Encyclopedia of Assessment Methodology

Everything We Know About Assessment

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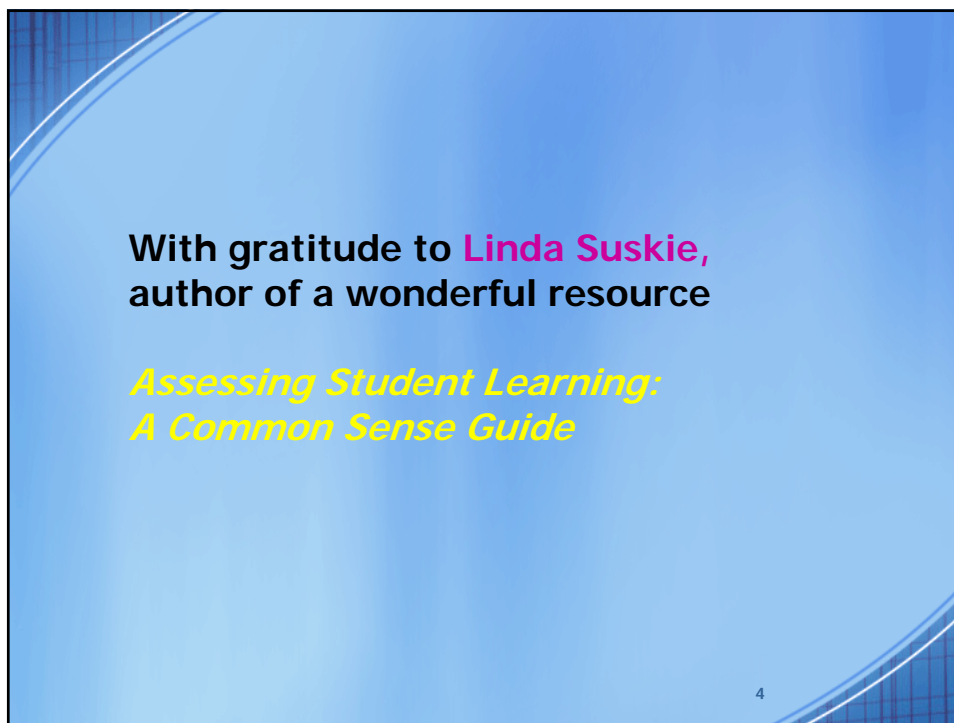*Old Dominion University*

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With gratitude to Linda Suskie, author of a wonderful resource

Assessing Student Learning:
A Common Sense Guide

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Learning Outcomes

Participants will be able to:

- … clarify with colleagues common myths and misconceptions about assessment
- … define assessment and differentiate it from research and evaluation

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Learning Outcomes

Participants will be able to:

- … explain the alignment between mission, goals, & outcomes
- … write measurable outcomes using the ABCD model
- … identify appropriate measures of student learning

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Common Myths
and
Misconceptions

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Common Questions and Answers

"How can I do this and complete all of my other teaching and research duties?"

Building the Scholarship of Assessment
(Banta, 2002)

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Common Questions and Answers

"Isn't this just an accountability problem for the upper administration and our assessment and IR folks?"

Focus on student learning

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Common Questions and Answers

"I know how well my students are performing because I teach them and grade their work!!!"

"In God we trust; all others bring data"

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Common Questions and Answers

"Why not use grades in courses?"

Grades in courses include more than student learning

Single grader

Results not specific enough for most program improvements

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Common Questions and Answers

"We have a capstone course; isn't that assessment?"

Vehicle for assessment

Capstone projects vs. capstone courses

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Common Questions and Answers

"We do surveys and course evaluations to assess our students satisfaction; isn't that sufficient assessment?"

Surveys are good measures of confidence, not competence

Surveys are good measures of satisfaction, not student learning

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Common Questions and Answers

"What about academic freedom?"

Faculty have a responsibility to cover common learning outcomes

Faculty can add learning outcomes and decide how to teach common learning outcomes most effectively

Assessment is not a form of faculty evaluation . . .

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Unit of Analysis

- .... Is NOT the faculty member

- Is NOT the student

- IS the PROGRAM

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Drivers of Assessment

- A revolution in education: **the learning-centered paradigm**
- Calls for accountability
- Federal requirements for regional accreditation
- Disciplinary accreditation
- Supports for faculty and students to improve their performance

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SACS/COC – Institutional Effectiveness

"The institution identifies expected outcomes, assesses the extent to which it achieves these outcomes, and provides evidence of improvement based on analysis of those results in each of the following areas."

✓ Educational programs, to include student learning outcomes
✓ Administrative support services
✓ Educational support services
✓ Research within its educational mission, if appropriate
✓ Community/public service within its educational mission, if appropriate

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Defining Assessment

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What is Assessment?

- "Assessment is the ongoing process of:

  – Establishing clear, measurable *expected outcomes* of student learning

  – Ensuring that students have sufficient *opportunities to achieve* those outcomes

Suskie, p. 3

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What is Assessment?

- "Assessment is the ongoing process of:
  – Systematically gathering, analyzing, and interpreting *evidence* to determine how well student learning matches our expectations.
  – Using the resulting information to *understand and improve* student learning."

Suskie, p. 3

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Assessment is not …

- Research designed to test theories – assessment informs practice
- Evaluation designed to determine the quality of a program – assessment focuses on improvement
- Grading students...

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Grading vs. Assessment

- Grading and assessment criteria appropriately differ (e.g., attendance)

- Grading standards may be vague or inconsistent (or, at best, idiosyncratic)

- Grades alone may give insufficient information on student strengths and weaknesses

- Grades do not reflect all learning experiences (whole curriculum)

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Why Not Course Grades?

Jim Nichols' Grade Book Analogy:

"How you can use student performance to assess course and/or program strengths and weaknesses? "

- a way to conceptualize the process

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Typical Grade Book

Student	Grading Dimensions						Student Performance
	Paper 1	Midterm	Attendance	Participation	Paper 2	Final	
#1							
#2							
#3							
#4							
#5							
#6							
#7							
#8							
#9							
#10							

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Typical Grade Book

- Rows represent individual students
- Dimensions across the top most typically represent measures of student performance at various points in time and/or results of different measures or instruments
- Student performance at the end of the semester is summarized and a course grade results.

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Typical Grade Book:
Focus on the Rows

- Student performance may vary across the columns, but, in general, is not important in summarizing individual student performance in each row.
- If all/most students pass the course, presumably, the targeted learning objectives have been met -- BUT have they?
  - Need to focus on columns

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Focus on the Columns: Learning Outcomes

- Analyzing the *row* data results in a summary of individual student performance.
- HOWEVER, analysis of the *column* achievement should identify strengths and weaknesses of the course which are not apparent when looking at student summary data only.

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Substituting Student Learning Outcomes

Student	Student Learning Outcomes						Student Performance
	A	B	C	D	E	F	
#1	1	0	1	1	1	1	84%
#2	0	1	1	1	1	1	84%
#3	1	1	1	1	0	1	84%
#4	0	0	1	1	1	1	67%
#5	1	1	1	1	1	1	100%
#6	1	0	1	1	1	1	84%
#7	1	1	0	1	1	1	84%
#8	1	0	1	1	1	1	84%
#9	1	1	1	1	1	1	100%
#10	1	1	1	1	1	1	100%
Objective Performance	80%	60%	90%	100%	90%	100%	

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Substituting Program Student Learning Outcomes as Column Dimensions

- Unit of analysis changes from an individual course to the academic program
- Achievement of each outcome may be measured at one or more times and in one or more ways during the course of the program

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Substituting Program Learning Objectives

Student	Program Learning Outcomes						Student Performance
	A	B	C	D	E	F	84%
#1	1	0	1	1	1	1	84%
#2	0	1	1	1	1	1	84%
#3	1	1	1	1	0	1	67%
#4	0	0	1	1	1	1	100%
#5	1	1	1	1	1	1	84%
#6	1	0	1	1	1	1	84%
#7	1	1	0	1	1	1	84%
#8	1	0	1	1	1	1	100%
#9	1	1	1	1	1	1	100%
#10	1	1	1	1	1	1	
Objective Performance	80%	60%	90%	100%	90%	100%	

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Typical Grade Book Summary

- Rows focus on…
  - Individual student performance
- Columns focus on …
  - Course student learning outcomes
  - Program student learning outcomes
- Once particular strengths and weaknesses are identified, analysis of how the course or curriculum is delivered should ensue.

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Suskie, p. 3
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Goals and Outcomes

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Mission of General Education

"The GE program at ODU represents the common core of the baccalaureate degree. It prepares students for pursuing a major, for broadening their views of life, and for understanding an increasingly global and diverse world. It provides students with...

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Mission of General Education

... the basic skills and intellectual perspectives to engage in the search for knowledge. The GE program develops analytical and critical thinking skills and the ability to make reasoned judgments. Students will also discover that learning is a complex, multifaceted, and lifelong endeavor."

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Goals express…

- Goals are broad and abstract statements that flow out of the mission
- Goals indicate the destination in which we are headed, not the path by which we get there

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Goal Examples

"Develop and demonstrate effective use of language
- Develop written communication skills.
- Develop oral communication skills.
- Develop ability to use a foreign language.
- Develop written communication skills in the major at the upper division level."

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Goal Examples

"Develop an understanding of human behavior, society, and culture, with specific attention to technology, international perspectives and issues related to ethnicity, race and gender.
- Develop an understanding of history and an ability to think critically about the past.
- Think critically about beliefs, values, and moral issues that have shaped human society.....

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Goal Examples

.....
- Critically analyze the fine and performing arts and their contribution to culture.
- Critically analyze literature and its contribution to culture.
- Develop an understanding of behavioral, political, economic, and social systems."

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WEAVE Practice

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Assessment Planning and Reporting Process

1. Become a learning organization
2. Define the mission and goals of the department
3. *W*rite expected outcomes / objectives
4. Define the intended student learning outcomes of the department
5. *E*stablish measures and criteria for success

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Assessment Planning and Reporting Process

6. Identify assessment targets
7. *A*ssess performance against criteria
8. *V*iew the results
9. *E*ffect improvements through actions
10. Start the process over again (continuous quality improvement)

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Outcomes articulate…

- The measurable achievement a participant will be able to demonstrate as a result of participation in a learning activity.
- The knowledge, skills, attitudes, and habits of mind that students take with them from a learning experience.

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Goals and Outcomes

- Goals are broad
- Goals are general
- Goals are intangible
- Goals are abstract
- Goals cannot be validated

- Outcomes are narrow
- Outcomes are precise
- Outcomes are tangible
- Outcomes are concrete
- Outcomes can be validated

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Bloom's Taxonomy of Cognitive Development

Evaluation

Synthesis

Analysis

Application

Comprehension

Knowledge

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The Purpose of Learning Outcomes

- To communicate to ourselves, students, and others:
  - What we intend for students to learn
    - So they can organize their efforts toward accomplishing the desired behavior
    - So they can assess their own performance
  - Whether students have gained appropriate skills, attitudes, and/or knowledge
  - How successful an activity has been

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Characteristics of Learning Outcomes

- Always expressed in terms of the learner.
- Are precise and support only one interpretation.
- Describe an observable behavior
- Use concrete action verbs
- Specify criteria for accomplishment

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Examples of Learning Outcomes – ABET

"(a) an ability to apply knowledge of mathematics, science, and engineering

(b) an ability to design and conduct experiments, as well as to analyze and interpret data

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(d) an ability to function on multi-disciplinary teams

(e) an ability to identify, formulate, and solve engineering problems …

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Examples of Learning Outcomes – ABET

…(f) an understanding of professional and ethical responsibility

(g) an ability to communicate effectively

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

(i) a recognition of the need for, and an ability to engage in life-long learning

(j) a knowledge of contemporary issues

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice." (ABET, 2007)

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ABCD Model

Questions a good outcome answers
- **Audience:** Who will be performing the behavior?
- **Behavior:** What behavior should the learner be able to do?
- **Condition:** Under what conditions do you want the learner to be able to do it?
- **Degree:** How well must it be done?

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ABCD Model

- **Audience -** Identify who will be learning   (not the instructor)
  - The Learner
  - The Staff member
  - The Student
  - The Participant
  - The Employee
  - The Trainee
  - The Organization Member
  - The Audience Member

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ABCD Model

Audience

- "The _____ will be able to_____."

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ABCD Model

- **Behavior** (Performance)
  - Should include an action verb indicating what the learner will be able to do
  - Should be something that can be seen or heard

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Action Verbs That Could Be Used When Writing Cognitive Learning Outcomes

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
define	translate	interpret	distinguish	compose	judge
repeat	restate	apply	analyze	plan	appraise
record	discuss	use	differentiate	propose	evaluate
list	recognize	demonstrate	appraise	design	rate
recall	explain	practice	calculate	formulate	compare
name	identify	illustrate	categorize	arrange	value
relate	locate	operate	experiment	assemble	revise
tell	report	schedule	test	collect	score
quote	review	calculate	compare	construct	select
label	express	complete	contract	organize	choose
name	summarize	show	diagram	manage	assess
	describe	solve	relate	prepare	estimate
	interpret	examine	solve	combine	measure
	predict	modify	examine	modify	decide
	distinguish	change	separate	substitute	rank
	differentiate	relate	classify		recommend
			arrange		convince
			divide		conclude
			select		

ABCD Model

- **Condition**
  - State the conditions you will impose when learners are demonstrating their mastery of the objective.
  - What will the learners be allowed to use?
  - Under what conditions must the mastery of skill occur?

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Conditions

- Givens
- Resources
- Environment
- Directions
- Format
- Deadlines

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ABCD Model

- **Degree** (or criterion)
  - A degree or criterion is the standard by which performance is evaluated.
    - The power of an outcome increases when you tell the learners the behavior must be done.

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Degree

- Accuracy/Tolerance
- *Speed*
- *Number*
- Reference or Standards
- *Permissible Errors*
- Degree of Excellence

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Writing

"The student will be able to write an essay
that includes the following components:

1. A clearly stated objective
2. Supporting evidence
3. Clarity in sentence structure and word   choice
4. Logical consistency
5. Reasonable freedom from mechanical errors."

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Oral Communication

Content – The SWBAT:
- Identify a speech topic that is appropriate for the specific purpose of the speech context and the audience.
- Develop the topic so that the goal and main points are clearly differentiated and supported by credible research.
- Explain facts, statistics, examples, experiences, and professional perspectives, to support the main points.

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Critical Thinking

"The student will be able to write an essay that includes the following components:
- **A clearly stated objective**. The writer's purpose or position (thesis statement) is clear and is the primary controlling force throughout the paper. The essay addresses the question directly.
- **Supporting evidence**. The writer satisfactorily develops the ideas presented in support of the purpose of the essay. Generalizations are supported by details or specific explanation.
- **Logical consistency**. The ability to develop an argument that is internally consistent and logically arranged. The writer avoids sweeping or hasty generalizations, false dichotomies (either/or fallacies), personal attack, and appeals to fear or ignorance.

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Where Can We Find Measurable Outcomes

- ODU general education objectives
- SCHEV Competencies
- Colleagues, professional organizations, etc.
- Examples:
    http://assessment.uncg.edu/departmentplans.htm

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WEAVE Practice

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Measures of
Student Learning

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Assessment Methods

Assessment tools must be compatible with the domain being assessed:

(1) *knowledge* typically assessed using appropriate written and oral examinations as well as direct observation;

(2) *skills* typically assessed by direct observation of student performances (written, oral, visual);

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Assessment Methods

Assessment tools must be compatible with the domain being assessed:

(3) *attitudes* typically assessed by interviews, observations, or evaluations with peers, supervisors, faculty, and co-workers and their families;

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Models of Assessment

- **Standards (competency) based** – set a standard and assess the extent to which students achieve it
- **Benchmarking** – assess how well your students achieve compared to other students at peer institutions
- **Value-Added** – assess your students at entry and at a later time (end of second year; graduation) and compare the differences (pretest – posttest)
- **Longitudinal** – assess students in each successive class and compare the differences between classes

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Good Assessment Practices

- Set clear expectations
- Minimize the burden of assessment
- Start small
- Start with successes
- Use assessment results for program improvement

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Good assessments…

- Measure what we intend to measure **(validity)**
- Give us **useful, reasonably accurate** information
- Yield **results specific to the learning outcomes** so that improvements can be made

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Good assessments…

- Yield **consistent results** across administrations **(reliability)**
- Are **systematized**
- Are **ethical** and protect the privacy and dignity of those involved
- Are **cost effective**, yielding value that justifies the time and expense we put into them

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Good assessments…

- Can be:
  - Direct or Indirect
  - Objective or Subjective
  - Quantitative or Qualitative
  - Formative or Summative
  - Embedded in courses

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Types of Evidence

Direct

- Tangible, visible, **observable**, self-explanatory
- Quality and quantity of student learning is concretely exhibited

Indirect

- **Signs, indicators**, less convincing — "tell us about . . ."
- Results may be consistent with student learning, but do not solicit specifics

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Common Direct and Indirect Measures of Student Learning

Direct

- *Test grades*
- Rubrics
- Portfolios of student work
- Capstone projects
- Field supervisor ratings
- Employer ratings
- Scores and pass rates on licensure exams

Indirect

- *Course grades*
- Surveys
- Focus Groups
- Course evaluations
- Admission to graduate school
- Student self-ratings
- Student / alumni satisfaction with learning
- Honors, awards, and scholarships

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Types of Assessment

Objective

- No professional judgment to score correctly – usually one correct answer
- Multiple-choice test
- Matching items
- True-false questions

Subjective

- Need professional judgment to score – many possible answers of varying quality
- Essays
- Performances

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Subjective Assessments…

- Assess many important skills that objective tests cannot.
- Assess skills directly.
- Promote deep, lasting learning.
- Allow for nuances in scoring.
- Can capture a lot of information on a broad range of learning goals in a relatively short time.

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Types of Assessment

Quantitative

- Structured, pre-determined response options that can be summarized into meaningful numbers and analyzed statistically
- Some audiences find quantitative results more convincing

Qualitative

- Flexible, naturalistic methods that are usually analyzed by looking for recurring patterns and themes
- Often underused, underappreciated
- Can give fresh insight and help discover problems and solutions

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Reasons for Assessment

Formative

- Improve teaching and learning (or service and satisfaction)
- Used while learning is taking place
- Focus on feedback and adjustment

Summative

- Document learning or service and satisfaction
- Occur **at the end** of the course or service period
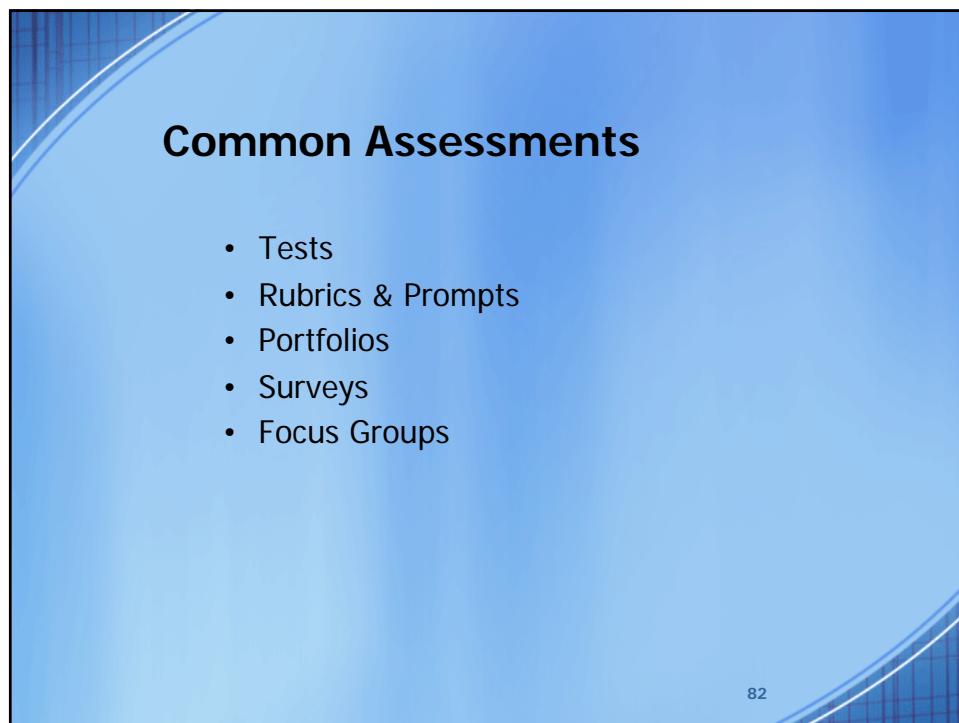- Focus on sum/total, with little feedback

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Course Embedded Assessments

- Developed and implemented within the context of individual course(s)
- Required courses in the major, capstone course ideal
- Completion of assessment measures part of course grades
- Contrast to separate session assessment – issues of motivating students to complete assessment

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WEAVE Practice

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Sample Tools

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Common Assessments

- Tests
- Rubrics & Prompts
- Portfolios
- Surveys
- Focus Groups

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Presumption is that, at all times, efforts are being made to ensure that measures are valid and reliable

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Sample Assessment Tools: Tests

- Direct measure of student learning
- Typically quantitative; essay questions may be qualitative
- Objective if multiple choice / subjective if essays
- Published / normed vs. locally developed

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Sample Assessment Tools: Tests

- Examples:
  - Licensure examinations
  - GRE content examination
  - Comprehensive examinations
  - Technology and Information Literacy
  - Quantitative Reasoning
  - Scientific Reasoning

- Other examples???

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Sample Assessment Tools: Rubrics & Prompts

- Direct measure of student learning
- Qualitative
- Subjective – professional judgment required
- Multiple raters – calibrated
- If appropriately developed, can result in consistent results (inter-rater reliability)

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Sample Assessment Tools: Rubrics & Prompts

- Examples:
  - Writing Sample Placement Test / Exit Exam of Writing Proficiency
  - Critical Thinking
  - Oral Communication
  - Assessment of a musical performance or work of art
  - Student teaching, practica and internships, supervisor / employer ratings
  - SAT writing sample
- Other examples???

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Sample Assessment Tools: Portfolios

- Direct measure of student learning
- Qualitative
- Subjective – professional judgment required
- A rubric can be used to evaluate a portfolio

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Sample Assessment Tools: Portfolios

- Examples:
  - Art samples
  - Writing sample portfolio to evaluate for value added in writing skills over completion of program

- Other examples???

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Sample Assessment Tools: Surveys

- Indirect measure of student learning
- Typically quantitative; essay questions may be qualitative
- Subjective – require professional judgment

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Sample Assessment Tools: Surveys

- Examples:
  - Transition to College Inventory – diagnostic tool which identifies at-risk first year students
  - Student Satisfaction Surveys (required of all graduating students)
  - Alumni Surveys
  - Employer satisfaction with graduates

- Other examples???

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Sample Assessment Tools: Focus Groups

- Indirect measure of student learning
- Qualitative
- Subjective – require professional judgment

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Sample Assessment Tools: Focus Groups

- Examples:
  - Used focus groups to assess NewPAGE
  - Used focus groups to help President Runte develop a common vision of the University and complete SWOT analysis for strategic plan
- Other examples???

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We start out with the aim of
making the important measurable
and end up making only the
measurable important.

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