

Using Student Assessment Data for Program Assessment

Applied Science Accreditation
Commission

Summit 2008

Turner Hughey
Chair

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IMPORTANT NOTE!!!

- There are numerous ways to approach program assessment.
- There is no single approach specified by ABET.
- The purpose of this presentation is to offer a few thoughts about one of many ways program assessment might be approached.

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Why Use Student Assessment in Program Assessment?

- Kill two birds with one stone.
- Use a process with which faculty are already familiar (student assessment).
- Save ourselves some work!

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Student vs. Program Assessment

- Similarities
 - Unit of measurement (the student or some product produced by the student)
 - Tools/instruments of assessment
- Differences
 - Overall purpose of assessment
 - Primary utilization of results

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Student Assessment

- Purpose – Students assessed with respect to mastery of material presented, ensure capability or competency of each student.
- Assessment tools – Written examinations, essays, papers, presentations, etc.
- Use of results – Determine grades or initiate some remedial action (tutoring, extra work assignment, etc.).
- Unit of remediation – ***Individual student.***



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Program Assessment

- Purpose – Judge and improve overall instructional performance, provide data for making program improvements.
- Assessment tools – Written examinations, essays, papers, presentations, etc., BUT data are aggregated.
- Use of Results – Program improvements, ensure that the program is accomplishing its objectives.
- Unit of remediation – ***program.***



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Program Remediation Strategies

- Curricular changes
 - New courses
 - Revised courses
 - Revised course sequence
- Admission criteria changes
- Instructional methodology changes



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Student Assessment Feeds Into Program Assessment

- Aggregate student assessment data for program assessment
 - Student or some product produced by the student is unit of assessment for both.
 - Broader view of data indicates effectiveness of overall program.
 - Supplements program assessment.



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Assessment Terminology

- What to call “that which is most important” in a discipline?
 - Core Competencies
 - Educational Objectives
 - Student Learning Outcomes
 - Strategic Learning Goals
 - Fundamental Knowledge in the Major Field
 - Educational Standards



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Assessment Terminology

- ABET Criteria uses term “outcomes.”



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Program Outcomes

- Narrower statements that describe what students are expected to know and be able to do by the time of graduation.
- These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.



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Performance Criteria

- The benchmark that the program sets for the outcome and against which the outcome's performance is judged by the faculty within the department.
- These criteria are most often stated in terms of percentages, percentiles, averages, or other quantitative measures.



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Means of Assessment

- The method, tool, or instrument used to determine whether (and/or the extent to which) the outcomes' performance criteria have been achieved.



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Examples of Assessment Means

- Commercial, norm-referenced, standard examinations
- Locally developed examinations
- Oral examinations
- Performance appraisals
- Simulations
- Portfolios
- Written surveys and questionnaires
- Exit and other interviews
- Focus groups
- External examiner
- Behavioral observations
- Archival records



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ABET (a) – (k)

- Programs are expected to demonstrate that their graduates achieve the outcomes specified in Criterion 3. Outcomes (a) – (k).



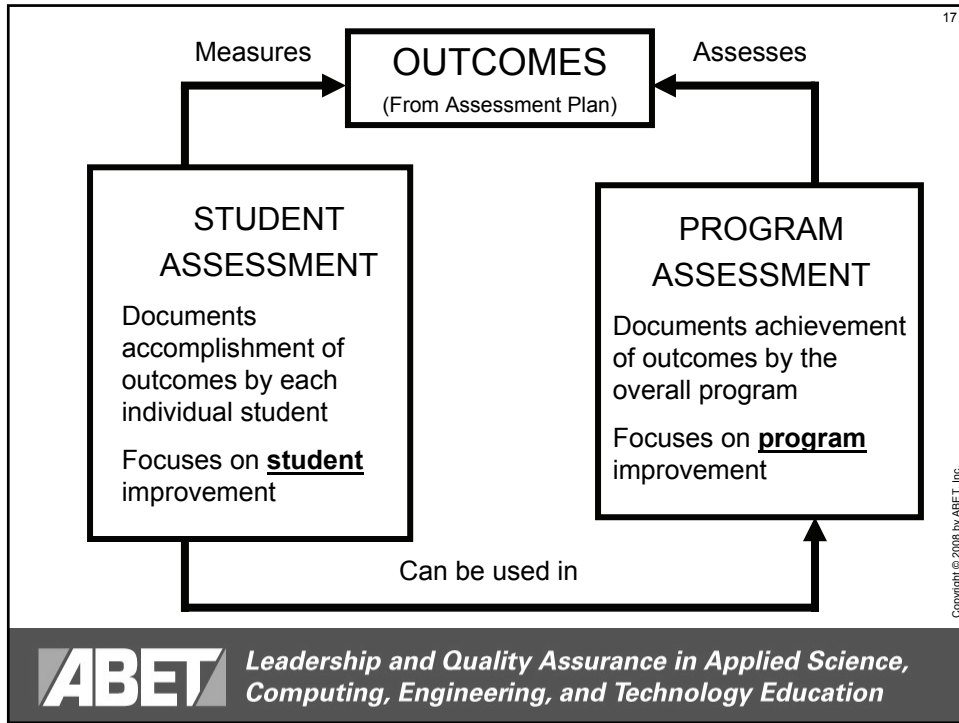
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Student Assessment Feeds Into Program Assessment

- KEY ISSUE!
 - To the extent that a given student assessment measures or relates to a programmatic outcome, it can potentially be aggregated and used for program assessment.



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EXAMPLE: Comprehensive Exam as Student Assessment

- Given in Capstone Course
- Consists of 50 multiple choice questions worth 2 points each

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Comprehensive Exam as Student Assessment

- Standard grade scale for individual students:

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
< 60	F



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Comprehensive Exam as Student Assessment

- Performance criteria for individual student
 - Must achieve a 70% overall (C or better)
- Remediation for individual student
 - Students scoring less than 70% will receive general tutoring



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How Can We Use the Comprehensive Exam as Program Assessment?

- Outcomes for Environmental Health and Safety (EHS) Program
 - Outcome 1: Application
 - Outcome 2: PPE
 - Outcome 3: Monitoring
 - Outcome 4: Agents
 - Outcome 5: LEV



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How Can We Use the Comprehensive Exam as Program Assessment?

- Link exam questions to outcomes
 - Questions 1 – 10 assess Outcome 1
 - Questions 11 – 20 assess Outcome 2
 - Questions 21 – 30 assess Outcome 3
 - Questions 31 – 40 assess Outcome 4
 - Questions 41 – 50 assess Outcome 5



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How Can We Use the Comprehensive Exam as Program Assessment?

- Performance Criteria for *Program*
 - The average grade on the Senior Exam will be no less than 70%.
 - On no individual outcome area will the average be less than 14 points.



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Comprehensive Exam as Program Assessment (Aggregate of Student Data)

Senior Assessment - Environmental Health and Safety Program							
Students	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5		
	Application	PPE	Monitoring	Agents	LEV	Total	Grade
Student 1	20	16	16	20	12	84	B
Student 2	20	20	20	12	12	84	B
Student 3	16	12	16	8	8	60	D
Student 4	20	20	20	16	16	92	A
Student 5	20	16	16	12	12	76	C
Student 6	16	16	12	16	12	72	C
Student 7	12	12	12	12	8	56	F
Student 8	20	16	16	16	12	80	B
Student 9	20	20	16	20	12	88	B
Student 10	16	20	12	16	12	76	C



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Comprehensive Exam as Program Assessment (Aggregate of Student Data)

Senior Assessment - Environmental Health and Safety Program							
Students	Outcome 1 Application	Outcome 2 PPE	Outcome 3 Monitoring	Outcome 4 Agents	Outcome 5 LEV	Total	Grade
Student 1	20	16	16	20	12	84	B
Student 2	20	20	20	12	12	84	B
Student 3	16	12	16	8	8	60	D
Student 4	20	20	20	16	16	92	A
Student 5	20	16	16	12	12	76	C
Student 6	16	16	12	16	12	72	C
Student 7	12	12	12	12	8	56	F
Student 8	20	16	16	16	12	80	B
Student 9	20	20	16	20	12	88	B
Student 10	16	20	12	16	12	76	C
Average	18	17	16	15	12	77	

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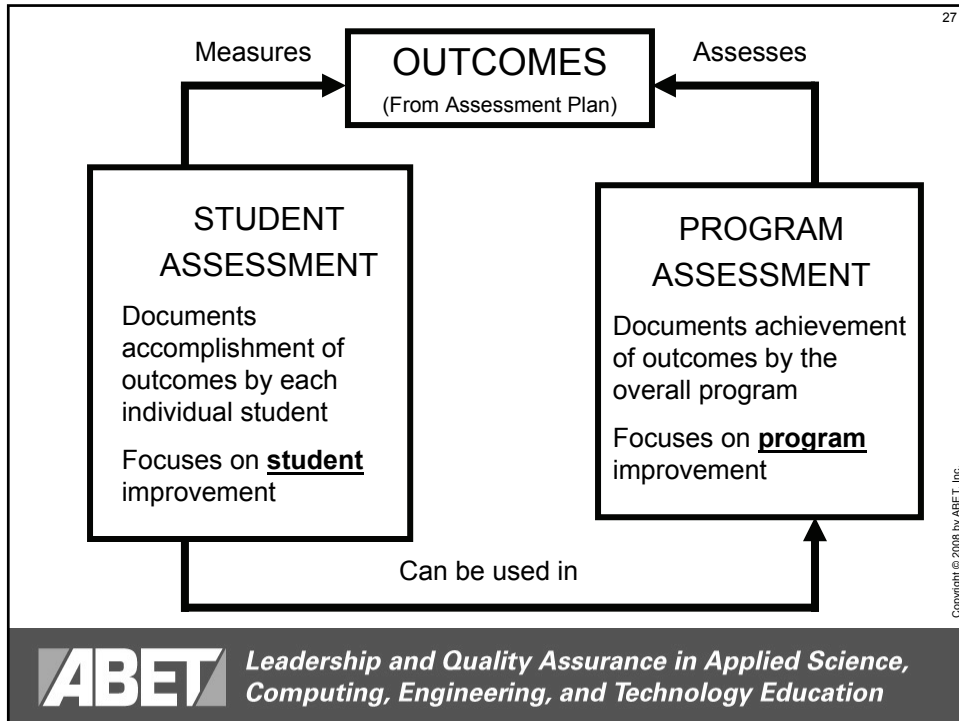
Comprehensive Exam as Program Assessment

- Program Remediation
 - Changes in course content to emphasize LEV in certain courses
 - Changes in course sequence
 - Creation of new course
 - Re-visit importance of LEV as a program outcome
 - Look carefully at the exam

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Comprehensive Exam as Program Assessment

- Key Points:
 - Correlate specific questions with specific outcomes and aggregate data
 - Senior Exam contributes to grade in Capstone Course
 - Course-embedded assessment
 - Helps solve student motivation problem

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Essay as Means of Student Assessment

- Desire to evaluate a student's ability to provide a persuasive argument that clearly supports a given resolution to an ethical dilemma"²
- Means of Assessment
 - Written essay given in a course at the senior level or other appropriate point in the curriculum
- Criteria for Success – Individual Student
 - Determined by the course instructor



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Essay as Means of Program Assessment

- Assume ethics is identified as a programmatic outcome.
- Outcome – Ethics
 - “Graduates of the program will be able to provide a persuasive argument that clearly supports a given resolution to an ethical dilemma.”²



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Essay as Means of Assessment

- Performance Criteria – Program
 - Average score (as determined by a panel of faculty) will be at least 70 out of a possible 100 points on a rubric designed to score the written essay.
 - On no individual rubric category will the average score be less than 60% of the possible points.



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Essay as Means of Assessment

- Notes:
 - All essays need not be scored for program assessment; a sample may be sufficient.
 - A group of faculty should be involved in scoring the essays.
 - The same rubric used to score each essay for individual student assessment may also be used in program assessment.
 - The same student product (essay) is used twice: once for individual student assessment and again for program assessment.
 - Course-imbedded assessment overcomes student motivation problem.



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Essay as Means of Assessment

- Key:
 - The means of student assessment (e.g. essay) **MUST** relate to or measure in some way the **PROGRAM OUTCOME!**



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Internship as Means of Assessment

- Co-op or internship experience required in many programs.
- Extremely useful for student and program assessment.
 - “External” evaluator



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Internship as Means of Assessment

- Key Issue
 - Feedback MUST relate to outcomes to be useful in program assessment.
- Can develop overall program criteria for success with aggregated data.
 - “On no individual outcome will more than 20% of students receive an average or below.”
- Recognize “multi-rater” consistency issues.



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Student and Program Assessment

- Approach works for any number of assessment strategies with which individual students are evaluated
 - Portfolios
 - Performance Appraisals
 - Oral Presentations
 - Juried Reviews
 - Etc.



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Student and Program Assessment

- Use produce twice
 - Once to assess individual student
 - Again (in aggregate) to assess overall program



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Student and Program Assessment

- Key Issues for Program Assessment
 - Means of assessment must relate to or measure the *program* outcome(s).
 - Criteria for success must be stated in terms of averages or aggregates of individual student scores.
 - Must involve more than one faculty member.



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- Advantages
 - Can be accomplished with many types of course-embedded student products
 - Something each student is already doing as part of course that relates to a program outcome
 - Can be transparent to students
 - Criteria for success triggers program improvement

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- Guidelines
 - Select a representative sample (some, most, all) to be scored in some fashion
 - Use multiple faculty (even external)
 - Can even block off names for privacy

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