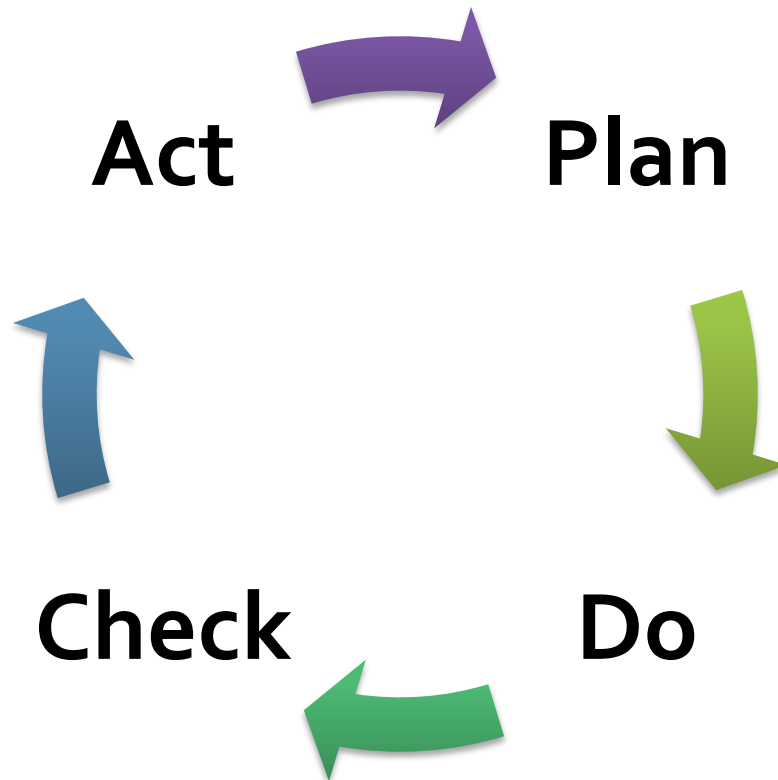


Student Learning Outcomes Assessment Handbook

A Guide to Learning Outcomes Assessment at Marymount University



Compiled by the Office of Planning and Institutional Effectiveness
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Preface: Overview of Student Learning Outcomes Assessment at Marymount University

Learning Outcomes Assessment

Learning outcomes assessment is the systematic examination of student learning during a degree program. Its primary goal is the continued improvement of academic quality for the institution.

Effective learning outcomes assessment answers three questions:

- What knowledge, skills, and attitudes will successful students have acquired upon graduation?
- How well do students perform relative to these learning outcomes?
- How can programs improve to provide a stronger academic experience to students?

Purpose of the Assessment Handbook

The purpose of this Handbook is to assist Marymount University faculty and program chairs in conducting learning outcomes assessment. It is a step-by-step resource that explains the basic concepts and processes, provides examples and strategies for meeting the specific requirements, and offers approaches for making assessment a useful tool in curricular renewal.

Learning Outcomes Assessment and Academic Quality

Marymount University has two formal mechanisms for assessing academic quality: program review and learning outcomes assessment. Learning outcomes assessment is an annual process by which faculty assess student mastery of program-level outcomes. Program review occurs every six years and examines programs' overall functioning by studying administrative data, graduate outcomes, and other measures of effectiveness. In addition, the program review also provides an opportunity for academic program faculty to examine learning outcomes data collected through the annual learning outcomes assessment.

Benefits of Learning Outcomes Assessment

When conducted properly, learning outcomes assessment has benefits for the entire institution. It benefits students by ensuring they master the material of their degree program and by providing academic and professional programs that are responsive to both their and society's needs. It benefits faculty by providing the tools necessary to lead curricular renewal and development. Finally, it benefits the entire institution by giving the institution documented evidence of student learning and achievement, thereby validating the institution is faithfully meeting its mission and goals.

Outcomes Assessment and Accreditation

Since the 1990s, issues of accountability in higher education have been increasingly common concerns of federal, regional, and state regulators. Often the standards of learning are discussed during hearings on the reaffirmation of the Higher Education Act, but to date higher education has been able to argue convincingly that self-regulation is the most effective method for ensuring academic quality and accountability. To this goal, the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC), Marymount's regional accrediting body, has greatly increased its emphasis on learning outcomes assessment.¹

¹ SACS Comprehensive Standard 3.3.1

While the SACSCOC Standards for Accreditation clearly emphasize the importance of assessment and evaluation, the standards are written with intentional breadth to allow individual member institution flexibility in their assessment activity. Institutions and programs are simply required to illustrate that they have defined learning outcomes and that student performance is evaluated to measure their effectiveness relative to those outcomes.

Various Roles in Learning Outcomes Assessment at Marymount

For learning outcomes assessment to be truly effective, it must be a University-wide process. At Marymount, there are four primary groups directly involved with assessment activity.

- Faculty develop learning outcomes, assess student performance, and provide the necessary analysis to understand learning outcomes in their programs.
- Program chairs and coordinators manage the assessment process within their programs and submit yearly assessment reports that provide evidence of the activity.
- The Office of Planning and Institutional Effectiveness coordinates and supports the overall effort and provides methodological and technical support throughout the process. This office also posts the student learning outcomes reports online annually in March.
- The University Assessment Committee (UAC), consisting of representatives from all the schools and divisions in the University, reviews and advises assessment activity to ensure that program-level assessment processes are effective and to keep the university in line with requirements of regional accreditation. The committee conducts its work by reviewing all divisional and student learning assessment reports from which specific recommendations for improvement are generated to be addressed by departments and programs (Appendix D). The divisional and student learning outcome assessment reports as well as UAC findings are used to provide evidence, where appropriate, in the budget process.

Six Steps of Student Learning Outcomes Assessment

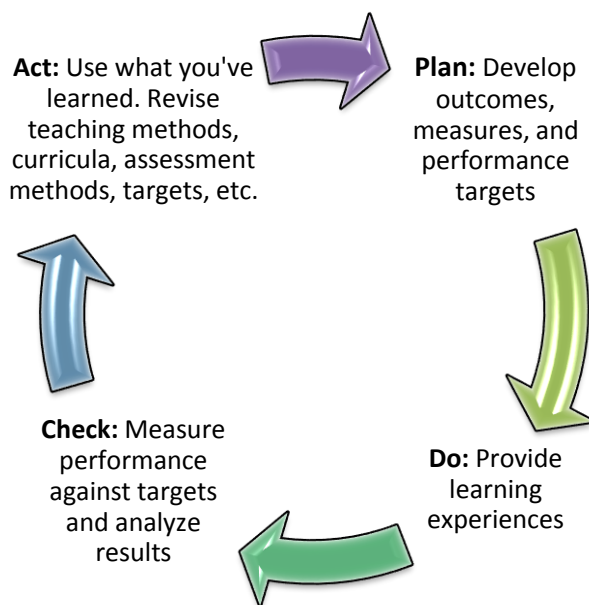
There are six steps of learning outcomes assessment: develop/revise learning outcomes, design outcome measures, collect data, analyze and evaluate data, write the assessment report, and plan for the next assessment cycle. The Assessment Handbook is divided into sections addressing each of these steps. Each section provides a basic overview of the goals and purpose of the step, lists the specific activities for departments associated with the step, and offers suggestions and potential strategies for effectively completing the step.

Six Steps of Learning Assessment

- 1. Develop/revise learning outcomes*
 - 2. Design outcome measures*
 - 3. Collect data*
 - 4. Analyze and evaluate assessment data*
 - 5. Write the yearly assessment report*
 - 6. Plan for next assessment cycle*
-

The ideas and suggestions for completing the steps are intended to provide useful information for faculty and department chairs. Since each academic department differs in terms of size, approach, and outlook, it is important to ensure that the assessment approach matches the needs of the program. Staff from the Office of Planning and Institutional Effectiveness staff are available to discuss any thoughts or ideas to help programs build a learning outcomes assessment program that meets its needs.

Cyclical Nature of Learning Assessment



Since the primary goal of learning outcomes program assessment is continued improvement of the quality of education offered by Marymount University, the process is cyclical in nature. Assessment is an ongoing process that should grow and change as programs evolve and develop.

Academic Program Assessment Calendar of Activity

The following calendar is designed to provide a timeline for typical assessment activity. September is typically the month during which the prior year’s cycle is wrapped up while the next year’s activity is planned.

Steps	Month	Suggested Activities
Develop Plan	September and October	<ul style="list-style-type: none"> • Develop/revise learning outcomes • Decide appropriate types of outcomes measures • Outline basic data and its sources
	November-December	<ul style="list-style-type: none"> • Revise processes as needed, in response to feedback from the University Assessment Committee • Create or modify outcome measures tools (rubrics, scales, tests, etc.) • Establish performance standards for successful completion by students • Begin data collection
Collect Data	January	<ul style="list-style-type: none"> • Continue data collection

Steps	Month	Suggested Activities
	February and March	<ul style="list-style-type: none"> Rate student work and record data (Rating student work on a continual basis can ease work flow issues during late spring)
	April	<ul style="list-style-type: none"> Continue data collection; rate student work and record data Meet with faculty to examine the assessment process; review preliminary data
	May	<ul style="list-style-type: none"> Rate and record data Receive results of institutional surveys
	June	<ul style="list-style-type: none"> Collect data from external sources (i.e. certification exams, licensure exams)
Analyze Data and Report Results	July	<ul style="list-style-type: none"> Analyze and interpret assessment data (Director of Institutional Assessment is available for assistance in analysis and interpretations of the data)
	August and September	<ul style="list-style-type: none"> Discuss results of the assessment with department faculty Develop strategies to improve program based on assessment data and analysis Finalize the assessment report including decisions made and changes to program if appropriate. Submit Annual Assessment Report to Planning and Institutional Effectiveness (September 30)

Section I: Developing Learning Outcomes

The first step in learning outcomes assessment is the creation of outcomes, which reflect the core knowledge and material of the program. Most programs have previously developed learning outcomes, so this step of the process allows for re-examination and potential revision. The development of learning outcomes should capitalize on the depth of knowledge of the faculty and thereby help shape the nature and direction of the program.

Checklist of Needed Activity for Developing Learning Outcomes:

- Three (3) separate learning outcomes developed
- Evidence of faculty participation in developing learning outcomes
- Verification that outcomes are: appropriate for course or program level, important, observable, and measurable

This section describes characteristics of strong learning outcomes, provides suggestions on how to develop outcomes, and discusses a process by which programs can scrutinize learning outcomes to ensure their strength.

Effective Learning Outcomes

Learning outcomes are statements that specify what students will know or be able to do as a result of earning their degrees. **Effective outcomes are usually expressed as knowledge, skills, or abilities that students will possess upon successful completion of a program.** They provide guidance for faculty regarding content, instruction, and evaluation, and serve as the basis for ensuring program effectiveness. Because we evaluate student performance in terms of specific actions, the strongest learning outcomes are measurable and observable.

Strategies for Developing Effective Learning Outcomes

Prior to beginning the program’s learning outcomes assessment activity, the chair and faculty may wish to meet with the Director of Institutional Assessment. This person can discuss the entire process, explain potential university resources, and answer questions on the process.

To start the process, program faculty may want to compile a list of the key knowledge skills and attitudes that students acquire during the program. The chair may call a meeting of faculty or seek suggestions via e-mail. “Tool 1: Key Questions to Consider When Drafting Outcomes” may be useful to generate the list of core components.

Tool 1: Key Questions to Consider When Drafting Learning Outcomes

- What is the most essential knowledge students need to have acquired upon successful completion of the program?
- Are there specific skills or abilities students need? What are they?
- How does the program attempt to shape students’ attitudes or views regarding the discipline or profession?
- How do these skills, abilities, or habits of mind relate to the university’s mission and core competencies?

From the list of core ideas, the faculty then need to select **at least three (3)** from which to write learning outcomes. It is very likely that more than three issues will develop from conversation. While programs are asked to focus typically on at least two learning outcomes each year, non-selected material can be assessed over the next year. **One strategy to simplify the process is to develop a comprehensive set of learning outcomes and examine them on a regular cycle.**

After identifying the knowledge, skills and abilities that the program faculty want to assess, actual learning outcomes are drafted. Drafting outcomes can be a long process requiring multiple versions to capture the true essence of core ideas. One way to help simplify the process is use an opening such as **“Upon successful completion of this program, students will be able to...”** and then focus on the actual essence of the outcome.

Selecting the Right Verb

Given that learning outcomes focus on observable and measurable actions performed by students, the selection of an action verb for each outcome is crucial. Determining the best verb to use in a learning outcome can be challenging because of its need to accurately reflect the knowledge, skills and abilities being studied. “Tool 2: Common learning outcome action verbs” provides a brief list of verbs that are used in writing learning outcomes at the collegiate level. *Bloom’s Taxonomy of Educational Objectives*, readily available from resources on the web, is an outstanding tool to assist in framing outcomes.

Tool 2: Common Learning Outcome Action Verbs

Define	Identify	Describe
Explain	Interpret	Compare
Solve	Apply	Illustrate
Analyze	Correlate	Criticize
Evaluate	Design	Compose
Create	Plan	Formulate
Hypothesize	Integrate	Categorize
Estimate	Select	Conclude

Source: Bloom’s Taxonomy

Certain verbs are unclear and subject to different interpretations in terms of what action they are specifying. Verbs/verb phrases such as “know”, “become aware of”, “appreciate”, “learn”, “understand”, and “become familiar with” should be avoided; they frequently denote behavior that is not easily observed or measured.

EXAMPLE: Making a learning outcome stronger

The following illustration shows how the questions in *Tool 3: Evaluating learning outcomes* can be used to strengthen weaker learning outcomes. This example is carried throughout the Assessment Handbook to show how to make the whole process easier.

The original learning outcome reads:

- ❖ ***Upon successful completion of this program, students will be*** exposed to case studies documenting the use of ethical reasoning in daily decisions.

We evaluate this learning outcome by asking the questions found in *Tool 3: Evaluating learning outcomes*.

- “Is the action done by the students?” **No**, the action is not done by students, but by the faculty who present the case studies.
- “Is the specified action observable?” **Yes**, the action is observable, as students could be observed as they are exposed to the case studies.
- “Can the specified action be measured?” **Yes**, the action can be measured by counting the number of case studies presented to students.

The revised learning outcome is:

- ❖ ***Upon successful completion of this program, students will be able to*** apply ethical reasoning in daily decisions.

By asking the same three questions as before we can evaluate the learning outcome.

- “Is the action done by the students?” **Yes**, the action is done by students.
- “Is the specified action observable?” **No**, the action is difficult to directly observe.
- “Can the specified action be measured?” **Yes**, it can be measured indirectly by asking students to comment on the extent to which they apply ethical reasoning in their daily decisions.

The department revises the learning outcome to:

- ❖ ***Upon successful completion of this program, students will be able to*** appreciate the value of ethical reasoning in their daily decisions.

Again, we evaluate the learning outcome by using the same three questions.

- “Is the action done by the students?” **Yes**, the action is done by students.
- “Is the specified action observable?” **Yes**, the action is somewhat observable by viewing the student’s actions/behaviors.
- “Can the specified action be measured?” **Yes and No. Yes**, because it may be measured indirectly by asking students to comment on the extent to which they appreciate the value of ethical reasoning in their daily life. **No**, because it is challenging to measure directly because appreciation is a concept which is difficult to define or operationalize.

Finally, the department develops the learning outcome:

- ❖ ***Upon successful completion of this program, students will be able to*** apply ethical reasoning in discussing an ethical issue.

By revisiting the three questions, the strengths of this outcome emerge.

- “Is the action done by the students?” **Yes**, the action is done by students.
- “Is the specified action observable?” **Yes**, the action is observable. The student can be given an assignment in which they are required to apply ethical reasoning.
- “Can the specified action be measured?” **Yes**, it is measurable. The expectations can be defined and the student’s performance measured against those standards.

Strengthening Weak Learning Outcomes

The process for strengthening learning outcomes re-examines the original characteristics used of strong outcomes. By asking the three questions in “Tool 3: Evaluating learning outcomes”, weaknesses in learning outcomes emerge.

Revising Learning Outcomes

The process of writing learning outcomes is not simple. Determining the outcomes a program wants to examine can pose the first challenge. In addition, drafting the outcome often takes several revisions to develop a strong one that reflects the intentions of the faculty. However, the effort put into drafting

Tool 3: Evaluating Learning Outcomes

- Is the action done by the students?
- Is the specified action observable?
- Can the specified action be measured?
- Is it important?

strong outcomes will be returned through an easier time developing measures, collecting data, analyzing the results, and ultimately making recommendations for improvement. Strong outcomes will help to focus the entire process and allow for the most useful results from the assessment process.

In addition, strong outcomes communicate to students what they will gain from your academic program. Program-level learning outcomes are included in the program description in the university catalog and can inform students what skills, knowledge, and habits of mind they are likely to acquire by selecting a particular academic program.

Section II: Designing Outcome Measures

After developing learning outcomes, the second step in the assessment process is to select outcome measures. While learning outcomes describe the knowledge, skills and abilities that students should possess after instruction (or completion of the program), outcome measures are the specific tools and methods that generate data and information about students’ performance relative to learning outcomes.

There are two types of outcome measures: direct measures and indirect measures. Each serves an important function in assessment, and when used together they provide a richer perspective on student learning by providing direct evidence and context to understand student performance.

Checklist of Needed Activity for Developing Outcomes Measures:

- At least one direct measure for each learning outcomes
- Indirect measures that will facilitate understanding of the assessment data, when appropriate
- Evidence of faculty participation in the development of measures
- Established performance standards for each measure being used
- Expected results for each measure being used

- **Direct measures** are methods for assessing actual samples of student work to provide evidence of student performance relative to the learning outcomes.
- **Indirect measures** are methods for assessing secondary information on student learning that do not rely on actual samples of student work.

Each type of outcome measure serves a particular purpose. Direct measures assess the extent to which students’ work meets the learning outcome performance standards. Indirect measures compliment direct measures by providing supportive evidence, information, and student perspective. Together they

provide a richer perspective on student learning by providing direct evidence and context to understand student performance.

Outcome Measures Should Meet Three Criteria

Regardless of the type of measure used, strong measures share three basic qualities:

- Provide sufficient data and information to measure the learning outcome
- Are not overly burdensome departments to collect
- Have established performance standards and expected results to help guide the analyses

Selecting Direct Measures

There are many issues to consider when selecting direct measures of learning. Programs should be creative in determining the most useful way to measure student performance, but at the same time ensure that the methods allow for meaning from interpretation and results. Tool 1: Sample direct measures provides a list of some of the more common methods within higher education and can help foster ideas for developing measures.

Course-embedded assessments are direct measures which use student work in specific courses to assess student learning. Students are already motivated to do their best on these assessments because they are conventionally graded on them. For example, if one learning outcome requires students to synthesize the literature on a topic in the field, student research papers may be evaluated using a rubric to assess how well they meet the learning outcome. Many classroom assignments can be used for course-embedded assessment as long as they assess a program's student learning outcome. Course-embedded assessment measures are often selected because they take place in the classroom, take advantage of student motivation to do well, and directly assess what is taught in the classroom.

Tool 1: Sample Direct Measures

- Student portfolio evaluation
- Student performances
- Thesis evaluation
- Course-embedded assessments
- Pre-test/post-test evaluation
- Capstone projects

Examinations: Many course-level student learning outcomes (SLOs) can be assessed by examinations given within the course. In some cases the outcomes measured by the examinations will be identical to the program's student learning outcomes and, the exam questions will assess both course and program outcomes. With some creativity, exam questions can also be written to cover broader program SLOs without losing their validity for course grading. In programs without capstone courses, it might be possible to write a coordinated set of exam questions that provide a fuller picture of student learning when administered in exams across a series of courses.

Analysis of course papers: Course papers can be used as measures for student learning outcomes. Because students create these papers for a grade, they are motivated to do their best and these papers may reflect the students' best work. This process typically requires development of a different rubric that focuses on program learning outcomes. Faculty committees can also read these same papers to assess the attainment of program SLOs. In most cases, this second reading should be done by someone other than the instructor or by others along with the instructor, as the purpose for the assessment is different than grading. Scoring rubrics for the papers, based on the relevant learning outcomes should be developed and shared with faculty raters prior to rating to promote interrater reliability.

Analysis of course projects and presentations: Products other than papers can also be assessed for attainment of program learning outcomes. For example, if students are required to give oral presentations, other faculty and even area professionals can be invited to these presentations and can serve as outside evaluators using the same rubric as other raters.

Student performances: In some areas, such as teaching or counseling, analysis of student classroom teaching, mock counseling sessions or other performances can provide useful measures of student learning. A standardized evaluation form is necessary to ensure consistency in assessment. One advantage of using performances is that they can be videotaped for later analysis.

Cross course measures are direct measures of student work across the program. Cross course measures examine students' work that incorporates multiple dimensions of knowledge, skills and abilities developed throughout the entire program. The most common types of cross course measures are capstone course papers and projects, and student portfolios.

Capstone courses: Capstone courses provide an opportunity to measure student learning, because this is where students are most likely to exhibit their cumulative understanding and competence in the discipline. One of the purposes of capstone courses is to provide an opportunity for students to "put it together," which typically requires students to integrate the knowledge, skills and abilities found in the program's learning outcomes.

Student portfolios: Compilations of students' work in their major can provide a rich and well-rounded view of student learning. The program usually specifies the work that goes into the portfolio or allows students to select examples based on established guidelines. By compiling a range of student work, portfolios can be used as the measure for more than one learning outcome. Portfolios can also be valuable for the student by providing a reflection of their skills and abilities. Portfolios do require strong, well-constructed rubrics to make the process of extracting assessment data manageable.

Standardized and certification exams: In some disciplines, national standardized or certification exams exist which can be used as measures if they reflect the program's learning outcomes. The examination usually cuts across the content of specific courses and reflects the externally valued knowledge, skills and abilities of a program.

Internship supervisor evaluations: If the program has a number of students who are doing relevant internships or other work-based learning, standard evaluations by supervisors using a rubric designed to measure a particular learning outcome across the duration of the internship may provide data on attainment of learning outcomes. In addition, when programs exercise control over the content of internships, those settings can serve as capstone experiences where students can demonstrate their knowledge skills and abilities.

Selecting Indirect Measures

Like selecting direct measures, there are many issues to consider when selecting indirect measures of learning. Programs should be creative in determining the most useful way to measure student performance, but at the same time ensure that the methods allow for meaning from interpretation and

results. Tool 2: Sample indirect measures provides a list of some of the more common methods within higher education and can help cultivate ideas for developing indirect measures.

Marymount University's Office of Planning and Institutional Effectiveness conducts two surveys each year that can be analyzed as indirect measures of learning. The Alumni Survey and the Graduating Student Survey both contain questions regarding the learning experience at Marymount University. In addition, programs are able to add supplemental questionnaires to the Alumni Survey that can be used to answer specific questions and issues of the program. The benefits of including these types of measures into department assessment plans are that they have built in comparisons by examining the program's responses relative to the University or school and they require limited work by chairs and faculty in collecting the data.

Tool 2: Sample Indirect Measures

- Graduating student and alumni surveys
- Employer and internship supervisor surveys
- Exit interviews and focus groups

While University surveys may provide some insights into students learning experience, they sometimes lack the specificity needed by programs in their assessment activity. Accordingly the programs may need to conduct their own primary research to address the issues. These methods may be quantitative or qualitative in nature, but should still address the key issues of strong measures.

Employer Survey: If the program is preparing students for a particular job or career field, employers' opinions of students' on-the-job performance can be an effective outcome measure. However, it is important to survey those who have first-hand knowledge of student work.

Internship Supervisor Survey: Internship supervisors may provide general feedback to programs regarding the overall performance of a group of students during the internship providing indirect evidence of attainment of learning outcomes. This should not be confused with internship supervisors' evaluation of student performance on specific learning outcomes.

Focus Groups: Focus Groups provide in-depth, qualitative interviews with a small number of carefully selected people who are thought to represent the population of interest (students in the program). For program assessment, students are brought together to discuss their perceptions of how well they achieved the program's learning outcomes.

Exit Interviews: Graduating students are interviewed individually to obtain feedback on the program. Data obtained can address strengths and weaknesses of the program and/or assess relevant concepts, theories or skills related to the program's learning outcomes.

Tool 3: Questions for Evaluating Outcome Measures

- Does the measure provide sufficient data and information to analyze the learning outcome?
- Does the measure require a reasonable amount of work to collect?
- Does the measure establish performance standards to help guide the analysis?

Area Expert Comments: Comments made by area experts can be useful in gaining an overall understanding of how students will be judged in a given field. This differs from having experts use the same rubric faculty raters use, and instead focuses on their opinion of the quality of

students' work and the program in general. This should not be considered a direct outcome measure but it can serve as a valuable indirect measure.

EXAMPLE: Improving Outcome Measures

The following illustration shows how the questions in *Tool 3: Questions for evaluating outcome measure* can be used to evaluate outcome measures. This example builds on the learning outcome developed in section one.

- ❖ ***Upon successful completion of this program, students will be able to apply ethical reasoning in discussing an ethical issue.***

A department decides to use the outcome measure:

Two questions from the Graduating Student Survey:

For each of the following skills, please indicate how well you believe your education prepared you to:

Determine the most ethically appropriate response to a situation.

Understand the major ethical dilemmas in your field.

Students respond to these questions by indicating their choice on a scale ranging from "Poor" to "Excellent."

We will evaluate this outcome measure by asking the questions found in *Tool 3: Questions for evaluating outcome measures*.

- "Does the measure provide sufficient data and information to analyze the learning outcome?" **Yes and No. Yes**, because this evidence is the student's opinion. **No**, because it is an indirect measure and indirect measures are not sufficient by themselves to analyze learning outcomes.
- "Does the measure require a reasonable amount of work to collect?" **Yes**, the amount of work required is reasonable.
- "Does the measure establish performance standards to help guide the analysis?" **No**, it does not provide a performance standard to help guide the analysis though one could be developed regarding the student opinion.

The department revises the outcome measure to:

A paper taken from student portfolios where the student discusses an ethical issue. The papers are rated by each faculty member on a specific rubric designed to measure the application of ethical reasoning.

We evaluate this outcome measured by asking the same three questions as before:

- "Does the measure provide sufficient data and information to analyze the learning outcome?" **Yes**, the measure directly measures students' application of ethical reasoning.
- "Does the measure require a reasonable amount of work to collect?" **No**, the faculty may object to having to read all the student papers and they may deem this measure too much work.
- "Does the measure establish performance standards to help guide the analysis?" **No**, there is no specific performance standard established.

The department revises the outcome measure to:

Student papers that discuss ethical issues are extracted from student portfolios. Each paper is rated by two faculty members on a rubric designed to measure the application of ethical reasoning. The mid-point of the rubric (a rating of 3) provides a description of the performance standard required by the program. The mid-point states that the paper, "Identifies the key stakeholders, states one ethical approach in their discussion, discusses both the benefits and risks associated with the ethical issue, shows consideration of key stakeholder interests, uses at least one normative principle in discussing the issue."

By revisiting the three questions, the strengths of this outcome emerge.

- "Does the measure provide sufficient data and information to analyze the learning outcome?" **Yes**, the measure directly measures student's ability to apply ethical reasoning.
- "Does the measure require a reasonable amount of work to collect?" **Yes**, it is less burdensome on the faculty to collect the data than the previous outcome measure.
- "Does the measure establish performance standards to help guide the analysis?" **Yes**, it provides a performance standard to help guide the analysis.

Establishing Performance Standards

When interpreting assessment results, it is useful to set a performance standard that specifies the acceptable level of student work or response. For each learning outcome, the program should ask “What is an acceptable performance standard for this learning outcome?” This performance standard may be a passing score on an exam, a rubric rating of “meets program standards” on a student paper or another indicator of the quality of student work.

Establishing Expected Results

By setting expected results for the percentage of students meeting or exceeding performance standards before data collection begins, the program can gauge its effectiveness in helping students meet the learning outcomes. For example: Seventy-five percent of students met the performance standard set by the department for the outcome measure on ethical reasoning. This can be compared to the expected result of 85% meeting the performance standard which reveals an area for improvement.

Evaluating Measures

It is possible to evaluate outcome measures by asking the three questions found in Tool 3: Questions for evaluating outcome measure. If faculty and chairs are able to answer “yes” to all of three questions, it is likely that a strong set of measures has been developed.

Section III: Collecting Data

Data collection is the next step in the assessment process. This section will cover the process of collecting student work and indirect measures, rating work, and storing data. The collection process may seem like a daunting task, but with planning, it can move more smoothly and provide quality data and information about the programs learning outcomes.

The data collection process consists of three basic steps:

1. **gathering** necessary student work and other information
2. **evaluating** the results
3. **storing** the data electronically

The **Gathering, Evaluating, and Storing (GES)** process is used for both direct and indirect measures; however some of the specific steps will vary. The key to simplifying the data collection process is planning. “Tool 1: Questions to Ask in Planning Data Collection” provides a number of questions to think about before gathering data.

Checklist of Needed Activity for Collecting Data:

- Direct data collected for each learning outcome and measure
- Indirect data collected, if appropriate
- Secure electronic database of both direct and indirect measures
- Examples of the student work for each performance standard in paper or electronic form.

Step 1: Gathering

The process of gathering materials for direct measures varies greatly depending on the measures used. For course-embedded measures or capstone experiences, it is necessary to coordinate with the faculty member teaching the course to ensure the student work is collected and forwarded for assessment. If a portfolio is being used, it will be necessary to determine who is responsible for putting the portfolio together.

When using indirect measures, the gathering phase consists of conducting the necessary research (survey, focus group, or other measures). Indirect measures based on secondary analysis of material (e.g. course syllabi) need these materials to be compiled. Programs should set a schedule that outlines the materials needed to simplify follow up and ensure all student work is collected.

Tool 1: Questions to Ask in Planning Data Collection	
Direct Measures	Indirect Measures
<ul style="list-style-type: none"> • Where is the student work coming from? • How will the student work be organized and stored for evaluation? • When will it be evaluated? • Who will be responsible for evaluating? • How will the performance data be stored? How will it be secured? • How will examples of student work be stored? Paper? Electronically? • Are there FERPA issues to consider? 	<ul style="list-style-type: none"> • Who will conduct the research for the measure? • When will research be done? In a class? • How will the results be tabulated or a categorized? • If you are using institutional data, will special data analysis need to be done?

Step 2: Evaluating

The evaluation phase for direct measures includes the examination of student’s work by faculty to determine the level to which it meets the learning outcome. Because assessment looks to evaluate specific aspects of the student work, rubrics are often used as guidelines in the process.

Effective rubrics, standardized evaluation forms used to assess student work toward meeting learning outcomes, can be developed in many different ways to assist the evaluation process. They can describe qualitative as well as quantitative differences; and are often used to assess assignments, projects, portfolios, term papers, internships, essay tests, and performances. They allow multiple raters to assess student work effectively by increasing the consistency of ratings and decreasing the time required for assessment. The development of rubrics is covered in Appendix A: Rubric Toolbox.

Regardless of the type or style of rubric used, there are a few general principles to ensure they are effective. “Tool 2: Steps for Using a Rubric to Evaluate Student Work” outlines the basic process of using rubrics.

The key to achieving consistency between raters is conducting a “norming” session to allow faculty raters to reach consensus on the levels of student work at each level of the performance standard. “Tool 3: Steps to “norming” a rubric” provides the basic process of a norming session.

<p>Tool 2: Steps for Using a Rubric to Evaluate Student Work</p> <ul style="list-style-type: none"> • Review the rubric with all raters to ensure it is consistently understood. • Use the descriptors in each performance level to guide ratings • Assign the rating that best represents the student’s work

For indirect measures that the department is conducting, the evaluation phase consists of the compiling of the results into a form that are meaningful to those doing the assessment. For survey data, this will generally include entering the data into a data set for analysis and generating the descriptive statistics. For more qualitative work such as focus groups, this part of the process maybe the extraction of any themes or ideas.

Tool 3: Steps In “Norming” A Rubric

- Explain to the raters how to use the rubric
- Provide samples of student work
- Discuss each sample and determine how raters determine scores
- Reach a general consensus on each level of the performance standard

Step 3: Storing

There are two different storage issues which departments need to address. The first is an electronic storage system of all the data that are compiled from students’ work and results from indirect measures. Whatever methods are used, it is generally a good idea to have a single computer to store the data. It is also a good idea to back up the files onto a CD-ROM or USB flash drive with all the materials for the year. For tracking direct (and some indirect) measures programs may create an electronic database/Excel spreadsheet to store all of their assessment data for later analysis.⁵ The database will typically list all students and their performance on the measure. Tool 4: Example of a program database illustrates how to compile the database of assessment data.

Because this database will have individual student information, it is very important to ensure it remains secure and that only faculty and staff involved in the assessment activity have access to the contents.

Many times, however, indirect measures may not be trackable by specific students. For these types of measures a descriptive report of the results will be useful as the program reviews the direct measures.

The second storage issue facing the department revolves around copies of student work and responses to questionnaires. It is generally advisable to retain copies of or access to the direct measures until the University Assessment Committee has reviewed the final report. If these examples contain either students’ names or student id numbers, it will be necessary to maintain a secure filing system. “Tool 5: Protecting Student Identification” provides a procedure to limit inappropriate access to student information. While this requires a bit of work upfront, it can help the program avoid thorny issues later.

Tool 4: Example of a Program Database					
Last Name	First Name	Year	LO 1: Portfolio Rating	LO 1: Senior Exit Interview	LO 2: Paper Rating from 300-level course
Allan	Jane	Senior	4	More writing needed	4
Miller	Larry	Senior	5	Not present	5
Smith	Bob	Senior	3	More writing needed	3
Bloom	Desmond	Junior			
Jones	Robin	Junior			3
Smith	Troy	Junior			1

⁵ The Office of Institutional Effectiveness can assist in setting up a database/spreadsheet if needed.

Additionally, it is recommended that samples of students' work be stored to document the assessment process. Generally for each direct measure, an example at each level of the performance standard should be saved. Electronic copies of student work can reduce space required for storage and allow the original work to be returned to the students. These documents can be scanned and stored as PDF files to help limit the amount of storage space necessary.

Student Awareness of Assessment Activity and Privacy Issues

Students should be aware that their work may be used in the assessment purposes. Tool 6: Syllabi statement regarding student work in assessment provides an example of a statement that departments may want to use. By incorporating the statement on select or all program courses the department informs students about its assessment work.

As noted in the section about keeping data work secure, student work is protected by The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99). To comply with FERPA regulations, student work should either be maintained in a secure system with access limited to those involved in assessment or should have all personally identifiable information removed. Even without a name, some student work is considered identifiable if it contains sufficient information about the student to enable the author to be identified.

Tool 5: Protecting Student Identity

- Assign a unique numeric code to all students enrolled in program (Do not use student ID or Social Security Number)
- Store number in secured database
- Collect student work with name
- Print appropriate code on each example of student work
- Redact work to eliminate evidence of authorship

Tool 6: Syllabi statement regarding the retention of student work

Notice:

Copies of your coursework including any submitted papers and/or portfolios may be kept on file for institutional research, assessment and accreditation purposes.

Due to the small numbers of students in many of Marymount's academic programs, data should be collected on each student to maximize the information regarding how well the students have achieved their respective programs' learning outcomes.

Strategies for Collecting Data

By reviewing the original planning questions in "Tool 1: Questions to Ask in Planning Data Collection" before collecting data, programs can avoid many potential roadblocks in the data collection process. The following example lists three common roadblocks that can occur during this process and illustrates an effective plan for data collection.

EXAMPLE: Collecting Assessment Data from Direct Measures Effectively

There are three common roadblocks that can stifle the collection of assessment data.

1. Data are not collected for stated outcome measures
2. Copies of student work are collected but cannot be found at the time of evaluation
3. There is no clear system for the evaluation of student work resulting in no data for analysis

The following example illustrates how to avoid these roadblocks and plan for effective data collection. By answering the questions in *Tool 1: Questions to ask in planning data collection* before data is to be collected, an effective plan can be developed. The example uses the learning outcome and outcome measures found in previous sections. The learning outcome chosen by the program is:

❖ ***Upon successful completion of this program, students will be able to apply ethical reasoning in discussing an ethical issue.***

It will be measured by a direct measure:

Direct Measure: A paper taken from student portfolios where the student discusses an ethical issue

The first common roadblock, data are not collected, can be avoided by identifying where the student work is coming from. The program chair decides that the instructor of the capstone course will collect copies of student work from the student electronic portfolios upon submission. This course is offered in both the fall and spring semesters and accordingly student papers will be collected by the instructor during both semesters. The instructor will remove the students' names from and affix unique numeric assessment codes to the papers.

The second roadblock, copies of student work cannot be found for evaluation, is discussed by the faculty and a system for organizing and evaluating the student work is developed. The capstone course instructor will submit electronic copies of the students' papers to program chair who will store them on the programs secure network drive. This will ensure the data are available for evaluation.

The third common roadblock, no clear system for evaluating student work, is avoided by developing a schedule for evaluation of student work. The faculty agree to serve as evaluators on a rotating schedule to divide the work equally. The instructor of the capstone course will not evaluate the students' papers for assessment purposes to avoid instructor bias. Each paper will be reviewed by two faculty members using the rubric developed for this outcome measure. If the reviewers' ratings do not agree, a third faculty member will review the paper and assign a final rating. Ratings will be recorded on a 1 to 5 scale.

Ratings of student work will be stored in an Excel database located on the program's secure network drive and maintained by the program chair. Examples of student work for each level of student performance will be stored as PDF files on the network drive and maintained by the program chair. These examples will be identified only by the unique assessment number assigned to each student in order to comply with FERPA and ensure the confidentiality of student work. The program decides that a backup copy of the database and copies of student work will be saved on a CD-ROM stored in the program chair's locked filing cabinet.

EXAMPLE: Collecting Assessment Data from Indirect Measures Effectively

There are three common roadblocks that can stifle the collection of assessment data.

1. Data are not collected for stated outcome measures
2. Copies of student work are collected but cannot be found at the time of evaluation
3. There is no clear system for the evaluation of student work resulting in no data for analysis

The following example illustrates how to avoid these roadblocks and plan for effective data collection. By answering the questions in Tool 1 before data is to be collected an effective plan can be developed. The example uses the learning outcome and outcome measures found in previous sections. The learning outcome chosen by the program is:

❖ ***Upon successful completion of this program, students will be able to apply ethical reasoning in discussing an ethical issue.***

It will be measured by an indirect measure:

Indirect Measure: Two questions from the Graduating Student Survey (GSS)

For each of the following skills, please indicate how well you believe your education prepared you to:

Determine the most ethically appropriate response to a situation.

Understand the major ethical dilemmas in your field.

Students respond to these questions by indicating their choice on a scale ranging from “Poor” to “Excellent”

The first common roadblock, data are not collected, can be avoided by identifying where the student work is coming from. For this indirect measure, GSS data will be obtained from the Office of Planning and Institutional Effectiveness. Because the data are collected across the institution annually, the first roadblock is avoided.

The second roadblock, copies of student work cannot be found for evaluation is discussed by the faculty and a system for obtaining the data on the program’s students is developed. The program chair volunteers to request the survey data for students in the program. This requires a special extraction of the responses for the program’s graduating students from the main survey database.

The third common roadblock, no clear system for evaluating student work, is avoided by developing a schedule for evaluation of student work. The data will be analyzed by a designated faculty member to determine the percentage of students responding at each level of the measurement scale for each question. The results of this analysis will be stored in the secure Excel database on the programs’ secure network drive. This avoids roadblocks two and three in this example.

Section IV: Analyzing Assessment Data

Analysis of data is the next step in the assessment process. Analysis is a process that provides better understanding of data and allows inferences to be made. It summarizes the data, enhances the value of

information gathered and provides direction for decisions regarding program improvement. While data analysis can be relatively complex, for the purpose of assessment it is usually basic.

This section discusses the core elements of data analysis and provides strategies for and examples of analysis. The underlying theme of this section is to illustrate how to link data to the learning outcomes and provide a basis for using data to improve student learning.

Before Analyzing Data

Two important steps should be completed before analyzing data. The first step is to review the data visually. Reviewing data has two benefits: It allows for the identification of outliers and possible mistakes, and it enables basic patterns or trends to emerge. For example, it may be clear that all students who took a particular class had difficulty with a particular outcome.

Checklist of Needed Activity for Analyzing Assessment Data:

- An indication of the number of students participating in the assessment activity for each outcome measure
- The percentage of students who met or exceeded the performance standard for each outcome measure.

The second step of the process is to determine the appropriate method for analyzing the data. This can range from simply counting the number of successful students to higher powered statistical analyses. The two key factors are first to make sure the analysis method fits the data; and second, to ensure that method aligns with the program's needs. There are two types of data used in assessment each with different methods of analysis.

Categorical data are based on groupings or categories for the evaluation of student performance. For example a simple passed/failed score is categorical because there are two groups into which students can be placed. Often rubrics generate categorical data by using a scale of "exceeding expectations," "meeting expectation," and "failing to meet expectations".

Numerical data are based on scales that reflect student performance. Tests which are scored based on the percentage of questions answered correctly generate numeric data.

Direct measures can generate either categorical or numerical data. Student's papers rated on an assessment rubric may be categorized as "meeting standard" or "failing to meet standard". However the papers may be scored on a numerical scale indicating the overall quality of the paper with respect to the learning outcome.

Indirect measures can also generate either categorical or numerical data. By asking students on a questionnaire: "Did you have sufficient writing in the program?" a program would compile categorical data based on those saying "yes" and those saying "no." However, by asking students to indicate how strongly they agree with a statement like "there was sufficient writing required in my program", numeric data could be generated by applying an agreement scale. (5 – Strongly Agree, 4 – Agree, 3 – Neither, 2 – Disagree, 1 – Strongly Disagree).

Analyzing Assessment Data

Once the data have been reviewed and the type determined, the process of analyzing data follows. "Tool 1: Methods For Analyzing Data" provides a brief overview of the basic methods used to analyze assessment data.

Assessment's focus on student achievement of learning outcomes typically requires the determination of counts and percentages. Together they show clearly the number of students involved in the activity and the rate of successful display of the outcome. All data, regardless of type can be analyzed using counts and percentages.

Numeric data has the additional benefit of being able to be analyzed using descriptive statistics. Mean, median, and mode provide useful information to interpret data by allowing for easier comparison between groups and tests for significant differences.

The Impact of Dispersion

By examining how data are distributed around measures of central tendency, particularly the mean and median, a richer understanding of the data emerges. The standard deviation represents the average deviation of scores about the mean. Small standard deviations in student performance indicate that performance levels varied little across students in the sample. Large standard deviations indicate a greater variability in levels of student performance. Standard deviations are commonly reported with the mean. Percentiles represent the percentage of a distribution of scores that are at or below a specified value. They are calculated by the formula $Percentile = S_b/n \times 100$, where S_b is the number of scores below the score of interest, and n is the total number of scores. They are often reported with the median which by definition is the 50th percentile. For example: a median score of 75 on a final exam would be the 50th percentile indicating 50% of students scored above 75 and 50% scored below. By examining the 25th, 50th, and 75th percentiles one can gain a sense of a student's performance relative to the group.

Tool 1: Methods For Analyzing Data

- **Percentage:** Proportion of total cases falling into a category
- **Mean:** Average of a set of scores
- **Median:** Middle value in an ascending list of scores
- **Mode:** Most frequent score
- **Standard Deviation:** Average distance of scores from the mean
- **Percentile:** Percentage of a distribution of scores that is equal to or below a specified value.

Missing Data and Valid Responses

Working with assessment data, there are many instances when data will not be available for every student. As a general rule, missing data should be excluded from calculations of percentages and descriptive statistics. If a program has ten (10) students, and eight (8) submit a needed paper for the assessment of an outcome; then eight (8) submitters become the basis of the analysis. Extending the example, if six (6) of the submitted papers meet or exceed the performance standard, then a program would indicate 75% of students submitting papers showed mastery of the outcome rather than 60% of all students in the program.

Presenting Analysis

Tables and graphs are useful in presenting analysis because they focus attention to specific results. Tables are useful for reporting multiple percentages and frequencies, comparison of student performance with stated performance standards and some descriptive statistics. They provide an ordered way for readers to see results quickly for each outcome measure without having to search through text to find a particular result. Graphs can further enhance the visual impact of assessment. Graphical representations of results show differences in variables, which makes graphs highly effective in showcasing assessment results.

When sharing the results of program assessment, it may be useful to report each learning outcome and outcome measure paired with the corresponding results of the analyses, which joins the multiple outcome measures (direct and indirect) for each learning outcome. Next, compare the results with the

specified performance standard and discuss the implications of the data as they relate to the program. Both strengths and areas for improvement are discussed, because showcasing program success is just as important as identifying areas for improvement, when it comes to making data based decisions about the program.

Tool 2: Example of Table of Counts and Percentages				
	# of students evaluated	% of students		
		Below Performance Standard	Meeting Performance Standard	Above Performance Standard
Demonstrate critical thinking and writing skills within the discipline	20	30	50	20
Apply specialized knowledge within Anthropology and related fields	18	5	5	90

When comparing student performance to specified performance standards, a table with the counts and percentages may be useful to summarize the data. The example in “Tool 2: Example of Table of Counts and Percentages” shows data collected from 20 student portfolios for two learning outcomes. It indicates the number of students completing the portfolio component and the percentage who were

EXAMPLE: Conducting Analysis of Student Performance

Once the student ethics papers in Section III have been evaluated by faculty, the data is recorded and analyzed for interpretation. Analysis provides summaries of the data in a form that is more easily understood than raw data. In order to do this the program chair reports the number of students who meet or exceed the standard for this learning outcome measure. This count might be displayed in the chart below:

Students Meeting or Exceeding the Performance Standard for Ethical Reasoning
35

While this gives a count of the number of students meeting or exceeding the performance standard in Section III; it is also valuable to further classify their students’ abilities.

Students Meeting or Exceeding the Performance Standard for Ethical Reasoning		
Below Standard	Met Standard	Exceeded Standard
5	20	15

This table shows that fifteen (15) students in the program exceeded the standard, but numbers by themselves are sometimes difficult to interpret. To facilitate greater understanding, reporting the percentage of students below standard, those meeting the standard and those exceeding the standard aid in interpretation of the data. The table below shows this.

Percentage of Students Meeting or Exceeding the Performance Standard for Ethical Reasoning		
Below Standard	Met Standard	Exceeded Standard
12.5 % (5)	50% (20)	37.5% (15)

Choosing how much information to provide from any data analysis should be guided by the type of data gathered and also the needs of the readers that will be interpreting the results. The analyses may vary for each learning outcome measured.

below, met and above the performance standard. While 70% of students in the sample achieved or exceeded the standard, 30% were below the performance standard.

The Role of Advanced Statistical Analysis

As a program's assessment activity and data increase, more advanced analysis may be useful in understanding student learning. It is possible to:

- Study differences in performance to examine the effects of curricular change
- Conduct pre and post assessments to evaluate effect of specific learning experiences
- Compare program students to national performance on certification examinations

The Office of Planning and Institutional Effectiveness will work with programs looking to incorporate these and other types of analysis into their assessment activity.

Section V: Reporting Results

The next step of the cycle is reporting results of program assessment. This phase focuses on interpreting strengths, areas for improvement, and identifying recommendations to enhance student learning. There are two steps in writing the assessment report:

1. Working with faculty to understand assessment results
2. Writing the final assessment report

Working With Faculty to Understand Assessment Results

Including program faculty in all steps of the assessment process is important to ensure its meaningfulness and effectiveness. The inclusion of faculty insights is probably most important in interpreting results and identifying strategies for improving student learning. The methods used for sharing results is driven by character of the department, with some pouring over all the data generated and others simply reviewing summary analysis outlined in Section IV of the handbook. Using summary reports of assessment results, and the University Assessment Committee's review of the previous year's report will typically facilitate rich discussion and generate useful interpretation for the assessment report.

Writing the Assessment Report

The assessment report is the document which summarizes a program's assessment activities, program decisions, and future directions. The report is reviewed by the University's Assessment Committee and used by the academic program to evaluate its effectiveness. This report also serves as the principle evidence of learning outcomes assessment for institutional accreditation. It is typically compiled by the program chair or assessment coordinator and faculty based on the work outlined earlier in this Handbook. The report contains three components: Executive Summary, Outcome Reports, and Appendix of Supporting Material.

Checklist of Needed Activity for Reporting Assessment Results:

- One completed outcome-specific report for each learning outcome assessed during the year which includes results, interpretation, and implications
- An executive summary including a list of student learning outcomes, description of the overall findings, any challenges the program faced in its assessment activity, and recommendations from the UAC.
- An appendix of materials used in the assessment process including direct and indirect measures

The Executive Summary, through its different sections, provides a brief history of previous assessment activities and linkages to school and university mission. This section includes the following components:

Description of where documents are stored provides direction for finding assessment data. It is advisable for programs to retain (or have access to) student work generating assessment data for one year. This allows for easy reference while the University Assessment Committee is reviewing the report. This can be done either in paper form or electronically. Programs should maintain samples of student work for each level of performance standards used in the assessment activity (e.g. exceeding the standard) as part of the report to make future examination possible.

List of all outcomes past and present provides an ongoing history of learning outcomes for the program. All learning outcomes should be included in this list.

Description of linkage to departmental and university mission refers to specific aspects of the school and university mission that relate to the program. Completing this section requires an explanation of how the program connects to the university mission and school plan. See “Tool 1: University Mission and Link to Strategic Plan for further information.”

Provide a brief description of the assessment process used including strengths, challenges and planned improvements and provide evidence of the existence of a culture of continuous improvement based on assessment.

Describe how the program implemented its planned improvements from last year. It is important to provide the program and reader with an understanding of what occurred and why. See “Tool 2: Example of Documentation of Implemented Planned Improvements.” The following information needs to be included in this section:

- Description of the specific planned improvement for each outcome
- How the program concluded that improvements needed to be made
- Who was involved in the implementation
- When the completion occurred

Respond to University Assessment Committee recommendations. Each program will receive a report from the UAC with one of the following boxes selected:

Report accepted as submitted – If this box was selected, indicate that the report was accepted as submitted.

Report accepted pending minor revisions – If this box was selected, indicate that very minor revisions are needed and affirm that they were made.

Tool 1: University Mission and Link to Strategic Plan

University Mission

Marymount University is a comprehensive Catholic university, guided by the traditions of the Religious of the Sacred Heart of Mary, which emphasizes intellectual curiosity, service to others, and a global perspective. A Marymount education is grounded in the liberal arts, promotes career preparation, and provides opportunities for personal and professional growth. A student-centered learning community that values diversity and focuses on the education of the whole person, Marymount guides the intellectual, ethical, and spiritual development of each individual.

See University portal for Strategic Plan

Tool 2: Example of Documentation of Implemented Planned Improvements

Outcome	Planned Improvement	Update (<i>Indicate when, where, and how planned improvement was completed. If planned improvement was not completed, please provide explanation.</i>)
Apply ethical reasoning in discussing applied issues.	Add a case-study assignment to ANT-201 that reinforces ethical theories learned in ANT-150	The professor who primarily teaches ANT-150 reviewed the course syllabus and decided to add a homework assignment to week 5 in which students reflect on the ethical consideration of a research project.
Write a coherent argument using primary sources	Invite the library faculty to PUB-300 to review finding primary sources	We decided against this planned improvement because starting in the fall PUB-300 is no longer a requirement for the major. Instead we have decided to work with the library faculty to develop an online refresher that will be targeted to a series of elective courses

Revisions required to accept report this year – If this box was selected, describe what actions needed to be taken to have the report accepted and indicate if they were indeed taken.

Recommendations for next year’s assessment process – If this box is selected, list each recommendation and if it was or was not implemented. A thorough response to this item gives context for why recommendations were or were not acted on.

Outcome Reports examine each learning outcome individually (see Appendix B). This section of the report is divided into two sections: Assessment Activity, and Interpretation of Results.

Assessment activity describes each component of the assessment process for each outcome. It includes the following sections:

Outcome measures includes a description of each measure used to assess this outcome and whether it is an indirect or direct measure.

Performance standard defines the assessment criteria and how well students (overall) are expected to perform on this measure. This section also includes a justification for the expected performance level. For example, if a new outcome was added to the program, students may not be expected to perform at 80%, but rather 50%. It is important to explain the justification for this standard not only for the reviewers but also to create and maintain a record for the program.

Data collection explains the collection procedures. A clear description of this process will also allow for easy replication in the future. “Tool 3: Data Collection Questions” gives a list of three basic questions to address when completing this section of the report.

Analysis section describes results and how data were analyzed. The following questions should be addressed:

1. What approach was used to analyze data?
Average scores on a multiple-choice test?
Percent rated in each category on a rubric?
2. What did you find? What are your results?
3. Did you have the level of participation expected? Did you receive data from all courses who should have contributed? How many participants are missing? Does the work received provide a good sample to determine if the learning outcome was or was not achieved?

Tool 3: Data Collection Questions

- How were data collected? Did each professor ask students to submit two copies of papers so that one copy could be used for the assessment? Did the chair ask each faculty member to submit papers to him/her?
- When was data collection? Fall semester? Spring semester?
- Which students were included? Students in a specific course? Seniors? Juniors?

Interpretation of results provides meaning to the data collected in the assessment process and includes the following three sections:

Extent this learning outcome has been achieved by students discusses how well students performed on each measure (direct and indirect) by summarizing information from the Analysis section for each measure. In this section, the outcome is viewed as a whole entity and not in its component parts as in the Assessment Activity section.

Program strengths and opportunities for improvement relative to assessment of outcome requires the program to define where students are performing at the highest and lowest, and what this means for the program. How do results indicate that the department is adequately supporting (or not supporting) this learning outcome?

Discuss planned curricular or program improvements for this year based on assessment of outcome. This section describes the plan for action for the next year. Planned improvements usually address one of the following areas:

- Courses supporting learning outcomes
- Learning outcomes
- Measures (rubrics, tests, surveys)

Appendix of Supporting Materials is a compilation of materials that aids in the understanding of the outcome reports and the executive summary. Tool 3: Items often included in assessment report appendices lists the types of materials that are most commonly included. Appendices should include copies of all assessment instruments including rubrics. By including items such as rubrics and other measures in the appendices, those who read the assessment report will have a better understanding of how the results were achieved and a context for interpreting recommendations for improvement.

Tool 4: Items Often Included In Assessment Report Appendices

- Notes from meetings with faculty
- Examples of outcomes measures
- Rubrics used to score student work
- Questionnaires used in indirect measures
- Charts and graphs illustrating results of data analyses
- Reports from institutional surveys

Section VI: Planning for the Next Assessment and Closing the Assessment Loop

Assessment is a cyclical process that builds on previous work and activity. The “assessment loop” is closed once a program takes findings from its assessment results and implements changes based on those findings. Generally, assessment findings indicate a need to modify the assessment process or the academic program. Making any change also requires consideration of resources and developing a plan of action. The following section provides a framework for thinking about taking action to close the assessment loop.

Checklist of Needed Activity for Planning and Implementing Changes:

- Results from current assessment cycle
- Draft of assessment report

Changes in the Assessment Process

When reviewing the assessment results, it is also important to evaluate the assessment process. This involves considering all aspects involved in creating the assessment report. Reviewing learning outcomes as well as approaches to gathering data will provide direction on improving the assessment process.

Learning Outcomes

“Tool 1: Re-Assessing Learning Outcomes” provides a structure for reviewing student learning outcomes. Based on findings from the student learning outcome assessment results, a program may want to retain, modify, or eliminate an outcome.

Tool 1: Re-Assessing Learning Outcomes	
Results From Assessment Activity	Likely Use of Outcome During Next Cycle
Students not performing adequately relative to outcome	<ul style="list-style-type: none"> • If recommendations impact student learning immediately, re-assess outcome using same measure during next cycle. • If recommendations impact student learning over an extended timeframe; schedule re-assessment for later
Students performing adequately relative to outcome	<ul style="list-style-type: none"> • If same results for the past 3 years, consider replacing this outcome. Potentially schedule re-assessment at an appropriate interval (e.g. three years)
Students performance relative to outcome yields unclear current results	<ul style="list-style-type: none"> • If difficulty in determining appropriate level relates to outcome; re-write outcome and reassess during next cycle • If difficulty relates to measures; retain outcome; revise measure; and re-assess during next year

Measures

In addition to changing outcomes, there might be a need to change the type of data collected. If results obtained were not as expected, it is also important to know if better information could

be collected to demonstrate student learning. This change could vary from modifying items on a multiple-choice test to creating a new rubric for reviewing essays.

Data Collection Procedures

In addition to having the correct measures, it is also important to consider how data were collected in previous student learning assessments. Knowing who was included in the assessment data and when data were collected are important to understanding if changes need to be made in data collection procedures.

Changes in the Academic Program

Results from the student learning assessment may indicate that program curricula need to be reviewed and adjusted. Mapping learning outcomes to the curriculum is the first step to understanding if changes are necessary. Changing how concepts are introduced and the timing of that introduction to students are two common findings from student learning assessments.

Mapping Outcomes to the Curriculum

Results may indicate a need to understand where students are introduced to concepts defined in the learning outcomes. Mapping learning outcomes to program courses is the first step in understanding where students are introduced to the material they need to master. See “Tool 2: Sample Curriculum Map” and the example below as guides to develop a curriculum map.

Tool 2: Sample Curriculum Map					
Required Course	Program Outcome 1	Program Outcome 2	Program Outcome 3	Program Outcome 4	Program Outcome 5
xxx-101	“√” or “high, medium, low,” or “I – Introduced, R-reinforced and opportunity to practice, M-mastery at the senior or exit level “				
xxx-102					
xxx-201					
xxx-nnn					
xxx-nnn					
xxx-nnn					

Examining Concept Reinforcement

Often programs will discover that students are introduced to the concept in the curriculum, but course assignments and planned experiences are not sufficient to help students master those concepts. This may lead to considering modifications in assignments, readings, or general teaching approaches to reinforce concepts with students. A program may also discover that a new course needs to be created to sufficiently address a learning outcome

Examining Course Sequencing

Sometimes faculty will discover that the course provides sufficient support for the student to master the material, but course sequencing should be adjusted so that students are introduced

to concepts that build on and complement each other. The student learning assessment process can be used as an audit of the programmatic educational experience.

EXAMPLE: Mapping Learning Outcomes to Curriculum

The music department wants to understand why students are more successful in demonstrating their music theory knowledge than other learning outcomes. The department mapped learning outcomes to courses and made the following discoveries:

- Music Theory was reinforced more than the other learning outcomes with two courses (Music Theory I and II).
- Only one course was offered that addressed society and music (Music and Ancient Greece).
- Students only received one course (Music Composition) in composition.

Music Major Course Map

Learning Outcomes	Courses			
	Music Theory I	Music Theory II	Music Composition	Music and Ancient Greece
Apply understanding of music theory in analysis of a classical piece	x	x		
Analyze the impact of music on modern society				? maybe
Create a musical piece incorporating three basic points of musical composition			x	

After reviewing their findings, they planned to change the curriculum as follows:

- Add another composition course
- Modify the Music and Ancient Greece course to cover different periods in history

Consider Resources

Closing the assessment loop may require the use of additional resources. Discovering the need for additional course sections or courses may require resources beyond current budgets. In addition to fiscal resources, there are other resources such as time to consider. Modifying tests or creating new materials requires time, which is a valuable resource.

Taking Action

Opportunities to improve the assessment process and curriculum may emerge from assessment results, but will not be realized without planning and implementation. The assessment loop is only closed if actions are taken to make modifications where necessary. Answering who, what, when, and where questions about assessment modifications are helpful to planning and implementing any changes. “Tool 3: Questions for Planning Change” provides a few questions to assist with mapping and implementing changes.

Tool 3: Questions for Planning Change

- Who will implement the changes?
- Who needs to be involved to make these changes successful?
- What will be changed?
- What needs to occur in order for things to change?
- When will the changes be put in place?
- Where will they be implemented?
- How will they be implemented?

Appendix A: Rubric Tool Box

Rubrics are sets of guidelines that aid in the assessment of student work or activities. Rubrics are often derived from careful analysis of varying qualities of student work. For example, a professor has student work from a recent assignment. By examining the student work and defining the characteristics of “below performance standard” papers, papers that “meet the performance standard,” and papers that “exceed the performance standard,” the professor has a good start on developing a rubric that will categorize the students’ papers based on quality. Rubrics increase the reliability of assessment by making the process of scoring student work more consistent. This helps eliminate bias by ensuring student work is rated on the same criterion.

Types of Rubrics

There are three basic types of rubrics: **checklists**, **holistic rubrics** and **analytic rubrics**. **Checklists** are the simplest type of rubric and list accomplishments that are evident in the students’ work. **Holistic rubrics** describe levels of performance with regards to the overall quality of the paper or project as a whole, without considering the components of student work separately. **Analytic rubrics**, guide the scoring of student work on multiple traits first, and then sum the individual scores to arrive at a total score. Tool 1: Description of types of rubrics illustrates the differences among rubrics.

Checklists give a list of content that should be included in students’ work. The content may be listed sequentially indicating the order in which it should occur. The rater marks each item on the checklist that the student has completed or included in their work. Checklists do not give an indication of the quality of student work.

Tool 1: Description of types of rubrics	
Type of Rubric	Description
Checklists	Provide a check-off list of accomplishments completed/present
Analytic Rubrics	Contain descriptions of each level of performance for each component/criterion/trait
Holistic Rubrics	Contain narrative descriptions to focus on the quality of the entire document/performance/project rather than the components or specific traits

Holistic rubrics assess the overall quality of student work by providing descriptions of student work at different levels of performance. These descriptions define the overall characteristics of student work at each level of performance. Holistic rubrics provide an overview of student performance and have the advantage of quick scoring. However, holistic rubrics do not differentiate between multiple traits and therefore may not provide as detailed a picture of student performance as an analytic rubric. They are most useful when a single trait is sufficient to define the quality of student work.

Analytic rubrics provide separate evaluation of student work on multiple traits. They can pinpoint particular areas where students need improvement, which can be used during planning to suggest opportunities to improve instruction. One drawback to the use of analytic rubrics is that they require more time to use than holistic rubrics.

Developing Holistic Rubrics

The first step in developing a **holistic rubric** is to identify the components in the student work that are related to the learning outcome. These components should be linked to the student learning outcomes developed as part of the program assessment plan. After the components are identified, the next step

is to decide how many levels are necessary to classify the quality of students' work. The descriptors chosen for the mid-point level of the rubric should describe the primary characteristics of the students' work that meet the minimum acceptable program standard.

Developing Analytic Rubrics

The first step in developing an **analytic rubric** is to identify the trait or traits (knowledge, skills or abilities) to be measured. For example, the ability to choose an appropriate statistical technique for data analysis is a trait. Traits should be linked to the student learning outcomes and developed as part of the program assessment plan. The number of traits to include in the **analytic rubric** should be guided by the learning outcome.

The next step is to decide how many levels are necessary to classify the quality in student work for each trait being measured. The descriptors chosen for each level of the rubric should describe the primary characteristics of students' work for each of the selected traits. Sometimes it can be difficult to find meaningful descriptors for several levels of performance. Remember, all of the characteristics listed must be reflected in the students' work in order to be scored as meeting that level of the rubric. Tool 2: Internet Resources for Developing Rubrics provides links that may useful in developing rubrics.

Tool 2: Internet Resources for Developing Rubrics

- <http://rubistar.4teachers.org>
- http://www.teach-nology.com/web_tools/rubrics/general/
- <http://www.rcampus.com/indexrubric.cfm>
- <http://teacher.scholastic.com/tools/rubric.htm>
- <http://www.learner.org/workshops/hswriting/interactives/rubric/>

The following examples illustrate each of the major types of rubrics. Although the content varies, the format is typical of that shown.

Checklist:

Checklist for Ethical Reasoning

The paper:	Yes	No
Describes the key stakeholders	<input type="checkbox"/>	<input type="checkbox"/>
Discusses one ethical approach	<input type="checkbox"/>	<input type="checkbox"/>
Discusses both the benefits and risks associated with the ethical issue	<input type="checkbox"/>	<input type="checkbox"/>
Shows consideration of key stakeholders interests	<input type="checkbox"/>	<input type="checkbox"/>
Contains at least one normative principle	<input type="checkbox"/>	<input type="checkbox"/>

Holistic rubric:

Below Standard	Meets Standard	Exceeds Standard
<p>The paper: identifies fewer than two key stakeholders and/or fails to state the ethical approach used in the discussion</p> <p>features limited discussion of the benefits and risks associated with the ethical issue</p> <p>shows little evidence of thought regarding the best interests of key stakeholders</p> <p>fails to use or is characterized by inappropriate use of normative principles in discussing the issue</p>	<p>The paper: identifies the key stakeholders and states the ethical approach used in the discussion</p> <p>features a full discussion of the benefits and risks associated with the ethical issue</p> <p>shows some evidence of thought, regarding the best interests of key stakeholders</p> <p>is characterized by appropriate use of normative principles in discussing the issue</p>	<p>The paper: identifies the key stakeholders and minor stakeholders</p> <p>states multiple ethical approaches used in the discussion</p> <p>features a rich and detailed discussion of the benefits and the risks associated with the ethical issue</p> <p>shows evidence of considerable thought, regarding the best interests of key and minor stakeholders</p> <p>is characterized by exemplary use of normative principles in discussing the issue</p>

Analytic rubric:

Characteristics/Traits	Below Standard	Meets Standard	Exceeds Standard
Identifies the stakeholders for the ethical issue	Identifies fewer than two key stakeholders	Identifies the key stakeholders	Identifies the key stakeholders and also minor stakeholders
States the ethical approach used (utilitarianism, justice, etc.)	Fails to state the ethical approach used in their discussion	States one ethical approach in their discussion	States multiple ethical approaches in their discussion
Discusses the benefits and risks associated with the ethical issue	Fails to discuss the benefits or the risks associated with the ethical issue	Discusses both the benefits and risks associated with the ethical issue	Discusses both the benefits and risks associated with the ethical issue and proposes suggestions for minimizing the risks
Demonstrates thoughtful consideration of stakeholder' best interests when discussing the ethical issue	Fails to consider the best interests of all key stakeholders	Shows consideration of key stakeholders interests	Shows consideration for key and minor stakeholders best interests
Uses normative principles in discussing the issue	Fails to use normative principles in discussing the issue	Uses at least one normative principle in discussing the issue	Uses multiple normative principles in discussing the issue

Appendix B: Student Learning Assessment Report

PROGRAM:

SUBMITTED BY:

DATE:

BRIEFLY DESCRIBE WHERE AND HOW ARE DATA AND DOCUMENTS USED TO GENERATE THIS REPORT BEING STORED:

EXECUTIVE SUMMARY

Program description from the Course Catalog: Please copy and paste the current year’s catalog description of this program. This is generally a one-two paragraph description immediately following the name of the program. Please be sure to include the listing of program outcomes as printed.

List all of the program’s learning outcomes: (regardless of whether or not they are being assessed this year)

Learning Outcome	Year of Last Assessment	Assessed This Year	Year of Next Planned Assessment

Describe how the program’s outcomes support Marymount’s mission, strategic plan, and relevant school plan:

Provide a brief description of the assessment process used including strengths, challenges and planned improvements and provide evidence of the existence of a culture of continuous improvement based on assessment:

Describe how the program implemented its planned improvements from last year:

Outcome	Planned Improvement	Update (Indicate when, where, and how planned improvement was completed. If planned improvement was not completed, please provide explanation.)

Outcome	Planned Improvement	Update (Indicate when, where, and how planned improvement was completed. If planned improvement was not completed, please provide explanation.)

Provide a response to last year's University Assessment Committee review of the program's learning assessment report:

Outcomes Report

Learning Outcome 1:

Assessment Activity

Outcome Measures Explain how student learning will be measured and indicate whether it is direct or indirect.	Performance Standard Define and explain acceptable level of student performance.	Data Collection Discuss the data collected and student population	Analysis 1) Describe the analysis process. 2) Present the findings of the analysis including the numbers participating and deemed acceptable.

Interpretation of Results

Extent this learning outcome has been achieved by students (Use both direct and indirect measure results):

Program strengths and opportunities for improvement relative to assessment of outcome:

Discuss planned curricular or program improvements for this year based on assessment of outcome:

Learning Outcome 2:

Assessment Activity

Outcome Measures Explain how student learning will be measured and indicate whether it is direct or indirect.	Performance Standard Define and explain acceptable level of student performance.	Data Collection Discuss the data collected and student population	Analysis 1) Describe the analysis process. 2) Present the findings of the analysis including the numbers participating and deemed acceptable.

Interpretation of Results

Extent this learning outcome has been achieved by students (Use both direct and indirect measure results):

Program strengths and opportunities for improvement relative to assessment of outcome:

Discuss planned curricular or program improvements for this year based on assessment of outcome:

Appendices

Appendix C: Assessment Committee Review Form

Academic Assessment Evaluation Rubricⁱ INDIVIDUAL PROGRAM REPORTS

Program Name:
Reviewers:

School:

I. Executive Summary			
Exemplary <input type="radio"/>	Acceptable <input type="radio"/>	Developing <input type="radio"/>	No Evidence <input type="radio"/>
<ul style="list-style-type: none"> Describes how and where report data are stored. List all program outcomes and dates last and next assessed; indicates which outcomes to be assessed in current year. Indicates if outcomes have recently changed. Demonstrates understanding of and clearly relates outcomes to university and school mission, plan, and goals, using tables as appropriate Briefly and succinctly describes assessment process including specific strengths, challenges, and planned improvements. Provides examples of a culture of continuous improvement based on assessment. 	<ul style="list-style-type: none"> Describes how and where report data are stored. List all program outcomes and dates last and next assessed; indicates which outcomes to be assessed in current year. Describes how outcomes support university mission and strategic plan. Describes assessment process including strengths, challenges, and planned improvements. 	<ul style="list-style-type: none"> Not all sections completed or not completed in full, or overwhelms reader with too much detail or information not directly tied to question. Fails to list all program outcomes or does not indicate dates last, next, or currently assessed. Does not clearly relate outcomes to both mission and plan. Fails to adequately describe assessment process, or does not provide a thoughtful discussion of strengths, challenges, and improvements needed. 	
Comments:			

II. Implemented Improvements from Previous Year			
Exemplary <input type="radio"/>	Acceptable <input type="radio"/>	Developing <input type="radio"/>	No Evidence <input type="radio"/>
<ul style="list-style-type: none"> Provides concrete evidence of how improvements from previous assessment activity were implemented, including improvements to the assessment process recommended by the UAC. Appropriate action taken on all issues 	<ul style="list-style-type: none"> Provides concrete evidence of how improvements from previous assessment activity were implemented, including improvements to the assessment process recommended by the UAC. Gives explanation for not implementing planned improvements 	<ul style="list-style-type: none"> Evidence insufficient or not provided Not all issues were addressed, without explanation of the delay Actions taken were not relevant to the issue. 	
Comments:			

III. Outcomes			
Exemplary <input type="radio"/>	Acceptable <input type="radio"/>	Developing <input type="radio"/>	No Evidence <input type="radio"/>
<ul style="list-style-type: none"> A reasonable number of program outcomes are identified, encompassing the central principles of the discipline without being overwhelming and focus on the cumulative effect of the program. At least two outcomes are assessed in the current year. States learning outcomes in terms of what a student should be able to do Each outcome is observable and measurable Each outcome uses action verbs Learning outcomes are at an appropriate level on Bloom's taxonomy for the level and degree type of the program. 	<ul style="list-style-type: none"> Program outcomes are identified and encompass the central principles of the discipline. At least three outcomes are assessed in the current year. States learning outcomes in terms of what a student should be able to do Outcomes match those listed in the course catalog. Each outcome is observable and measurable Language in some outcomes may need minimal revision. Some but perhaps not all outcomes reflect an appropriate level of learning for the program. 	<ul style="list-style-type: none"> Only one outcome listed Not clear how outcome could be measured Fails to demonstrate alignment with University or School mission Outcomes do not match outcomes listed in course catalog Does not address key learning, or outcomes are not at appropriate level. Not worded so that a single method can measure the entire outcome statement. Language needs substantial revision. 	

III. Outcomes			
Exemplary ○	Acceptable ○	Developing ○	No Evidence ○
<ul style="list-style-type: none"> Aligned with University and School goals and with professional organizations, where applicable. 			
Comments (Please comment on each outcome.):			

IV. Assessment Measures and Targets			
Exemplary ○	Acceptable ○	Developing ○	No Evidence ○
<ul style="list-style-type: none"> Multiple measures for all outcomes Direct and indirect measures used, with at least one direct measure for each outcome Assessment tools clearly are described (and attached, as appropriate), are appropriately designed, and are feasible. Targets are clearly defined for each measure and are sufficiently challenging. Measures are purposeful; it is clear how results could be used for program improvement. 	<ul style="list-style-type: none"> At least two measures for each outcome Direct and indirect measures are used Assessment tools described and are relevant to the outcome Targets defined for each measure but may not be set at effective levels. Implementation may not be complete or need additional planning. 	<ul style="list-style-type: none"> Not all outcomes have at least two measures. Few or no direct measures used Assessment tools are vaguely described or are undeveloped. Uses course grades for assessment Targets not defined for each measure. Relies only on assessment at lower levels of the program. 	
Comments (Please comment on each outcome.):			

V. Analysis of Results and Implications			
Exemplary ○	Acceptable ○	Developing ○	No Evidence ○
<ul style="list-style-type: none"> Clear, complete, and well-organized discussion of results for all outcomes Clear and substantial evidence that targets were met, partially met, or not met for all measures Discussion of implications for unit of the results of all assessment measures Compares results to findings from previous years, if available Includes supporting documentation (tables, charts, surveys, rubrics, etc.) 	<ul style="list-style-type: none"> For each outcome, effectively uses tables, graphs, and/or charts to summarize results, if applicable. Clear and well-organized discussion of results for all outcomes; some data might be incomplete or not yet available. Clear and substantial evidence that targets were met, partially met, or not met for all measures Includes supporting documentation May contain too much detail or stray slightly from the data. 	<ul style="list-style-type: none"> Incomplete or too much information. Not aligned with targets. Questionable conclusions are drawn about whether or not targets were met. Does not discuss results of each assessment measure Details not given in the analysis Results are too general to prove whether or not targets were met. Supporting documentation not included 	
Comments (Please comment on each outcome.):			

VI. Use of Assessment to Improve Effectiveness			
Exemplary ○	Acceptable ○	Developing ○	No Evidence ○
<ul style="list-style-type: none"> Reflects on the assessment process and any needed changes Demonstrates strong understanding of results Identifies key areas that need attention and defines next steps, including for those outcomes with targets that were fully met. Improvements reflect what was learned during the assessment process 	<ul style="list-style-type: none"> Demonstrates understanding of results Identifies key areas that need attention and defines next steps, including for those outcomes with targets that were fully met. 	<ul style="list-style-type: none"> Does not describe what was learned during the assessment process Does not identify key areas for improvement or describe next steps for all outcomes. Does not offer thoughtful interpretation or concrete improvements to be made No action plans Too general, lacking time frames or identifying responsibility. 	

Comments:			

Other comments:

- Report Accepted as Submitted
- Report Accepted Pending Minor Revisions
- Revisions Required to Accept Report This Year

Recommendations for Next Year's Assessment Process:
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ⁱ "Assessment Report Evaluation Rubric." *Assessment Report Evaluation Rubric*. Web. 15 Dec. 2014. <[http://www.oirpe.emory.edu/Assessment/2013-14 Assessment Report Evaluation Rubric.pdf](http://www.oirpe.emory.edu/Assessment/2013-14%20Assessment%20Report%20Evaluation%20Rubric.pdf)>.
"Rubric for Evaluating Program Assessment Plans and Reports." *Rubric for Evaluating Program Assessment Plans and Reports*. Web 2 Mar. 2015. <<https://www.iusb.edu/weave/docs/Rubric%20for%20Evaluating%20Program%20Assessment%20Plans%20and%20Reports.pdf>>.

Appendix D: Glossary

Action Verb: A verb that reflects overt behavior that can be observed

Analysis: Process of summarizing information to make inferences about student learning and program effectiveness

Assessment Report: The comprehensive discussion of assessment activity submitted at the end of each assessment cycle. The Assessment Report consists of three components:

- **Executive Summary:** List of student learning outcomes; connection to university mission, strategic plan, and school plan; discussion of assessment process; description of implemented improvements; and response to the University Assessment Committee's recommendations
- **Outcome Report:** Individual report on the results for assessment for each learning outcome
- **Appendix of Supporting Materials:** Measures, rubrics, and other material used in the assessment process.

Categorical: Data that are grouped by performance

Closing the Assessment Loop: Implementing changes based on assessment findings

Data: Quantitative or qualitative scores attributed to student work or responses to indirect measure data collections

Database: Electronic collection of data relating to student performance or responses

Descriptive Statistics: Standard formulas that generate numeric indicators of data allowing easier interpretation and comparison of data

Direct Measures: Assessments that evaluate actual samples of student work

Expected Results: Pre-specified percentage of students expected to meet or exceed the performance standard

Graph: A pictorial display used to help analyze and interpret data.

Indirect Measures: Assessments that analyze supportive evidence, information, and student perspective of learning

Learning Outcome: Statements that specify what students will know or be able to do as a result of earning their degrees

Mapping: Identifying where learning outcomes are supported in the curriculum

Measurable Outcomes: Outcomes that can differentiate the quality of student performance

Numerical: Data that are measured on scales that reflect student performance

Observable Outcomes: Outcomes that can be evidenced by student work or other data

Outcome Measures: Methods for assessing student mastery of learning outcomes

Outliers: Extreme values outside the expected range that should be reviewed for data entry or other errors

Performance Standard: Pre-specified level of acceptable student performance (direct measures) or response (indirect measures)

Rater: Faculty responsible for evaluating students' work using rubrics and other standardized forms

Rubrics: Guides which identify criteria to be measured and levels of success for each criterion

Rubrics: Standardized evaluation forms used to assess student work toward meeting learning outcomes

Success Rate: Percentage of students meeting the program standard

Table: A listing of data in a systemic format to facilitate comparison and analysis.