

FIU

FLORIDA
INTERNATIONAL
UNIVERSITY



Assessment Handbook

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CHAPTER 1

Assessment Overview

A. Introduction and Purpose

This chapter provides a brief overview of the different perspectives on assessment at the national, regional, state, and university level. The end of the chapter summarizes the overall contents of the guidebook by chapter.

The national trends on assessment have impacted Florida International University (FIU), furthering the institution's scope for accountability and quality assurance. FIU, alongside higher education institutions nationwide, has integrated assessment procedures aimed at enhancing the quality of educational programs and the effectiveness of administrative units. There are several reasons why the university assesses learning outcomes and efficiency measures:

- Foremost, assessment is a means of documenting improvement of academic and administrative programs on a continuous basis across the university. By documenting current assessment efforts on a daily basis, the university can substantiate evidence of tracking over time.
- Longitudinally, the university can analyze the impact of improvement strategies that have been implemented.
- Assessment provides an opportunity to continuously realign student learning, program, and administrative outcomes to the mission, vision, and strategic plan of the university and the degree program.

B. Assessment Background

1. National Perspective

Assessment practices at a micro level in FIU stem from multiple external perspectives at the macro level. The nation is placing greater value on accountability measures and on ranking systems in the United States. The perceived role of universities is shifting as these accountability and ranking systems become pervasive in the pre-K through 12 schools. As described below, various movements are driving the belief that the measures placed on primary and secondary schools should also be implemented at the higher education levels.

A Nation at Risk

Assessment has been a part of the national discussion on education for many decades; however, the focus on assessment for accountability surfaced from the need for higher standards as documented in various national reports, including *A Nation at Risk*, written during the Reagan administration. According to *A Nation at Risk*, "All, regardless of race or class or economic status, are entitled to a fair chance and to the tools for developing their individual powers of mind and spirit to the utmost" ([National Commission on Educational](#)

[Excellence](#), 1983), because “[a] high level of shared education is essential to a free, democratic society and to the fostering of a common culture, especially in a country that prides itself on pluralism and individual freedom.” ([National Commission on Educational Excellence](#), 1983).

The report outlined a series of deficiencies that threatened the American system and provided five subsequent recommendations, which highlighted educational excellence as the key factor for America’s future success. The first recommendation focused on curriculum requirements (e.g., 4 years of English, 3 years of Math) and raised the high school graduation requirements. The second and fifth recommendations addressed standards and expectations for all schools, calling for “schools, colleges, and universities to adopt more rigorous and measurable standards, and higher expectations for academic performance and student conduct,” and that accountability should be integrated into education ([National Commission on Educational Excellence](#), 1983).

No Child Left Behind

20 years after *A Nation at Risk*, President George W. Bush proposed the *No Child Left Behind* (NCLB) federal legislation, signed into law January 8, 2002. NCLB was driven by the standard-based education theory, which indicates that clear, measurable academic standards are needed to facilitate assessment of student knowledge and skills. Under NCLB, each state is responsible for setting standards and developing assessments for all students. For example, from NCLB, the State of Florida developed its accountability plan for the U.S. Department of Education. Some of the key standards are:

- Principle 1.1 The accountability system includes *all schools and districts in the state*
- Principle 2.1 The accountability system includes *all students*
- Principle 4.1 The accountability system *determines annually the progress* of schools and districts.
- Principle 6.1 The accountability system is based *primarily on academic assessments*.
- Principle 8.1 The accountability system holds students, schools and districts separately accountable for *reading/language arts* and *mathematics*.

(State of Florida, 2009, p. 2-3)

In light of NCLB, the notion of accountability for student learning extended into postsecondary education. The 2006 Spellings Report, brought forth by the Commission on the Future of Higher Education, increased national attention placed on assessment in higher education.

Spellings Commission

The Commission on the Future of Higher Education, also known as the Spellings commission, completed a year-long examination of the challenges facing higher education. The findings included national learning dilemmas such as a decline in literacy levels among college graduates and graduates’ lack of skills when entering the workforce. Similarly, the findings included accountability issues such “as a lack of clear, reliable information about

the cost and quality of postsecondary institutions, along with a remarkable absence of accountability mechanisms to ensure that colleges succeed in educating students.”

The recommendations of the Spellings report focused on various areas, including the development of a culture of accountability and transparency, assessment of student learning outcomes, and the needed role of regional accrediting agencies. The commission recommended that colleges and universities move from a reputation-based system to a performance-based system. The commission stated that, “the strategy for the collection and use of data should be designed to recognize the complexity of higher education, have the capacity to accommodate diverse consumer preferences through standard and customizable searches, and make it easy to obtain comparative information including cost, price, admissions data, college completion rates and, eventually, *learning outcomes*” (U.S. Secretary of Education’s Commission on the Future of Higher Education, 2006).

The commission called for the quality assessment of student learning outcomes and the reporting of aggregated results in meaningful ways in postsecondary institutions. For the accrediting agencies, the commission focused on assessment transparency and making the accreditation process clearer and accessible to others outside of the higher education institutions. Included in this call for assessment transparency is the need to focus on performance measures for institutional assessment and establish an assessment framework that would push institutions to be more innovative and continuously improve their services and processes. The development of an assessment framework would allow for comparisons to be made across institutions on the basis of performance and student learning measures.

2. Regional Perspectives

With a national focus on assessment and accountability, accrediting agencies have modified their principles and standards, thus enabling the institutions that they accredit to engage in assessment as guided by current trends and policies. The accrediting regional body for Florida schools is the Southern Association of Colleges and Schools (SACS), and they have included various principles that focus on assessment for gauging institutional effectiveness and promoting continuous improvement. Some key principles are:

Core Requirement 2.5: The institution engages in ongoing, integrated, and institution-wide research-based planning and evaluation processes that incorporate a systematic review of programs and services that

- (a) results in continuing improvement, and
- (b) demonstrates that the institution is effectively accomplishing its mission.

(Institutional Effectiveness)

Comprehensive Standard 3.3.1: The institution identifies expected outcomes, assesses the extent to which it achieves these outcomes, and provides evidence of improvement based on analysis of the results in each of the following areas:

- 3.3.1.1 Educational programs, to include student learning outcomes
- 3.3.1.2 Administrative support services
- 3.3.1.3 Academic and student support services

3.3.1.4 Research within its mission, if appropriate

3.3.1.5 community/public service within its mission, if appropriate

Federal Requirement 4.1: The institution evaluates success with respect to student achievement consistent with its mission. Criteria may include: enrollment data; retention, graduation, course completion, and job placement rates; state licensing examinations; student portfolios; or other means of demonstrating achievement of goals ([Commission on Colleges](#), 2012).

3. State Perspectives

There are two principle assessment requirements at the state level. First, Program Review is a process to assess all of the academic programs at least once every seven years. This system helps in academic planning and in aligning all programs to the mission of the university. Second, the Academic Learning Compacts (ALCs) are required for all undergraduate programs every year. The above principles represent a comprehensive assessment process, inclusive of programs and student learning outcomes. The next segments describe these principles in more detail.

Program Reviews

A program review is a systematic way to meet both the legislative and university intent to assess the quality of our academic degree programs while determining ways to improve the quality of education, research, and service. The seven-year review period enables degree programs to conduct a self-study with the help of external and internal resources such as in field consultants and the APA office to align their goals and plans with those of the college/school and university. This process is designed to build a better understanding of the whole program among faculty, staff, and university leadership. The program review process is composed of the following three elements:

1) Self-Study by Department: The Self-Study is a comprehensive report on the total academic department focused on each of the degree programs. It contains the department vision, mission, goals, learning/program outcomes, and recommendations based on an analysis of the program information and measurable indicators. For more information please visit <http://apa.fiu.edu/progreview self-study.html>

2) External Consultant: An external consultant and/or a specialized accreditation visit provides an objective outside perspective on the quality of the program and recommendations for improvement. For more information please visit <http://apa.fiu.edu/progreview consultant.html>

3) Executive Vice Provost's Recommendations: The Executive Vice Provost provides written recommendations to the unit regarding the future directions of the academic program based on the findings of the Self-Study and the reports of the external consultant and Executive Program Review Committee. These

recommendations reflect the context of future planning, university academic themes, strategic initiatives, and budgetary decisions.

Program review focuses on evaluating degree programs for continuous quality improvements within the context of best practices in the discipline. Additional information on program review can be found under:

Program Review Resources - http://apa.fiu.edu/progreview_resources.html

Program Review Archives - http://apa.fiu.edu/progreview_archives.html

Academic Learning Compacts

On February 15, 2005, the Florida Board of Governors (BOG) mandated that public universities in Florida develop Academic Learning Compacts (ALC) for each baccalaureate degree program they offer. The ALCs identify the expected core student learning outcomes for degree program graduates in the areas of communication skills, critical thinking skills, and content/discipline knowledge and skills. These skills and knowledge are expected to be acquired by students if they successfully follow the prescribed course of study in their declared major by the time of graduation.

Currently, the Office of Academic Planning and Accountability collects and reports on these ALCs to the Florida Board of Governors on a yearly basis. In order to facilitate the process of gathering data from each degree program, the outcomes collected for the ALCs are the same as the ones collected for the student learning outcomes required for the university's assessment process. Therefore, in order to serve this dual purpose, each outcome that is reported for the student learning outcomes report is labeled as one of the three proficiencies required for the ALCs (communication skills, critical thinking skills, and content/discipline knowledge and skills) and is reported to the BOG.

C. Summary and Organization of the Handbook

Using this handbook will be facilitated by referring to the table of contents, which has links to each chapter and major section. As an overview, this first chapter addressed some broad concepts about assessment, including background information about different policies and perspective on assessment. The rest of this handbook addresses principles and practices. After each division there will be a "**Toolbox**" where relevant resources will be listed and hyperlinked to help guide readers to more information or to useful tools.

D. References and Toolbox

Commission on Colleges. (2012, May). *Resource manual for the principles of accreditation: Foundations for quality enhancement*. Decatur, GA: Southern Association of Colleges and Schools. Retrieved from <http://www.sacscoc.org/pdf/Resource%20Manual.pdf>.

State of Florida. (2009, January 15). *Consolidated State Application Accountability Workbook*. Retrieved from http://www.fldoe.org/news/NCLB/NCLB_Workbk1.pdf.

- U.S. National Commission on Excellence in Education. (1983, April 26). *A nation at risk: The imperative for educational reform*. Retrieved from <http://cc.usst.edu.cn/Download/b42c4210-e82c-4244-aa4f-89d2b313f44a.doc>.
- U.S. Secretary of Education's Commission on the Future of Higher Education. (2006, September 19). *A Test of Leadership: Charting the Future of U.S. Higher Education*. Retrieved from <http://www2.ed.gov/about/bdscomm/list/hiedfuture/reports/final-report.pdf>

CHAPTER 2

Assessment in Florida International University

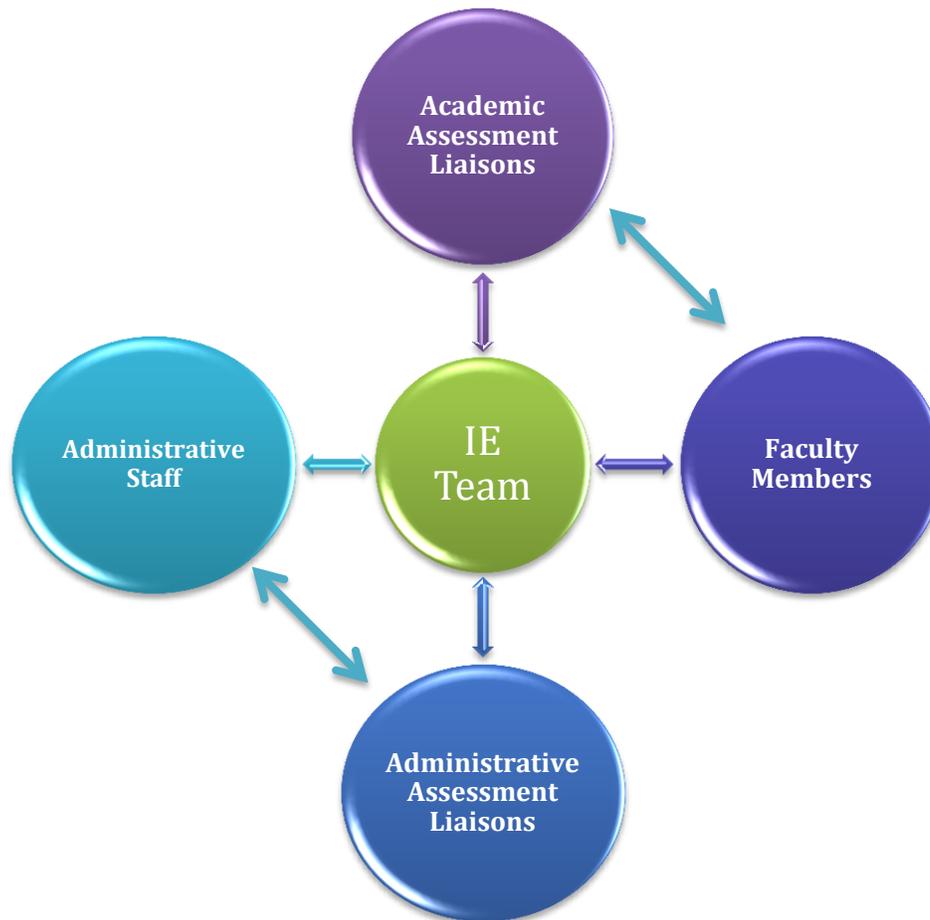
A. Introduction: Assessment in Florida International University

National, regional and state trends on assessment have influenced Florida International University (FIU) in their assessment practices at a local level. At FIU, assessment and institutional effectiveness can readily improve education and affect all stakeholders involved in the university. This chapter provides an overview of assessment practices at FIU, including key points, review processes, cycles and deadlines, common terminology, assessment myths, and the various discipline specific accrediting bodies.

1. FIU Perspective: Key Points about Assessment

Florida International University has developed its assessment processes from the mixture of national, regional, and state expectations, as well as from a strong foundation of assessment literature and a consensus amongst colleagues. Most of the assessment efforts at the university are directed by the Office of Academic Planning and Accountability (APA). The principle role of the office is to collaborate with faculty and staff across the university to fulfill several major functions: academic planning, assessment, program review, and accreditation. The assessment component is led by the Institutional Effectiveness (IE) team. Our goal is to engage the FIU community in best assessment practices and to build a strong culture of continuous improvement. With a culture of continuous improvement in place, the university is able to enhance its pursuit to foster an innovative teaching and learning environment for students and faculty.

It is important to involve all members of the FIU community in the assessment process. Key members who directly work with the IE staff are a part of the University Assessment Committee as described in Figure 2.1. As illustrated in the figure, there are two branches to this committee: academic and administrative. The academic branch has a representative from every FIU college and school, who serves as a liaison between the Institutional Effectiveness team and the faculty and staff of their unit. The Academic Assessment Committee members are a valuable part of the assessment process because they help bridge faculty members to the central assessment team. The administrative branch parallels the academic branch in function. Every major administrative area is represented by a member who serves to facilitate and maintain open communication between their units and the central assessment office. These committee members typically meet each fall and spring semester to review the latest assessment updates and to participate in the campus-wide dialogue on assessment practices. Committee members and individual faculty and staff members are always encouraged to interact with each other within the committee and with the IE office in order to propagate this goal.

Figure 2.1 Institutional Assessment Review Process

The role of the IE team is to coordinate assessment efforts throughout the university, disseminate information through direct interactions with the FIU community, and provide feedback on all assessment documents collected throughout all academic and administrative units. The following assessment documents are collected from each unit:

Administrative Units:

- Administrative Assessments
- Centers and Institutes Administrative Assessments

Educational Units:

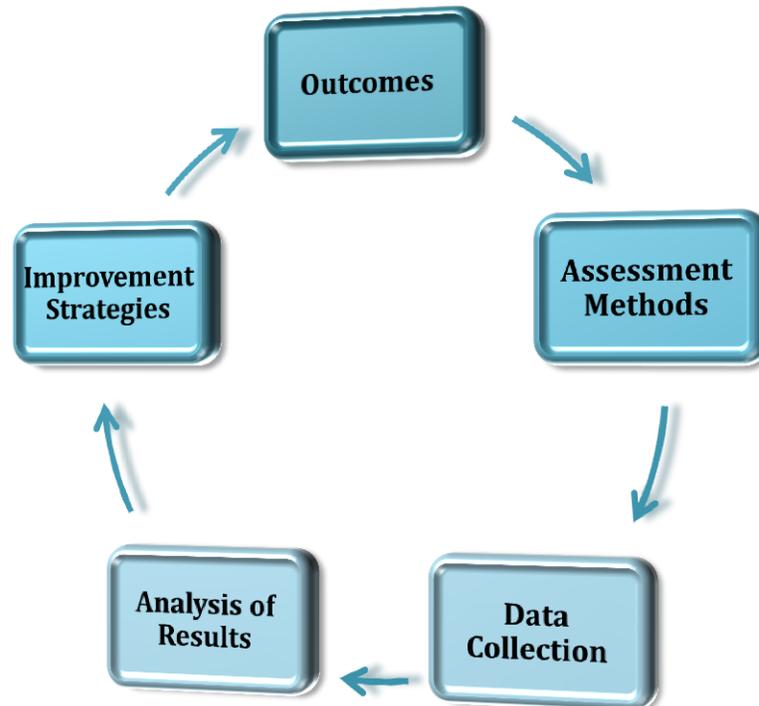
- Student Learning Outcomes
 - Academic Learning Compacts
 - Program Review
- Program Outcomes
- Core Curriculum: Assessment of SLOs
- Administrative Assessments for the Dean's Office and Centers/Institutes

2. Assessment Processes and Timelines

Assessment at the university is a cyclical process divided into interconnected stages (see Figure 2.2). Typically, the first stage involves establishing clear outcomes that are related both to the program’s main goals and to the missions of the program and university. The main question to be asked when developing student learning outcomes is: What are the most important competencies a student graduating from my program should have acquired? For the program outcomes, the main question is: What efficiency measures or non-classroom measures need to be monitored and assessed in order to improve my program?

The second stage involves describing a method of assessing the outcomes outlined in the first stage. In this stage, faculty should establish a consensus on how they plan to assess the outcomes for their program. Methods should be clear, specific, and measurable. The third stage is to collect the data described in the methods which ties in with the fourth stage that involves analyzing and reporting data. The fifth stage is using the results to develop improvement strategies and is often referred to as the “closing the loop” phase, which is the most essential component of the assessment process. Each of these stages will be more thoroughly described in the subsequent chapters.

Figure 2.2 Continuous Improvement Assessment Cycle



2011-2013 Timeline for Academic and Administrative Units

In order to obtain more longitudinal data and to make more significant and informed improvement strategies, the university moved from a yearly assessment cycle to a two year assessment cycle. Each college/school and major administrative unit was assigned to

either Cycle A or Cycle B. In the case of academic areas, student learning outcomes, program outcomes, and administrative assessments (for both the Dean's office and for centers or institutes) follow the same due dates as are outlined in their respective cycles. Figure 2.3 provides a listing of the academic units into as they are divided Cycle A and Cycle B and figure 2.4 provides of the administrative units as they are divided into Cycle A and Cycle B.

Figure 2.3 Academic Assessment Cycles

CYCLE A	CYCLE B
<ul style="list-style-type: none"> • College of Architecture and the Arts • College of Business Administration • College of Engineering and Computing • Honors College • School of Journalism and Mass Communication • School of Hospitality Management 	<ul style="list-style-type: none"> • College of Arts and Sciences • College of Education • College of Law • College of Medicine • College of Nursing and Health Sciences • Robert Stempel College of Public Health and Social Work

Figure 2.4 Administrative Assessment Cycles

CYCLE A	CYCLE B
<ul style="list-style-type: none"> • Academic Planning and Accountability • Administration & Chief Financial Officer • Division of Information Technology • Office of Planning and Institutional Research • External Relations • University Advancement • Facilities Management • Frost Museum • Wolfsonian • International Hurricane Center • General Counsel/Compliance • Human Resources • Library • Office of Global Learning Initiatives • Office of Planning Institutional and Research • Office of the Provost and Executive Vice President • Office of the Vice Provost – BBC Campus • Student Affairs • Undergraduate Education 	<ul style="list-style-type: none"> • Academic Health Center • Athletics • Community Engagement • Division of Research • Enrollment Services • Office of the President • University College • University Graduate School • Academic Health Center

The new two-year assessment cycle will focus on collecting data throughout the entire span of two years. Therefore, the two-year cycle does not mean that assessment will only take place once every two years; it means there will be more data points to analyze within each report. This shift will allow for the collection of longitudinal data, which will provide more evidence for making improvement decisions.

Figure 2.5 Assessment Deadlines for Cycle A and Cycle B

Cycle A

Deadline		Task
Summer 2011	May 15	Interim Reports (results only) due
Spring 2012	By Appointment	APA works with colleges/units to enhance assessment plans
Fall 2012	Oct 15	Reports/Plans due
Summer 2013	May 15	Interim Reports (results only) due
Fall 2014	Oct 15	Reports/Plans due

Cycle B

Term	Deadline	Task
Spring 2011	By Appointment	APA works with colleges/units to enhance assessment plans
Fall 2011	Oct 15	Plans due
Summer 2012	May 15	Interim Reports (results only) due
Fall 2013	Oct 15	Reports/Plans due
Summer 2014	May 15	Interim Reports (results only) due

3. Specialized Accreditation

Several of the academic programs at FIU are accredited by discipline-specific agencies/organizations to ensure program quality and develop strategies for improvement. These specialized accreditation agencies help to enhance educational quality for multiple degrees. The Office of Academic Planning and Accountability (APA) works closely with each department to assist them in their field accrediting processes and to develop university wide curriculum alignment. The partnership attempts to streamline assessment efforts and facilitate overall assessment processes for all departments involved. In the **toolbox** section of this chapter, under **accreditation**, you can find the specialized accrediting bodies for all the FIU disciplines.

B. Common Assessment Terminology/Glossary

An important aspect of the assessment process is to establish a common assessment language for all stakeholders involved. A comprehensive list of terminology or assessment glossary may be found on the APA website. [Click here to browse.](#)

C. Debunking Myths on Assessment

This section outlines some of the common myths and misconceptions related to assessment practices. The listing of myths was compiled based on years of comments and feedback from assessment experts, faculty, and staff members across the nation and at FIU.

Figure 2.6 Myths of Assessment



D. References and Toolbox

Accreditation

Florida International University

- Southern Association of Colleges and Schools (SACS): <http://www.sacs.org/>

College of Architecture and the Arts

- National Architectural Accrediting Board (NAAB): <http://www.naab.org/>
- National Association of Schools of Theatre/Commission on Accreditation (NAST): <http://nast.arts-accredit.org/index.jsp?page=Accreditation>
- American Society of Landscape Architects (ASLA)/Landscape Architectural Accreditation Board (LAAB): <http://www.asla.org/accreditationlaab.aspx>
- Council for Interior Design Accreditation (CIDA) (formerly FIDER): <http://www.accredit-id.org/>
- National Association of Schools of Music/Commission on Accreditation (NASM): <http://nasm.arts-accredit.org/index.jsp?page=Accreditation>
- National Association of Schools of Art and Design/Commission on Accreditation (NASAD): <http://nasad.arts-accredit.org/>

College of Arts and Sciences

- American Chemical Society (ACS): http://portal.acs.org/portal/_acs/corg/content
- American Academy of Forensic Sciences (AAFS): <http://www.aafs.org/>
- Council on Social Work Education/Office of Social Work Accreditation and Educational Excellence (CSWE): <http://www.cswe.org/Accreditation.aspx>
- National Association of Schools of Public Affairs and Administration (NASPAA)/Commission on Peer Review and Accreditation (COPRA): <http://www.naspaa.org/accreditation/NS/index.asp>

College of Business Administration

- Association to Advance Collegiate Schools of Business: <http://www.aacsb.edu/>

College of Education

- The National Council for Accreditation of Teacher Education: <http://www.ncate.org/>
- Council for Accreditation of Counseling and Related Educational Programs (CACREP): <http://www.cacrep.org/template/index.cfm>
- National Recreation and Park Association/American Association for Physical Activity and Recreation Council on Accreditation (NRPA/AALR): <http://www.nrpa.org/>

College of Engineering

- Accreditation Board for Engineering and Technology: <http://www.abet.org/>

College of Law

- American Bar Association: <http://apps.americanbar.org/legaled/accreditation/acinfo.html>

College of Journalism and Mass Communications

- Accrediting Council on Education in Journalism and Mass Communications (ACEJMC): <http://www2.ku.edu/~acejmc/>

College of Medicine

- Association of American Medical Colleges (LCME): <http://www.lcme.org/>

College of Nursing and Health Sciences

- Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM): <http://www.cahiim.org/index.html>
- National League for Nursing Accrediting Commission, Inc. (NLNAC): <http://www.nlnac.org/home.htm>
- American Association of Nurse Anesthetists (AANA)/Council on Accreditation of Nurse Anesthesia Educational Programs (CoA-NA): <http://www.aana.com/councilaccreditation.aspx>
- American Occupational Therapy Association (AOTA): <http://www.aota.org/>
- American Physical Therapy Association (APTA)/Commission on Accreditation in Physical Therapy Education (CAPTE): <http://www.apta.org/AM/Template.cfm?section=CAPTE1>
- American Speech-Language-Hearing Association/Council on Academic Accreditation in Audiology and Speech-Language Pathology (ASHA): http://www.asha.org/academic/accreditation/CAA_overview.htm
- Commission on Accreditation of Athletic Training Education (CAATE): <http://www.caate.net/imis15/caate/>

College of Public Health and Social Work

- Council on Education for Public Health (CEPH): <http://www.ceph.org/>

Annual Assessment Conferences

- Association for Institutional Research (AIR) Forum: <http://forum.airweb.org>
- Southern Association of Colleges and Schools (SACS) Annual Assessment Meeting: <http://sacscoc.org/meeting.asp>

- **Indiana University-Purdue University Indianapolis (IUPUI) Annual Institute:** <http://planning.iupui.edu/conferences/national/nationalconf.html>
- **National Conference on Student Assessment (NCSA) Annual Conference:** <http://www.ccsso.org/>
- **Student Affairs Administrators in Higher Education (NASPA) Annual Conference:** <http://www.naspa.org/conf/default.cfm>
- **Texas A&M Assessment Conference:** <http://assessment.tamu.edu/conference/>

CHAPTER 3

Planning for Assessment I: Mission and Goals

A. Introduction and Purpose

The purpose of this chapter is to assist in defining and developing missions and goals for programs, since these serve as cornerstones for successful assessment. This chapter will provide generic guidelines and useful strategies for developing missions and goals, and will provide relevant examples from programs across FIU. It is crucial that your department have mission and goal statements accepted by faculty, program leaders, coordinators, and department chairs. By the end of this chapter you should be able to:

- Differentiate between missions, goals, and outcomes (objectives)
- Develop and write effective missions and goals
- Identify, review, and revise missions and goals for successful program development and assessment
- Identify different outcomes for assessment purposes

B. Mission, Goals, and Outcomes

It is standard practice for departments and programs to have a mission with a purpose to guide their efforts and succeed in their academic endeavors; in fact, it is expected of them to do so (Noriega, 2006, p.41). Furthermore, missions set the foundation from which to build goals and outcomes that are required for assessment planning. A mission is defined as a **broad description** that articulates the **purpose of the department/program, who is involved, and for whom the services are rendered**. Unlike a vision, which denotes future activities, a mission clearly states current practices, purposes, capabilities, and management. Mission statements for academic programs should reflect how teaching and research efforts of the department contribute to the overall learning environment and curriculum. The mission should **align with the Department, College, and University missions**, and be unique to each program.

Distinctions between missions, goals, and outcomes are essential to developing effective assessment plans. The main idea is to move from missions, which are broad statements, to outcomes, which are specific statements. For a clearer understanding of what each entails, we provide definitions below:

Mission: A mission statement explains the nature, values, and current undertakings of a program/department. It describes the purpose, the functions, and the stakeholders involved and/or served.

Goals: Program goals are general statements about knowledge and skills expected from students of a program/course in the long run, which align with and are drawn from mission statements. Essentially, they are general targets that meet the mission's purpose.

The programs goals should be reached through departmental consensus and must also meet curriculum requirements of the major.

Outcomes: Outcomes are clear and concise statements that describe how students can demonstrate mastery of goals. Learning outcomes are thoughtfully developed in consideration of the mission and the goals of the program. Outcomes must demonstrate specific, measurable behaviors, and it is common to have multiple learning outcomes per goal. Goals and outcomes need not be limited to learning that can be objectively tested, such as quantitative skills. For example, both outcomes and goals can be about critical thinking skills or valuing multiculturalism/diversity.

C. Developing Missions Statements and Goals

1. Mission Statements

Missions should include several key components. The elements and attributes of a well-defined mission statement are as follows:

- **Brief and clear purpose statement of the academic program:**
 - State the main reason(s) for your program to exist (e.g., teaching, research, service)
 - **For example:** This program prepares students for entering a social studies teaching profession.
- **Indicate the primary functions of the program:**
 - Highlight the main operations and/or activities offered by your program
 - **For example:** Our focus is to teach students the fundamental knowledge and skills necessary to be successfully employed in the area of biochemical engineering.
- **Indicate the stakeholders of your program:**
 - Include the individuals for whom you are providing your program and those who will benefit from the program and its graduates (e.g., students, faculty, staff, parents, employers)
 - **For example:** Orientation services at the beginning of each semester will serve newcomers and their families.
- **Alignment with institution's vision, values, and mission:**
 - The mission should align with the strategic plan, vision, values, and mission of the university as a whole. It should support the rationale of your program and drive its activities.
 - **For example:** Missions can include a focus on some of the components of the mission statement of FIU (e.g., advocating diversity and collaborative efforts within and outside of the university).

The following is a general format that can be used when developing a mission statement (*Keep in mind that the order in which the statements are made may vary from this format, but the content should nevertheless be easily identified*):

“The mission of (**name of your program or administrative unit**) is to (**your primary purpose**) by providing (**your primary functions or activities**) to (**your stakeholders**).”

These are mission examples from FIU that follow the above format:

A. Institutional Mission Statement

Florida International University is an **urban, multi-campus, public research university serving its students and the diverse population of South Florida**. We are committed to **high-quality teaching, state-of-the-art research and creative activity, and collaborative engagement** with **our local and global communities**.

B. Academic Mission Statements

College of Arts and Sciences

As the heart of a leading public research university, **the College of Arts and Sciences** plays a vital role in the intellectual, cultural and civic life of **local, national and international communities**. The College provides an **educational foundation that prepares FIU students to be successful and engaged citizens in a global society**. The College **generates extensive scholarship that yields new knowledge, shapes how we teach and learn, and contributes to a more complete understanding of the world**.

Undergraduate Political Science Program

The **Political Science undergraduate major** provides **students with the opportunity to acquire a broad education that will equip them to adapt to a wide variety of careers**. The program is designed to encourage the analysis of theories, institutions, and processes of political systems in the context provided by the social sciences; to stimulate a grasp of the broad sweep of political science as a discipline; to develop a continuing and responsible interest in political activity and public affairs; to provide the opportunity to acquire a fundamental understanding of political science as a basis for citizenship, a career in government, or professional study and service; and to stimulate the qualified **student's** interest in graduate study in political science.

C. Administrative Mission Statements

Student Affairs

The **Division of Student Affairs** at Florida International University supports the mission of the University by **engaging students in becoming active contributors in an evolving global and technological society**. The Division **teaches civic responsibility, leadership, and commitment to service; nurtures an**

understanding of diversity; and contributes to academic success by providing students with support services and experiential learning opportunities.

University Health Services

[The] mission of the **University Health Services** is to **provide access to quality health care** to the **University community** and **to encourage healthy lifestyles through health promotion, education, mentorship and research.** The **clinical and health educational services** complement the academic mission of the institution by working with **University faculty, departments, and community agencies to expand access to health [and provide] related resources.** **We strive to be proactive based on the changing needs of our community.**

2. Goals

In order for assessment to be useful to a department, there must be a clear understanding of the information that is most important to gather and the type of data that would be useful to analyze and address. Goals act as benchmarks to measure success and progress, as well as reinforce measures that will achieve the vision and mission of the university. They are meant to be pillars for the overall qualities and competencies that are pivotal for the success of the program (Walvoord, 2004).

Palomba and Banta (1999) state that it is possible to write slightly more specific course level goals, as long as these remain overarching concepts and/or traits that will be further addressed and measured through finite outcomes. They provide this example: “Preparing students who can understand and deal with diverse ideas, populations, and cultures and who possess a set of competences including critical thinking, creative thinking, oral and written communication, quantitative reasoning, and problem solving” (Palomba, 1999, p.242). Once a list of these broad competencies is compiled, then specific and measurable outcomes can be created to measure the goals for assessment purposes. For the purpose of clarification, below is a chart demonstrating key differences between goals and outcomes:

Figure 3.1 Differences Between Goals and Outcomes

Differences Between a Goals and Outcomes	
Goals are broad	Outcomes are narrow
Goals are general intentions	Outcomes are precise
Goals are intangible	Outcomes are tangible
Goals are abstract	Outcomes are concrete
Goals cannot be validated as is	Outcomes can be validated

When in the process of creating goals, it is likely there are goal statements that are already in place that may not be documented or that are only available through further investigation (e.g., reviewing course syllabi, reviewing department meeting minutes). These resources should be gathered and checked before beginning to create new goals. Also, it is important to review the mission and vision statements that are pertinent to the program, whether that be at the university, college, or department level. Other places to find potential goals include: program reviews, self-studies, surveys, or similar reports.

In essence, it is key to remember that goals are generalized or broad wording of expectations. A few examples are given below for university level goals:

- The university expects all students to be able to communicate effectively.
- The university is focused on research, research development, and professional skills.
- The university seeks to have its students be able to be critical thinkers in tomorrow's future.

Notice how these statements suggest broad ideas that cut across different programs and disciplines.

Goals are set at different levels. There are institutional, college/school, departmental/program, and course goals. The goals set as an institutional level are the highest set of goals. Walvoord (2004) provides these generic examples for hierarchical goals:

Institutional Goals

Institution: “Students will be able to communicate appropriately orally and in writing.” (p. 30)

College/School

The School of Business: “Students will be able to communicate orally and in writing to business audiences, including colleagues, supervisors and clients in appropriate ways about business issues.” (p. 31)

Department/Program

Marketing Department: “Students will construct a marketing plan and prepare written and oral communications appropriate to a client form.” (p. 31)

Course goals are often misidentified as outcomes. However, they are called goals because they are broad and are generalized expectations for end of semester/academic year.

The general format of a goal statement is: “To (**action verb**) (**object**) (**modifiers**)” (UCF, 2008, p. 23). Below is an example of a set of goals created and shared by FIU's Construction Management Department, demonstrating the suggested format.

The department strives to serve the needs of South Florida, the nation, and the world through high-quality education, research, and professional involvement through the following goals:

1. **Provide effective education** to students and **prepare** them to **enter** the **construction profession**.
2. **Utilize available technology** to **enhance teaching and learning**.
3. **Conduct** and **disseminate research** in the construction area.
4. **Acquire** and **improve laboratory facilities**.
5. **Facilitate employment opportunities** for students.
6. **Provide resources** for professional development of the faculty.
7. **Broaden** the **access** to construction management education through **distance learning opportunities**.
8. **Support student organizations** and the **alumni association**.
9. **Engage** and **support** the **local industry** through **outreach activities**.
10. **Maintain program accreditation**.

The next chapter is dedicated exclusively to identifying and developing outcomes.

D. References and Toolbox

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CHAPTER 4

Planning for Assessment II: Outcomes

A. Introduction

What is an outcome? Why do we need outcomes? Who benefits from outcomes? This chapter addresses outcomes by providing clear definitions, step by step instructions, and explanations for the various outcomes presented in FIU. The multiple outcomes for our institutional assessment process include the following: **Student Learning Outcomes (SLOs) and Program Outcomes (POs) [the two program level outcomes], Core Curriculum Outcomes (COs), Academic Learning Compacts (ALCs), and Administrative Outcomes (AOs).**

B. Defining and Writing Outcomes

Simply defined, **an outcome is a specific expectation** stated for a unit (Driscoll & Wood, 2007). It can also be explained as an intended change in a targeted audience's **skills, knowledge, behavior, attitudes, services, and/or status**, due to specific activities and/or experiences. Outcomes direct the efforts of a department, program, and unit to ensure success in teaching, research, services, and assessment. They benefit all stakeholders, from students to faculty, to administrators and staff members of an institution.

A typical outcome statement has three parts: **WHO + VERB/ACTION + WHAT**. It should also be:

1. **Written** as one complete sentence.
2. **Measurable** with an assessment activity such as a paper, presentation, portfolio, embedded test items, projects, surveys, timelines, databases, attendance logs
3. **Specific** by stating the exact knowledge/skills/behaviors and level of knowledge/skill/behaviors acquisition expected for specific deadlines
4. **Aligned** with current goals of the program

The following sections will describe the different types of outcomes used at FIU and contain corresponding examples that demonstrate the above format. The outcomes involving student learning, such as the SLOs and Core Curriculum Outcomes, have specific competencies that **MUST** be addressed. These include: **Critical Thinking Skills, Content/Discipline Knowledge, and Written and Oral Communications**. A fourth competency, **Technology**, is required only for undergraduate SLOs. The examples used for these outcomes will address a number of these competencies.

Bloom’s Taxonomy, as a general rule, is highly recommended for all outcomes on student learning. The taxonomy was created for categorizing different levels of thinking processes that form part of the learning skills. They are useful to determine and ensure that students are assessed beyond factual recall and comprehension. The ultimate goal being that our students reach high order levels of thinking, which enable to them to become adaptable and creative individuals in society as a whole. Here is an overview of Bloom’s hierarchical taxonomy (both the traditional and the newly revised taxonomy):

Figure 4.1 Bloom’s Taxonomy Versions

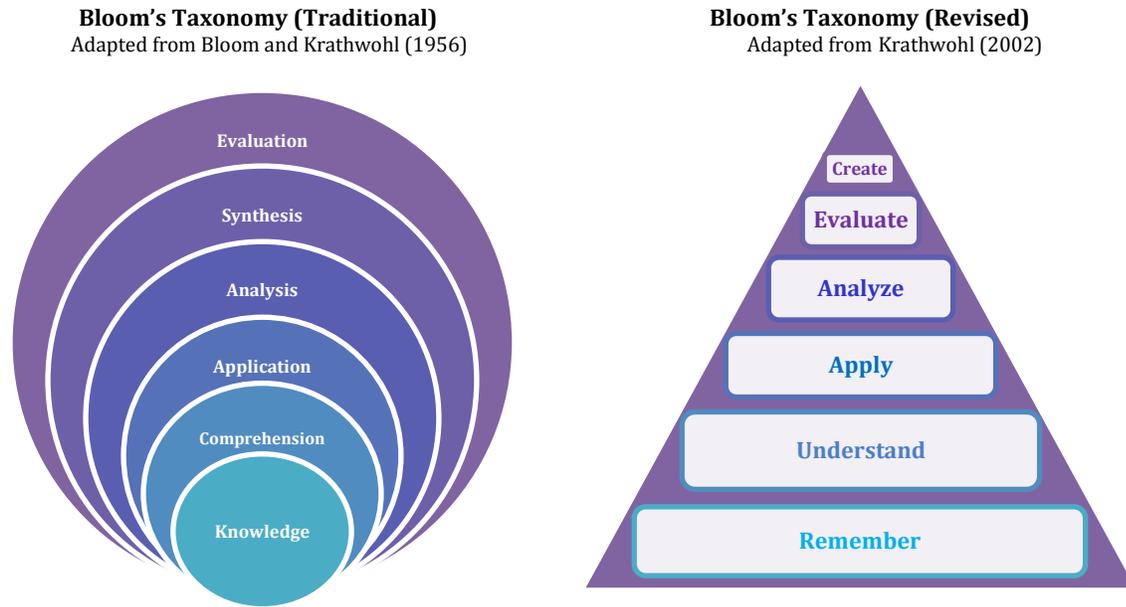


Figure 4.2 Bloom’s Taxonomy Defined

Skill	Description	Associated Verbs
Traditional		
Knowledge	Primarily observation and recollection of information, students require memorization of basic information	find, retrieve, describe, list, recognize, recall, name, memorize, repeat, review
Comprehension	Students understand information or grasp meaning, interpret facts	paraphrase, explain, summarize, restate, sketch, identify, express, discuss, recognize
Application	Students move beyond basic comprehension and begin to apply what they’ve learned; students expected to use concepts they’ve learned in new situations	execute, implement, apply, modify, use, illustrate, examine, demonstrate, solve

Analysis	Students see patterns, organize parts, recognize hidden meanings, identify components	analyze, separate, order, explain, connect, distinguish, deduce, divide, compare, select, explain, infer
Synthesis	Use old ideas to create new ones, generalize from given facts, relate knowledge from several areas, predict, draw conclusions	plan, devise, hypothesize, schematize, create, construct
Evaluation	Compare and discriminate between ideas, assess value of theories, presentations, make choices based on reasoned argument, verify value of evidence, recognize subjectivity	assess, decide, recommend, convince, select, judge, explain, discriminate, support, conclude
Revised		
Remember	Recalling information	find, retrieve, describe, list, recognize, recall, name, memorize, repeat, review
Understand	Explaining ideas and concepts	paraphrase, explain, summarize, restate, sketch, identify, express, discuss, recognize
Apply	Using information in another familiar context	execute, implement, apply, modify, use, illustrate, examine, demonstrate, solve
Analyze	Breaking information into parts to explore meaning and relationships	analyze, distinguish, deduce, compare, contrast, infer, deconstruct, differentiate, calculate
Evaluate	Justifying a decision or course of actions	critique, judge, assess, discriminate, convince, support, rate, value, rate, score, select
Create	Generating new ideas, products or ways of viewing information/concepts	design, construct, devise, invent, produce, formulate, assemble, propose, estimate, plan

1. Academic Outcomes

Program Related Outcome: Student Learning Outcomes (SLOs)

Student learning outcomes or **SLOs** focus on students’ knowledge and skills expected upon completion of an academic degree program. When writing a student learning outcome, it is important to consider: ***What should my students know or be able to do at the time of graduation?*** Three frequently used definitions of student learning outcomes are:

1. “A learning outcome is a stated expectation of what someone will have learned” (Driscoll & Wood, 2007, p. 5).
2. “A learning outcome statement describes what students should be able to demonstrate, represent, or produce based on their learning histories” (Maki, 2004, p. 60).
3. “A learning outcome describes our intentions about what students should know, understand, and be able to do with their knowledge when they graduate” (Huba and Freed, 2000, p. 9-10).

In student learning outcomes, the **WHO** is the graduating student (undergraduate or graduate student). The **VERB** describes the students’ action (e.g., will be able to

demonstrate, conduct, design). The **WHAT** refers to the expected knowledge or skill the graduates of the program should have mastered (e.g., project, presentation, exiting exam).

For the purpose of streamlining institutional and external assessment requirements, SLOs are expected to meet the requirements of various constituencies. One requirement is to have outcomes related to each of the following three categories: Content/Discipline Knowledge, Critical Thinking, and Oral and/or Written Communication skills. These three categories meet the requirements of the Academic Learning Compacts (ALCs). **ALCs** are required by the Florida Board of Governors from all public universities in the state for each baccalaureate degree program that each university offers. Another institutional requirement for all undergraduate programs is that there must be at least one outcome designated to assess students' use of technology for enhancing their education within the context of their discipline. This technology outcome may be integrated as part of other outcomes such as content knowledge or communication, but must remain clearly identifiable (e.g., using a software program to design buildings in an architecture program may be related to both content knowledge and technology).

Below are examples of student learning outcomes with a description of the quality of those outcomes. The first example is related to Written Communication that is used for both SLOs and ALCs:

- Poor:** *Students will demonstrate the ability to write effectively.*
The outcome is a complete sentence and includes WHO (students) + ACTION (will demonstrate) + WHAT (the ability to write effectively). However, this outcome is weak in that it does not specify how this ability will be demonstrated. The VERB could also be strengthened by referring to Bloom's taxonomy and using language that specifically addresses the type of skill expected.
- Better:** *Students will demonstrate their ability to compose a final essay with a well-defined thesis.*
This outcome has improved in that it is more specific for (a final essay with a well-defined thesis) is measurable.
- Best:** *Students will construct a research paper with a well-defined thesis using critical theory to compare and contrast two specific literary periods.*
This outcome is well developed. Not only does it have all three parts, but it clearly states how it is going to demonstrate this skill. You can also get a clearer idea of what kinds of skills are going to be evaluated and the type of major the student belongs to because the WHAT and the VERBS are much more specific. The actual measure is also described more clearly and the reader is also able to determine the type of assignment used to assess the state skill sets.

For more examples of outcomes and direct measures that are used for the ALC's, the complete listing is on the APA website at <http://apa.fiu.edu/alc.html> under the section

entitled, “Direct Measures”.

The second example addresses the **Technology** competency for undergraduate students.

Poor: *Students will be able to effectively use technology.*

The outcome is a complete sentence and includes WHO (students) + ACTION (be able to) + WHAT (use technology). However, this outcome does not aptly describe the behavior expected: what kind of technology; will this help students conduct research, etc. Furthermore, the skill addressed may be difficult to measure without a proper description. The statement is too vague and it does not reflect the skills in association with a major or a focus. The outcome may be for a chemistry student or a history student. If you cannot differentiate a major from the outcome, it is an indication that the outcome may be too broad. Conclusion: the VERB and WHAT should be more specific.

Better: *Students will be able to use electron microscopes for research.*

This outcome now specifies the technology that students will need to master, but it does not describe the purpose of using it and the verb is still too vague. You also still cannot deduce how the technology skills relate to a specific major or field.

Best: *Students will appropriately plan for and apply their knowledge of electron microscopes and biology to conduct research on cell structure.*

Here, both the VERB and the WHAT is more specific and includes information as to how student will apply concepts and skills to their discipline. The skills are also easily measureable.

Program Related Outcomes: Program Outcomes (POs)

Program Outcomes or POs focus on expected programmatic changes that will improve overall program quality for all stakeholders, including students, faculty, and staff. It does not incorporate learning outcomes, but rather emphasizes areas such as recruitment, professional development, advising, hiring processes, and/or satisfaction rates. When writing program outcomes, consider the following question: How can I make this program more efficient? A couple of other definitions include:

1. Program outcomes illustrate what you want your program to do. These outcomes differ from learning outcomes in that you discuss what it is that you want your program to accomplish. (Bresciani, n.d., p. 3)
2. Program outcomes assist in determining whether the services, activities, and experiences of and within a program positively impact the individuals it seeks to serve.

In program outcomes, the **WHO** includes multiple stakeholders generally, since the program is viewed as whole. So it can be undergraduate and/or graduate students, faculty, and/or staff members. The **VERB** describes any and all actions (e.g., will be able to demonstrate, conduct, design, hire, implement) that will affect the stakeholders. The **WHAT** refers to the expected experiences and/or accomplishments of the program.

- Poor:** *Graduate students will be satisfied with the program.*
 The outcome is a complete sentence and includes WHO (graduate students) + ACTION (will be satisfied) + WHAT (the program). However, this outcome does not specify the program or the type of program satisfaction measured. The WHAT should be more specific.
- Better:** *Graduate students will be satisfied with the master's program.*
 This outcome specifies the program level (masters) and degree of satisfaction (satisfied), but would be stronger if the reader would know the specific program addressed and the type of program satisfaction under analysis. .
- Best:** *Graduate Students will be satisfied with the overall effectiveness of student advising in the Master's program in Construction Management.*
 Here, the WHAT is more specific about the program, which will then allow for selection of the assessment tool (most likely a survey in this case) and criteria for success.

Again, there is a tendency to be too broad in writing program outcomes, which would make these statements “goals”, rather than outcomes. It is important that all of the outcomes are **SPECIFIC** and **MEASURABLE**.

Core Curriculum Outcomes (COs)

Core curriculum outcomes or **COs** focus on expected learning outcomes for the core curriculum of the university, and characterize the institution’s mission for student learning. In the core curriculum outcomes, the **WHO** are the undergraduate students. The **VERB** describes any and all actions (e.g., will be able to demonstrate, conduct, design, implement). The **WHAT** refers to the expected knowledge or skill the students in the courses should have mastered. The example provided below is an outcome in the *critical thinking* competency.

- Poor:** *Students will design and conduct research.*
 The outcome is a complete sentence and includes all three basic components. However, this outcome does not specify the type or quality of research to be done. The outcome should be more specific.
- Better:** *Students will be able to independently design and carry out experimental and correlational research.*
 This outcome specifies the type of research (the WHAT), but not the actions and type of skills used for accomplishing the outcome.
- Best:** *Students will be able to independently design, carry out, interpret, and report experimental and correlational data analysis using SPSS when provided with valid quantitative data from an educational research study.*

Here, the WHAT is more specific and includes information as to what types of research and research activities are deemed acceptable for these students. The conditions under which students will complete the research activities are clear and specific enough to help faculty agree on assessment methods and expectation levels (e.g., by the use of more specific verbs). Furthermore, the using more specific verbs also demonstrate an expectation of higher order thinking from creative level in Bloom's Taxonomy.

These examples also demonstrate that **the most difficult aspect of writing the student learning outcome** (or any outcome) is creating **specific and measureable VERBS and appropriately describing WHAT exact knowledge/skills are to be mastered and how.**

2. Administrative Assessment Outcomes (AAOs)

Administrative Assessment Outcomes (AAOs) are statements that describe what the administrative units intend to accomplish in support of institutional effectiveness and overall academic learning. The drive of administrative units should be to determine and improve service quality across the university, particularly in the areas of client satisfaction, decision making, resource allocation, operational support, and general strategic planning. Similar to the other outcomes addressed in this chapter, AAOs should be written with the university's vision and mission in mind and all stakeholders involved therein. Thus, if the mission of a unit is to support students in learning certain skills (as is frequently the case in Student Affairs offices), then effectiveness outcomes related to overall student learning of these unit related skills may be used. Examples of administrative units include, but are not limited to: Deans' Offices, centers and institutes, administrative support units, and student support areas such as the library and Student Affairs offices. Below is an example of an AAO for a Career Services office:

- Poor:** *Students will successfully complete a resume.*
The outcome is too vague and does not address how the unit will relate to accomplishing the outcome. The purpose of the WHAT is also not mentioned. For what purpose are students completing resumes? Is it for graduate school admission or for employers?
- Better:** *Students will demonstrate competence in writing resumes for employment.*
This outcome is more specific. Now the reader knows that the resumes are for the purpose of finding employment. Also, the outcome uses more specific action VERBS. However, it can still be improved by providing more detailed information.
- Best:** *Students attending the fall and spring workshops will be able to develop a discipline specific resume that meets employer expectations.*
Now the reader can understand the nature and context of the outcome as well as the intended goal. The WHO is also more specific and provides information about how the unit hopes to reach the intended stakeholders who will accomplish the outcome. Also, the added details link the outcome to the unit

and its mission by providing information about the services offered by the unit (e.g., workshops). Extra details in the WHAT section provides clues about the level of proficiency and quality is expected to be achieved.

C. Qualitative and Quantitative Outcomes

When writing outcomes, it is important to determine whether you wish to conduct quantitative or qualitative assessment. This decision dictates the assessment method utilized to collect data and report results.

The output for quantitative assessment measures are defined by numerical values. When measuring student learning, this translates into a primary focus on recall skills and questions where there is only one correct solution (e.g., multiple choice exams). For example, if a program requires an overall knowledge base for completing a program, this knowledge could be measured through a comprehensive exam, which would generate a score based on the number of questions answered correctly. When not directly measuring student learning, quantitative assessments could include a wide range of numerically defined measures such as surveys, checklists, time of completion, and funding targets. Basically, any measure that can easily be counted or translated into a percentile or deadline can be a quantitative measure.

Qualitative measures focus on rich, descriptive evidence for assessing outcomes. These measures often yield a more holistic and in depth view of the topic or area being assessed. However, these measures may also be more time consuming to collect and more difficult to assess since there may not be one simple solution, answer, or perspective that would be deemed correct. In the case of student learning outcomes, qualitative measures include essays, short answer responses, portfolios, multitier projects, team work evaluations, internship evaluations, and oral exams. A specific example, would be assessing a poem whereby learning expectations would pertain to the particular strategies students use to compose the poem, which would be subjective, and/or subject to interpretation. Here faculty could consider focus groups or student questionnaires that can give them an insight as to how students apply knowledge acquired within their program to their writing.

When not directly measuring student learning outcomes, different kinds of measures may also be used, such as interviews, focus groups, minutes, and other narratives. For example, students may be expected to provide multiple perspectives regarding their experiences in an academic or an extracurricular program, in which case they could be interviewed and the data would be coded to analyze these perspectives. This kind of data can have profound impact on changing techniques or pedagogical methods to enhance the quality of activities, services, courses, or programs. As Palomba and Banta (1999) explain, “qualitative approaches allow for goal-free evaluation, the chance to discover the unintended and accidental effects of a program as well as intended effects” (p. 338).

When choosing between quantitative and qualitative measures, it is essential to keep the outcome in perspective. Some outcomes are best assessed through one of the two methods. Most outcomes, however, can be assessed using both types of measures. For more robust assessment, some programs opt to use both kinds of measures to assess key outcomes for their major. Additionally, depending on the discipline, either quantitative or

qualitative measures may be more appropriate to use (Palomba & Banta, 1999). The next chapter will provide a more detailed explanation of the various types of quantitative and qualitative measures used in assessment.

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CHAPTER 5

Planning for Assessment III: Curriculum Mapping

A. Introduction

1. Definition of Curriculum Mapping

Curriculum mapping is a representation of the different components of the curriculum as an overview to describe the relationships between the curriculum and specific learning competencies (Harden, 2001). It is primarily concerned with “**what is taught** (the content, the areas of expertise addressed, and the learning outcomes), **how it is taught** (the learning resources, the learning opportunities), **when it is taught** (the timetable, the curriculum sequence), and **the measures** to determine whether the students have achieved the expected learning outcomes (assessment)” (Harden, 2001, p. 123). Curriculum maps help identify **where** within the curriculum learning outcomes are **addressed** and provide a means to determine whether the **elements** of the curriculum are **aligned**. They also provide a context for planning and improving curriculum, instruction, and assessment (Holycross, 2006). Overall, it is an efficient assessment practice whereby goals and outcomes are systematically and thematically aligned to curriculum.

2. Benefits of Curriculum Maps

Curriculum maps have multiple benefits, some of which are listed below:

- Allow for an aggregate view of departmental/programmatic curriculum for faculty perusal
- Make the curriculum transparent for all stakeholders
- Link all components in a clear manner (from curriculum to instruction to assessment)
- Identify gaps in the curriculum
- Identify strengths in program outcomes
- Improve overall program coherence
- Identify overlapping learning outcomes in view of scope and sequence
- Allow vertical alignment of assessments, content, and methods across semesters and varying levels
- Support horizontal alignment of assessments, content, and methods between courses and programs
- Illustrate potential advantages and disadvantages to curriculum sequence for students
- Serve as useful advising tool for students – giving them an overview of what is expected of them and the reasoning behind the sequence of courses
- Improve communication among faculty

- Increase the likelihood that students achieve program-level outcomes
- Encourage reflective practice

3. An Overview of Curriculum Mapping Systems

In creating efficient curriculum maps, the following criteria may be useful:

- Look
 - Clear and succinct data
 - Display comparative data – it should spatially represent the different elements of the curriculum so that a whole picture is easily viewed, including relationships and connections between the various parts of the map
- Content
 - Evidence that the courses address program-level learning outcomes
 - Presence of assignments that evaluate a learning outcome [optional]
 - Include the level at which skills will be taught within the curriculum (e.g., introduce, reinforce, assess)
 - Relevant to an institution’s vision, mission, and values
 - Relevant discipline specific programs/degrees
 - Available to all faculty (network based) and collaboratively created

B. Examples of Curriculum Maps

Curriculum maps take on many formats depending on the preferences and needs of each program/department. Generally, the map will consist of tables that have learning outcomes located within the columns and courses within the rows, or vice versa. In the cells where a course and a competency intersect, a marker is placed if a particular competency is covered by the course. These markers vary from the simplest symbol (e.g., an “X”) to a descriptive word or phrase (e.g., describing the level at which skill is taught or indicating relevant assignments). Blank cells can prove to be indicators of missing information or gaps in learning outcomes for any given course at any given time. This characterizes a simple curriculum map. Below are three examples.

First, Figure 5.1 is an example of a curriculum map developed by FIU faculty in the College of Nursing and Health Sciences. This example was developed to map learning outcomes to the required courses in the Nursing B.S. program and was also used for reporting required for the Academic Learning Compacts (ALCs).

Figure 5.1: Bachelor in Nursing - Academic Learning Compacts*

Degree Program Student Learning Outcomes	Courses						
	Basic Skills	Client Assessment	Pharmacology	Foundations II	Foundations II Clinical	Pathophysiology	Nursing Research
	NUR 3026C	NUR 3065C	NUR 3145	NUR 3027	NUR 3027L	NUR 3125	NUR 3165
Content/Discipline Knowledge							
1. Apply antecedent knowledge in assessing psychosocial, developmental, cultural, and spiritual adaptive dimensions that impact individuals, families and communities as clients who are experiencing potential and actual environmental stressors.		X			X		
2. Apply the nursing process to assist the individuals, families and communities as clients in adapting to potential and actual environmental stressors in health promotion, maintenance, restoration, rehabilitation and/or assist the client to face death with dignity.	X	X	X	X	X	X	
3. Apply research findings from nursing and related disciplines applicable to individuals, families, and communities as client.				X	X	X	X
Critical Thinking							
1. Synthesize scientific knowledge from nursing and related disciplines in the provision of care to clients within the health-illness continuum throughout the life span.		X	X	X	X	X	X
2. Analyze nursing theories and theories/concepts from other disciplines as a base for nursing practice.							X
3. Analyze research findings from nursing and related disciplines applicable to individuals, families, and communities as client.							X
Oral and Written Communication							
1. Demonstrate oral and written skills in receiving, translating, and relaying information	X	X	X	X	X	X	X

**Courtesy of College of Nursing and Health Sciences at Florida International University*

The second example, illustrated in Figure 5.2, is a simple mapping of SLOs and the measures used to assess them through program assignments/milestones in a hypothetical doctoral program. This type of curriculum map, though not as detailed, covers important information that may allow faculty to quickly plan assessments within a program and help in tracking the assignments that need to be collected and evaluated.

Figure 5.2: Assignment/Curriculum Map PhD XXXX Program

PhD Requirements	SLO 1	SLO 2	SLO 3	SLO 4
Coursework	X			
Pre-Qualifying Exam		X	X	
Comprehensive Exam	X	X		X
Dissertation/Final Project	X	X	X	
Defense	X	X	X	

The final example, Figure 5.3, is a template of one of the most commonly used curriculum maps. This example includes more detailed and specific information about the level of different skills/competencies that are taught and/or assessed within each course in the program.

Figure 5.3: Curriculum Audit for Degree Program XXXXX*

- **Introduced** = indicates that students are introduced to a particular outcome
- **Reinforced** = indicates the outcome is reinforced and certain course allow students to practice it more
- **Mastered** = indicates that students have mastered a particular outcome
- **Assessed** = indicates that evidence/data is collected, analyzed and evaluated for program-level assessment

Competency/Skill	Introductory Course	Methods Course	Required Course 1	Required Course 2	Required Course 3	Required Course 4	Capstone Course
Content SLO 1	Introduced		Introduced	Reinforced		Reinforced	Mastery / Assessed
Content SLO 2		Introduced		Reinforced	Introduced	Reinforced	Mastery / Assessed
Content SLO 3	Introduced		Introduced		Reinforced		Mastery / Assessed
Critical Thinking SLO 1		Introduced			Introduced	Reinforced	
Critical Thinking SLO 2		Introduced		Introduced			Mastery / Assessed
Communication SLO 1		Introduced		Reinforced			Mastery / Assessed
Communication SLO 2			Introduced				Mastery / Assessed
Integrity / Values SLO 1	Introduced	Reinforced			Reinforced		Mastery / Assessed
Integrity / Values SLO 2		Introduced					
Project Management SLO 1		Introduced		Reinforced			Mastery / Assessed
Project Management SLO 2				Introduced			Mastery / Assessed

*Adapted from University of West Florida, Writing Behavioral, Measurable Student Learning Outcomes CUTLA Workshop May 16, 2007.

C. Planning for Curriculum Maps

Here are some important tips when your unit or department is planning for curriculum mapping:

- A. Assessment leaders/liaisons can either gather information from program faculty and compile it into the curriculum, or bring together the faculty members (highly recommended) and brainstorm a working curriculum matrix.
- B. Information that is needed for the matrix includes:
 - a. The intended program outcomes/student learning outcomes
 - b. The required and recommended courses for the program
 - c. Other required academic experiences (e.g., internships, exams)
- C. Determine which kind of matrix fits your department's/program's needs (see examples above).
- D. Determine in which manner the department/program will share the curriculum map with faculty, staff, and students. It is recommended that the curriculum map(s) be made public and accessible to parties who assist in the planning and creation of these maps throughout the process.
- E. New technologies have rendered curriculum mapping more flexible and efficient. The most common tool is Excel. However, with the new FIU Assessment Management System (Nuventive's TracDat), you will have access to its curriculum mapping tool that allows you to map outcomes to courses in a curriculum. The tool also enables report creation of these maps for easy viewing analysis.
- F. It is recommended to use markings such as "I", "R", "M" and "A", which stand for "introduced", "reinforced", "mastered", and "assessed" respectively (see Figure 5.3 above). This type of curriculum map provides a more comprehensive outlook of the curriculum and outcomes over time. However, this is up to individual departments/programs depending on their needs, size, and requirements.

D. Developing and Utilizing Curriculum Maps – Step by Step Guide

After the planning stage is complete, it is then time to construct the curriculum map. The following steps provide a guideline:

1. Collect all relevant or required information such as: course syllabi, curriculum requirements, and major learning competencies.
2. Collaborate with faculty and staff members related to the program or to developing assessment strategies to delineate where the learning outcomes are taught, reviewed, reinforced, and/or evaluated within each of the required courses.
3. Identify major assignments within courses related to the learning outcomes and discuss how accurately they measure the learning outcomes.
4. Create a matrix with courses on one axis and learning outcomes on another (see previous examples).
5. Make changes as appropriate if there are any gaps in teaching or assessing learning outcomes.

6. Strategize with colleagues to periodically collect samples of these assignments, review them, and use them as measures to assess how well students are mastering critical competencies. You can include dates or semesters when assessment will take place within the curriculum map as well.
7. Continue the cycle of reviewing and revising the curriculum map periodically (especially after changes to the curriculum or the outcomes).

Tips for Effectively Integrating Curriculum and Assessment

- A. Consider all of the of the assessment requirements you need to fulfill: SLOs, POs, Academic Learning Compacts, discipline specific accreditation, and others when establishing learning outcomes and creating an assessment plan.
- B. Use the curriculum map(s) to identify and/or develop learning experiences and opportunities, such as assignments, exams, and internships that will lead to the completion of the program's outcomes.
- C. Create or use assignments that can specifically address particular learning outcomes.
- D. Structure the curriculum so that students will have multiple opportunities to learn and review major competencies.
- E. Include as many instructors as possible throughout the entire process (including full time faculty, adjuncts, teaching assistants who are assigned courses, etc.).
- F. Inform students that the assignments are aligned to the learning outcomes of the course or program.
- G. Inform students that the assessment process is being used to calibrate future program improvements.
- H. Faculty and assessment leaders should periodically revisit the curriculum map and make adjustments if there are changes to the curriculum or outcomes in the program or department. Revisions should be made regarding gaps, timelines, and/or prioritization. Eliminate obsolete outcomes and add outcomes wherever missing or needed.

E. References and Toolbox

- Least, Tern. (2003, July). Retrieved from <http://www.leasttern.com/workshops/Mapping/WhatIsCurricMapping.ppt.pdf>
- Oliver, B., S. Jones, et al. (2007). Mapping curricula: ensuring work-ready graduates by mapping course learning outcomes and higher order thinking skills. Evaluations and Assessment Conference. Brisbane.
- Harden, R. M. (2001). "AMEE Guide No. 21: Curriculum mapping: a tool for transparent and authentic teaching and learning." *Medical Teacher* **23**(2): 123-137.
- Holycross, J. (2006). "Curriculum Mapping – An essential tool for curriculum development." *The Journal of Physician Assistant Education* **17**(4): 61-64.

Jacobs, H. H. (2003). "Connecting curriculum mapping and technology." *Curriculum Technology* 12(3).Curriculum Maps:

Useful Sites for Curriculum Mapping

University of West Florida: http://uwf.edu/cutla/curriculum_maps.cfm

University of Hawaii – Manoa: <http://manoa.hawaii.edu/assessment/howto/mapping.htm>

Indiana University Kokomo:

<http://www.iuk.edu/~koctla/assessment/curriculummap.shtml>

Aligning Curriculum: Classroom Assessment Techniques by Angelo, T. and Cross, P.A.

Summary:

<http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/assess-1.htm>

Book Available in APA Office

Designing and Assessing Courses and Curricula by Diamond, R.M.

CHAPTER 6

Defining Tools of Assessment

A. Introduction

After developing strong outcomes, it is important to determine how to effectively assess them. This is the first step to developing your assessment method that will help you determine the degree to which your outcomes are being accomplished. This chapter will describe basic steps that you can take to identify assessment measures that are appropriate for your needs. Within these steps you will find different types of measures and assessment tools described in depth (e.g., direct vs. indirect measure).

B. Identifying Assessment Tools

Assessment tools consist of any measures or instruments used to assess learning, behaviors, skills, perceptions, or programs and services. There are a wide variety of options available and most of these options are already being used in some way within programs, departments, and colleges. The outcome is always the foundation of the assessment strategy you choose. First, review your outcome. Then use the outcome as a basis to list a variety of assignments, projects, exams, surveys, or other tools that address that outcome in some way. This process can be facilitated by reviewing your program's curriculum map if you have one available (see chapter 5). Next, identify the artifacts or student works that can be used to assess the given outcomes within the curriculum. After you have identified the assignment(s) you will use to measure the outcome, you can pinpoint when and where you collect the assessment (e.g., course number, senior project, etc.) and make the proper arrangements with the faculty and staff to assess those assignments or tasks. Figure 6.1 provides an overview of the steps covered in this section identifying appropriate measurement tools.

Figure 6.1 Finding the Appropriate Measurement Tools

1. Identify Assessment Needs

- What are you trying to measure or understand? Every thing from artifacts for student learning to program efficiency to administrative objectives.
- Is this skill or proficiency a cornerstone of what every graduate in my field should be able know or do?

2. Match Purpose with Tools

- What type of tool would best measure the outcome (e.g., assignment, exam, project, or survey)?
- Do you already have access to such a tool? If so, where and when is it collected?

3. Define Use of Assessment Tool

- When and where do you distribute the tool (e.g., in a capstone course right before graduation)?
- Who uses the tool (e.g., students, alumni)?
- Where will the participants complete the assessment?
- How often do you use or will use the tool (e.g., every semester or annually)?

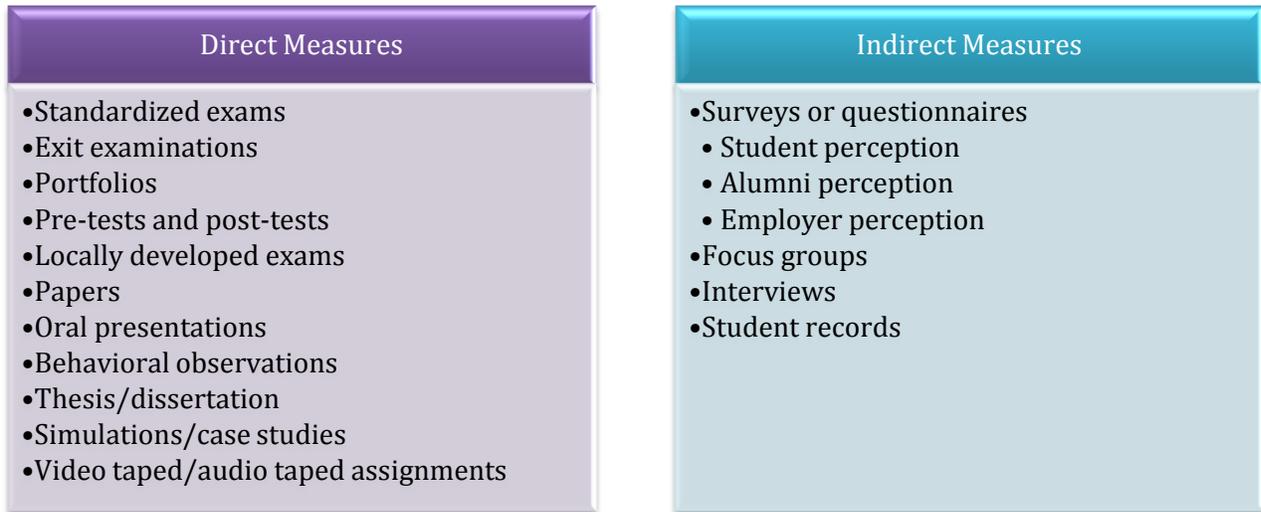
C. Understanding Assessment Needs

When trying to determine which tool to use for the purpose of measuring an outcome, it is essential to differentiate between assessing student learning outcomes and assessing program outcomes or administrative unit outcomes.

1. Student Learning Assessment

If your goal is to measure learning, then you can assess the particular competency or skill using two methods (1) a *Direct Measure* in which learning is assessed using tools that measure direct observations of learning such as assignments, exams, and portfolios or (2) an *Indirect Measure* in which learning is assessed using tools that measure perspectives and opinions about learning such as surveys, interviews, and evaluations. Direct measures are the most precise and effective tools in understanding how well students have learned the competencies you have defined in your Student Learning Outcome. Each learning outcome should be measured by at least one direct measure of student learning. Indirect measures provide supplemental details that may help your program or department understand what students think about learning and understand any strengths/weaknesses about your program that may help or hinder student learning. Figure 6.2 provides a listing of more examples of direct and indirect student learning assessment tools.

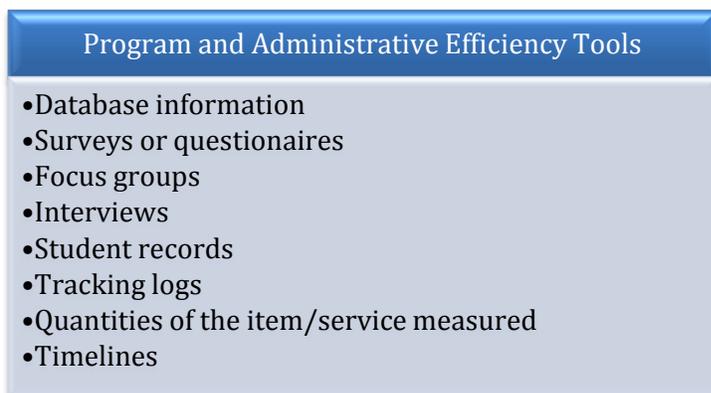
Figure 6.2. Direct and Indirect Measures of Student Learning



2. Program Efficiency or Administrative Assessment

If your goal is to measure effectiveness or efficiency of programs and administrative units, then assessment tools will be utilized in a different way than when measuring learning. Assessment tools will be used to measure numbers, percentages, deadlines, and perceptions. The intended participants of these assessments may be students, faculty, or staff. However, some objectives do not use participants and instead focus on numbers and figures obtained from databases and other such resources. Below is a listing of various types of assessment that can be used (see Figure 6.3).

Figure 6.3. Assessment Tools for Measuring Program and Administrative Unit Efficiency

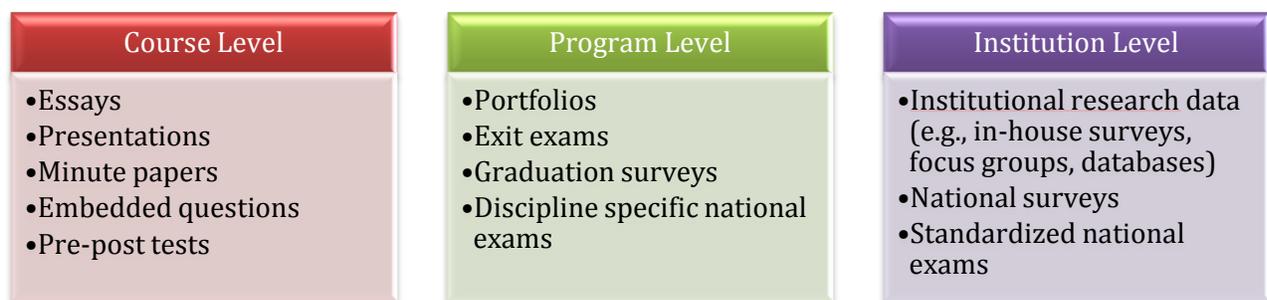


As you can see from comparing Figure 6.2 and Figure 6.3, program/administrative assessment tools have many commonalities with indirect measures of student learning. The main differences between the two are the purpose of using the tools and the way the data is applied to the measure the outcome or objective.

D. Where, When, and How Often

When measuring outcomes, it is fundamental to have a clear plan on where, when, and how often the assessment tools will be used to collect data. You can collect data at three different levels: the course, the program, and the institution. Each of these will produce different types of data and will affect the quality and specificity of the data you can collect and analyze. Figure 6.4 describes some of the assessment tools that can be used in each of the three levels.

Figure 6.4. Examples of Different Levels to Collect Assessment Data

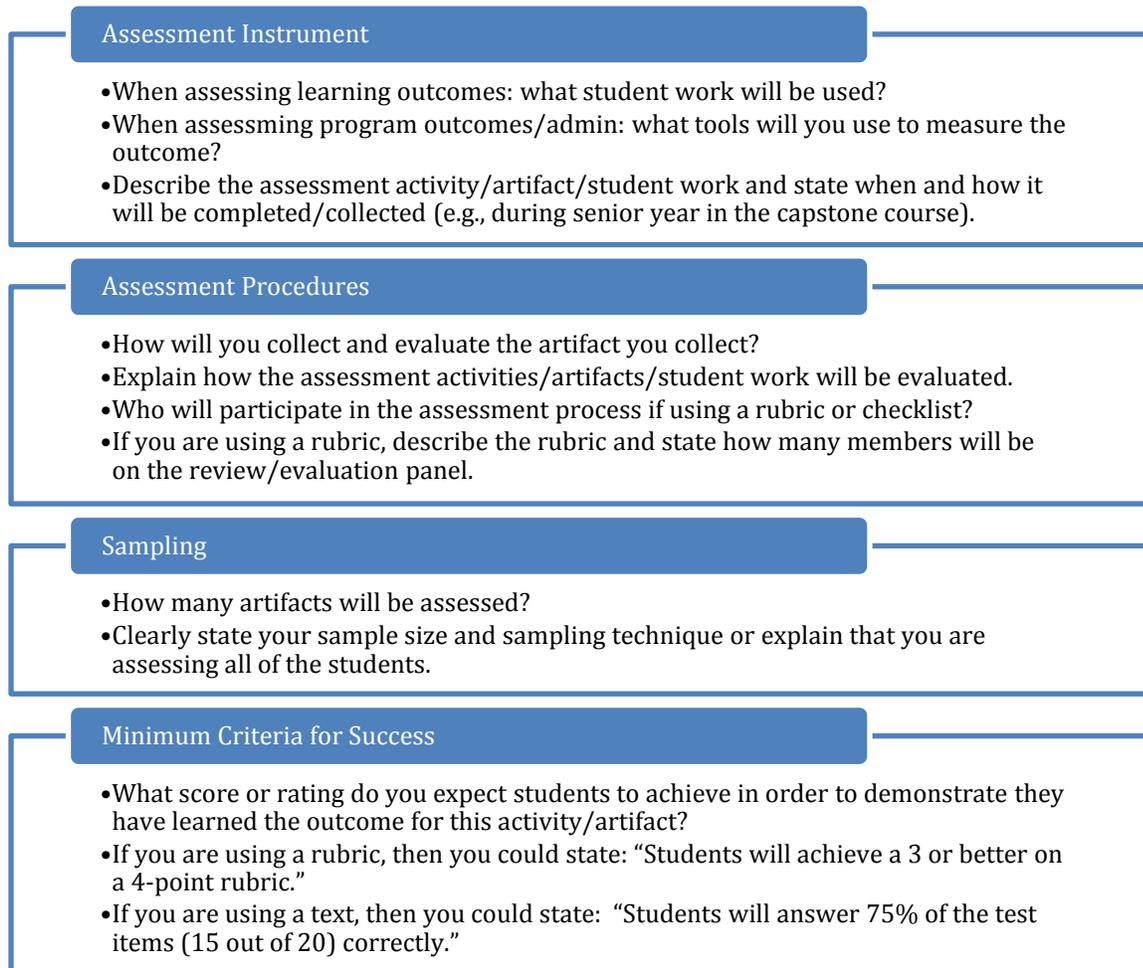


The time period when you administer the assessment tools needs to be carefully considered and documented. Some people find it useful to map out all of the assessment tools they are going to use and to the places and time periods they are going to collect these assessments. These types of mapping strategies are forms of curriculum mapping when in the context of student learning assessment. However, these maps may also be used to plan assessment procedures for administrative assessments and purposes other than student learning (e.g., planning assessment of a Human Resources service involving timelines, databases, and surveys).

Another consideration is to identify the schedule at which the assessment tool(s) will be administered. If you would want to assess a measure annually, but your primary assessment tool is only administered every 2 years, then you may want to consider another tool. Overall, understanding the where, when, and how often are essential component of planning and executing an assessment process.

E. Articulating an Assessment Methodology

The next step is to clearly articulate, document, and implement an assessment methodology. A clear assessment methodology identifies various key components that will outline the assessment processes used to measure the learning outcomes. Figure 6.5 outlines the components that are documented in the methods section assessment reports.

Figure 6.5 Assessment Methods Components

F. References and Toolbox

A wide range of assessment tools are described as well as tips for online and large classroom settings: <http://serc.carleton.edu/NAGTWorkshops/assess/types.html>

Two page handout from Stanford detailing different types of measures (e.g., direct/indirect, objective, performance, embedded, add-on):<http://www.stanford.edu/dept/pres-provost/irds/assessment/downloads/AM.pdf>

Advantages and disadvantages of various assessment methods:

<http://www.morningside.edu/academics/research/assessment/documents/advantagesdisadvantages.pdf>

Iowa State University site with a variety of assessment tools as well as other assessment tips:

<http://www.celt.iastate.edu/teaching/assessment.html>

CHAPTER 7

Generating and Reporting Meaningful Results

A. Introduction

The assessment plan, which includes outcomes and methods, must now be followed by the collection and analysis of data. The following section explores strategies for completing this stage of the assessment process. Guidelines for converting data into meaningful reports will also be included as a part of this chapter.

B. Collecting and Analyzing Data

Collecting data involves gathering information from the people who will be assessed. Most commonly, the process of gathering assessments takes place in the last half of the fall and spring semesters (but can also take place at any point during the three semesters each year). During this time it is essential to maintain open lines of communication between all of the people involved in the process of gathering information. This is a key recommendation because lack of clarity on what data needs to be gathered can lead to challenges such as missing opportunities for assessment, gathering the wrong kind of data, or making the process unnecessarily complex.

Suggestions for successful data collection include:

- Strategize on who will gather the data and who will be responsible for monitoring data collection as early as possible
- Set a timeline for gathering data across the program or unit
- Send reminders to collect data
- Inform the people whose data is being collected that their information will be used to improve the program or unit

1. Analyzing Data

The next step is to analyze the data that has been collected. This step involves several major components. The first is to record and organize the data. This component varies according to the type of data that is being gathered.

Analyzing Essays, Projects, and Other Open-ended Artifacts

These types of data sources often require a rubric and a panel of reviewers. Similarly, the analysis for these data requires more collaboration than the other forms discussed in this segment. Thus, it is important to form a panel of 2 or more experts in the field to review the data using a rubric. These experts can include any field related faculty members or instructors, alumni, employers, and professionals.

Calibration Sessions

It is a good idea to conduct a calibration session with your panel prior to commencing the data evaluation process. Calibration sessions involve meeting with all of the panel members in order to define a common method of rating artifacts based on a common rubric or scale. During the calibration session, panel members discuss and analyze the rubrics. This analysis provides a common understanding of the skill levels or competency levels outlined in the rubrics and builds consensus about rating scales and their meaning given specific examples of student works or other data sets. For example, one of the items to be defined would be the difference between a 4 and a 5 on a rubric given a particular student essay. Understanding this will help increase the comparability of the scores between different raters. In other words, the reliability of the scores is increased in the calibration exercise. To further increase the reliability of the ratings, you can use 2-3 sample artifacts to rate separately and then discuss the ratings to make sure that each member of the panel has similar rating parameters and expectations.

Rating Session

Once there is a rubric and a panel, you can rate the artifacts selected for assessment in one of several ways. The following examples are two of the most popular formats for assessing artifacts:

1. Simultaneous Rating Session: All panel members rate the artifacts at the same time and in the same location. This is the format that is most common for rating student presentations or senior projects where students are asked to present to a group of faculty and other professionals. However, it can also occur when panel members set a time and date to sit together and look through the artifacts as a whole. The advantage is that everything gets done at the same time and therefore, panel members can ask questions.
2. Independent Rating Session: Each panel member rates artifacts on their own time and submits a rating to a predetermined person who tallies up the scores for each member. The format is best when panel members find it difficult to meet or for artifacts that are too lengthy and complex to evaluate in a group session. However, the availability of discussion and collaboration is minimized and the ratings may contain more variance.

Rating sessions may also be a combination of the two formats described above. The most important aspect of the rating sessions is that they fit the needs of the type of assessment that is being conducted and the availability of panel members.

Compiling and analyzing assessment data for essays, projects, and other types of open-ended artifacts that require rubrics and expert panels can be more time consuming than other types of assessments (e.g., closed-ended multiple choice questions). However, open-ended artifacts often generate a deeper and more comprehensive understanding of what students have learned. They also serve to assess knowledge, attitudes, or skills (such as

communication or critical thinking) that may be difficult to assess using closed-ended questions.

Exams, Embedded Questions, and Other Closed-ended Artifacts

Analyzing data for these types of artifacts can be quick and easy. The first thing that needs to be done is to check whether the answers are correct or incorrect. This can be done through automated systems such as bubble-in answer sheets or online. Results can also be generated by manually checking the answers and reporting the results. It is essential that the questions used pertain exclusively to the learning outcomes being assessed. If an exam is used, for example, some questions may not be related to the learning outcomes that are being addressed or they may be related to several separate learning outcomes. In this case, it is recommended that the subtest sections or embedded questions within the exam be analyzed as separate scores according to learning outcome pertinence.

C. Reporting Data

Reporting data involves describing the data that has been analyzed. The main questions answered are:

- Were the criteria met?
- How many students or artifacts met the criteria set in the methods section?
- How many students or artifacts were included in the final assessment?
- What were the results of the assessment?

These questions can be answered in a variety of ways. The examples below illustrate each of the approaches.

1. Minimal Requirements

As part of your planning, you needed to have included the minimum criterion for success in assessing students or for your unit's outcome. In your results section, you would now need to include this minimal requirement.

The minimal requirement would include basic information about the number and/or percentile of artifacts or students meeting the criterion.

Example 1: 80% (8 out of 10) of the papers assessed *met* the minimum criterion for success. The average score on the rubric was 2.5 (while the minimum criterion was 2.0).

Example 2: The 29 students assessed answered an average of 25 of 40 questions correctly. The minimum criterion of answering an average of 30 questions correctly was *not met*.

2. Disaggregating Results

Disaggregating the results of the exam/quiz questions or the rubric is a more comprehensive way of reporting data. Disaggregated data means looking at test scores or

results by specific subgroups of students or outcomes. In the case of exam questions, disaggregating data can be done in several ways:

A. Reporting subsets of questions or subsets of categories within a rubric

Example 1: 80% (8 out of 10) of the papers assessed met the minimum criterion for success. The overall average was 2.2 and the minimum criterion was 2.0. The rubric used for the assessment addressed four major competencies. For each indicator, the average number of points for students can be viewed below (the maximum number of points was 3):

- Knowledge of Topic: 2.5
- Contrasting Different Perspectives: 2.0
- Using Outside Sources to Expand Argument: 2.7
- Appropriate Suggestions for Policy Change: 1.6

B. Reporting results (e.g., mean scores, percentiles) for individual questions or subsets of questions in an exam, quiz, or other closed-ended artifact. Measuring individual questions is more effective when using few questions that address different knowledge/skills related to the outcome. When there are many questions, however, they can be grouped into subcategories according to major sets of knowledge and/or skills addressed.

Example 2: The 29 students assessed answered an average of 25 of 40 (63%) questions correctly. The minimum criterion of answering an average of 30 (75%) questions correctly was *not met*. The questions addressed four major components of cell biology. Below are the results as disaggregated by major components:

- Knowledge of Cell Mitosis: Overall average = 40% of questions correct
- Identifying Cell Anatomy: Overall average = 80% of questions correct
- Understanding Functions of Cells: Overall average = 50% of questions correct
- Identifying Different Kinds of Cells: Overall average = 80% of questions correct

Disaggregating results is much more comprehensive than the examples identified when are describing how you met the minimal requirements. This extra information can provide a more complete understanding of the strengths and weaknesses of the students included in the assessment. For instance, in example #2, students did not meet the overall criterion which may seem like they are weak in cell biology knowledge. However, when disaggregating the results we see that students are strong in identifying cell anatomy and identifying different kinds of cells, but weak in the other two areas assessed. Information about this can help generate more targeted strategies for improving learning.

3. Tables, Graphs, and Charts Examples

Graphical displays of the data help provide an easy to read format for large quantities of data or complex information. All graphical displays of information should also include some of the written text that was found in the previous examples. This text, at minimum, would indicate how many students or artifacts were included in the assessment, whether

the criteria were met, and an overall average score/rating. In the two examples below, the same information is being displayed in different ways. In the case of the table, each of the major indicators in the rubric is listed as rows and the 3 points in the rubric are listed as columns. Each of the other cells lists the percentile of students who fell into each of the 3 points within each of the indicators.

Example 1: Table

80% (8 out of 10) of the papers assessed met the minimum criterion for success. The average was 2.2 and the minimum criterion was 2.0. The rubric used for the assessment addressed four major competencies. For each indicator, the average number of points for students can be viewed below (the maximum number of points was 3):

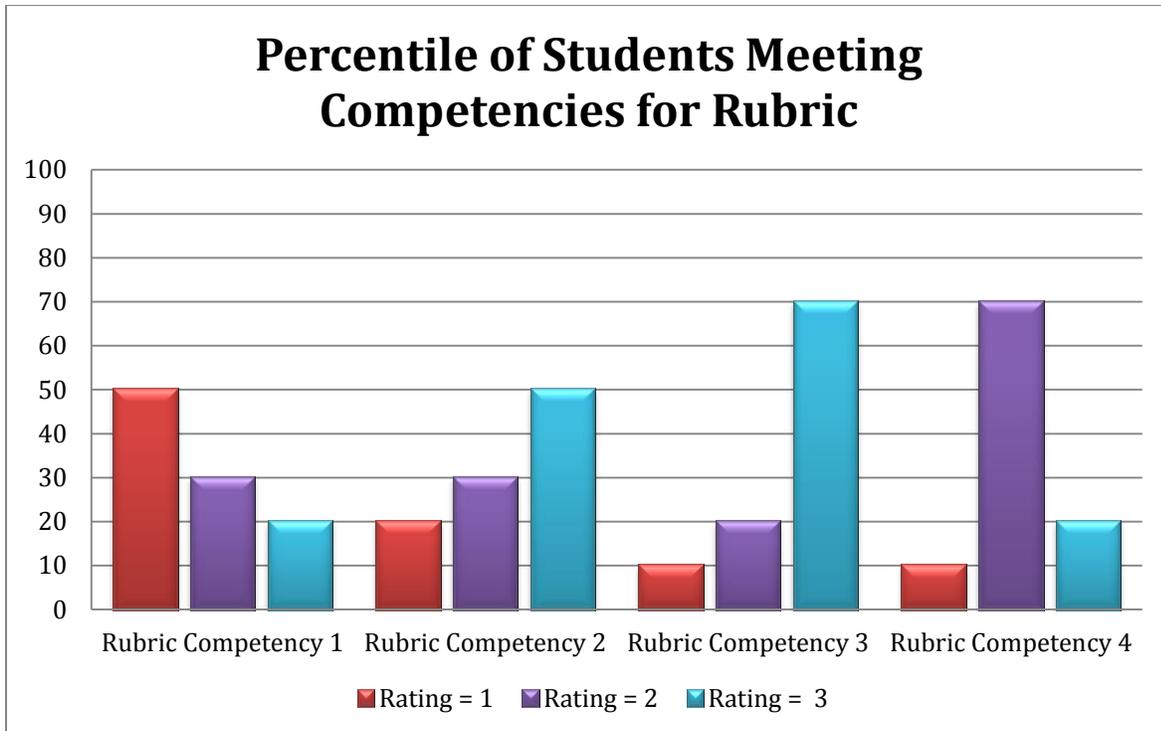
Percentile of Students Meeting Competencies for Rubric

Rubric Indicator	Rating = 1	Rating = 2	Rating = 3
Rubric Competency 1	50%	30%	20%
Rubric Competency 2	20%	30%	50%
Rubric Competency 3	10%	20%	70%
Rubric Competency 4	10%	70%	20%

In the bar graph, the percentiles of students are listed in the y-axis and the rubric indicators are listed on the x-axis while each of the 3 points is shown as a differently colored bar.

Example 2: Bar Graph

80% (8 out of 10) of the papers assessed met the minimum criterion for success. The average was 2.2 and the minimum criterion was 2.0. The rubric used for the assessment addressed four major competencies. For each indicator, the average number of points for students can be viewed below (the maximum number of points was 3):



Other types of graphical displays such as pie charts and lines graphs may also provide easy to read information when data is complex.

Tips for effectively using graphical displays include:

- Add titles that clearly describe the data that is being presented
- When using colors, make sure that they are easily distinguishable
- If data will be printed only in black and white, remember to make the colors in the graph or chart using white, black, and different shades of grey that can be distinguished from one another
- Include a legend to explain colors or other indicators within the graph or chart

The most common software programs to create these graphs, tables, and charts are Microsoft Word or Microsoft Excel. You can find resources to guide in creating your own graphs and charts using online tools or Microsoft Office in the links under the Resources section at the end of this chapter.

D. References and Toolbox

Palomba, C.A. & Banta, T.W. (1999). *Assessment Essentials: Planning, implementing, and improving assessment in Higher Education*. San Francisco: CA, Jossey-Bass.

Useful Sites

Online Graph/Chart Creation Tool

<http://www.chartgo.com/>

US Government Sponsored Graph/Chart Creation Tool

<http://nces.ed.gov/nceskids/createagraph/>

YouTube Video Tutorial for Creating Graphs/Charts in Microsoft Word and Excel

<http://www.youtube.com/watch?v=CJ7Dza-Wo7o&feature=related>

Vanderbilt University Assessment Website

<http://virg.vanderbilt.edu/AssessmentPlans/Results/Home.aspx>

Ball State University Assessment Website

<http://cms.bsu.edu/About/AdministrativeOffices/Assessment/Resources/Workbook.aspx>

CHAPTER 8

Using Results for Continuous Improvement

A. Introduction: Establishing Improvement Strategies

The most fundamental element of assessment emerges when all of the collected data is transformed into strategies to make improvements. The following sections will describe the steps that lead to developing effective improvement strategies and will provide tips on finding new ways to improve outcomes.

B. Revisiting Outcomes, Methods, and Results

Once the results of the assessment procedures have been collected and analyzed, the next step is to review all of the outcomes and their related methods and results. In this phase, faculty and staff can use this review as the foundation to establish improvement strategies that would directly impact the outcome. Questions that are important in this phase are:

- Were the criteria met?
- Were the results based on extremely low sample sizes?
- Are there any weaknesses that can be identified?
- Are there any strengths that can be identified?
- Did the results significantly differ from previous assessment cycles or were they the same?

Ideally, these questions should be asked in collaboration with other faculty, staff, and stakeholders (as applicable). These collaborations can help establish a comprehensive approach to addressing possible improvements by allowing for multiple people to generate ideas from different perspectives and areas of expertise and to develop strategies that will be shared as common goals for the entire program/unit.

1. Conceptualizing Improvement Strategies

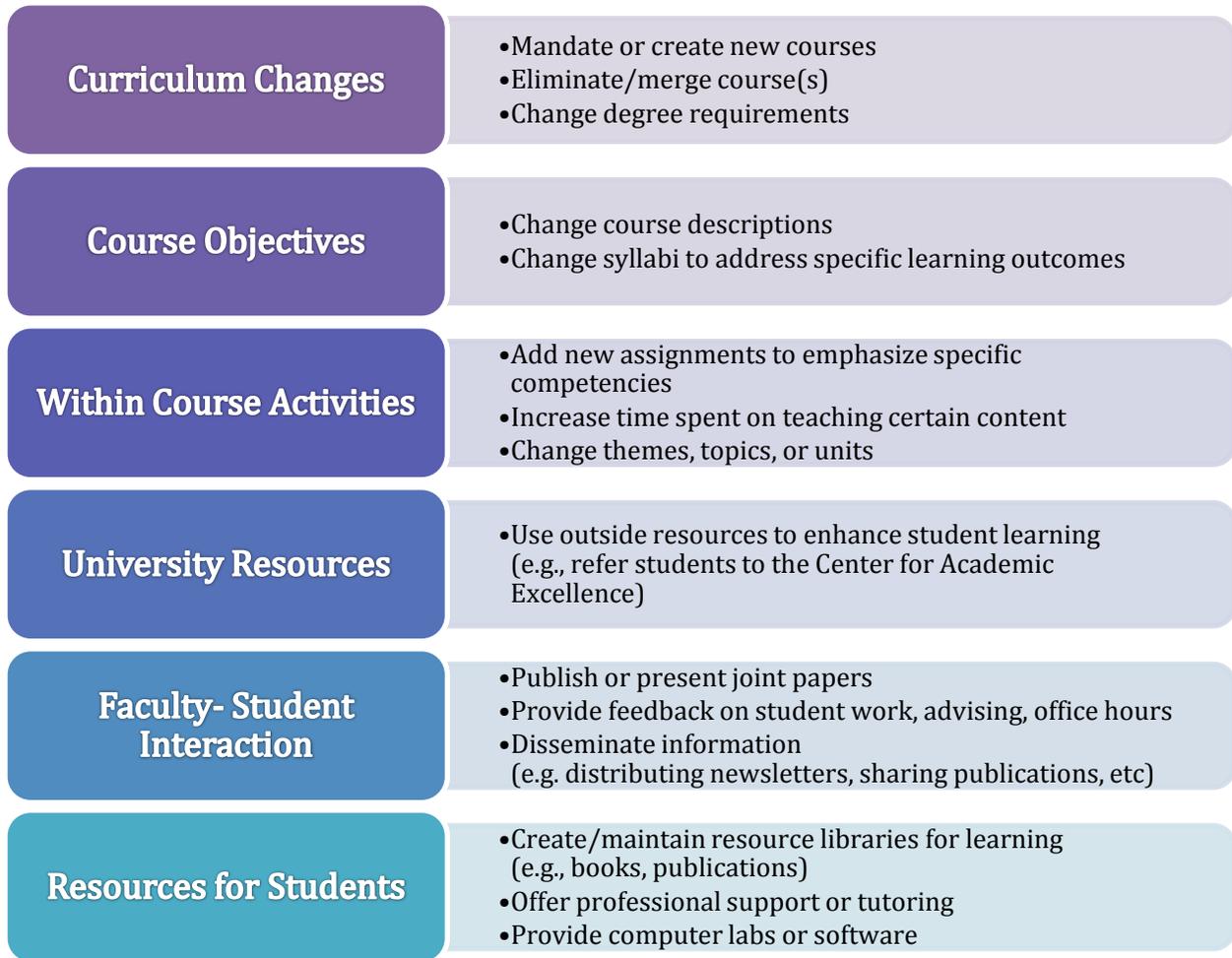
After reviewing all of the information gathered and asking the key questions above, it is time to generate improvement strategies. In a program or unit, the improvement strategies need to:

- Directly relate to the outcome specified
- Describe attainable and sustainable improvement actions
- Specify observable or measurable actions
- List timelines by which strategies will be implemented

It is important to note that for **student learning outcomes, improvement strategies must directly address student learning**. This means that at least one of the strategies must affect or change what students learn (e.g., curriculum changes) or how students learn (e.g., changing course lectures). In Figure 8.1, there are various examples of the types of student learning strategies that can be used for improving programs and units. The major categories on the left are based on an on-ongoing qualitative study conducted by the Office

of Academic Planning and Accountability. In this study, all of the use of results for all student learning outcomes, program outcomes, core curriculum course outcomes, and administrative outcomes collected since 2006. The strategies were coded and refined into major categories and these major categories are summarized in Figure 8.1 and Figure 8.2. On the right side of the graphic, examples of the types of improvement strategies under each category are listed to add further clarification.

Figure 8.1 Student Learning Improvement Strategy Examples



Below, in Figure 8.2, there are examples of the categories used to describe the improvement strategies of all non-academic reports including: program outcomes and administrative outcomes. Note the differences in the categories. While the student learning outcomes and course outcomes focus on strategies that will impact learning, administrative and program outcomes focus on a wide variety of strategies. However, it is important to note that administrative outcomes and program outcomes may contain strategies that pertain to improving student learning. This is especially true for outcomes that involve a learning component or for units that have a mission dedicated to learning (whether they are students or other groups).

Figure 8.2 Non-Academic Improvement Strategy Examples

Financial	<ul style="list-style-type: none"> •Obtain financial resources: funding, grants, etc. •Hire new faculty/staff •Reduce Spending
Enrollment	<ul style="list-style-type: none"> •Change recruitment efforts/tactics •Increase enrollment
Policy Changes	<ul style="list-style-type: none"> •Change policies, values, missions, or conceptual frameworks of a program or unit
Services	<ul style="list-style-type: none"> •Add or expand services to improve quality •Add or expand processes to improve efficiency
Research and Information	<ul style="list-style-type: none"> •Conduct research •Gather and/or disseminate information •Produce publications or presentations
Professional Development	<ul style="list-style-type: none"> •Create professional development opportunities •Attend professional conferences or workshops
Engagement	<ul style="list-style-type: none"> •Establish collaborations across stakeholders or disciplines •Provide services or establish links to the community
Resources	<ul style="list-style-type: none"> •Acquire new equipment, software, etc •Provide resources to specific groups

There is a third type of improvement strategy that pertains to modifying assessment methods or assessment instruments. This type of improvement strategy should never be used as the only source of improvement, but can be combined with other improvements if needed. Examples of assessment improvements include adding, modifying, or removing:

- Outcomes
- Assessment tools or instruments
- Sampling quota or method
- Method of collecting data
- Timelines for conducting assessments
- Changing the Criteria for Success

C. Implementing Improvement Strategies and Closing the Loop

The product of Step 2 is a concrete and attainable improvement plan and in Step 3 that improvement plan will be implemented and close the loop by starting the assessment

process again. This component of the assessment effort is the most crucial since the purpose of assessment is to produce evidence based improvements. Implementation should be conducted as specified by the use of results that were developed in the reporting process. Key faculty and staff members should be involved in the process of instituting improvement strategies with one or two people taking the lead on initiating and tracking the progress of the implementation. In the next reporting cycle, reports will include a section on the status of each of the improvement strategies that were reported. Thus, tracking each of these strategies is an important part of implementing changes.

The phrase that is commonly used in assessment “closing the loop” actually manifests itself after strategies have been implemented and after you have assessed the outcomes to measure the impact of the improvements. It is during this time that you can determine whether your improvement strategies have worked or whether additional actions need to be taken. However, it is important to note that some improvements take time to manifest themselves in the assessment results. For example, if the improvement strategy was to add additional reading materials to an introductory course to be able to expand students’ knowledge on a certain topic, then several years may pass before the students are able to take the senior level course in which their knowledge is assessed.

This is one of the major reasons why it is recommended that outcomes are assessed for as long as possible in order to gather longitudinal data that can provide a clearer picture of trends. Outcomes can also be placed under dormancy for a couple of years if there are no major changes in the data and the criteria are being consistently met or exceeded. These outcomes can be reintegrated after a given period in order to reassess whether the outcome is being successfully met.

D. References and Toolbox

Examples of Use of Results from Baylor University:

<http://www.baylor.edu/ie/index.php?id=52953>

Explanation and Examples of Use of Results from Temple University:

http://www.temple.edu/provost/aaa/other_accrediting/documents/resultsandtheiruses.pdf

Video of Developing Use of Results in Conjunction to Assessment Plans:

<http://www.youtube.com/watch?v=Md4Wymun2Pw>

CHAPTER 9

Assessment Instruments

A. Introduction

This chapter expands on some of the most commonly used tools for assessing outcomes and provides supplementary resources for publishing results. Rubrics, for instance, are commonly used for both direct and indirect assessment in a variety of contexts. As tools for assessment, rubrics may help in determining strengths and weaknesses in student learning and pinpointing areas that need improvement. Surveys are also commonly used to gather information on a multiplicity of phenomena, as well as on perspectives from students and other university members. In this chapter, you will likewise find information on checklists, logs, and timelines.

B. Scoring Rubrics and Checklists

After you have identified and developed a method for gathering artifacts, the next step is to determine how they will be evaluated. For artifacts such as exams and quizzes with only one right answer for each question, the required evaluation method would be to simply count the number of questions answered correctly or incorrectly. However, with more abstract artifacts such as essays, projects, or oral presentations, a different type of approach will need to be used. Usually, for these abstract artifacts, rubrics and/or checklists can be developed to serve this purpose; as they are useful tools to assess student work as well as match learning outcomes to specific criteria within assignments. These two types of assessment tools and guidelines for creating them are described in greater detail below.

1. Rubrics

Rubrics are a common tool used to score or assess artifacts (student works) using well-defined criteria and standards. Faculty can use rubrics to evaluate essays, short answer responses, portfolios, projects, presentations, and other similar artifacts.

Benefits of Rubrics: There are many advantages to using rubrics for measuring student learning. The principle benefits include:

- Allowing for information about student learning expectations to be shared among current and future professors teaching the course as well as other faculty members in the program
- Establishing a record of the competencies expected for students for a particular artifact
- Transparency of expectations for students
- Providing meaningful contextual data as opposed to only having grades or scores
- Providing students with clearer feedback on performance (if scored rubrics are handed back to students)

- Usefulness for measuring creativity, critical thinking, and other competencies requiring deep multidimensional skills/knowledge
- Increase of inter-rater reliability by establishing clear guidelines for assessing student learning
- Possibility of easy, repeated usage over time
- Inexpensive development and implementation
- Time saving properties, especially when assessing a large quantity of artifacts

Steps in Creating Rubrics: Developing a rubric has become simplified by the large number of rubric samples available through the internet. Resources such as RubiStar (<http://rubistar.4teachers.org/>) provide a large variety of customizable rubrics targeted at different fields and learning competencies. For assignments or tasks that require more specific criteria than the ones available online, customized rubrics can be created following a few guidelines. Below are the steps often used when customizing a rubric:

1. Identify Competencies

- Narrow down the most important learning competencies you are trying to measure. Ask yourself what you wanted students to learn and why you created the assignment.
- List the main ideas or areas that would specifically address the learning competencies you identified. These competencies are also referred to as "criteria" in this tutorial.

2. Develop a Scale

- Think of the types of scores that would best apply to measuring the competencies (e.g., a 5 point scale from Beginning to Exemplary; a scale using the 6 cognitive levels of Bloom's Taxonomy: knowledge, comprehension, application, analysis, synthesis, and evaluation; or a simple point scale).
- There is no right or wrong way to develop a performance scale; it all depends on how it would apply to the assignment, the competencies addressed, and the expectations of the instructor.

3. Produce a Matrix

- Using the information gathered from the previous two steps, you can create a matrix to organize the information.
- Part of this process consists of describing the proficiencies, behaviors, or skills each student will demonstrate depending on the particular criterion and its associated performance scale ranking or score. This matrix will be the rubric you will use to assess student work.

Rubric Template: Typically, rubrics contain some type of **criteria** (or competency listing), **performance scale** (or ranking), and **performance descriptors**. There are several possible ways of labeling or describing each of the three rubric components. One method consists of placing the three components in a table format, whereby criteria are usually placed on the left hand side of the rubric and serve to describe each of the competencies that are being measured. Then a performance scale is used as the column headers and the performance descriptors are specified for each of the cells in the table. In Figure 9.1 a template for the most common method of structuring a rubric is presented, which can be adapted to fit the needs of the particular SLO that is being assessed.

Figure 9.1 Common Rubric Template

List All of the Competencies Measured	Performance Scale				
	1	2	3	TOTAL POINTS	
	Unacceptable	Acceptable	Excellent		
	Criterion 1	Competency not demonstrated	Competency demonstrated	Competency demonstrated at an advanced level	
	Criterion 2				
Criterion 3					
TOTAL POINTS					

2. Checklists

Similar to rubrics, checklists use a concrete set of learning proficiencies or skills that are used to evaluate student performance. The main difference is that checklists are used to check-off various performance descriptors in order to get a sum total of points, whereas rubrics have a rating system for how well students perform in each performance descriptor. Figure 9.2 illustrates some other differences between the two assessment tools as well.

Figure 9.2 Differences between Rubrics and Checklists

Rubrics	Checklists
<ul style="list-style-type: none"> •Rating Scale •Focus on Quality •Fast •Score Based on Proficiency Ratings 	<ul style="list-style-type: none"> •List of Competencies •Focus on Quantity •Faster •Score Based on Number of Checkmarks

There are two main ways of formatting a checklist:

- **Method 1:** List all of the proficiencies, skills, or requirements that need to be met
- **Method 2:** Create a list, and group proficiencies, skills, or requirements into various categories as is done when creating rubrics

The first method is the simplest, but provides less organization and detail than the second method. The second method is slightly more time consuming, but grouping the proficiencies, skills, or requirements into different subcategories can be useful when evaluating more than one outcome per artifact, since it can generate separate scores for multiple outcomes within one tool.

Figure 9.3 illustrates the second method of creating a checklist. The criteria are listed on the column to the left, and at the top of the table the column header states that each of the proficiencies, skills, or behaviors demonstrated in the assignment will receive a point.

Figure 9.3 Checklist Template

		Performance Scale
		1 Point is Assigned to Each of the Proficiencies Met
List All of the Competencies Measured	Criterion 1	<input type="checkbox"/> Organization <input type="checkbox"/> Use of Language <input type="checkbox"/> Use of References to Support Arguments
	Criterion 2	<input type="checkbox"/> Proficiency or Skill 4 <input type="checkbox"/> Proficiency or Skill 5 <input type="checkbox"/> Proficiency or Skill 6
	Criterion 3	<input type="checkbox"/> Proficiency or Skill 7 <input type="checkbox"/> Proficiency or Skill 8
	TOTAL POINTS	_____

The APA office has created a sample checklist to assist the liaisons and other members of the university with the two year cycle assessment process. [Click here to view the checklist.](#)

C. Creating and Using Surveys

1. Survey Introduction

Surveys are a great way to gather quick information about people’s perspectives. In higher education, surveys serve to gather information about a wide range of contexts, from documenting students’ experiences within academic programs and activities, to measuring satisfaction ratings of food venues. The information obtained can be used for multiple purposes such as:

- Obtaining information on a poorly known phenomenon prior to conducting more in depth measures
- Gauging performance to create improvement strategies where necessary

Creating an effective survey is essential for obtaining the most accurate and relevant information available.

2. Define a Purpose

In order to develop an effective survey, it is important to know the information that needs to be gathered, the rationale for gathering it, and how the data will be used after collection and analysis. To ensure that the above mentioned goals are reached, clearly outline each of these points before developing a survey and refer to this outline as the survey is drafted, pilot tested, and the data is analyzed.

3. Make a Plan

With a clear purpose, steps can then be taken to create, distribute, and analyze the survey. Consider the following components for planning:

Survey – The amount of time it takes to complete the survey is a determining factor to take into consideration. Survey length can determine which mode of disseminating the survey would be most appropriate and what kinds of data can be obtained from the survey.

Budget – Determine the costs in terms of money, physical facilities, and personnel.

Participants – Who are the participants of this survey and why? This is one of the most important steps in the process. Start from the purpose and then determine what the demographics of the intended audience is, how many people would be available, and how they can be reached. Consider: target population (location, ethnic, cultural, race, graduating, specific course, gender, and/or age group), sample size)

Methods – How will the survey be disseminated to participants (e.g., e-mail, phone calls, mail, etc.)? Also, plan for how long the collection process will take. What are the deadlines and how do you determine if enough data has been collected? With these questions in mind, create a specific plan to follow for collecting data.

4. Creating the Survey

Introduction

The first element participants will see in a survey is the introduction. This is an opportunity to provide a brief description of the contents of the survey and its purpose. Elements that are included in most surveys are the following: who is distributing the survey (including contact information such as an email or phone number); why the survey data is being collected; how long the survey should take to complete; and whether it will be confidential and/or anonymous. Keep in mind that in surveys, simple, direct, and brief text is more appreciated than long detailed passages. Thus, always try to keep the introduction as short and clear as possible (less than 80 words would be ideal).

Questions

Developing relevant questions for a survey is critical, as it directly affects the quality of the data returned. An important first step in this process is to search for surveys that cover the same content area/topic as the survey that is being designed. By using samples, the time it takes to create an entirely new survey will be significantly decreased, allowing for more focus on any new questions that must be designed. In the case that there are not any existing surveys that match the specific area/topic, it is still helpful to study the design of similar surveys and use them as a template. When developing survey questions, take the following tips into consideration:

- **Determine** which questions would best address the objectives of the survey
- **Determine** which answer choice format would be best for answering the question and meeting the data needs:
 - **Quantitative Format:** Questions whose answers can be easily counted (e.g., multiple choice, ratings, etc.).
 - **Qualitative Format:** Questions that ask participants to express thoughts using words (e.g., interview, focus group)
- **Consider the audience.** Use language that is appropriate and appealing to the targeted audience
- **Ensure brevity.** Keep the questions short and simple
 - **Too lengthy and complex:** How many times in a day (in days that you attend class), do you purchase food (including any of the food locations in the Graham Center, in the Market Station parking lot, in the library, in the vending machines, and any other on-campus location)?
 - **Edited version:** How often do you purchase food on campus per day?
- **Avoid leading or biased questions.** Avoid questions that may seem to expect a certain answer (e.g., don't you think that the food quality is great at the cafeteria?)
 - **Leading and biased:** Research shows that most students prefer dining in an open food court setting rather than in a traditional cafeteria. Do you agree?
 - **Edited version:** On a scale from 1 (most preferred) to 5 (least preferred), which dining area setting would you prefer?
- **Split multiple questions into one.**
 - **Two questions in one:** Do you think that more food venues should be added and what food venues should be added (if yes)?
 - **Edited version:** Split question into two separate questions:
1) should more food venues be added to the Graham Center?
2) If yes, list the food venues you would like available in GC.
- **Revisit purpose of the survey** to verify that each question answers something meaningful. Eliminate questions that are not related to the purpose of the survey (avoid asking extraneous questions that will not be used for research or to improve quality in some way)
- **Sparingly use questions with multiple answers** (e.g., list all of the vendors, circle all that apply, etc.)

- **Avoid changing the format of the questions too frequently** (e.g., Likert rating scales, fill-in the blanks, multiple choice). However, it is good to include multiple formats if to group questions with the same format together within the survey.
- **Use open ended questions if not able to predict what answers participants would choose.** However, keep in mind that open-ended questions are more prone to getting skipped and take more time to answer than closed-ended questions.
- **Avoid surveys that take longer than 30 minutes.** It takes about 1 minute to answer 3-4 closed-ended questions.
- **Ask important questions in the first half of the survey.** The questions in the last half of the survey are less likely to be answered (especially for longer surveys). Also, if the first questions are perceived as more engaging and important, participants are more likely to continue to later questions.

5. Survey Sampling

Before distributing the survey, a sampling strategy must be determined. Sampling is the strategic gathering of data of a subset group of individuals from a larger population. Selecting a sample may be more feasible than collecting information from the entire population because of time, costs, and convenience. A sample is representative to the extent that it exhibits the same distribution of characteristics as the population from which it was selected. Sampling guidelines that may be useful in developing surveys is located below

- **Probability Sampling**
 - **Random Sampling:** Every member of the population has an *equal probability* of being selected (e.g., pulling random names from a hat).
 - **Stratified Random Sample:** The population is *divided into subgroups* based on information about the population. *The sample is drawn from each subgroup.* This design attempts to increase the possibility that the sample reflects the demographic composition of the population (e.g., Students can be separated into 4 categories: freshmen, sophomores, juniors, and seniors)
 - **Proportional Stratified Sampling:** The same as stratified random sampling, but going a step further and selecting a sample from each group in portion to the characteristics of the entire population (e.g., If 60% of students are women, the sample selected has 60 women and 40 men).
 - **Cluster:** Sample from *identified preexisting groups/clusters* (e.g., There are 6 sections of ENC 1101, you randomly select 3 of the 6 sections and survey all students within those classes).
- **Non-Probability Sampling**
 - **Convenience Sampling:** Samples are chosen based on criteria such as *accessibility or specialized knowledge*, which may introduce biases (e.g., student in class who volunteers or asking students to invite friends to take the survey)
 - **Quota Sampling:** Set a quota for each group you want to survey. *Once a quota is set the sample can be chosen using random sample selection* (e.g., A

professor wants to sample 25 students from a course using a quota sampling based on the population of each type of student in the class: 8 freshmen 44%, 8 sophomores 32%, 3 juniors 12%, 3 seniors 12%).

6. Disseminating the Survey

Once the survey is created, it is ready to be distributed to the participants from whom data is being collected. Prior to dissemination to the targeted population, consider doing a **pilot test**, or distributing survey drafts to a small sample of people before distributing to the rest of participants (this small sample can be of people who may be able to offer insight on the actual survey). This will assist in the formulation and/or reformulation of the survey. Finally, consider the following means for distribution:

- **Online** – fast, convenient, and inexpensive, but may limit access to those who may not have computers or e-mail addresses.
- **Phone** – time consuming and resource heavy, but appropriate for populations who may not have access to internet
- **Mail** – slow, costly method with a low response rate, but appropriate for populations who may not have access to internet
- **On Location** –convenient and generates high response rates, because audience may be captive

7. Summarizing, Analyzing and Reporting Survey Data

This section refers to the post data collection summary, analysis of the data, and reporting/publishing of the results. There are a series of steps that can be taken to ensure effective data summary, analysis, and reporting.

Step 1: Organizing Data

First, review and organize the data. If using a spreadsheet tool such as Microsoft Excel, the data can be sorted according to specific variables and then organized for easier access. While organizing the data, determine if there are any outliers, as they are normally able to be discarded. In addition, begin to look for patterns within the data: Does anything reoccur? Are there any relationships between any of the variables?"

Furthermore, while organizing the data, always keep the audience in mind: Who will read the data? This is important when considering how to present the data and how much data to include.

Step 2: Analyzing Data

After gathering the results and summarizing the raw numbers, data analysis is needed to make conclusions. One of the major parts of this phase is to understand whether the data *accurately represent the population in question*. Response rate is one of the key indicators of consistency of the data (reliability) and the applicability of the results to the observed

population (generalizability). Response rate is calculated by dividing the number of surveys completed by the sample size (e.g., 20 people of 100 completed a survey; Response rate=20%). Finally, review the purpose of the survey, and then make conclusions based on:

- **Overall Survey:** What does the survey as a whole say about the general attitude/perspectives of the participants? Looking at the broad picture first can lead to more insights when considering the data.
- **Target Areas/Themes:** Group questions into themes or target areas. Are there some areas that are stronger and weaker? This information can be used to create more specific action plans for improving services or programs.
- **Environmental Context:** Take into account any influences that may affect results and implied action plans. Perhaps there was a change in services recently or perhaps one group was satisfied while another was not. These are key indicators that can guide data interpretation.

Step 3: Preparing Data for Presentation

Be selective in presenting information. Avoid presenting a large number of data points within one graph or chart since it can be very confusing to your audience. Consider splitting large amounts of data into various charts and graphs. If the amount of data is extremely large, consider only presenting the major data points instead of a comprehensive listing. Lastly, if presenting the data, ask “What it is trying to say?” Visualize what graphic may best convey this message.

Step 4: Choosing a Visual Format

Once conclusions have been reached, consider the choices of representation.

- **Area chart and Pie chart:** These work well to give an overview of your data, especially when using multiple choice survey results.
- **Bar charts and Line graphs:** Work well for comparing information such as differences of opinion or changes over time.
- **Scatter plots:** Work well to show the relationship between two variables with each point plotted against a horizontal x-axis and a vertical y-axis, when dealing with large amounts of data.

Step 5: Creating the Graphic Image

Create the data visualization. Most spreadsheet programs can generate charts from the data you've entered. Other software is available online or to download. A good reference link is: <http://bestconstructionmanagementdegree.com/2010/50-free-web-apps-to-make-beautiful-graphs/>

Step 6: Put it in Context

The graphic is only as useful as it is understood. Make sure all the information is labeled clearly. How the variables are labeled and the language used to narrate the results can

influence how the information is received. Use descriptions and related content to give the graphic meaning.

D. Logs and Timelines

Aside from rubrics, checklists, and surveys, logs and timelines can readily be used as instruments/tools for assessment purposes. Administrative units tend to use logs and timelines for their assessment. However, they can also be used in academic programmatic assessment. **Logs** are considered regular or systematic recordings of activities, events, incidents or observations, which usually include the names of the events/incidents/observations, date/time, descriptions, number of participants, signatures, communications, and other relevant data. In instances where time is of essence for completing certain task, **Timelines** can be used for assessment. These are linear representations of important events/activities in the order in which they occur, or a schedule/timetable delineating important deadlines for events/activities. Both logs and timelines can be recorded using productivity software, such as Excel, Word, Databases, and/or any other program of convenience.

E. References and Toolbox

Rubrics

- Arter, J. & McTighe, J. (2001). *Scoring Rubrics in the Classroom: Using Performance Criteria for Assessing and Improving Student Performance*. Thousand Oaks, California: Corwin Press Inc.
- Boston, C. (Eds.) (2002). *Understanding Scoring Rubrics*. University of Maryland, MD: ERIC Clearinghouse on Assessment and Evaluation.
- Mertler, C. A. (2001). "Designing scoring rubrics for your classroom." *Practical Assessment, Research & Evaluation*, 7(25). Available online: <http://pareonline.net/getvn.asp?v=7&n=25>.
- Moskal, B. (2000b). "Scoring rubrics: What, when and how?" *Practical Assessment, Research & Evaluation*, 7(3) [On-line]. Available: <http://pareonline.net/getvn.asp?v=7&n=3>.
- Northwest Regional Educational Laboratory (2002). "Converting rubric scores to letter grades." In C. Boston's (Eds.), *Understanding Scoring Rubrics* (pp. 34-40). University of Maryland, MD: Clearing House on Assessment and Evaluation.
- Perlman, C. (2002). "An introduction to performance assessment scoring rubrics". In C. Boston's (Eds.), *Understanding Scoring Rubrics* (pp. 5-13). University of Maryland, MD: ERIC Clearinghouse on Assessment and Evaluation.
- Stevens, D. D., & Levi, A. J. (2004). *Introduction to rubrics: An assessment tool to save grading time, convey effective feedback, and promote student learning*. Sterling, VA: Stylus.

Useful Sites

Rubrics

- Introduction to Rubrics - Resources, Samples, and Information About Rubrics:
<http://www.introductiontorubrics.com/overview.html>
- RubiStar - Rubric Construction Site: <http://rubistar.4teachers.org/>
 - Tutorial Video Part I: <http://www.youtube.com/watch?v=oZPAbf1FwAg>
 - Tutorial Video Part II: http://www.youtube.com/watch?v=Jq_jgCRWxGo
- The Rubric Machine - Rubric Construction Site:
http://www.sites4teachers.com/links/redirect.php?url=http://landmark-project.com/rubric_builder/
- Authentic Assessment Toolbox - How-To Guide for Rubric Construction and Assessment Tools:
<http://jonathan.mueller.faculty.noctrl.edu/toolbox/rubrics.htm>

Surveys

- Step by step guidelines of creating surveys:
<http://www.qualtrics.com/university/how-to-create-a-survey/>
- A thorough guide in creating and designing surveys:
<http://www.datacenter.org/research/creatingsurveys/index.htm>
- Qualtrics very complete tool for creating and disseminating surveys hosted by FIU for all faculty, staff, and students with virtually no restrictions:
<http://fiu.qualtrics.com/>
- Kwik Surveys free website for creating and disseminating surveys with less limits than some of the other popular online tools listed below:
<http://www.kwiksurveys.com/>
- eSurveyspro free survey creation tool that has capacity for unlimited questions, respondents, and surveys, but has limitations on e-mailing surveys:
<http://www.esurveyspro.com/>
- Survey Monkey free online tool with 10 question limit and 100 respondents limit:
<http://www.surveymonkey.com/>
- Zoomerang similar to Survey Monkey, with a 12 question limit and 100 respondents limit:
<http://www.zoomerang.com/>