

Assessment Tips

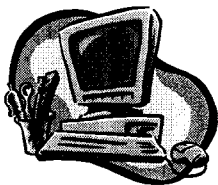
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Contents:

- What is Program Assessment?
- Direct Measures of Student Learning
- Indirect Measures of Student Learning

Do you have an assessment "Tip" you would like to share with others?

→ If so, please send it to the office of Assessment and Program Review, 226 Anderson Hall, c/o Patricia Marsh.



Email questions and additional suggestions to pmarsh@k-state.edu

What is Program Assessment?



Program Assessment "IS" About:

- ◆ A formalization of what we do all the time
- ◆ Improvement in academic programs
- ◆ The overall level of students learning in an academic program
- ◆ An ongoing process
- ◆ *Using* assessment
- ◆ Student learning

Program Assessment is:

- ◆ NOT about external reviews of academic programs
- ◆ NOT about individual student assessment
- ◆ NOT about a one-shot event
- ◆ NOT about *doing* assessment
- ◆ NOT about a new thing
- ◆ NOT solely about student learning

Source for the information presented above: Cecilia Lopez, NCA Commission on Institutions of Higher Education. Opportunities for Improvement: Advice from Consultant-Evaluators of Programs to Assess Student Learning, March, 1996.

How Do I DIRECTLY Assess Student Learning?

Here are just a few examples:

- ✓ Locally developed tests
- ✓ Essays
- ✓ Blind-scored projects
- ✓ Professional exams
- ✓ Capstone experience or course
- ✓ Juried review of projects, exhibitions, and performances
- ✓ Portfolio assessment
- ✓ Certification & placement exams
- ✓ Standardized tests

Can I Still Use Self-Report Measures to Assess Students' Learning?

YES! Self-report measures are considered **INDIRECT** methods of assessing students' learning.

- Some indirect techniques can provide useful information for making improvements to courses and curriculum. However, they should NOT be the sole means of assessing learning. **DIRECT** measures are also needed for a well-balanced assessment plan.

Here are a few examples of **Indirect Measures of Students' Learning**:



- ✓ Exit interviews of graduates and focus groups
- ✓ Alumni, employer, and student surveys
- ✓ Interviews of instructors, program coordinators, residence hall leaders, and others who have direct contact with students
- ✓ Graduate follow-up studies
- ✓ Length of time to degree and retention rates for cohort group of majors
- ✓ Graduation and transfer rates
- ✓ SAT / ACT scores
- ✓ Job placement data
- ✓ Satisfaction surveys
- ✓ Self-report measures assessing students' perceptions of what they've learned
- ✓ Observing and recording students' behaviors

Sources: (1) Parkland College Academic Assessment Program (<http://www.virtual.parkland.edu/aac/facres/lopez/indirect.htm>) and (2) Center for Effective Collaboration and Practice's List of Indirect Measures (<http://cecp.air.org/fba/problembehavior2/indirect2.htm>).

Recommendations from North Central Association (NCA):

Faculty Ownership of Assessment—There should be faculty ownership for assessment in academic programs consistently across campus. They must be extended to graduate programs as well.

Knowledge and Awareness of Assessment—University settings need to have a coherent, widespread understanding that the purpose of assessment is the continuous improvement of student learning both within the degree program and within general education.

Source: NCA Site Visit Report (<http://www.k-state.edu/provost/academic/nca/index.htm>).

These TIPS were brought to you by the office of Assessment and Program Review (APR)

Assessment Methods

1. **Written surveys and questionnaires** (Asking individuals to share their perceptions about the study target—e.g., their own or others' skills/attitudes/behavior, or program/course qualities and attributes)
2. **Exit and other interviews** (asking individuals to share their perceptions about the target of study—e.g., their own skills/attitudes, skills and attitudes of others, or program qualities—in a face-to-face dialog with an interviewer).
3. **Commercial, norm-referenced, standardized examinations** (commercially developed examinations, generally group administered, mostly multiple choice, "objective" tests, usually purchased from a private vendor.
4. **Locally developed examinations** (objective or subjective designed by local staff/faculty);
5. **Archival Records** (biographical, academic, or other file data available from college or other agencies and institutions).
6. **Focus groups** (guided discussion of a group of people who share certain characteristics related to the research or evaluation question, conducted by trained moderator)
7. **Portfolios** (collections of work samples, usually compiled over time and rated using rubrics).
8. **Simulations** (a *competency based* measure where a person's abilities are measured in a situation that approximates a "real world" setting. Simulation is primarily used when it is impractical to observe a person performing a task in a real world situation (e.g., on the job).
9. **Performance Appraisals** (systematic measurement of overt demonstration of acquired skills, generally through direct observation in a "real world" situation—e.g., while student is working on internship or on project for client)
10. **External Examiner** (using an expert in the field from outside your program – usually from a similar program at another institution – to conduct, evaluate, or supplement the assessment of your students).
11. **Oral examinations** (evaluation of student knowledge levels through a face-to-face dialogue between the student and the examiner—usually faculty).
12. **Behavioral Observations** (measuring the frequency, duration and context of subject's actions, usually in a natural setting with non-interactive methods).

Do Grades Make the Grade for Program Assessment?

Assessment Tips With Gloria Rogers



Gloria Rogers

is Vice President for Institutional Research, Planning, and Assessment at the Rose-Hulman Institute of Technology

Assessment Tips is a quarterly column, exclusive to *Communications Link*.

One of the most common questions from faculty when discussing outcomes assessment is, "We are already assessing students in courses; why can't we just use student grades as an indication of what our students know or can do?" *Grades represent the extent to which a student has successfully met the faculty member's requirements and expectations for a course.* Because many factors contribute to an assigned grade, it is almost impossible to make inferences about what a student knows or can do by only looking at the grades for a course.

In outcomes assessment at the program level, the primary question that needs to be answered is, "Can students demonstrate the ability to perform at an acceptable level in each of the program outcomes?" Program assessment focuses on providing evidence that students can demonstrate knowledge or skill directly linked to specific program outcomes. Grades *per se* **do not** provide that information.

One reason why course grades are not appropriate for program assessment is that *course content for any given subject may vary among faculty members teaching the same course.* When developing a course, the faculty member has to make many decisions. These include decisions about course content and course management. When deciding what topics and concepts to include in the course, the faculty member needs a clear view of how the course is aligned with other courses in the curriculum (e.g., introductory, elective, required, lower/upper division, major, or service course). Decisions about course content are constrained by several factors: the amount of time the faculty member has to deliver the course, the knowledge and skills that students bring to the course, and the expectations other faculty have for learning brought to follow-on courses. Content may also vary with the individual faculty member's beliefs about what is important (topics, concepts, and levels of cognition students must demonstrate for each concept), the textbook chosen, and the faculty member's expertise and interests. Decisions are also made about how the course is managed, for instance the mode of delivery, number and types of tests, attendance policy, and grade structure. All of these variables contribute to the grades students receive, further confounding the ability to interpret the rela-

tionship of the grade to specific student knowledge or abilities.

Another reason why grades do not provide adequate information for program assessment is that *the grading policy in any course is dependent on the individual faculty member.* This is generally true even when there are multiple sections of the same course with common exams. Some faculty choose to give (or take away) points or partial credit for things that are not related to student learning (for example, attendance, class participation, and course evaluation). Some faculty grade on a curve; others have a fixed standard. Letter grades or numeric scores reflect the student's relative standing within the class or among other tests – relative to a set scale or relative to other students. They do not, however, tell the person interpreting the assigned grade/score what the student knows or can do, nor do they provide information about what topics or concepts he or she did not understand or how his or her learning can be improved.

Assessing program learning outcomes for the curriculum differs from assessing classroom learning outcomes in several ways, most notably the following:

When developing a curriculum, faculty collectively consider the objectives¹ their students will need to achieve after graduation. Once the objectives are identified, faculty decide what students should know or be able to do by the time of graduation in order to meet them. After the program outcomes² are set, the curriculum is developed/modified to represent a well articulated and aligned set of major and general education courses. Students are introduced to key concepts in the lower division courses. Then these concepts are applied in courses throughout the rest of the curriculum, as students move from knowing and understanding a concept to developing an ability to apply that knowing and understanding in various ways, in multiple settings. This process illustrates the cumulative learning effect of specific concepts and skills taught through individual courses. The assessment of program outcomes should reflect student-achievement-specific outcomes as a culmination of several classes and activities throughout the curriculum.

Just as faculty cannot include in a course everything associ-

¹*Objective* here is defined as the expected accomplishments of graduates during the first few years after graduation.

²*Outcome* here is defined as what a student knows or can do by the time of graduation.

ABET FACULTY WORKSHOP FOR PROGRAM IMPROVEMENT

This hands-on workshop helps you build the skills you need to plan and implement successful outcomes assessment processes. Participants work on realistic case studies, developing feasible objectives and outcomes and plans for measuring if they've been achieved. Assessment tools are covered, as well as ABET terminology. The knowledge gained here can be applied directly to program(s) on your own campus.

Where:	Nashville, TN
When:	June 20 - June 22, 2003
Accommodations:	Doubletree Hotel 315 Fourth Ave. N. Nashville, TN 37219 (615) 244-8200
Registration Form:	www.abet.org/workshops.html
Registration Deadline:	May 30, 2003

ABET FACULTY WORKSHOP VERSION 2.0

This workshop is designed especially for those who've already attended an ABET faculty workshop (Regional, Open-Enrollment/Program Improvement, or TEI) and will continue to build on the foundation laid by these workshops. During Version 2.0, participants will hone their assessment knowledge, broaden their understanding of continuous improvement processes, and learn new assessment strategies they'll be ready to implement when they return to campus.

Where:	Minneapolis, MN
When:	October 28, 2003
Accommodations:	Marriott City Center 30 South 7th Street Minneapolis, MN 55402 (612) 349-4000
Registration Form:	www.abet.org/workshops.html
Registration Deadline:	October 1, 2003

ated with the subject matter of that course, a program cannot include in its curriculum every concept or skill set that is in the realm of possibilities for that curriculum. As in course preparation, several decisions need to be made by program faculty when determining the program outcomes to be assessed and managing the assessment process. These include deciding what learning outcomes are central to achieving the objectives, how many and what performance criteria³ will be assessed for each outcome, where in the curriculum students are getting the opportunity to demonstrate the desired performance criteria associated with the outcome, how often the outcomes will be assessed, how the outcomes are going to be assessed, and how the data gathered can be used for program improvement. As in classroom assessment, these decisions are constrained by factors related to the context of the program. Some of these factors include the nature of the objectives, type of institution/program, available resources and time, and make up of students served.

For program assessment, a numeric score that is **directly** linked to students' performance on a specific performance criteria can be used as evidence of program learning outcomes. For example, for the outcome, "Students have an understanding of ethical responsibility," one of the performance criteria could be, "Students will demonstrate the ability to evaluate the ethical dimensions of a problem in their engineering discipline." Faculty could develop a rubric to score

student performance. A rubric is a descriptive rating scale with several different observable levels of performance possible for each performance criteria being assessed. Each performance level is described and assigned a numeric score (for example, 1 = exemplary, 2 = good, 3 = adequate, 4 = marginal, and 5 = unacceptable). The number of points on the scale will depend on the level of cognition or skill that the outcome requires – but that is a discussion for a later time. Reporting the percent of students who score at each of the levels provides data that are linked directly to the anticipated outcome and focus the evaluation and strategies for improvement. It is a numerical score that provides a great deal of information about what students know or can do – but it is not a grade.

Grades will continue to be an important part of the higher education culture and should be understood for what they represent. However, for program assessment, where the purpose of the assessment is to provide information about student learning at the program level, grades in courses generally have little use. This is not to say that students cannot demonstrate program outcomes in a classroom setting. But, the measure used to assess those outcomes should be used consistently, should reflect specific student knowledge or skills, and should be directly linked to specific performance criteria. *It is important to remember that the focus is not a score or grade, but the student knowledge or skill that is represented by that score or grade.*

³Performance criteria here are defined as the specific, measurable statements identifying the specific knowledge, skills, attitudes and/or behavior students must demonstrate as indicators of achieving the outcome.

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Direct and Indirect Assessment

August 2006

There has been a lot of discussion (and confusion) in the ABET community about **direct and indirect assessments**: What are they? Do you have to use both when measuring student learning?

Direct assessments (measures) are most familiar to faculty. Direct assessments provide for the direct examination or observation of student knowledge or skills against measurable learning outcomes. Faculty conduct direct assessments of student learning throughout a course using such techniques as exams, quizzes, demonstrations, and reports. These techniques provide a sampling of what students know and/or can do and provide strong evidence of student learning.

However, not all learning can be measured in a direct way. For example, a desired outcome of a course may be to create more positive student attitudes toward mathematics (or writing, or team work), which are difficult to assess using direct methods.

Indirect assessments of student learning ascertain the perceived extent or value of learning experiences. They assess opinions or thoughts about student knowledge or skills. Indirect measures can provide information about student perception of their learning and how this learning is valued by different constituencies.

However, as evidence of student learning, indirect measures are not as strong as direct measures because assumptions must be made about what exactly the self-report means. If students report that they have attained a particular learning outcome, how can that report be validated? An indirect assessment is useful in that it can be used to measure certain implicit qualities of student learning, such as values, perceptions, and attitudes, from a variety of perspectives. However, in the absence of direct evidence, assumptions must be made about how well perceptions match the reality of actual achievement of student learning.

It is important to remember that all assessment methods have their limitations and contain some bias. A meaningful assessment program would use both direct and indirect assessments from a variety of sources (students, alumni, faculty, employers, etc.). This use of multiple assessment methods provides converging evidence of student learning. Indirect methods provide a valuable supplement to direct methods and are generally a part of a robust assessment program.

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Direct and Indirect Assessment

August 2006

The table below illustrates examples of direct and indirect assessments.

Method	Direct	Indirect	Method	Direct	Indirect
Exit and Other Interviews		✓	Locally Developed Exams	✓	
Simulations	✓		External Examiner	✓	
Behavioral Observations	✓		Written Surveys, Questionnaires		✓
Archival Data		✓	Portfolios	✓	
Focus Groups		✓	Oral Exams	✓	
Performance Appraisal	✓		Standardized Exams	✓	

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D. Death By Assessment: How Much Data Are Too Much?

March 2002

The movement of accreditation – both regional and specialized – toward outcomes assessment is creating positive changes in academe. It is also, however, requiring iterative processes and procedures that, while necessary to ensure continuous program improvement, might be overwhelming if we don't go about them in an effective way. One such process is data collection. If not gathered systematically and efficiently, data collection can be fatal. It can kill time, effort, and enthusiasm. Is there an antidote? Yes. First, ask yourself: "When is enough, enough?" This question can be answered through a self-examination of your current assessment and data collection processes. Begin by asking the following four "how" questions:

Why? *Be sure that you have a clear vision of why you are collecting specific data.* Assuming learning outcomes have been defined (e.g., a definition of what knowledge, skills, or other attributes indicate that a student can "work effectively on interdisciplinary teams"), it should be clear what data need to be collected and the purpose of that data. If the outcomes are not clearly developed into measurable performance criteria¹, it is difficult to know what data are relevant. In these instances, there is the tendency to collect anything that even looks like the outcome. There are now several nationally normed examinations and surveys that can provide data about student learning. However, if the questions asked and the concepts tested are not consistent with your outcome definitions, the data are not useful to assess the teaching and learning process. Ask yourself, "Are the data being collected aligned with our specific, measurable learning outcomes?" If the answer is "no," then don't expect the data to inform the teaching and learning process.

How much? How many data points are enough to provide adequate evidence of outcome achievement? *It is not always true that more data are better.* If you are conducting senior interviews with a specific set of questions, will the twenty-first student interviewed provide information that hasn't already been provided by the first twenty students? What about the fifteenth student? Do all 2,357 alumni from your program need to be surveyed to find out what you need to know about your program? Do you need 30,000 ABET-aligned data points? Could alumni surveys be made much shorter by asking sub-sets of questions to different segments of the alumni pool? This will not only increase the response rate (fewer questions) but also present

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Death By Assessment: How Much Data Are Too Much?

March 2002

an opportunity to ask questions at the performance criteria level for each outcome.

Understanding and using good sampling techniques can greatly reduce the amount of data you need to collect. Effectiveness and efficiency are the keys to the “how much” question. For example, the learning outcome “oral communication skills” could be approached in a number of ways (assuming of course that you have developed a *limited* number of performance criteria that define the outcome).

Once the performance criteria are developed, and it has been identified where in the curriculum students are getting an opportunity to demonstrate their speaking and/or presentation skills, peer and faculty evaluation sheets could be developed to evaluate student performance specific to the criteria that have been developed. Not only will the individual student get immediate feedback and have an opportunity to improve, but the forms can also be used to document, in aggregate, student skills. This process does not take extra time once the performance criteria have been established and the forms have been designed. This process also insures a clear understanding among students and faculty of what the expectations are for oral communication. *It is important not to sacrifice quality, but the focus should not be on quantity alone.*

How often? *Data do not need to be collected from every student on every outcome every year.* It is important to pace yourself and strategize for efficiency without sacrificing quality. Continuing to use the oral communication example from above, how often should data on oral communications skills be gathered? The extent to which students are given opportunities to make oral presentations will vary from program to program and institution to institution. Do data need to be gathered from every class or activity in which students make presentations? Do they need to be collected every year? How much data are enough? The answer to these questions will vary with the size of the program and the findings from the data collected. If you find, for instance, that students are not reaching a specified outcome for graduates of the program, you may wish to take measurement more often (i.e., decrease the amount of time in the cycle of data collection).

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D. Death By Assessment: How Much Data Are Too Much?

March 2002

How used? Once a strategy has been implemented with an efficient process for data collection, how are the data going to be used? Although this decision should drive the data collection process, far too often it comes after data has been amassed. *Rule of thumb: if the use of the data is not known, don't collect it.* Stories have been told of programs that are signing on to every national benchmarking, student attitude, and standardized survey or test that is available. After literally thousands of data points have been collected, faculty try to figure out what they all mean. This is not only inefficient, but also wasteful (both in time and money).

Each program should decide who is going to be in charge of its process of assessing student learning – the program itself or an external testing agency. A well-thought-out local plan can be both efficient and effective without the investment in external resources. However, if learning outcomes have not been defined, then there are others who would be willing to assess student learning (for a fee, of course.)

Benchmark surveys that ask students whether or not they have learned something at the outcome level (no definition) are not very useful for program improvement. For example, if students said “no,” what would be learned that could be applied to program improvement? If the data being gathered are not aligned to the program’s specific objectives or outcomes for student learning, nor do they provide information of how the program can be improved to enhance student learning, they should not be collected. It is important to target the data collection processes so that you can *maximize the meaningfulness of results, and minimize the work effort on the part of faculty.*

It is important that the value of the assessment process is not minimized. Assessment has taken a bad rap (see title) primarily because, in many cases, it is not being done effectively or efficiently, and the results do not adequately inform the teaching and learning process. It is time to step back and reevaluate what is being done, identify ways to focus assessment efforts, bring common sense into the process, and reduce the stress that is currently being felt by faculty and administrators alike. Technical professionals understand the importance of the quality of performance specifications and designing products/processes within given constraints. It’s time

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D.

Death By Assessment: How Much Data Are Too Much?

March 2002

to apply this same know-how to this sometimes-perplexing, open-ended design problem. Don't be a victim; join FADD (Faculty Against Data Dump) now.

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Lessons Learned : Things I Wish I Had Known

November 2003

When developing program assessment plans, there are many lessons we can learn from those who have gone on before. The list below represents some suggestions for those beginning the journey.

1. You cannot do everything. When involved in program assessment, it is important to remember that there is neither time nor resources to do everything. When identifying student learning outcomes¹ a program should demonstrate that it is not possible to measure every attribute that constitutes a major area of study. Decisions must be made based on high-level performance indicators² and the objectives³ graduates must achieve in their early careers. It is important to stay focused and create a timeline that reflects the unique elements of the program. For example, if there are 12 outcomes to be measured (each with a limited number of performance indicators), a program may decide to assess only two per semester or three per year. Developing a systematic, focused process will enable the program to assess and evaluate program outcomes in an effective and efficient manner.

2. One size does not fit all. There is no one right way to do program assessment, and no two programs or institutions are alike. What one program/institution can do, another may not be able to do. Many programs have posted their assessment plans on their website, but this is not a guarantee of quality, nor does it mean that the plan will work at a variety of sites. It is important to learn from others and adapt the features that are appropriate to the program and consistent with good practice.

3. More data are not always better. We all have had students who have stayed up all night before a test, and when they come across an open-ended question on the exam they do a “data dump” in hopes that the faculty member will find the answer somewhere – or at least give partial credit. Sometimes this is the way we approach program assessment. If the assessment question is not clearly defined and the outcomes and performance indicators are not measurable, we do a data dump in hopes that the ABET team will at least give us “partial credit.” Program outcomes need to be clearly defined with a limited number of performance indicators, and data collection should be focused and efficient. You don't need 10,000 data points if you can answer the assessment question with 500.

4. Pick your battles. There is enough assessment and evaluation theory to get us through to the next millennium. If we could implement the ideal assessment plan for our programs, if the faculty were all eager to participate, if students were willing to give the assessment effort 100%, this column would be unnecessary. However, we don't live in Utopia, and our zip codes aren't even close. The reality is that we don't have a perfect assessment plan, faculty are not always willing to participate in meaningful ways, and students don't see any value in taking the process seriously. Review your assessment processes carefully and be prepared to enter into negotiations along the way. It may be necessary to give up some things to get others. The battles are different for different programs/institutions, but be sure that there is an understanding of the “essentials” that cannot be compromised, and be willing to bend on the “nonessentials.”

5. Take advantage of local resources. Find out what resources are available at your institution to assist in the assessment process. If you have a comprehensive institution, it is likely that there is college of education or similar program that has expertise in writing measurable learning outcomes, crafting assessment plans, developing assessment methods, etc. Find out what expertise is available. If you are in a small or two-year institution that does not have this

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D.

Lessons Learned : Things I Wish I Had Known

November 2003

expertise, is there a larger institution nearby? One of the most valuable resources are graduate students in education, education psychology, or related fields. They are often available, willing to work on assistantships, and often have experience in the field that is invaluable.

1 **Outcomes** here are defined as the knowledge, skills, values, attitudes, or behavior that students should have by the time of graduation.

2 **Performance indicators** here refer to the measurable attributes that define the learning outcomes and are focus the of the data collection process.

3 **Objectives** here are defined as the knowledge, skills, values, attitudes, or behavior

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D. Making a List and Checking It Twice

August 2004

I always cringe when someone tells me that they used someone else's program assessment plan as a model for their own plan. When I ask why the particular plan was chosen, I generally get the reply, "Well it was on the web and the program just got accredited so it must be good." As educators, we are often faced with helping students know how to filter all the "stuff" that is on the web, which they tend to reference and sometimes (to our dismay) copy. One of the ways we help them is to provide guidelines to follow as they search out credible reference materials. How do you know if someone else's program assessment plan is worth emulating (whether you found it on the web or not)? How do you know if your plan is consistent with good practice? The following check list is designed to guide you in your evaluation.

Is the assessment question known and explicit?

Is it clear what assessment question is being asked? Some possible questions are:

- Have we achieved our desired program learning outcomes?
- Can we demonstrate the value added that our program provides students?

Each of these questions requires a different approach and emphasis in the development of measurable outcomes statements, data collection processes, analysis, and evaluation criteria. In other words, it is important that the plan includes demonstration of a clear understanding of the question that is being explored. It is important to note that even if the question is question 1, which implies summative assessment (i.e., can we demonstrate that we have achieved our outcomes at the end of the program?), it is good assessment practice to be taking measures along the way to determine your progress BEFORE the end of the program (formative assessment) so interventions can be made if students are not making adequate progress.

Are educational objectives¹ clearly stated, developed with the input and review of your constituents and aligned with educational outcomes²?

For those who have attended ABET-related workshops or program evaluator training, this has almost become a mantra.

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D. Making a List and Checking It Twice

August 2004

However, if this statement is dissected, it demonstrates the importance of aligning the curriculum with the needs of key constituents and early career graduates. It creates an important relationship between faculty and those practicing in the field and enables faculty to maintain curriculum relevance.

Are outcomes defined and the number manageable?

Because the definition of student learning outcomes is the most critical and overlooked element of the assessment- planning process, this is where serious effort and/or scrutiny should take place. Regardless of what you call the statements that define your outcomes, each outcome should have a **few** high level performance criteria³ that are the focus of your data collection process.

In the absence of definition, it is impossible to have any direct measures of student learning at the outcome level. If you are participating or considering participating in commercialized benchmarking studies that provide an opportunity to benchmark your student/alumni/employer responses regarding ABET outcomes against those of peer institutions, remember that in the absence of a common definition of what the outcomes mean the usefulness of the data are interesting but not very informative for the purpose of program improvement. That is, if a program finds that its students or alumni self-report that their level of achievement on a certain outcome is lower than their peers, what can be done with that information?

Certainly, program faculty can discuss the issue and determine that they need to add additional modules on the outcome in their courses, but what would they add? What does it mean to have “the broad education necessary to understand the impact of engineering solutions in a global and societal context”? What did it mean to those from your program who responded to the survey?

What did it mean to the respondents of peer institutions? Is it possible that it means different things for different programs? Be cautious when the only evidence of student learning is based on self-report of ill-defined or undefined outcomes whether they are benchmarked or not. These data cannot lead to well-focused program improvement.

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D. Making a List and Checking It Twice

August 2004

Are educational strategies aligned with anticipated outcomes?

The concept of curriculum mapping is becoming very common. Aligning curriculum with educational strategies (usually through courses but not always limited to courses) provides a clear understanding of where in the curriculum students are getting opportunities to learn, practice, develop, and demonstrate the performance criteria related to the program outcomes. This information provides faculty with the opportunity to make informed decisions about data collection – where to collect the data, from whom to collect the data, and how often to collect the data.

Do assessment methods include both direct and indirect measures, and are they appropriate to the program context?

When choosing assessment methods, it is important to use a multi-method/multi source approach to maximize the validity and reduce the bias of any one approach. It is also important to have at least one direct method that provides for the direct examination or observation of student knowledge or skills. There appears to be almost exclusive dependence on the use of indirect measures such as surveys. Although indirect measures have some usefulness, they generally cannot provide the rich information of direct measures. Which assessment methods you choose should be appropriate to your outcomes and meet your needs for validity and affordability (time, effort, and money) – at least one measure should be a direct method.

The data collection processes systematic and flexible?

When making decisions about what outcomes to assess, how often to assess them, and from whom to collect the data, it is important to remember that the focus of program assessment is on the program and not on the individual student. A multi-year timeline should be established that demonstrates multiple cycles through the process for each outcome (at least two cycles). The nature of the timeline will depend on the assessment question.

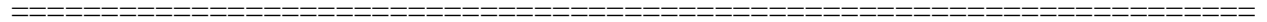
Results are evaluated and appropriate action taken and/or success of outcomes achievement is validated.

**Assessment 101: Assessment Tips with Gloria Rogers, Ph.D.
Making a List and Checking It Twice**

August 2004

There is more to evaluating your success than just looking to see if your learning outcomes are met. If you find that 95% of your students could demonstrate the anticipated learning outcomes by the time of graduation, there seems to be great cause for celebration. However, if only 35% of your entering students actually graduated, then it is a hollow victory. It is important to place the results in context of your program, who your students are, and the resources you have available.

The nature of your institution (open enrollment vs. selective, etc.) will dramatically impact the anticipated results and the context within which evaluation will take place. Looking for other program assessment plans in order to model or benchmark your own can be a very informative process. However, it is important not to assume that just because the program has been accredited that the plan is appropriate for you or that another program evaluator may have the same view of the plan. If your assessment program includes the elements of the checklist, you are well on your way to establishing meaningful assessment processes, which will not only enhance the educational experience of students but also provide focused, efficient processes for your program to monitor its own progress toward excellence.



- 1** For the purpose of this article, educational objectives are defined as the early career attributes (3-5 years) that you anticipate your graduates will be able to demonstrate upon graduation. There is no one correct term to describe this concept.
- 2** For the purpose of this article, educational outcomes are defined as the attributes you anticipate your students will demonstrate by the time of graduation. There is no one correct term to describe this concept.
- 3** Specific, measurable statements identifying the performance(s) required to meet the outcome; confirmable through evidence.

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D. Surveys and Questionnaires: Do They Measure Up?

January 2008

The single most used and abused assessment method is the locally developed survey. Surveys are conducted of students, faculty, recruiters, employers, alumni, and advisory boards. Before send out that survey, have you considered what constitutes an effective survey? The results will only be as good as the planning and quality of the survey instrument. Here are some tips to effective surveying:

1) Plan ahead. Objectivity is very important in survey development. Plan the survey carefully to reduce the likelihood of bias in questions asked or sample surveyed. Focus clearly on the key questions you want answered. If the survey developer does not have experience in survey construction, have the survey reviewed by someone with the appropriate expertise. Decide whether you will need to survey a population (i.e., everyone in the study group) or if a sample (i.e., a purposeful selection representative of the study group) will meet your needs.

2) Construct survey items carefully. There are many different formats available for survey items. It is important to construct items that are clearly understood. Keep items short and to the point. Compound (single items that contain more than one question) or complex questions are confusing and make responses impossible to interpret. Avoid loaded and/or leading questions (e.g., “Do you believe you were well-prepared to enter the workforce?”).

3) Pilot the survey. Once the survey has been completed, ask a small group representative of the population to be studied to take the survey. If you are surveying students, have a select few to take the survey. (Of course, pizza is a must!) Then, conduct a focus group to identify any concerns they might have about the survey. If you are surveying alumni, get a group of graduate students who were undergraduates in the program. Be creative in how to effectively “test” the survey for clarity and relevance.

4) Maximize the likelihood of response. If the survey is being mailed, be creative to increase the likelihood of an acceptable response rate. If the survey is well-planned, it will be direct and clear, and the study group will be appropriate. Keep the instrument short. If the survey must be lengthy, consider creating two versions and giving half to one part of the study group and the

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other half to the rest of the group, being sure that the demographics of the two groups are the same. Although this will take forethought, it will likely increase the response rate. The same applies to an “on-line” survey, with the added responsibility to be sure that those surveyed have the likelihood of access to the survey and that the survey interface is user-friendly.

5) Analyze survey results in an appropriate manner. Remember, you are not doing social science research in the truest sense. In most cases, descriptive statistics is all that you need to use. You may choose to show your results by cohort groups or for different years, but generally, sophisticated statistical analysis is not required.

6) Report and evaluate findings. Although this step is the least time consuming, it is one of the most important aspects of the process. If it is assumed that the survey instrument has been carefully constructed, pilot tested, administered, and analyzed, then how and to whom the results are reported becomes critical. Reports should be easy for a layperson to read and presented with an executive summary.

Statistical jargon should be avoided. Where appropriate, implications of the findings should be clearly articulated. Reports should be made to those most directly affected by the results and who are able to evaluate the findings and take action on any recommendations made.

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D. The Ultimate Open-Ended Design Problem

December 2005

The process of program assessment of student learning can be understood in the context of the open-ended design problem. In designing a product or process for a client¹, there are several principles that are shared among disciplines. Here are some common characteristics that can be applied to program assessment:

Understanding the client's needs

When designing a product or process, it is important that the service provider understands the client and meets his needs. In the program assessment planning process, the service provider must consider both the external clients, those who employ our graduates or accept them for graduate schools, as well as internal clients, our students and our faculty colleagues:

- What do graduates need to know or be able to do to succeed in the initial years after graduation and thereby satisfy our external clients' needs?
- What are the students' expectations of how their preparation will help them achieve their career goals?
- What about our faculty colleagues? How does the teaching in one course impact our colleagues who will be expecting students to have certain knowledge and skills when they take subsequent courses?
- How do we know that we have met our clients' needs?

These questions should drive the design of the educational process (anticipated student learning outcomes).

Identifying constraints

In the business world, clients do not come for services with unlimited expectations or resources. The client will expect the services to be provided within given constraints, such as product or process design specifications and financial constraints. No one program can do everything or meet the needs of every possible client. By understanding your program constraints, it is possible to manage the expectations of your internal and external clients.

For example, programs are constrained by the resources that are available to them, including the background and capability of students, the experience and composition of faculty, the quality and

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D. The Ultimate Open-Ended Design Problem

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availability of laboratories, and financial resources. There is a saying that goes, “Price, service, quality — pick any two.” When setting the program outcomes, ensure that they align with both the resources available and the processes that have been put in place to manage these resources. The outcomes must be realistic in light of the program’s existing constraints.

Teamwork

Most design problems are not solved by individuals working alone. Solutions are more often results of collaborative efforts. Program assessment requires the same type of collaboration by program faculty. This is not to say that everyone is equally involved; rather, there must be an internal process that engages the faculty in a way that optimizes both the resources available and the likelihood that the outcome meets the clients’ expectations. Someone needs to serve as the project manager and have responsibility for bringing together the necessary resources to develop a quality assurance process that continuously improves the curriculum.

Ambiguity

By their nature, most design problems are ambiguous in that there is no one clear solution. Based on the problem’s complexity, the existing constraints, and the available resources, there can be several possible solutions. The same is true for program assessment — there is no one way to develop a quality assurance process for program curriculum. Numerous processes have been developed to solve the problem; the one that fits a program best is the one that meets its need, based on constraints and best practice. Programs can learn from one another to reduce time to delivery, but the bottom line is that a program has to develop a process that fits its unique situation.

Iteration

Design processes are iterative; generally, models for a proposed solution are developed and then tested to see if they meet the necessary requirements. Data are taken and analyzed, processes are examined to see if they are valid and reliable, and projections are made to determine if the final product or process can be delivered within budget. With each test, there are modifications and retesting. When doing program assessment, chances are unlikely that it will be optimal the first

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time. There will be cycles of refinement, not only to improve results but also to perfect the process of quality assurance itself. Measurement tools will be polished, data collection cycles will be altered, and learning outcomes will become more focused and better defined. Each step in the program assessment process will influence both previous and future steps, and every improvement in the process will optimize the final solution.

Integration

The design process is made up of multiple steps that follow systematically and integrate. Each step informs the other steps, and generally, there are no shortcuts without jeopardizing the quality of the results. The same is true for the program assessment process. There are certain steps that must be followed to ensure that the findings are valid and reliable and that the information provided can lead to quality improvement. It begins with the clients and their needs. Once the clients' needs are identified, it is the program faculty's responsibility to determine what the product (curriculum) should be to satisfy those needs. In determining how to do that, faculty must consider the given constraints and determine the measurable performance criteria (specifications) that must be met.

With consideration for the performance criteria, practices and strategies must be developed so that students have ample opportunity to learn, develop, practice, and get feedback on their performance, related to the criteria established. Assessment data must be collected, analyzed, and evaluated at the program level to determine whether the merits must be made. The steps in this process are integrated so that, when assessment results are evaluated, they have clear implications in the ways the program can be improved. The ultimate goal is satisfaction for the clients, both internal and external.

Assessment 101: Assessment Tips with Gloria Rogers, Ph.D. Using Course or Test Grades for Program Assessment

December 2006

When discussing outcomes assessment, one of the most common questions that faculty members have is, “We are already giving students grades in courses. Why can’t we just use grades as a measure of student learning outcomes?”

Grades represent the extent to which a student has successfully met an individual faculty member’s requirements and expectations for a unit or course. **Because many factors contribute to an assigned grade, it is almost impossible to make inferences about what a student knows or can do solely by looking at that grade.**

In outcomes assessment at the program level, the primary question that needs to be answered is, “To what extent do students demonstrate the anticipated learning outcomes?” The focus of program assessment is on providing evidence that students can demonstrate knowledge or a skill that is directly linked to specific performance criteria¹ that define the program outcomes. Grades per se are relative measures and generally do not represent specific aspects of learning. More often, they reflect performance on multiple concepts.

Course content and emphasis varies with each individual faculty member’s beliefs about what is important (topics, concepts, and levels of cognition students must demonstrate for each concept) and the faculty member’s expertise and interests. The grading policy in any course is dependent on the individual faculty member. This is generally true even when there are multiple sections of the same course with common exams and syllabi. Some faculty choose to give (or take away) ‘points’ or award ‘partial credit’ for things that are not related to student learning (e.g., attendance, class participation, and filling out the course evaluation).

Some faculty grade on a curve, while others have a fixed standard. Letter grades or numeric scores reflect the relative standing the student has in the class or on a test — relative to a set scale or relative to other students. All of these variables confound the ability to interpret the meaning of the grade related to specific student knowledge or abilities. An assigned grade does not tell the person interpreting it what a student knows or can do, nor does it provide information

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about which topics or concepts a student did not understand or how student learning could be improved.

For program assessment, a numeric score that is **directly** linked to students' performance on specific performance criteria can be used as evidence of program learning outcomes. For example, for the outcome "students have an understanding of ethical responsibility," one of the performance criteria could be "students will demonstrate the ability to evaluate the ethical dimensions of a problem in their discipline."

Faculty could develop a rubric to score student performance. Each performance level is described and assigned a numeric score (e.g., 1=no evidence, 2=developing, 3=good, and 4=exemplary).² The student work related to the specific performance can be scored as a part of the course work and may even contribute to the course grade. Reporting the percent of students who score at each of the performance levels provides meaningful data that are linked directly to the anticipated performance and focus the evaluation and strategies for improvement

Grades will continue to be an important part of the higher education culture and should be understood for what they represent. However, the measure used to assess the outcomes should be used consistently among faculty, reflect specific student knowledge or skills, and be directly linked to specific performance criteria. It is important to remember that the focus is not a score but the specific student knowledge or skill that the score represents.

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Establishing Timelines and Responsibilities -An Example-

In program assessment planning, it is important to let common sense prevail. You can't do everything. Processes must be established that capitalize on what is already being done and complement the work of the faculty. Decisions will need to be made. Just as faculty cannot teach the universe of all concepts and skills related to a single course, programs cannot assess everything that they believe students should know or be able to do. As decisions are made and as assessment and evaluation process are developed, think systematically and for the long term. Identify where you want to be at some time in the future and work backwards.

The timeline illustrated in Table 1 demonstrates a three year cycle where each outcome is assessed every three years. Because there are only six outcomes, this means that the data collection process takes place on only two outcomes per year. The timeline provides for two cycles of data collection every six years.

Learning Outcomes (each with measurable performance indicators):	'08-09	'09-10	'10-11	'11-12	'12-13	'13-14
A recognition of ethical and professional responsibilities	●			●		
An understanding of how contemporary issues shape and are shaped by mathematics, science, & engineering		●			●	
An ability to recognize the role of professionals in the global society			●			●
An understanding of diverse cultural and humanistic traditions	●			●		
An ability to work effectively in teams		●			●	
An ability to communicate effectively in oral, written, graphical, and visual forms			●			●

Table 1. Data collection cycle for six learning outcomes

The table above can be misleading in that during the year where data collection is taking place on some of the outcomes, activities are taking place related to other outcomes. Table 2 below represents an assessment and evaluation timeline for multiple processes for a single outcome.

Outcome: An ability to recognize the role of professionals in the global society

Assessment and Evaluation Activity	'08-09	'09-10	'10-11	'11-12	'12-13	'13-14
Review of performance indicators that define the outcome	●			●		
Map educational strategies related to performance indicators		●			●	
Review mapping and identify where data will be collected		●			●	
Develop and/or review assessment methods used to assess performance indicators		●			●	
Collect data			●			●
Evaluate assessment data including processes				●		
Report findings				●		
Take action where necessary				●		

Table 2. Assessment and evaluation activity timeline for a single outcome

To get a general view of what one cycle of an assessment program might look like, Table 3 represents three academic years of activity for six learning outcomes by assessment and evaluation activities.

Activities	'08-09					'09-10					'10-11							
	Ethics	Contemporary Issues	Global	Cultural	Teams	Communication	Ethics	Contemporary Issues	Global	Cultural	Teams	Communication	Ethics	Contemporary Issues	Global	Cultural	Teams	Communication
Review of performance indicators defining that outcome			●			●	●			●				●				●
Map educational strategies related to performance indicators		●			●			●			●	●				●		
Review mapping and identify where data will be collected		●			●			●			●	●				●		
Develop or review assessment methods related to outcome		●			●			●			●	●				●		
Collect and analyze data	●			●			●			●				●				●
Evaluate assessment data including processes			●			●	●			●				●				●
Report findings			●			●	●			●				●				●
Take action where necessary			●			●	●			●				●				●

Table 3. Three-year cycle of assessment and evaluation activity

Although this appears to require considerable effort, not all assessment activities need to be done by the same person or group. Table 4 suggests that there are multiple parties involved in the assessment and evaluation cycle. It is important to plan strategically and systematically so that the workload is reasonable and appropriately distributed.

Assessment and Evaluation Activity	Responsibility for activity
Review of performance indicators that define the outcome	Faculty Assessment Team
Map educational strategies related to performance indicators	All Faculty
Review mapping and identify where data will be collected	Program Faculty
Develop and/or review assessment methods used to assess performance indicators	Faculty Assessment Team w/Assessment Resource
Collect and analyze data	Faculty Assessment Team w/Assessment Resource
Evaluate assessment data including processes	Program Faculty
Report findings	Program Faculty
Take action where necessary	Program Faculty

Table 4. Parties responsible for the assessment and evaluation processes

These tables are for illustrative purposes only. In order to close the loop on the assessment and evaluation process, it is important to plan with the end in mind. Creating a multi-year timeline will help to shape thinking about the activities involved in program assessment. It will also help to avoid taking on too much in the beginning and encourage systematic planning over time.

Creating these types of tables should only be seen as tools to assist in administering and communicating the process. At any time it is found that the processes need to be altered, the information in the tables should change. For example, it may be found after multiple data collection and analysis processes that one or more of the outcomes are consistently of high quality whereas there are other outcomes where the program cannot demonstrate adequate achievement. This could lead to more frequent data collection and evaluation process for some outcomes and less for others. The overall process needs to be designed to answer questions that are of interest to the program. “Systematic” does not mean “etched in stone.” If you need to change your processes and/or cycles of activity, then it should be done.