defense**

Out-standing	Accept-able	Unaccept-able
✓✓✓✓	✓	
	✓ ✓	✓ ✓ ✓
✓ ✓ ✓ ✓		
✓ ✓	✓ ✓ ✓	
✓ ✓ ✓ ✓	✓	
	✓	✓ ✓ ✓ ✓

Bibliography

Outstanding – References current, appropriately cited, representative, relevant

Acceptable – References mostly current, few citation errors, coverage adequate, mostly relevant

Unacceptable – No references or containing many errors in citation format, inadequate coverage or irrelevant

Threats to Reliability/Generalizability/Dependability of Rubrics:

1. raters
2. rating criteria
3. raters X criteria interaction

-- Judd, Secolsky, Allen (2012)

For External Credibility

- Collaborate on rubrics
- Use employers as examiners
- Conduct process audits

Will it take 85 years

to establish the reliability and validity

of authentic measures?

* Learning outcome

1. How students will learn
2. Assessment activity
3. How faculty will evaluate performance
4. Possible improvement action

* Give ethical patient care

1. Read cases of rights violations

2a. Write paper on patients' rights

2b. Take role in simulated setting

3. Grade with rubrics

4. Add new readings

* Clarify responsibilities for treatment

1a. Read and discuss treatment plans

1b. Shadow a provider in community

2. Write reflection on shadowing

3. Grade with rubric

4a. Brief subjects of shadowing

4b. Add more practice

* Communicate with patients

1. Organize history notes on chart

2a. Present info to peer; reverse roles

2b. Write paper reflecting on strengths

3a. Faculty grade videotaped presentations

3b. Peers exchange reflections

4. Bring in interdisciplinary panel

National Institute for Learning Outcomes Assessment

- Surveys
  - 2009 CAOs
  - 2011 Departments
- Occasional Papers
- Website review, standards
- Quick comments (monthly)
- Calendar of events

www.learningoutcomesassessment.org

New Leadership Alliance for Student Learning and Accountability

- Presidents' Alliance

- Self Assessment/Certification Process
  - Set ambitious goals for learning
  - Gather evidence of learning
  - Use evidence to improve learning
  - Report evidence and results

www.newleadershipalliance.org

ASSESSMENT UPDATE

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