Assessment of Undergraduate Student Learning Task Force Report  
December 5, 2012

I.  Work of the Committee

Mission of Task Force

The Task Force examined assessment of undergraduate student learning at OSU focusing on the following questions: (1) What are current assessment practices at the University? (2) What are best practices at the national level? (3) How can assessment of student learning at OSU be improved? Task Force members gave special consideration to identifying innovative and meaningful approaches to assessment that benefit students as well as the University. In addition, members recognized the need to use assessment results to guide change and to demonstrate accountability for student learning.

Membership of Task Force (Attachment #1)

Summary of Meetings

Beginning in April 2012, the Task Force met during Summer 2012 and Fall 2012. Common readings included the following:


Following the mission of the Task Force, members examined current practices and best practices related to undergraduate student assessment. Key discussion points included Dr. Jeremy Penn’s presentation of current university assessment practices (Attachment #2). He noted the philosophy and cycle of assessment and the two broad purposes for conducting assessment: accountability for accreditation and for improvement. Two university-wide committees that focus on assessment are (1) Assessment and Academic Improvement Council and (2) Committee for the Assessment of General Education. Dr. Penn noted that about 12 programs on campus use electronic portfolios. In addition, college representatives provided 5-10 minute overviews of their respective college’s assessment practices (Attachment #3).
The Task Force considered information and recommendations from the Association of American Colleges and Universities (AAC&U) regarding best practices related to assessment of student learning. A key recommendation from AAC&U is for students to engage in integrative capstone experiences, culminating experiences at the end of a student’s program that provide an opportunity for integration and application of knowledge. (This recommendation also is made by the Oklahoma State Regents for Higher Education and can be considered a General Education requirement for a given undergraduate degree program.) AAC&U based this recommendation, in part, on a 2008 National Survey of Student Engagement (NSSE) study that identified practices that “had the greatest impact on success, on retention, on graduation, on transfer, and on other measures of learning” (Bass, 2012, p. 26).

In addition, AAC&U has created VALUE (Valid Assessment of Learning in Undergraduate Education) rubrics across 15 outcomes of student learning. The rubrics are being widely recognized as one of the most useful tools to assess college student learning that goes beyond typical standardized approaches (examples of standardized approaches include the Collegiate Assessment of Academic Proficiency and the College Learning Assessment). VALUE rubrics can be found at [http://www.aacu.org/value/rubrics/pdf/All_Rubrics.pdf](http://www.aacu.org/value/rubrics/pdf/All_Rubrics.pdf). These rubrics are intended to reflect core expectations for learning and to be adopted by respective institutions. The members spent considerable time discussing and identifying core expectations for undergraduate student learning at OSU and how assessment data could be collected and benchmarked during a degree program. Further, members were particularly interested in how OSU could develop a comprehensive approach where efforts to assess learning could be streamlined with and utilized in other assessment activities including annual program assessment reports submitted to UAT, university and program-specific accreditation reports, and OSHRE reports. Another identified need was to create a plan to disseminate information about assessment results to communicate how OSU is meeting its mission and to convey accountability for student learning to constituents.

The Task Force was interested in better understanding another AAC&U recommendation, the use of integrative student electronic portfolios, as a tool to assess student learning. Two presenters and several readings addressed this topic. First, Tina Meier presented on D2L features related to electronic portfolios. This system would integrate with OSU’s current management system and contain four components: presentation, reflection, collection, and artifacts. Full web service is linked to the portfolio, and mobile applications are possible. Adding the portfolio option to the existing features would amount to $5.00 per student. Second, Dr. Christine Ormsbee demonstrated LiveText software used by professional education programs at OSU. These electronic portfolios are aligned to the Professional Education Unit’s conceptual framework. External reviewers, using a rubric, often serve as evaluators for the portfolios. About half of accreditation data is taken from the portfolios. The e-portfolios are used to demonstrate that the Unit meets accreditation standards. The cost is $110 per student for a three-year subscription.

Another important resource for the Task Force was Provost Sternberg’s WICS Model (Attachment #4) that provides a useful framework to guide curriculum and assessment. In the attachment and in the book, Assessing College Student Learning, the use of the framework and of electronic portfolios was important information for consideration. Below is an excerpt from Attachment #4 regarding the advantages and disadvantages of electronic portfolios:
Advantages
- They measure the broadest range of college learning and achievement
- They reflect the fact that college students acquire very diverse kinds of knowledge through varied kinds of experiences
- They assess best work in actual courses, not in artificial testing situations
- They have considerable face validity

Disadvantages
- The data are a challenge to manage and store
- Their reliability may be questionable unless raters are very well trained
- Portfolios can be a challenge to score (although rubrics, such as VALUE, are available)
- Work is hard to compare within and across institutions
- They are not compiled under standardized conditions so may reflect work of unknown persons

Based on the Task Force’s inquiry and discussion about the assessment of undergraduate student learning at OSU, members propose seven recommendations which are described in Section II.

II. Recommendations

Recommendation #1 – Core Expectations for Undergraduate Student Learning

Assessment of student learning at OSU should be driven by four significant concepts: The Four Cs – Communications, Creative Problem Solving, Community Engagement, and Content Knowledge. **The list of categories below each core concept is not inclusive. Programs would identify categories within each core concept appropriate to their respective areas.**

A. Communications:

   (1) Written
   (2) Oral
   (3) Interpersonal
   (4) Visual/graphical expression

B. Creative problem solving:

   (1) Critical thinking
   (2) Analytical problem solving
   (3) Evaluating and using sources and information
   (4) Collaborative strategies

C. Civic engagement

   (1) Ethical behavior/ Wise reasoning
   (2) Leadership
(3) Community service/Service learning
(4) Lifelong learning
(5) Environmental sustainability

D. Content Knowledge

**Recommendation #2 – Benchmarks and Capstone Experience**

Assessment of undergraduate student learning should be benchmarked at three levels:

A. Initial - Collection of information at the initial phase will need to be coordinated among admissions, orientation classes, and other introductory coursework and activities.

B. Mid-level - Designated artifacts from courses designated as General Education will be collected. Other mid-level assessment activities would be a recommended option for program/discipline-specific areas.

C. Capstone Experience - Each undergraduate degree program will identify a culminating capstone experience at the end of students’ programs that demonstrates an integration and application of four learning expectations and other discipline-specific expectations. The Capstone Experience could be considered a General Education requirement and systematically reviewed by the General Education Advisory Council. Further, a rubric(s) would be developed to assess the four core expectations, and discipline-specific rubrics could be developed at the program level.

**Recommendation #3 – Electronic Portfolios**

To facilitate the assessment of student learning at all levels, especially for the capstone experience, the implementation of an electronic portfolio system is recommended as a tool to accomplish this goal. A working group with wide representation will need to be assembled to devise an effective implementation plan. Examples of issues for the group to address include the following: What system should be used? Should a limited number of programs pilot the system prior to wider implementation?

**Recommendation #4 – Core Assessment Items on SSI**

The Task Force recommends adding a limited number of items to the Student Survey of Instruction to focus on aspects of the course related to student learning and to the four core expectations. Members supported the Evaluating Faculty Teaching Task Force’s recommendation to modify questions on the Student Survey of Instruction (SSI) so that it focuses more heavily on student learning and effort rather than on perceptions of instructors’ performance. Further, for undergraduate courses, an SSI process or tool would be developed to identify the extent to which their course emphasizes each of the four Cs and to eliminate items not relevant to the course. This process would ensure instructors are not penalized for low scores in areas their course does not emphasize. Further, the process would need to create reasonable
and appropriate mechanisms that protect instructors’ rights while allowing the use of SSI data described above to inform program planning and improvement.

**Recommendation #5 – Coordination of Assessment Data for Multiple Uses**

As much as possible and appropriate, align/streamline annual program assessment reports, State Regents’ reviews, accreditation activities, and other assessment activities with the University’s assessment plan. Dr. Brenda Masters (coordinator, HLC and OSHRE reports) and Dr. Jeremy Penn (Director, UAT) will lead efforts to accomplish this goal.

**Recommendation #6 – Demonstration of Accountability**

Given the growing need for higher education institutions to demonstrate accountability for student learning, OSU will implement a value-added model on *samples of students* to assess gains in undergraduate student learning, particularly in content learning. Task force members were particularly interested in the use of AAC&U - VALUE rubrics as part of the assessment plan. A working group will be assembled to create a research design and implementation timeline.

**Recommendation #7 – Effective Communication Plan**

Create and implement an effective communication plan to share results of the assessment of undergraduate student learning at OSU. Presently, no systematic internal or external communication plan exists to regularly share results of the assessment of student learning. More effective communication of assessment results will (1) lead to improvements based on data, (2) demonstrate accountability for student learning at OSU, and (3) convey how OSU is meeting our mission to prepare competent leaders in their respective fields. Working with OSU Communications and other units on campus, the UAT Office would lead efforts to create an annual report and/or other types of reporting measures.
Assessment of Undergraduate Student Learning Task Force

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College of Arts and Sciences
    Jon Comer, Professor, Geography

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College of Engineering, Architecture and Technology
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Assessment Process

Identify student learning outcomes

Assess the assessment – revise and reengage

Identify or design tasks to assess learning

Use results for improvement

Analyze results

Accountability

Improvement

Assessment Activities

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<th>Degree Programs</th>
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<tr>
<td>Course Placement</td>
<td>Institutional Portfolios</td>
<td>Over $150,000 annually to support degree programs' assessments</td>
<td>National Survey of Student Engagement</td>
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Highlights

- Undergraduate degree programs reported 229 assessment methods for program outcomes assessment and graduate programs reported 266 assessment methods. Methods included:
  - Dissertations or theses
  - Panel review of student work
  - Oral presentations
  - Performance assessment
  - Alumni surveys
  - Capstone or major course projects
  - Internship or practicum evaluation
  - Comprehensive or qualifying exams
  - Portfolios, exit interviews, employer survey, course projects, creative components

- Undergraduate degree programs reported 193 uses of program outcomes assessment data and graduate degree programs reported 169 uses of assessment data. Uses included:
  - Monitor student achievement
  - Modify the assessment process
  - Modify course content
  - Discuss possible program improvements
  - Modify curriculum
  - Monitor recent curricular change
  - Develop new course
  - Modify advising, curriculum mapping, communication with students, targeted hiring

- 92% of doctoral degree respondents, 89% of master's degree respondents, and 91% of undergraduate degree respondents were "satisfied" or "very satisfied" with their overall educational experience at OSU.

- Seniors wrote significantly better than freshmen (effect size of 0.37; 14 percentile points).

- Juniors and seniors scored significantly higher than freshmen and sophomores on critical thinking (effect size of 0.53; 20 percentile points).

- First-year students reported significantly higher student-faculty interaction than selected peer institutions and other doctoral-extensive institutions participating in the 2009 NSSE.

- All of OSU's 2009 NSSE benchmarks for first-year students were significantly higher than in 2005.

- Estimated learning gains between freshmen and seniors on the ETS Proficiency Profile were "above expected" on writing and critical thinking.

Opportunities and Challenges

- Engagement in program outcomes assessment should be improved for some degree programs.

- Average writing scores for seniors were below reviewers' stated expectations for senior level writing.

- 50% of assessed students scored in the lowest two categories (out of five) in the area of diversity.

- 2009 NSSE benchmarks for senior students were significantly lower than participating doctoral-extensive institutions on Level of Academic Challenge and Active and Collaborative Learning.

- Regularly enhancing our assessment strategies to fully reflect the mission and vision for Oklahoma State University and to ensure we are fully accountable to our stakeholders while continuously improving.
Summaries of Colleges’ Assessment Practices (Two Minute Report from Each Task Force Rep)

Ms. Lynne Brown, College of Engineering, Architecture and Technology, reported that their college assessment is done to meet ABET (an accreditation organization) requirements. Each department handles their own assessment and reporting to ABET. They all follow the same structured guidelines. Their alumni are asked questions about their experience and how valuable and applicable their degree was and how prepared they felt. They also ask employers what they want in an employee and whether those expectations are being met. This is also a part of the ABET criteria. The general assessment for courses and core engineering courses is becoming more centralized in the Dean’s Office.

Dr. Sandra Morgan, Center for Veterinary Health Sciences, stated that their students have to pass a national exam that all veterinary schools participate in. Dr. Morgan noted that 99 percent of OSU CVHS students pass the exam. As a teacher, this allows you to see if you are teaching toward the goal.

Mr. Brent Hill, College of Education, reported the college is in the middle of NCATE accreditation. They are doing program review, and in 2014 they will have a site visit. The eportfolio is compiled to showcase student work. He mentioned that writing is an issue. There are teacher prep tests that students must pass.

Ms. Pat Reaves, OSU-OKC, reported that over the past couple of years they have gone through a process of defining some campus-wide student learning outcomes. They have taken their old GenEd competencies and turned them into actual learning outcome statements. They are now looking at how they incorporate the assessment of those outcomes into the program on assessments. Every degree program is responsible for doing assessment of their students. They are working towards each program being responsible for assessing those general outcomes within the context of their units. It is currently a work in progress.

Dr. Carol Johnson, Spears School of Business, reported that they are finding that students should improve in writing and in critical thinking. She would like to find out what drives the outcomes.

Dr. Jon Comer, Arts and Sciences, reported that each department comes up with its own plan and assesses its own students. Assessment is decentralized into the departments.

Dr. Jeremy Penn reported for the College of Agricultural Sciences and Natural Resources that their assessment is more decentralized but that there is some college level coordination.
Measuring Learning Outcomes

Robert J. Sternberg
Provost and Senior Vice President
Oklahoma State University

Organization of Talk
- Introduction
- Standardized Tests
- Indirect Measures and Measures of Engagement
- Portfolios and Other Performance-Based Measures
- An Emerging Oklahoma State Academic-Affairs Model: WICS
- WICS in Practice
- Conclusions

Introduction

Introduction: Prerequisite for Measuring Learning Outcomes
- Measurement of learning outcomes makes sense only if the institution has:
  - Committed to what it believes to be important targeted learning outcomes
  - Announced the targeted learning outcomes publicly
  - Taught and assessed students in ways that reflect those targeted learning outcomes

Introduction: Three Ways to Select Targeted Learning Outcomes
1. Infer learning outcomes from institutional mission statement, e.g.,
   - Promote critical thinking
   - Develop expertise in a field of concentration
   - Encourage active citizenship
   - Create life-long learners
   - Develop job-relevant skills

Introduction: Three Ways to Select Targeted Learning Outcomes
2. Create a task force to survey relevant stakeholders regarding learning outcomes and then produce a report, e.g.,
   - Faculty
   - Staff
   - Students
   - Alumni
   - Major donors
Introduction: Three Ways to Select Targeted Learning Outcomes

3. Choose from existing models
   - Degree Qualification Profile (DQP—Lumina)
   - Valid Assessment of Learning in Undergraduate Education (VALUE—AAC&U)

Standardized Tests

- These tests generally measure critical/analytical thinking in the context of a controlled testing situation
- Examples
  - Collegiate Learning Assessment (CLA)
  - ETS Proficiency Profile (PP)
  - ACT Collegiate Assessment of Academic Proficiency (CAAP)

Advantages of Standardized Tests

- Tests are normed on large and diverse samples
- Tests are psychometrically sophisticated
- Quantitative comparisons are relatively easy across or within institutions
- Tests correlate highly with each other so they are largely interchangeable

Disadvantages of Standardized Tests

- Tests are narrow in the range of skills they measure (primarily analytical/critical thinking)
- Correlate highly with SAT/ACT/IQ. For example, one study (Klein et al., 2007) found correlations between CLA and SAT of .50 at the individual level and .88 at the college level.
- Tests are not always highly reliable at the individual level, so that individual-level comparisons can be suspect

Standardized Tests: Four Considerations

1. Current standardized measures of learning are all incomplete—for example, they typically do not measure or measure only minimally
   - Creative skills
   - Practical/social skills
   - Wisdom-based skills
   - Ethical-reasoning skills
   - Emotional-intelligence skills
   - Team-based problems-solving skills
   - Resilience-based skills
Standardized Tests: Four Considerations

2. Current standardized measures of learning are not substitutes for a college education (i.e., they are not college versions of a GED)—because they do not cover:
   - Expertise in a chosen field of study
   - Broad-based knowledge
   - Intellectual maturity gained from general-education courses
   - Leadership skills acquired in extracurricular and related activities

3. Measures of learning are of widely varying reliability and validity and some are well suited only to analysis of group data, not individual data.

Critical Facts about Reliability

- Reliability refers to the extent to which an assessment consistently measures whatever it is supposed to measure, either over (a) time, (b) multiple raters, or (c) items of the assessment.
- An assessment that is not very reliable, or of unknown reliability, may be useful for comparisons at a group level, because errors of measurement average out over large numbers of subjects; but it is not useful for comparisons at the individual level, because null results may reflect the unreliability of the assessment rather than any lack of real educational or other effects.

- Reliability
  Such information is critical. E.g., the Technical FAQ for the CLA has a section "What is the Reliability of the CLA?" which fails to give the reliability of the CLA (i.e., it includes no reliability data); see http://www.collegiatelearningassessment.org/files/Technical_FAQs.pdf.
  Similarly, http://www.cae.org/content/pdf/TVS_Report.pdf states that, for the CLA, "student-level reliability coefficients were not computed for this study," which is, I believe, psychologically difficult to defend if individual-level data are used. Yet, Arum and Roksa and others have treated the test as sufficiently reliable to draw strong conclusions from individual scores and these analyses have been cited numerous times in the media.

Critical Facts about Validity

- Validity reflects the extent to which an assessment measures whatever it is supposed to measure.
- An assessment may be valid for one population in one context but not for another population in another context. Each assessment has to be evaluated for a particular population in a particular context.
- There are different kinds of validity. For example:
  - Predictive validity refers to how well the assessment predicts performance on a meaningful criterion, such as retention, graduation, or GPA.
  - Content validity refers to the extent to which an assessment adequately samples the domain of content it is supposed to sample.
  - Face validity refers to the extent to which an assessment appears valid to the test-taker.

- Validity
  "CLA scores reflect a holistic assessment of the higher order skills of critical thinking, analytic reasoning, written communication, and problem solving," http://www.collegiatelearningassessment.org/files/technical_FAQs.pdf, or roughly the skills measured by the SAT. According to the authors of the CLA, the validity of the test with respect to tests of critical thinking ranges from .73 to .83, indicating that the test is measuring the same kinds of skills as the SAT/ACT.
Standardized Tests: Four Considerations

4. Some standardized measures thus are proxies for SAT/ACT types of tests
   As per data from the authors of the CLA, the median correlations for freshmen and seniors of the CLA with the SAT are, at the institutional level, .79 and .83 for analytical writing and .97 and .88 for the performance tasks. These correlations are not so different from the correlations of the SAT with the ACT or different forms of the ACT or SAT with each other. Correlations are lower at the individual level, which may reflect possibly low reliability of the CLA at the individual level.

Standardized Tests: Why Correlation with SAT/ACT is Undesirable

- SAT measures college preparation
- If a test correlated perfectly with the SAT, it would then measure "college preparation"
- If a test of college learning correlates perfectly with the SAT, it suggests either (a) that the test of college learning is actually a test of college preparation, that is, that it is not really measuring "value added" by college but rather skills unaffected by or acquired largely prior to college learning; or (b) that the SAT equally well can be used as a test of college learning

Standardized Tests: Interpretive Note

All of the major standardized tests on the market are reasonably good, if limited, measures for group comparisons. One must be very careful, however, when using them for individual comparisons. As always, when using tests, "Let the buyer beware." Unfortunately, most buyers are not aware of (and could care less about) the technical properties of the tests they are buying, even though such properties are most important for how the tests are used and interpreted.

"Let the Buyer Beware" Applies to Us All: An Example at My Own Institution

We at Oklahoma State have required the ACT for college admission, although we are now considering possibly going ACT-optional. Why? Because in 2012 we commissioned a study, never before done at OSU, which showed that the ACT added only (a) 0.0024 to the squared correlation between HS academic performance and first-year retention, and (b) 0.0037 to the squared correlation between HS academic performance and six-year graduation. Let the buyer beware!

Indirect Measures and Measures of Engagement

- These tests include student surveys, focus groups, exit interviews, and the like

- Example
  National Survey of Student Engagement (NSSE)
Advantages of Indirect Measures

- They measure motivational as well as cognitive aspects of performance
- They are broader in the performances they assess than standardized tests, measuring non-academic as well as academic engagement
- They are less stressful to take than are standardized tests

Disadvantages of Indirect Measures

- They measure students’ implicit theories (personal conceptions) of their engagement rather than their actual engagement
- They are more easily “fakeable” than standardized tests
- May reward breadth rather than depth of engagement

Portfolios and Other Performance-Based Assessments

- Portfolios allow students to collect and organize their best work across their college career and then to present it in a fashion that allows review and evaluation
- Examples
  - E-portfolios
  - Capstone courses with performance assessments

Advantages of Portfolios

- They measure the broadest range of college learning and achievement
- They reflect the fact that college students acquire very diverse kinds of knowledge through varied kinds of experiences
- They assess best work in actual courses, not in artificial testing situations
- They have considerable face validity

Disadvantages of Portfolios

- The data are a challenge to manage and store
- Their reliability may be questionable unless raters are very well trained
- Portfolios can be a challenge to score (although rubrics, such as VALUE, are available)
- Work is hard to compare within and across institutions
- They are not compiled under standardized conditions so may reflect work of unknown persons
An Emerging Oklahoma State AA Model

Creative skills to
- Create new ideas
- Invent things
- Discover new facts and concepts
- Imagine alternative courses of action and their consequences
- Explore new intellectual terrain
- Adapt flexibly to rapidly changing environments
- Become proactive rather than reactive to circumstances as they emerge

Analytical (critical-thinking) skills to
- Analyze whether their and others' ideas are in fact good ideas
- Compare and contrast alternative courses of action
- Evaluate options in their lives
- Judge the quality of products
- Critique pieces of work

Wisdom-based skills to
- Seek a common good for themselves, others, and higher order entities
- Reason wisely rather than foolishly (e.g., avoid fallacies of unrealistic optimism, egocentrism, omniscience, omnipotence, invulnerability, sunk costs, ethical disengagement)
- Thinks long-term as well as short-term regarding implications of one's actions
- Act ethically in one's dealings with others

WICS (Wisdom, intelligence, Creativity, Synthesized—Sternberg, 2003, 2010)

The goal of college is to educate responsible adults who work to create a better world—who make a positive, meaningful, and enduring difference to society, through...
WICS in Practice

- Collaboration at Tufts with Admissions Dean Lee Coffin, thea CELT Director Linda Jarvin, et al.
- Collaboration at Yale with Assoc. Prof. Elena Grigorenko, then post-doc Steven Stemler, then post-doc Damian Birney, et al.

WICS in Practice: Admissions Panorama Examples

- You have been asked to create a reality TV series, which is designed to benefit society. What will be the focus of the show, and how will you make it appeal to a sizable audience?
- If you were to open a local charity of your choice, what type of charity would it be, how would you draw people to your cause, and whom would it benefit?

WICS in Practice: Admissions Panorama Examples

- It has been said, “Don’t ever take a fence down until you know why it was put up.” To what do you think the author of this quote was referring? Do you agree or disagree with this statement? Why?
- Write a short story or poem that includes one of the following sets of words:
  - Green, rabbit, daisy, happiness, potato
  - A pig, a fire hydrant, you, Paris, a robot
  - You, a museum, a watch, Frankenstein, rope

WICS in Practice: Previous Data

- Kaleidoscope Project at Tufts (WICS)
  - Assessments increased prediction of freshman GPA over SAT plus HS GPA
  - Assessments predicted meaningful leadership/extracurricular performance
  - Assessments eliminated ethnic-group differences
  - Assessments were met with enthusiasm by applicants
  - Rainbow Project at Yale (analytical-creative-practical)
  - Assessments yielded separate psychometrics factors for creative, practical, and analytical/multiple-choice
  - Assessments doubled prediction of college-freshman GPA over SAT alone and increased prediction 50% over SAT + HS GPA
  - Assessments substantially reduced ethnic-group differences

WICS in Practice: Instruction and Assessment

- The OSU Learning and Student Success Opportunity Center (LASSO)
- The Mathematics Learning Success Center (MLSC)
- The OSU Institute for Teaching and Learning Excellence (ITLE)
  - Provide academic scaffolding
  - Convey tacit knowledge of the university environment
  - Teach self-regulation skills
  - Enhance self-efficacy skills
  - Provide intensive mentoring

WICS in Practice: Previous Data

- Students taught for analytical/creative/practical thinking outperformed control groups taught for analytical or memory thinking only, across grades and subject-matter areas.
- Students taught in a way that enabled them to better capitalize on analytical/creative/practical strengths and to compensate for or correct weaknesses performed better than students taught in a way that involved no matching to strengths.
Conclusions

- Measures of learning are important supplements to college grades
- The measures also increasingly are being sought by accreditors to demonstrate progressive improvement in learning outcomes
- The measures show complementary advantages and disadvantages
- Multiple measures best would serve an institution, if resources are available
- Buyer, beware!

For a Copy of the Talk

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For More Information