Direct Measures of Student Learning

Learning outcomes assessment programs must be based on clear and public statements of faculty’s expectations for student achievement. The College must provide evidence that it systematically collects and examines direct indicators of student learning at the academic program level and uses the data to document and enhance student learning.

Why use direct measures? Direct measures provide strong evidence of:

- Student attainment of competencies or expected learning outcomes.
- Quality and consistency within discipline/program across campuses and faculty.
- Student attainment of general education goals across applicable courses.

How are direct measures used?

1. **Identify common competencies or expected learning outcomes for courses, discipline specific general education requirements, and/or programs.**
2. **Establish a program of systematic assessment of the competencies using direct measures that are most appropriate for the discipline/program.**
3. **Build in systematic discipline review of assessment results.**
4. **Use review/results to improve instruction/curriculum as indicated.**

1. Tests and Assessments

In most cases, a test will be one part of a fully developed assessment plan. Tests are commonly used in association with cognitive goals in order to review student achievement with respect to a common body of knowledge associated with a discipline or program. Tests are traditionally used in assessment programming to measure whether students have acquired a certain process- and content-related knowledge.

**There are two primary testing alternatives; 1) locally developed/faculty generated tests and assessments, and 2) commercially produced standardized tests and examinations.** Locally developed tests and assessments are probably the most widely used method for evaluating student progress. For assessing the attainment of academic program learning outcomes, assessments designed by the instructors who set the educational goals and teach the courses is often the best approach. Cost benefits, interpretation advantages, and quick turnaround time all make using locally designed tests an attractive method for assessing student learning, although the reliability and validity of the exams must be established and documented.

**Locally developed tests** designed for a specific curriculum can often prove more valuable when assessing student achievement than commercial instruments. These tests will be closely aligned to curricular goals and objectives, focus on the missions, goals, and objectives of the departments and permit useful measurement of student behavior and learning. A well-constructed and carefully administered test that is graded by two or more judges for the specific purpose of determining program strengths and weaknesses
remains one of the most popular instruments for assessing most programs or major coursework as well as general education.

**Commercially generated or state developed tests** and licensure examinations are used to measure student competencies under controlled conditions. Tests are developed and measured nationally to determine the level of learning that students have acquired in specific fields of study. For example, nationally standardized multiple-choice tests are widely used and assist departments in determining programmatic strengths and weaknesses when compared to other programs and national data. Compilations of data on the performance of students who voluntarily take national or state licensure examinations provide faculty useful data that often leads to programmatic improvements.

When using commercially generated tests, national or state standards are used as comparative tools in areas such as pass rates, mean and median scores, and overall achievement of students when compared to other institutions. In most cases, standardized testing is useful in demonstrating external validity.

There are a number of important advantages to using commercial/standardized tests and examinations to measure student achievement; first, institutional comparisons of student learning are possible. Second, very little professional time is needed beyond faculty efforts to analyze examination results and develop appropriate curricular changes that address the findings. Third, in most cases, nationally developed tests are devised by experts in the discipline and should be current and well-constructed. Fourth, tests are traditionally given to students in large numbers and do not require faculty involvement when exams are taken by students.

The Florida State Basic Skills Exit Test (College Preparatory Exit Test) is currently administered to students in the highest levels of college preparatory coursework at MDC. Results from this test can be used to evaluate consistency of instruction within and across campuses, and student attainment of specific learning outcomes defined for the college preparatory program.

Some of the more commonly used national tests include:

**The Academic Profile**, published by ETS, focuses on the academic skills developed through general education courses rather than on the knowledge acquired about the subjects taught in these courses. The test measures college-level reading, college-level writing, critical thinking, and using mathematical data in the context of three major discipline groups (humanities, social sciences, natural sciences). The questions have a broad range of difficulty; some are quite easy, others are more difficult. It is an objective test using a multiple-choice format.


**The Collegiate Assessment of Academic Proficiency (CAAP)**, published by ACT, is designed to measure the achievement levels of students in selected core academic skills. Test modules are available in Reading, Writing Skills, Writing Essay, Mathematics, Science, and Critical Thinking. Each test module may be used as a stand-alone exam or in combination with other CAAP exams. The modular format offers flexibility to select the assessment components that meet the College’s mission, goals, and educational objectives.

The Major Field Tests, published by ETS, are designed to assess the outcomes of higher education by measuring undergraduate learning in specific disciplines/majors. Tests (e.g. Chemistry, Education, Literature in English, Mathematics, Physics, etc.) reflect basic knowledge and understanding gained from courses. They go beyond measurement of factual knowledge, however, because they also evaluate students' ability to analyze and solve problems, understand relationships, and interpret material. A content review by appropriate faculty members should be undertaken to determine whether the content and coverage of the test is consistent with the content coverage expected of undergraduates majoring in that field. More information is available at http://www.ets.org/hea/mft/index.html

2. Course-Embedded Assessment

Assessment practices embedded in academic courses generate information about what and how students are learning within the program and classroom environment. Course-embedded assessment takes advantage of already existing curricular offerings by using standardized data instructors already collect or by introducing new assessment measures into courses. The embedded methods most commonly used involve the development and gathering of student data based on questions selected by the discipline. These questions, intended to assess student outcomes, are incorporated or embedded into final exams, research reports, and term papers or projects. The student responses are then evaluated by two or more faculty to determine whether or not the students are achieving the prescribed educational goals and objectives of the department or discipline. This assessment is a separate process from that used by the course instructor to grade the exam, report, or term paper.

There are a number of advantages to using course-embedded assessment. First, student information gathered from embedded assessment draws on accumulated educational experiences and familiarity with specific areas or disciplines. Second, embedded assessment often does not require additional time for data collection, since instruments used to produce student learning information can be derived from course assignments already planned as part of the requirements. Third, the presentation of feedback to faculty and students can occur very quickly creating a conducive environment for ongoing programmatic improvement. Finally, students tend to take this method seriously since course-embedded assessment is part of their course assignments or examinations. Course embedded assessment can be used in virtually any discipline or to evaluate general education programs.

3. Portfolio Evaluation

Portfolios used for assessment purposes are most commonly characterized by collections of student work that exhibit to the faculty and the student the student's progress and achievement in given areas. Portfolios often include samples of student work such as research papers and other projects or reports, multiple choice or essay examinations, self-evaluations, personal essays, journals, computational exercises and problems, case studies, audiotapes, videotapes, and short-answer quizzes. This information may be gathered from in-class or as out-of-class assignments and compiled electronically or in paper format.

Information about the students' skills, knowledge, development, quality of writing, and critical thinking can be acquired through a comprehensive collection of work samples. A student portfolio can be assembled within a course or in a sequence of courses in the major. Faculty determine what information or students' products should be collected and how these products will be used to evaluate or assess student learning. These decisions are based on the academic unit's educational goals and objectives.
Collecting student work over time gives departments a unique opportunity to assess a students’ progression in acquiring a variety of learning objectives. Using student portfolios also gives faculty the ability to determine the content and control the quality of the assessed materials.

Electronic portfolios are currently used to demonstrate student learning outcomes within the Baccalaureate program at MDC and within some mathematics classes. Additional information available at: http://college.livetext.com/college/portfolios.html.

In addition, InterAmerican Campus is developing electronic portfolio resources and templates as part of a Title V grant. More information on this project is available at: http://www.mdc.edu/iac/learningResources/epf/epfresources.html.

FACTS.org includes information about a free electronic career portfolio resource at: http://facts023.facts.usf.edu/portfolio/

Information about how another institution is using electronic portfolios in course and course sequence outcomes assessment, is available at: http://www.siue.edu/AQIP/goal1/ElectronicPortfolio.html

General information about electronic portfolios can be found at: http://www.ash.udel.edu/ash/teacher/portfolio.html.

4. Pre-test/Post-test Evaluation

Pre-test/post test assessment is a method where locally developed tests are administered at the beginning and at the end of courses or academic programs. These test results enable faculty to monitor student progression and learning throughout prescribed periods of time and sequences of courses. The results are often useful for determining where skills and knowledge deficiencies exist to inform curricular changes. By controlling for entry level skills, this method documents learning gains attained by students through the courses or programs.

5. Thesis or Capstone Project Evaluation

A graduating student thesis, research project, performance paper, or other project that is structured by the department to give students an opportunity to demonstrate a mastery of an array of skills and knowledge appropriate to the program can be a useful assessment instrument. This method has the advantages of being authentic and integrative, allowing the student to put their best work forward. The project or thesis may also prove useful to students as they apply to upper division institutions or for employment.

6. Capstone Course Evaluation

Capstone courses integrate knowledge, concepts, and skills associated with an entire sequence of study in a program. This method of assessment is unique because the courses themselves become the instruments for assessing student teaching and learning. Evaluation of students' work in these courses is used as a means of assessing student outcomes. For academic units where a single capstone course is not feasible or desirable, a department may designate a small group of courses where competencies of completing programs will be measured.
Capstone courses provide students with a forum to combine various aspects of their programmatic experiences. For departments and faculty, the courses provide a forum to assess student achievement in a variety of knowledge and skills-based areas by integrating their educational experiences. Also, these courses can provide a final common experience for students in the discipline.

7. Videotape and Audiotape Evaluation

Videotapes and audiotapes have been used by faculty as a kind of pre-test/post-test assessment of student skills and knowledge. In other institutions, disciplines that have experienced difficulty in using some of the other assessment methods (e.g., theatre, music, art, communication, and student teaching) have had significant success in utilizing videotapes and audiotapes as assessment tools.