



## HOW MANY DATA ARE TOO MANY?

By Gloria Rogers, Ph.D., ABET Senior Adjunct Director, Professional Offerings

The movement of accreditation — both regional and specialized — to a focus on outcomes assessment has created positive changes in academe. Effective outcomes assessment requires iterative processes and procedures that, while necessary to ensure continuous program improvement, might also be overwhelming if not gone about in an effective and sustainable way. One such process is data collection. If not gathered systematically and efficiently, data collection can create faculty frustration and resistance. 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:

**How do we know?** Be sure that you have a clear vision of why you are collecting specific data. Assuming student outcomes have been defined (e.g., what performances will you look for as indicators that students are achieving the desired outcomes), it should be clear what data need to be collected and the purpose of those data. If the outcomes are not clearly developed into measurable performance indicators, it is difficult to know what data are relevant, and there is the tendency to collect any data even remotely related to the outcome.

Several nationally normed examinations and surveys can provide data about student learning. However, if the questions asked and the concepts tested are not consistent with your program’s outcome definitions, the data are not useful to assess the teaching and learning processes. Ask yourself, “Do the data being collected align with our specific, measurable student outcomes?” If the answer is “no,” then do not expect the data to inform the teaching and learning processes.

**How many?** 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 has not 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 the currency of your program educational objectives? Do you need 30,000 data points that are aligned to student outcomes? 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 an opportunity to ask for additional information that will enable you to better understand the responses.

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

Once the performance indicators for this outcome are developed and a curriculum map identifies where in the curriculum students are getting an opportunity to demonstrate their oral communication skills, scoring sheets could be developed to rate student performance specific to the indicators that have been developed. Not only will the individual student get prompt feedback and have an opportunity to improve, but the forms can also be used to document the students' strengths and weaknesses at the program level. This process does not take extra time once the performance indicators have been established and the forms have been designed. This process also ensures a clear understanding among students and faculty of what the expectations are for oral communication. It is important not to sacrifice the quality of the data, 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 and sustainability without sacrificing quality. Using 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 the size of the cohort being assessed. 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 many 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 that students are not demonstrating achievement of an outcome by the end of the program, you may decide to take actions and collect data more often (i.e., decrease the amount of time in the cycle of data collection).

**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 using multiple available external exams and student surveys. After literally thousands of data points have been collected, faculty try to decipher what they all mean. This is not only inefficient, but also wasteful (both in time and money).

Benchmark surveys that ask students whether they have learned something at the outcome level (with no definition given) are not especially useful for program improvement. For example, if students said "no," what would be learned that could be applied to program improvement? A litmus test for the effectiveness of these types of data is as follows: if the data being gathered are not aligned to the program's specific student outcomes and they do not 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 primarily because, in many cases, it is not being done effectively or efficiently and the results do not adequately inform the teaching and learning processes. 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 is time to apply this same know-how to this sometimes-perplexing, open-ended design problem.