The IUS Faculty Assessment Handbook

In recent years, there has been a dramatic increase at IUS in formal assessment activities. For the Fall 2005 assessment reporting cycle, 74% of academic programs that submitted an Annual Assessment Report included evidence that the university is reviewing assessment data, and is using the data to identify program improvement opportunities. During the prior academic year, the Academic Assessment Committee (AAC) conducted a faculty survey and found that, despite generally positive results, a significant number of respondents indicated a general lack of understanding of assessment terminology, techniques, and approaches. Some faculty also noted a need for dissemination of assessment information and results across campus, so that the process could be better understood. In response to this, the AAC has created an Assessment Handbook, which is a chapter by chapter guide for departments when designing, implementing, and conducting program assessment.   Since the Handbook is a compilation of diverse material intended to assist programs in making effective assessment plans, the AAC hopes that faculty will use it as a resource book, either as a master template to carry out assessment or in a nonlinear way to explore some aspect of assessment further. The Handbook will also furnish links that will highlight assessment work by faculty.

A number of faculty have contributed to this Handbook in various ways. Its text was authored principally by Pat Daly, who adapted considerable material from the assessment web sites of the following institutions: University of Maryland Center for the Study of Assessment Validity and Evaluation; Southern Illinois Edwardsville; Truman State; Mount Royal College; Montana State University; Central Arkansas; Ball State; and Weber State. The Handbook was reviewed and accepted by the 2005-2006 AAC committee.

Chapter 1. Introduction

A) The History of Assessment at IUS

Back in the 1980s legislators and community leaders concerned with the growing mediocrity in education began to ask schools on all levels to demonstrate academic effectiveness. As a way to accomplish this, the education establishment turned primarily to the formal assessment of student learning to demonstrate that effectiveness. At the post-secondary level, schools reported their progress to national accrediting agencies. That agency for IUS is the Higher Learning Commission of North Central Association of Colleges and Schools (NCA), which at the time mandated that all affiliated institutions develop an effective institutional assessment plan by June 1995. In so doing, NCA identified the following ten characteristics of an effective program:

1. *Successful assessment flows from the institution's mission and educational purposes.*
2. *Successful assessment emerges from a conceptual framework.*
3. *Successful assessment is marked by faculty ownership and responsibility.*
4. *Successful assessment has institution-wide support.*
5. *Successful assessment relies on multiple measures.*
6. *Successful assessment provides feedback to students and the institution.*
7. *Successful assessment is cost-effective.*
8. *Successful assessment does not restrict or inhibit goals of access, equity, and diversity established by the institution.*
9. *Successful assessment leads to improvement.*
10. *Successful assessment includes a process for evaluating the assessment program.*

Responding to the NCA mandate, most institutions initially attempted to develop assessment plans via voluntary contributions by departments. The results were mixed. Only a small group of campuses set up formal programs that set authentic assessment into motion. Most schools realized that a formal campus-wide assessment program was needed to move beyond the developmental stage. IUS was one such campus, and following the recommendations of an assessment task force in 1999, the faculty senate approved the Academic Assessment Committee (AAC). This committee's original composition of four faculty members and two ex officio members (the Vice Chancellor for Academic Affairs and the Director of the Office of Institutional Research) was modified in 2003-04 so that each of the six schools at IUS would be represented. In addition, as it became clear that the AAC could not undertake the large and complex task of assessment, a Director of Assessment was appointed to assume the day-to-day operational responsibilities.

B. What is Assessment and why Assess?

Long before the term 'assessment' gained currency in higher education as a mechanism to demonstrate institutional effectiveness, the term was mainly used to denote the general process by which instructors assign students a grade: "Since the student Jane Doe received a B on the

midterm, a B+ on the final, and a B- on her term paper, her final grade is a solid B." Assessment has come to mean much more than that, however, and among the more important reasons to do assessment are the following:

1) *Assessment clarifies student learning for students and provides information to them for improvement.* Improving the quality of learning in the classroom involves determining not only to what extent students have mastered course content, but also to what extent students are mastering specific kinds of content throughout their academic career. By using multiple forms of ongoing assessment whose results are then analyzed and updated, teachers can then relay to students their progress in ways that are understood and appreciated. A course with only a midterm and a final yields little if any metacognitive understanding for students.

2) *Assessment supports and encourages professional development.* Many programs have discovered that conducting regular assessments of learning in the classroom helps teachers to determine where they are successful and where they are less successful. Doug Eder of Southern Illinois Edwardsville notes that assessment is what "we faculty members can do in order to demonstrate to ourselves that we actually do what we say we do. It is our source of in-process feedback. . . . Assessment decomposes the curriculum (or an assignment, class, or course) into component parts and makes those parts visible." Another assessment practitioner, Linda Suskie, notes that "the thread that connects faculty commitment to their work inside and outside of the classroom is intellectual curiosity–the characteristic ability to question, challenge, look at an issue from multiple perspectives, seek more information before rushing to judgment, raise questions, deliberate, and craft well-reasoned arguments." Documenting students' academic improvement provides strong evidence of ongoing commitment to professional development, which among other things can be used in promotion and tenure as well as for annual reviews and post-tenure review.

3) *Assessment is required by external authorities.* In recent years the community at large has come to expect universities to open up their previously closed classrooms for public inspection. Faculty and departments have been asked to explain to external accrediting agencies what is expected of their students and to what degree those expectations have been fulfilled. Indeed some faculty who for years have enjoyed complete classroom autonomy have questioned this development. Yet as Eder reminds us, "Physicians, surgeons, lawyers, and nurses all practice their professions daily in front of their peers. They are constantly subject to peer review and feedback. Professors are perhaps the only professionals who habitually isolate themselves from peers behind closed [classroom] doors, there to practice the major activity for which they receive payment. Given the immense costs of higher education, if we the faculty don't use assessment to provide accountability, surely someone else will do it for us." Needless to say, the increasing climate of accountability in higher education is not a passing trend. All programs at IUS will continue to provide concrete evidence of student learning.

4) *Assessment helps secure external funding.* Applications for funding to support program development are strengthened by evidence from assessment. Agencies supporting the development of new program assessment require a plan for assessing the new program as part of the application.

Excerpts from *Assessing Student Learning: A Common Sense Guide* (Suskie, 2004):

Students benefit from good assessment practices because
θ Assessment expectations help students to understand where they should focus their time and energies;

θ Assessment feedback helps students understand their strengths and weaknesses;
θ Assessment information gives students documentation of what they've learned that they can use to apply for jobs, awards, and programs of advanced study.

Faculty benefit from good assessment practices because
θ Assessment activities bring faculty together to discuss important issues such as what they teach, how they teach, and what their standards and expectations are;
θ Assessment activities help faculty see how their courses link together to form coherent programs and how the courses contribute to student success in subsequent pursuits;
θ Assessment results can be used as compelling evidence of the quality of their teaching when they apply for tenure, promotion, and salary increases.

Administrators benefit from assessment because

θ Assessment information documenting the success of a program or institution can be used to convince employers, donors, legislators, and other constituents of its quality and worth;
θ Assessment can help ensure that institutional resources are being spent in the most effective ways possible–where they'll have the greatest impact on student learning;
θ Assessment can help administrators make informed decisions about such matters as resource allocations and faculty hires.

C) IUS Assessment Philosophy

One element of the IUS Mission Statement is to provide "a challenging, innovative, and supportive learning community committed to the intellectual and social growth of its students." Toward this end, the AAC has established an outcomes-oriented assessment approach with the goal of improving student performance. Moreover, since assessment is an iterative, adaptive process that informs changes to instructional practices, the feedback loop is the critical element in assessment. The basis of good assessment practice is a shared understanding of program goals to ensure that all those involved in curriculum delivery are working toward the same ends.

D) Assessment Administration

While the **Vice Chancellor for Academic Affairs** has overall responsibility for academic assessment (Program Assessment and Classroom Assessment) at IUS, other administrative units also have responsibilities related to Program Assessment.

- **The Academic Assessment Committee**, a Faculty Senate committee, will be responsible for monitoring assessment of student academic achievement in the undergraduate majors and in the masters programs. The committee will determine to what extent the assessment of educational outcomes offers an opportunity for strengthening the University and enhancing its accountability. Specifically, the committee is charged with developing an institutional assessment plan that is consistent with the campus mission, recommending a time-line for its implementation, and identifying and recommending

assessment, outcomes, and database needs to support the North Central Accreditation process.   [from IU Southeast Faculty Senate By-Laws, updated 7-05]

- **The Director of Institutional Research and Assessment** is responsible for assisting programs and faculty with development, implementation, operation, and maintenance of their assessment programs.

- **Deans** are responsible for the successful operation of assessment programs within their schools.

- **Program Coordinators** are responsible for developing, implementing, operating, and managing the assessment programs within their academic programs to achieve continuous improvement of student learning.

E) Learning-Outcomes Assessment in the Context Of the Feedback Loop

As has been the case with assessment at other institutions, the IUS Assessment Academic Committee embraces a learning-outcome approach to assessment. The working definition of 'learning outcome assessment' that will inform this handbook is the gathering and interpreting of information related to students' verifiable academic performance and behavior at various stages of their academic career that lead to curriculum changes or modifications. Thus, assessment can never be viewed as a single action, but as an ongoing process whose ultimate goal is obtaining the necessary feedback based on student performance to modify and improve student learning. Prior to the national assessment mandate, nearly all college departments simply listed goals and assured constituents that those goals were being met. The assessment movement now asks all academic programs to supply evidence of student behavior that has been explicitly measured and evaluated.

F) Assessment Expectations

Following a decentralized approach in which each program is responsible for its own assessment, faculty should establish curriculum maps in order to evaluate the extent to which students are being exposed to the program learning goals and outcomes. In conjunction with guidelines published by NCA, each program at IUS will submit both an annual assessment report, which is then stored in the centrally maintained Office of Institutional Research and Assessment (OIRA) database, and annual assessment summaries, which will then be posted on the IUS Assessment Web Page. Individual faculty are expected to participate in the assessment activities in the following ways: reviewing program goals and assessment plans; collecting and interpreting assessment data as required by assessment; reviewing assessment results and resulting decision-making processes. As a means to improve teaching and learning, faculty may be asked to adopt curricular changes based on the departmental deliberation of assessment results.

G) Distinguishing Levels of Assessment

Assessment practitioners recognize three different levels of assessment at the post-secondary level. At the course level, assessment examines the degree to which the objectives for a specific course are evidenced in student learning; faculty engage in course assessment by regularly evaluating student performance on assignments, projects, and exams and then fine-tuning their approach in the course to achieve a better outcome. At the institutional level, assessment seeks to determine the degree to which broad institutional objectives are being met. At the program level, to which the AAC has devoted much of its time at this point, assessment seeks to determine the degree to which programmatic learning outcomes are being met. The mission of a Math program, for example, might be to prepare students for careers in graduate school, industry, and teaching. To accomplish this, students need to demonstrate certain learning outcomes: a basic knowledge of the math; mathematical and analytical problem-solving skills; experimental skills; information-handling skills; computing proficiency; communication skills; scientific method and approach; organizational skills; and personal/interpersonal skills. The distinguishing feature of assessment for this Math program, as it should be for all programs, is that it verifies achieved outcomes across multiple courses even as it isolates areas that need improvement.

Chapter 2. Overview of the Assessment Process

Before considering the details of creating and implementing an assessment plan, it might first be useful to supply an overview of the process. Prior to establishing the actual plan, each program must make important decisions which in themselves represent the early stages of the assessment process (and to which the following chapters will be devoted). These decisions are

- defining the program mission statement (Chapter Three);
- identifying the program goals and outcomes for students (Chapter Four);
- choosing the assessment tools (Chapter Five).

Perhaps the most challenging of these tasks is to decide on program learning goals with which most faculty can live. It is not unusual for faculty of any given department to differ on program goals. For example, while some faculty in a political science department may see the more important goals as an understanding of historical knowledge bases, other faculty in the same department might want to emphasize research application. Even so, faculty can learn to compromise by discussing the sum total of goals and then arriving at a list of broad based goals. What is most vital to the assessment process, however, is that the core goals can directly measure students' learning. Most assessment practitioners agree that it is important that departments do not rely on goals that indirectly measure student learning.
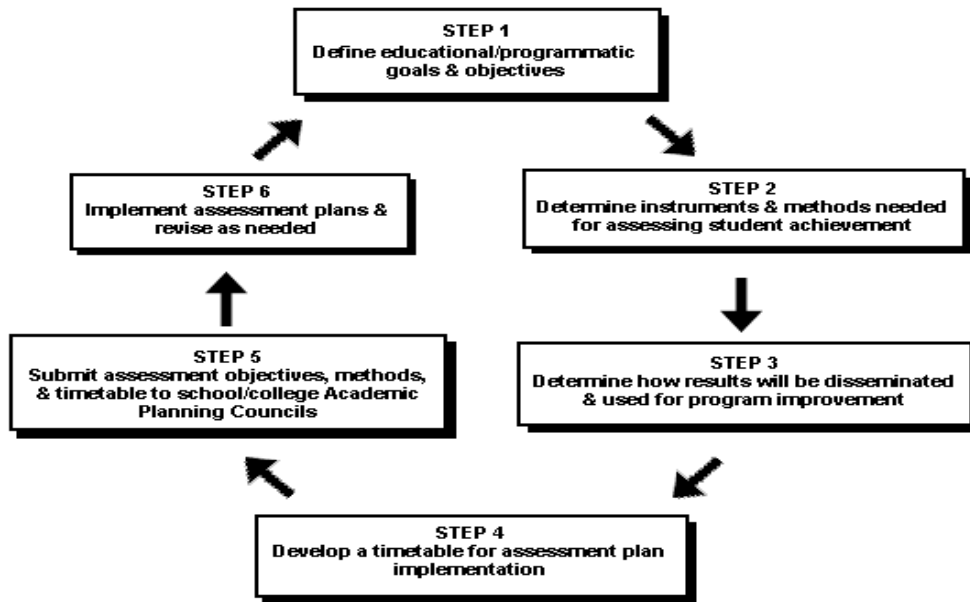
Once these decisions have been made, departments can then move to the next stage, the actual implementation of assessment (Chapter 6). As noted by experts, though, the devil is always in the details of implementation. Once programs have established the learning outcomes, these further decisions must be made:

- the methods for collecting evidence to assess learning outcomes;
- the number of students involved in the process (i.e. sample size);
- the personnel and resources needed for coordination and data analysis;
- the potential training needs of evaluators;
- the best approaches for sharing and discussing the results with colleagues.

An assessment plan attains reliability in large part when the tools and the measures are consistently used. Validity is attained when faculty have a role in its creation. (Validity is "the degree to which an assessment measures (a) what is intended, as opposed to (b) what is not intended, or (c) what is unsystematic or unstable; source: University of Maryland Center for the Study of Assessment Validity and Evaluation).

The figure below depicts the steps in developing and implementing an assessment plan. The process is intentionally circular in order to evoke the idea of continual improvement (adapted from the University of Wisconsin-Madison web page).

Developing and Implementing a Departmental Assessment Plan for Programmatic Improvement

STEP 1
Define educational/programmatic goals & objectives

STEP 6
Implement assessment plans & revise as needed

STEP 2
Determine instruments & methods needed for assessing student achievement

STEP 5
Submit assessment objectives, methods, & timetable to school/college Academic Planning Councils

STEP 3
Determine how results will be disseminated & used for program improvement

STEP 4
Develop a timetable for assessment plan implementation

Source: University of Wisconsin-Madison web page

Chapter 3. The Program Mission Statement

While the program mission statement often gets lost in the busy shuffle of assessment, not to mention that discussions about it often draw yawns, the creation–or clarification–of a departmental mission statement is the vital first step, for it clearly defines a program's purpose for existence. Among other things, the commitment to formulating a mission statement is critical to a program's reputation, especially since most successful statements are measurable, definable, and actionable, and as such, can be evaluated by constituents. For example, it makes sense for the Physics department of a large research institution to have a mission statement that calls for both a top tier national score on a standardized test as well as a high percentage of its seniors entering graduate programs. Likewise, the mission statement of a Physics department of a small regional campus ought to call for more diversified goals that lead to a curriculum that will offer students more flexible and realistic career options. The mission statement can be viewed as a launching pad for program assessment; for without it faculty would not have the foundation upon which to create the program's learning outcomes.

Though departments ought to begin by exploring mission statements on web pages of professional organizations or similar programs across the country, faculty must reach a consensus on the final statement if it is to be meaningful. If a department can't reach a conclusion, a few volunteers might work outside the larger group and develop a working draft that can then be circulated and discussed over e-mail before meeting again for final deliberation.

Though a program's mission must have clear statement of purpose, this is not to say that all such statements comprise the same format. Some are long and prescriptive; others are brief and tilt toward the rudimentary. The attached examples from IUS departments reflect the characteristics and preferences of the faculty in the program and teach the students what the program is striving to accomplish.

Examples of Program Mission Statements at IUS

Communication: *Communication Studies exists to produce student learning and to advance knowledge about human communication from both a humanistic and social scientific perspective. The Department will provide a challenging, innovative, and supportive environment that will facilitate students' intellectual growth, which includes students' communication (both oral and written), research, and critical thinking skills across an array of contexts. The Department will serve the university, the community, and the discipline.*

English: *The English Department creates, evaluates, and administers programs in writing and literature that foster students' intellectual growth, collaborative skills, multicultural awareness, effective citizenship, and technological competence. While preserving historic strengths in literary and rhetorical tradition, the department is devoted to an innovative curriculum that encourages readers and writers to situate texts in relation to history, philosophy, and culture through the theory and practice of integrated literacies that encourage lifelong learning.*

Chapter 4. Establishing Learning Outcomes

A) The Relationship Between Goals and Learning Outcomes

After a program's mission statement has been established, the next step for faculty is to design goals and the attendant outcomes for those goals. Faculty should strive after goals that can easily be converted into learning outcomes. It might be helpful to note that while goals tend to focus on delivery of information (*Students will become familiar with the cultures of ancient Greece and Rome*), the converted outcomes focus on effect (*Students will compare and contrast the political, economic, and religious systems of Greece with that Rome*). In order to arrive at outcomes, faculty might consider the following questions as a guide for the learning outcomes discussion:

1) What do we want students in our major to know?

2) What do we want our students to be able to do?

3) What values or attitudes (dispositions) do we want to instill in our students?

The statement of learning outcomes at the program level clarifies for all stakeholders the knowledge, skills, and abilities a student must possess to successfully complete a course or program and thus earn a degree from the college. Learning outcomes have three distinguishing characteristics: the learners' specified action must be observable, measurable, and performed by the learners. Here are examples of goals followed by their respective outcomes:

- *Students will be familiar with the syllogism.*
- *Students will have an appreciation of cultural diversity in the classroom.*
- *Students will be familiar with the different kinds of writing genres.*

These goals can easily be converted into outcomes by inserting action verbs and in some instances making clear the predicate.

- *Students will conduct logical arguments through the use of a syllogism.*
- *Students will summarize in writing their attitudes about cultural diversity in reflective essays.*
- *Students will submit by graduation the following kinds of writing: essay, creative non-fiction, summaries, paraphrase, and reports.*

Since the learner's performance ought to be observable and measurable, the verb chosen for each outcome statement should result in overt behavior that can then be observed and measured. Sample action verbs are: compile, create, plan, revise, analyze, design, select, utilize, apply, demonstrate, prepare, use, compute, discuss, explain, predict, assess, compare, rate, critique. Conversely, some verbs that are unclear subject the learning statement to different interpretations in terms of what action is being specified; such verbs, which obscure the intended behavior, cannot be observed or measured. These types of verbs should be avoided when constructing learning outcomes: know, become aware of, appreciate, learn, understand, become familiar with.

B) How to Establish Goals and Learning Outcomes

The most practical way to start the conversation about goals and learning outcomes is to weigh the needs of the program mission statement against examples of outcomes published through the respective professional organizations or by departments with similar programs at other schools. This process should help generate a comprehensive list of ideas and suggestions for learning outcomes that can then be refined and narrowed. Once the department has generated such a list, the most challenging task is then deciding which goals and outcomes are essential at the program level. Practitioners point out that if the final list of learning outcomes initially reaches beyond five or six, the assessment effort will be onerous, even unmanageable. During discussions, it might be helpful to keep in mind that all outcomes should be measurable. Program goals articulate both measurable and non-measurable expectations for students; outcomes must be expressed in terms of demonstrable characteristics. Outcomes focus on what students in the major can demonstrate rather than on what faculty members teach. The list of learning outcomes can always be reviewed and revised as the need arises or as new developments occur in the discipline. In any event, it important to make sure that students know the program's learning outcomes. Research has shown that students who are aware of the direction of their education are much more likely to be engaged in the learning process.

Here is a model of learning outcomes for a History department:
1. History majors will demonstrate skill in chronological thinking.
2. History majors will demonstrate historical comprehension.
3. History majors will demonstrate the skills of historical analysis and interpretation.
4. History majors will demonstrate historical research capabilities.
5. As a consequence of these skills, History majors will demonstrate a) a working knowledge of the natural and cultural environment in which humans have developed and live; and b) a sense of the diversity of the human experience influenced by geography, culture, race, ethnicity, gender, and class.
6. History majors will demonstrate an understanding of the career search in appropriate educational and professional markets

C) Use Curriculum Mapping to Confirm Outcomes

Once the preliminary list of outcomes is established, faculty should engage curriculum mapping to see where those outcomes are embedded in current courses. A curriculum map consists of a table with two axes, one listing program outcomes, the other listing courses in the major. The coverage of a learning outcome in each course is shown in the cells of the table (see Table 4.1)

Table 4.1. Curriculum Map Template

Program Learning Outcomes	Course 1	Course 2	Course 3	Course 4	Course 5	Course 6	Course 7
Outcome 1	X	X	X	X	X	X	X
Outcome 2		X		X	X		
Outcome 3	X		X	X			X
Outcome 4							
Outcome 5	X	X	X				

Course mapping can provide a view of how individual courses are related to the program learning outcomes and can show the curricular emphasis given to each outcome. For example, Outcome 1 in the above table appears in seven courses and is therefore given greater emphasis than Outcomes 2 and 3. A map can also identify program redundancies or gaps, such as the fact that no course currently takes ownership of Outcome 4.

Curriculum mapping can help facilitate faculty discussion about the extent to which the program currently addresses the list of learning outcomes. A different kind of map, one that indicates levels of intensity, can go even further by displaying the degree to which a course emphasizes a specific outcome. In some cases, it may even be useful to show the number of hours devoted to each outcome in each course; the level of achievement that is expected in each course can be indicated as low, medium, or high or other such descriptors. This would reveal how student achievement is expected to develop during their progress through the curriculum.

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*For those who are need further convincing about the importance of outcome-based pedagogy, read the following noteworthy articles.

Articles:

From Teaching to Learning - A New Paradigm for Undergraduate Education By Robert B. Barr and John Tagg. November/December 1995. *Change* magazine.

So, What's a Learning Outcome Anyway? Learning Outcomes and the Learning Paradigm By Mark Battersby, Department of Philosophy, Capilano College.

Chapter 5. Choosing Appropriate Assessment Tools

Once faculty settle on learning outcomes, and hopefully use curriculum mapping to understand which outcome(s) need attention, the next step is to select tools to assess student achievement in the target outcome(s). As practitioners note, the selection of tools involves a tradeoff between the ability to obtain detailed information and the need to keep the process feasible and manageable. For this reason programs should use multiple assessment tools to overcome the disadvantages of a single tool.

A. Two Major Issues to Consider When Choosing an Assessment Tool

1. Direct and Indirect: Assessment tools can generally be placed in two categories, direct and indirect measures. Direct measures are those in which the products of student work are evaluated in light of the learning outcomes for the program. Evidence from course work such as projects or specialized tests of knowledge or skill are examples of direct measures. Indirect measures are not based directly on student academic work but rather on the perceptions of students, alumni, employers, and other outside agents. While both direct and indirect measures have their place in assessment (together they form an important holistic impression of student learning), it is most useful for programs to start with the direct measures, given that it is there that student achievement is directly evaluated.

<u>**Direct Methods**</u>

1. Capstone courses draw upon and integrate knowledge, concepts, and skills associated with the entire curriculum of a program. Taken normally in the senior year, capstone courses ask students to demonstrate facility in the program's learning outcomes, in addition to other outcomes associated with the particular course.   Within a capstone course, evidence of student learning may include comprehensive papers, portfolios, group projects, demonstrations, journals, or examinations. But how does one use this evidence to assess the overall program? The final grade for the course, being a single measure, does not dissociate into an assessment of student achievement in the various learning outcomes for the program (although achievement in each of the learning outcomes may combine into the final grade). One method of assessment in capstone courses is to evaluate student work with an eye toward the multiple dimensions of the program's outcomes. More than one faculty member can be invited to assist in the assessment of student work, e.g. in an essay, or a presentation. The assessment of a major paper or project, or set of papers or projects, may be broken down into sub-assessments of each learning outcome.

2. In course-embedded assessment, student work in designated courses is collected and assessed in relation to the program learning outcomes, not just for the course grade. As in the capstone course, the products of student work need to be considered in light of the multiple dimensions of the learning outcomes. Products may include final exams, research reports, projects, papers, and so on. The assessment may be conducted at specific points (e.g.,

introductory course and upper-level course) in a program.

3. Standardized tests. The Educational Testing Service and other companies offer standardized tests for various types of learning outcomes, such as critical thinking or mathematical problem solving. Scores on tests such as the GRE or the Massachusetts Test of Educator Licensure (MTEL) may be used as evidence of student learning.

4. Locally developed tests.   Faculty may decide to develop their own internal test that reflects the program's learning outcomes. Though locally developed tests require work by the program's faculty in development and scoring, they are less costly than a standardized test and are often more meaningful in that they focus more clearly on the intended learning outcomes.

5. Portfolio evaluation.   A portfolio is a compilation of student work that, in total, demonstrates a student's achievement of various learning outcomes. Portfolios can be created for a variety of purposes aside from program assessment, such as fostering reflection by students on their education, providing documentation for a student's job search, or certifying a student's competency. Portfolios created over the span of a student's academic career, compared to those consisting of a student's work only at the end, provide the basis for a developmental assessment.

6. Pre- and post- tests. One of the questions that comes up in assessment is not only whether students can demonstrate the learning outcomes when they graduate, but how much of what they can demonstrate was actually gained during their time in the program. This suggests the need to assess the students' knowledge and skills at the point of entry into the program and, later, at the point of exiting the program. In pre-test/post-test assessment, student work is assessed both early and late in their academic career, from which the growth and development of the students can be deduced. Several of the previously described tools lend themselves to pre-test/post-test evaluation. Portfolios that collect evidence throughout a student's academic career can intrinsically be a type of pre- and post-test evaluation. Course-embedded assessment in which student work is collected from introductory and upper-level courses also provides a type of pre- and post-test evaluation, although the level of difficulty in the two courses can be expected to differ considerably. Standardized or locally developed tests can be administered at two times in a student's career to assess learning. However, if the test is exactly duplicated at the two times, then students may improve simply by having seen it twice. On the other hand, if different tests are administered at the two times, it can be difficult to ensure that both tests are of the same nature and difficulty, so the reliability of this method becomes a question.

Indirect Methods

1. Student self-efficacy. Students have a sense of their own competence. Student self-efficacy involves students rating their perception of their own achievement in particular learning outcomes. Research shows a significant, although imperfect, correlation between actual and perceived competence. What can be problematic are gender and demographic differences in the accuracy of self-efficacy.   For example, certain groups of students may rate their quantitative skills at a level below that indicated by standardized tests. Also, unless "the answers are anonymous, students will be likely to overrate their abilities. The same is true if students perceive they can be penalized by their answers. Self-efficacy as an assessment tool is relatively simple. For example, tests have been designed that ask students to rate the perceived importance and self-efficacy of leadership skills, communication skills, interpersonal skills, analytical skills,

decision-making skills, technological skills, the global economy, ethics, and business practices."
(Source: Weber State)

2. Student satisfaction surveys. Given that student satisfaction with a program or course is not a learning outcome, satisfaction may or may not relate to outcomes assessment. But satisfaction may correlate with other variables. For this reason, a common component of assessment systems is the student satisfaction survey. Such surveys may consider the extent to which students are satisfied with their interactions with faculty, with their introductory or advanced courses, or with their preparedness coming out of the program. "Use of individual course evaluations for program assessment is problematic because the evaluations reflect on individual instructors – a serious pitfall to be avoided in program assessment. Disadvantages include the difficulty of designing questions appropriately, or, again, a potential hazard in linking student satisfaction and achievement of learning outcomes." (Source: Weber State)

3. Student attitudinal surveys. If learning outcomes include elements of appreciation or understanding of particular issues of concern, student attitudes can be measured as part of the assessment program. For example, informed appreciation for the arts may be assessed using an attitudinal survey. Another example may be students' empathy toward disadvantaged groups, which can be measured in an attitudinal survey. A further example would be attitudes toward learning or toward the profession. Both standardized tests and locally designed surveys can be used for this purpose, although the responses are very sensitive to the wording of the questions. Disadvantages include the challenge of determining student attitudes in a reliable manner.

4. Exit interviews. Rather than assess students' attitudes, self-efficacy, or satisfaction through the use of surveys, students may be interviewed directly in individual or focus-group settings. Such interviews allow a more thorough, free-form exploration of the issues through the use of follow-up questions that depend on students' responses.

5. Alumni surveys. The perspective that students have on their education may change significantly after time away from school. Some learning outcomes lend themselves more naturally to questions posed some time after graduation. For example, an outcome involving preparation for professional practice can best be assessed after the student has graduated and been employed in the job market.

6. Employer surveys. It is possible that some of the students' knowledge and skills are evident to the employers who rely on these characteristics. Thus, some accrediting bodies either require or encourage programs to perform an assessment through the major employers of their students. These may range from information as basic as hiring data, to site supervisor evaluations, to detailed surveys of the characteristics that the employers perceive in program graduates. Advisory boards, anecdotal information, and placement data may be used in place of formal surveys.

7. Curriculum Analysis. Accrediting bodies have historically required institutions to document the information that students are receiving and the content that the program delivers in its courses. With the move toward learning-outcomes assessment, programs are required to show that students actually exhibit the skills and qualities that the program wishes to develop. However, a curriculum analysis may still be relevant and is often included in accreditation documents. For example, some accrediting bodies may require the documentation of the number of hours devoted to a particular subject in the curriculum.

Chapter 6. Implementing Assessment

Thus far this Handbook has asked faculty to engage in important assessment work that is essentially preparatory in nature. The time has come to think about actually implementing outcomes assessment. To do so programs are asked to consider using the following six-step approach.

Step 1: Pick a goal that deserves attention based on faculty deliberation. In some instances, faculty might have to work on a less deserving goal and put one or two important goals on the back burner until the timing is right.

Step 2: After deciding on a target goal, apply appropriate assessment methods for a specific outcome and then collect and analyze data. This step, of course, is labor intensive and time consuming. More and more departments are turning over this step to a small group of members who in turn will do the actual analysis and then report the findings to the department for consultation.

Step 3: Deliberate some recommendation to change or modify the curriculum that will lead to program improvement. This feedback loop is essential in all assessment plans.

Step 4: Submit assessment results and curriculum plans to OIRA using the Annual Report format.

Step 5: Review the evaluation of your Annual Report by OIRA. Bring any comments or concerns you may have to OIRA's Director.

Step 6: Once the annual Report is evaluated by OIRA, departments should implement assessment strategies. When initial program feedback from assessment practices becomes available, departments should use the results for programmatic improvement or to revise objectives or plans, if necessary.

By following this six-step process, the complexities associated with developing effective and efficient assessment plans, especially for those devising assessment strategies for the first time, can be made less arduous and time consuming. As programs gain more assessment experience, faculty will become more adept at using the more helpful methods for measuring student work. The development of this handbook is one effort to assist this cooperative learning effort.

Other Implementation Issues

Before concluding this chapter, faculty might want to look at a few more issues that concern the implementation process.

1) Sampling Method and Sample Size. In thinking how evidence of student work will be collected, and how much evidence will be used for assessment, faculty also need to determine how many students will have their work sampled, and from which courses or tests evidence will be extracted.   Cost and time are major issues, so the more work you collect for analysis, the greater the implementation cost. Use a manageable, if small, sample size so as to make assessment realistic.

2) Rubrics. As suggested above, all too often faculty do not make explicit the criteria they use to evaluate student work in complex projects that are not easily quantifiable. These kinds of projects include writing, oral communication, critical thinking, or information literacy, which are just a few objectives that every college program now incorporates into their curriculum. Too often, however, the selection of an assessment tool does not, by itself, specify the parameters of the assessment tool. For example, the use of student writing in a capstone project to assess research skills or argument development often leaves unstated how the judgments about this area will be made from this assignment. To help rectify this serious shortcoming of not having explicit criteria, faculty should ask what specific traits in writing exhibit evidence of good, bad, or indifferent critical thinking. This process of isolating the traits for evaluation purposes is called rubric grading, which the assessment practitioners urge faculty to consider using.

A rubric is a set of criteria for assessing student work or performance. Rubrics have two dimensions: they identify the various characteristics of the outcome, and they specify various levels of achievement in each characteristic. Thus, a well-designed rubric consists of 1) clear definitions of each characteristic to be assessed for a given learning outcome, and 2) clear descriptions of the different levels of achievement for each characteristic. For example, to assess writing requires a set of characteristics of writing that are being examined (e.g., exigency, discernable purpose, supporting quotes) and a set of levels indicating the quality evident in those characteristics (e.g. what constitutes excellent, good, fair, or poor logical organization). Because rubrics list explicit criteria, they make assessment more transparent, consistent, and objective, which in turn can be communicated to students who gain an understanding of what is expected and how their performance will be assessed.

3. Resources. In order to do assessment, faculty need to consider the material cost of resources in total. Most schools that have a strong assessment plan in place also have varying systems of financial support for the program. Even so, faculty need to continue to consider the cost of different assessment strategies such as standardized tests, and surveys, which, for example, includes the design of the survey, mailings, web-based postings, e-mail, and compilation of the results. Another cost to consider is the time and cost of collecting and evaluating student work.   For example, some administrators are unaware that the estimate for scoring 20 pages of student writing is about an hour, and that is only after faculty acquire some proficiency in applying rubrics. For larger programs requiring complex assessment tools, it may be necessary to assign a faculty member the ongoing task of assessment coordinator.

Chapter 7. Best Practices

Nine Principles of Good Practice for Assessing Student Learning

1. The assessment of student learning begins with educational values. Assessment is not an end in itself but a vehicle for educational improvement. Its effective practice, then, begins with and enacts a vision of the kinds of learning we most value for students and strive to help them achieve. Educational values should drive not only what we choose to assess but also how we do so. Where questions about educational mission and values are skipped over, assessment threatens to be an exercise in measuring what's easy, rather than a process of improving what we really care about.

2. Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed in performance over time. Learning is a complex process. It entails not only what students know but what they can do with what they know; it involves not only knowledge and abilities but values, attitudes, and habits of mind that affect both academic success and performance beyond the classroom. Assessment should reflect these understandings by employing a diverse array of methods, including those that call for actual performance, using them over time so as to reveal change, growth, and increasing degrees of integration. Such an approach aims for a more complete and accurate picture of learning, and therefore firmer bases for improving our students' educational experience.

3. Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes. Assessment is a goal-oriented process. It entails comparing educational performance with educational purposes and expectations -- those derived from the institution's mission, from faculty intentions in program and course design, and from knowledge of students' own goals. Where program purposes lack specificity or agreement, assessment as a process pushes a campus toward clarity about where to aim and what standards to apply; assessment also prompts attention to where and how program goals will be taught and learned. Clear, shared, implementable goals are the cornerstone for assessment that is focused and useful.

4. Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes. Information about outcomes is of high importance; where students "end up" matters greatly. But to improve outcomes, we need to know about student experience along the way -- about the curricula, teaching, and kind of student effort that lead to particular outcomes. Assessment can help us understand which students learn best under what conditions; with such knowledge comes the capacity to improve the whole of their learning.

5. Assessment works best when it is ongoing not episodic. Assessment is a process whose power is cumulative. Though isolated, "one-shot" assessment can be better than none, improvement is best fostered when assessment entails a linked series of activities undertaken over time. This may mean tracking the process of individual students, or of cohorts of students; it may mean collecting the same examples of student performance or using the same instrument semester after semester. The point is to monitor progress toward intended goals in a spirit of continuous improvement. Along the way, the assessment process itself should be evaluated and refined in light of emerging insights.

6. Assessment fosters wider improvement when representatives from across the educational community are involved. Student learning is a campus-wide responsibility, and assessment is a way of enacting that responsibility. Thus, while assessment efforts may start small, the aim over time is to involve people from across the educational community. Faculty play an especially important role, but assessment's questions can't be fully addressed without participation by student-affairs educators, librarians, administrators, and students. Assessment may also involve individuals from beyond the campus (alumni/ae, trustees, employers) whose experience can enrich the sense of appropriate aims and standards for learning. Thus understood, assessment is not a task for small groups of experts but a collaborative activity; its aim is wider, better-informed attention to student learning by all parties with a stake in its improvement.

7. Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about. Assessment recognizes the value of information in the process of improvement. But to be useful, information must be connected to issues or questions that people really care about. This implies assessment approaches that produce evidence that relevant parties will find credible, suggestive, and applicable to decisions that need to be made. It means thinking in advance about how the information will be used, and by whom. The point of assessment is not to gather data and return "results"; it is a process that starts with the questions of decision-makers, that involves them in the gathering and interpreting of data, and that informs and helps guide continuous improvement.

8. Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change. Assessment alone changes little. Its greatest contribution comes on campuses where the quality of teaching and learning is visibly valued and worked at. On such campuses, the push to improve educational performance is a visible and primary goal of leadership; improving the quality of undergraduate education is central to the institution's planning, budgeting, and personnel decisions. On such campuses, information about learning outcomes is seen as an integral part of decision making, and avidly sought.

9. Through assessment, educators meet responsibilities to students and to the public. There is a compelling public stake in education. As educators, we have a responsibility to the public that support or depend on us to provide information about the ways in which our students meet goals and expectations. But that responsibility goes beyond the reporting of such information; our deeper obligation -- to ourselves, our students, and society -- is to improve. Those to whom educators are accountable have a corresponding obligation to support such attempts at improvement.

Seven Principles for Good Practice In Undergraduate Education

    1. Good Practice encourages student-faculty contact.   Frequent student-faculty contact in and out of classes is the most important factor in student motivation and involvement. Faculty concern helps students get through rough times and keep on working. Knowing a few faculty members well enhances students' intellectual commitment and encourages them to think about their own values and future plans.

    2. Good practice encourages cooperation among students. Learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning. Sharing one's own ideas and responding to others' reactions improves thinking and deepens understanding.

    3. Good practice encourages active learning. Learning is not a spectator sport. Students do not learn much just sitting in classes listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn part of themselves.

    4. Good practice gives prompt feedback. Knowing what you know and don't know focuses learning. Students need appropriate feedback on performance to benefit from courses. In getting started, students need help in assessing existing knowledge and competence. In classes, students need frequent opportunities to perform and receive suggestions for improvement. At various points during college, and at the end, students need chances to reflect on what they have learned, what they still need to know, and how to assess themselves.

    5. Good practice emphasizes time on task. Time plus energy equals learning. There is no substitute for time on task. Learning to use one's time well is critical for students and professionals alike. Students need help in learning effective time management. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty. How an institution defines time expectations for students, faculty, administrators, and other professional staff can establish the basis for high performance for all.

    6. Good practice communicates high expectations. Expect more and you will get it. High expectations are important for everyone--for the poorly prepared, for those unwilling to exert themselves, and for the bright and well motivated. Expecting students to perform well becomes a self-fulfilling prophecy when teachers and institutions hold high expectations for themselves and make extra efforts.

    7. Good practice respects diverse talents and ways of learning. There are many roads to learning. People bring different talents and styles of learning to college. Brilliant students in the seminar room may be all thumbs in the lab or art studio. Students rich in hands-on experience may not do so well with theory. Students need the opportunity to show their talents and learn in ways that work for them. Then they can be pushed to learning in ways that do not come so easily.

(1990). The Principles, created by Art Chickering and Zelda Gamson with help from higher education colleagues, AAHE, and the Education Commission of the States, with support from the Johnson Foundation, distilled findings from decades of research on the undergraduate experience.

Related links:

http://www.winona.edu/air/nca2001/otherairfiles/nca7pbackground.htm (a historical perspective)

http://www.tltgroup.org/programs/seven.html (Implementing the seven principles)

http://cte.udel.edu/TAbook/principles.html (Implementation ideas)

Chapter 8. Resources and Assessment Web Sites

This chapter is devoted to the electronic resources of some of the best assessment web sites. Many of the sites below can be found on the most comprehensive assessment web site at North Carolina State University, whose web address is cited below.

Colleges and Universities

Carthage College: http://www.carthage.edu/academics/assessment/index.html

Eastern Illinois University: http://www.eiu.edu/~assess/departmental_assessment_plans.htm

Montana State University: http://www.montana.edu/aircj/assess/majors/majors9899/

Mount Royal College, Calgary, Alberta, Canada: http://www.mtroyal.ab.ca/cr/

North Carolina State University: http://www2.acs.ncsu.edu/UPA/assmt/index.html

Ohio University: http://www.ohiou.edu/instres/student/stud_assess.html

Seton Hall University: http://academic.shu.edu/outcomes/

Southeast Missouri State University: http://www2.semo.edu/provost/assmt/

Southern Illinois University at Edwardsville: http://www.siue.edu/assessment/

Truman State University: http://www.truman.edu/pages/150.asp

University of Central Arkansas: http://www.uca.edu/divisions/academic/assess/aslibrar.htm

University of Central Florida: http://www2.oeas.ucf.edu/oeas/phase2/visitor_menu.asp

University of Colorado at Boulder: http://www.colorado.edu/outcomes/

University of Nebraska: http://www.unk.edu/academicaffairs/assessment/

University of Nevada at Reno: http://www.unr.edu/assess/

Virginia Tech: http://www.aap.vt.edu/

Assessment and Evaluation

Topically organized resources: http://www.mcli.dist.maricopa.edu/ae0/

Journal on assessment issues/methods: http://www.tandf.co.uk/journals/titles/02602938.asp

A web site devoted to world's best practice in assessment: http://ahe.cqu.edu.au/

Resources on student learning: http://iea.fau.edu/pusateri/assess/student_learning.htm

Resources on pedagogy: http://iea.fau.edu/pusateri/assess/pedagogy.htm

Resources on skills, knowledge bases, and values: http://iea.fau.edu/pusateri/assess/skills.htm

Assessment resources in academic disciplines: http://iea.fau.edu/pusateri/assess/colleges.htm

The National Teaching & Learning Forum: http://www.ntlf.com/

The Annenberg/CPB Project's Website for Learners and Educators: http://www.learner.org

AAHE Assessment Site

AACU's "Knowledge Network"

Assessment Case Studies Cases

FAST (Free Assessment Summary Tool),

Internet Resources for Classroom Assessment Techniques, from Sinclair Community College.

Introduction to Classroom Assessment Techniques, Penn State Institute for Teaching Excellence.

Technology Applied to Classroom Assessment, from the National Teaching and Learning Forum.

ERIC's Clearinghouse on Assessment and Evaluation
Practical Assessment Research and Evaluation
SearchERIC
Test Locator
Educational Testing Service Test Locator
Classroom Assessment Technique Tutorial
Item Response Theory
BETSY (automated essay scoring)
Measurement Decision Theory

Assessment and Rubrics

Rubrics for general education:

> http://www.bgsu.edu/offices/assessment/Rubrics.htm

> http://intranet.brenau.edu/assessment/default.asp

> http://www.csufresno.edu/ir/assessment/rubric.shtml

Developing rubrics: http://www.k-state.edu/assessment/plans/measures/developing.htm

Rubric for critical thinking: http://wsuctproject.wsu.edu/ctr.htm

Online version of the Teaching Goals Inventory, from the University of Iowa's Center for Teaching.

Chapter 9. Assessment Vocabulary

The definitions in this list were derived from several sources, including:

- *Glossary of Useful Terms Related to Authentic and Performance Assessments.* Grant Wiggins
- *SCASS Arts Assessment Project Glossary of Assessment Terms*
- *The ERIC Review: Performance-Based Assessment.* Vol. 3 Issue 1, Winter, 1994.
- *Assessment: How Do We Know What They Know?* ASCD. 1992.
- *Dissolving the Boundaries: Assessment that Enhances Learning.* Dee Dickinson
- http://www.newhorizons.org/strategies/assess/terminology.htm

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Accountability – The demand by a community (public officials, employers, and taxpayers) for school officials to prove that money invested in education has led to measurable learning. "Accountability testing" is an attempt to sample what students have learned, or how well teachers have taught, and/or the effectiveness of a school's principal's performance as an instructional leader. School budgets and personnel promotions, compensation, and awards may be affected. Most school districts make this kind of assessment public; it can affect policy and public perception of the effectiveness of taxpayer-supported schools and be the basis for comparison among schools. It has been suggested that test scores analyzed in a disaggregated format can help identify instructional problems and point to potential solutions.

Action Plans – The statement that indicates the specific changes that a given area plans to implement in the next cycle based on assessment results. "The biology faculty will introduce one special project in the introductory class that will expose the students to the scientific method." "Career Services is implementing a software program called '1st Place'. This software will allow better tracking of job openings."

Action Research –   Classroom-based research involving the systematic collection of data in order to address certain questions and issue so as to improve classroom instruction and educational effectiveness.

Affective Outcomes – Outcomes of education that reflect feelings more than understanding; likes, pleasures, ideals, dislikes, annoyances, values.

Annual Report: A report from each academic program based on its assessment plan that is submitted annually, which outlines how evidence was used to improve student learning outcomes through curricular and/or other changes or to document that no changes were needed.

Assessment – The systematic collection, review, and use of information about educational

programs undertaken for the purpose of improving student learning and development. In general terms, assessment is the determination of a value, or measurement, based on a "standard." We often refer to this standard as a "target." Standard-based measurement, or assessment, is useful in education for both the placement of students in initial course work and ascertaining the extent of students' acquisition of skills/knowledge.

Assessment Cycle – The assessment cycle in higher education is generally annual and fits within the academic year. Outcomes, targets and assessment tools are established early in the fall semester; data is collected by the end of spring semester; results are analyzed during the summer and early fall.

Assessment Tool – An instrument that has been designed to collect objective data about students' knowledge and skill acquisition. An appropriate outcomes assessment test measures students' ability to integrate a set of individual skills into a meaningful, collective demonstration. Some examples of assessment tools include standardized tests, end-of-program skills tests, student inquiries, common final exams, and comprehensive embedded test items.

Assessment Literacy – The possession of knowledge about the basic principals of sound assessment practice, including terminology, the development and use of assessment methodologies and techniques, familiarity with standards of quality in assessment. Increasingly, familiarity with alternatives to traditional measurements of learning.

Authentic Assessment – A circumstance in which the behavior that the learning is intended to produce is evaluated and discussed in order to improve learning. The concept of model, practice, feedback in which students know what excellent performance is and are guided to practice an entire concept rather than bits and pieces in preparation for eventual understanding. A variety of techniques can be employed in authentic assessment.

Benchmark – Student performance standards (the level(s) of student competence in a content area).

Cohort – A group whose progress is followed by means of measurements at different points in time.

Course-embedded assessment – A method in which evidence of student learning outcomes for the program is obtained from assignments in particular courses in the curriculum.

Course-level assessment – Assessment to determine the extent to which a specific course is achieving its learning goals.
Course mapping – A matrix showing the coverage of each program learning outcome in each course. It may also indicate the level of emphasis of each outcome in each course.

Criterion Referenced Tests – A test in which the results can be used to determine a student's progress toward mastery of a content area. Performance is compared to an expected level of mastery in a content area rather than to other students' scores. Such tests usually include questions based on what the student was taught and are designed to measure the student's mastery of designated objectives of an instructional program. The "criterion" is the standard of performance established as the passing score for the test. Scores have meaning in terms of what the student knows or can do, rather than how the test-taker compares to a reference or norm group.

Curriculum Map – A matrix showing where each goal and/or learning outcome are covered in each program course.

Direct Assessment – Assessment to gauge student achievement of learning outcomes directly from their work.

Educational Goals – The knowledge, skills, abilities, capacities, attitudes or dispositions students are expected to acquire as a result of completing your academic program. Goals are sometimes treated as synonymous with outcomes, though outcomes are the behavioral results of the goals, and are stated in precise operational terms.

 Formative assessment – The assessment of student achievement at different stages of a course or at different stages of a student's academic career. The focus of formative assessment is on the documentation of student development over time. It can also be used to engage students in a process of reflection on their education.

General Education Assessment – Assessment that measures the campus-wide, general education competencies agreed upon by the faculty. General education assessment is more holistic in nature than program outcomes assessment because competencies are measured across disciplines, rather than just within a single discipline.

Holistic Scoring – In assessment, assigning a single score based on an overall assessment of performance rather than by scoring or analyzing dimensions or traits individually. The product is considered to be more than the sum of its parts and so the quality of a final product or performance is evaluated rather than the process or dimension of performance. A holistic scoring rubric might combine a number of elements on a single scale. Focused holistic scoring may be used to evaluate a limited portion of a learner's performance.

Indirect Assessment – Assessment that deduces student achievement of learning outcomes through the reported perception of learning by students and other agents.

Institutional assessment – Assessment to determine the extent to which a college or university is achieving its mission.

Learning outcomes – Operational statements describing specific student behaviors that evidence

the acquisition of desired goals in knowledge, skills, abilities, capacities, attitudes or dispositions. Learning outcomes can be usefully thought of as behavioral criteria for determining whether students are achieving the educational goals of a program, and, ultimately, whether overall program goals are being successfully met. Outcomes are sometimes treated as synonymous with objectives, though objectives are usually more general statements of what students are expected to achieve in an academic program.

Measurable Criteria – An intended student outcome, or administrative objective, restated in a quantifiable, or measurable, statement. "60% of biology students will complete an experiment/project using scientific methods in fall 2003;" "75% of responding MU students will indicate on a survey in fall 2003 that they have read materials about career opportunities on campus."

Metacognition – The knowledge of one's own thinking processes and strategies, and the ability to consciously reflect and act on the knowledge of cognition to modify those processes and strategies.

Norm – A distribution of scores obtained from a norm group. The norm is the midpoint (or median) of scores or performance of the students in that group. Fifty percent will score above and fifty percent below the norm.

Performance-Based Assessment – Direct, systematic observation and rating of student performance of an educational objective, often an ongoing observation over a period of time, and typically involving the creation of products. The assessment may be a continuing interaction between teacher and student and should ideally be part of the learning process. The assessment should be a real-world performance with relevance to the student and learning community. Assessment of the performance is done using a rubric, or analytic scoring guide to aid in objectivity. Performance-based assessment is a test of the ability to apply knowledge in a real-life setting or performance of exemplary tasks in the demonstration of intellectual ability.

Portfolio – A systematic and organized collection of a student's work that exhibits to others the direct evidence of a student's efforts, achievements, and progress over a period of time. The collection should involve the student in selection of its contents, and should include information about the performance criteria, the rubric or criteria for judging merit, and evidence of student self-refection or evaluation.

Portfolio Assessment – Portfolios may be assessed in a variety of ways. Each piece may be individually scored, or the portfolio might be assessed merely for the presence of required pieces, or a holistic scoring process might be used and an evaluation made on the basis of an overall impression of the student's collected work. It is common that assessors work together to establish consensus of standards or to ensure greater reliability in evaluation of student work. Established criteria are often used by reviewers and students involved in the process of evaluating progress and achievement of objectives.

Primary Trait Method – A type of rubric scoring constructed to assess a specific trait, skill,

behavior, or format, or the evaluation of the primary impact of a learning process on a designated audience.

Process – A generalizable method of doing something, generally involving steps or operations which are usually ordered and/or interdependent. Process can be evaluated as part of an assessment, as in the example of evaluating a student's performance during prewriting exercises leading up to the final production of an essay or paper.

Program assessment – Assessment to determine the extent to which students in a departmental program can demonstrate the learning outcomes for the program.

Reliability – An assessment tool's consistency of results over time and with different samples of students.

Rubric – A set of criteria specifying the characteristics of a learning outcome and the levels of achievement in each characteristic.

Self-efficacy – Students' judgment of their own capabilities for a specific learning outcome.

Senior Project – Extensive projects planned and carried out during the senior year as the culmination of the undergraduate experience. Senior projects require higher-level thinking skills, problem-solving, and creative thinking. They are often interdisciplinary, and may require extensive research. Projects culminate in a presentation of the project to a panel of people, usually faculty and community mentors, sometimes students, who evaluate the student's work at the end of the year.

Summative assessment – The assessment of student achievement at the end point of their education or at the end of a course. The focus of summative assessment is on the documentation of student achievement by the end of a course or program. It does not reveal the pathway of development to achieve that endpoint.

Triangulation – The collection of data via multiple methods in order to determine if the results show a consistent outcome

Validity – The degree to which an assessment measures (a) what is intended, as opposed to (b) what is not intended, or (c) what is unsystematic or unstable.