MEANINGFUL MEASUREMENT

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

Much of the frustration over assessing student outcomes comes from the fact that, in most cases, the data that are collected are not very useful in determining what actions to take. In other words, the data do not provide useful information in understanding strengths and weaknesses in student learning. For example, it may be possible to identify that students need to improve their communication skills, however, when questioned about what aspects of their communication skills need to be improved, the data do not reveal that information. This is because faculty may be asked to score student performance in writing, but the breadth and depth of the writing experiences vary widely among the faculty.

Scales are often used to quantify faculty judgment (e.g., 1-needs improvement, 2-fair, 3-good, 4-excellent). Faculty are then asked to submit their aggregate ratings, and someone takes the scores from all courses, aggregates those scores and reports the results in terms of an overall average. Using this example, an average score of 1.8 would indicate that some intervention should be developed and implemented. However, the data do not provide the information as to specific areas of improvement that are needed. In other words, 1.8 does not indicate WHAT needs to be improved, such as grammar, sentence structure, mechanics, content, etc. How would faculty provide direction to students, give them feedback on their areas of weakness or incorporate classroom strategies which would provide opportunities for students to practice specific writing skills within courses? Telling students that they need to improve their writing is not very helpful unless the faculty expectations for acceptable writing skills are made explicit.

The most critical step in creating a valid, meaningful continuous improvement process is to define the anticipated student learning outcomes into a _few_ measurable performance indicators that, when measured, give direct evidence of student learning related to the student outcome. For example, when measuring students' understanding of working in a team, the program faculty might decide they are going to focus on four indicators related to the outcome of "ability to work effectively on a team:" 1) participates in the establishment of goals and workplan of the team, 2) contributes to the development of a collaborative team environment, 3) encourages an inclusive team environment and 4) exhibits dependability in achieving team's goals. These four indicators do not encompass all possible concepts and performances that could be measured related to the outcome. However, if the faculty have agreed that these four performance indicators represent the most significant aspects of the outcome for _their program_, then data can be collected to measure student performance in each of these areas, and the data can be used to provide information on how well the program is enhancing student learning related to the outcome.

In the absence of defining the learning outcomes into a few measurable performance indicators, there is insufficient discrimination in the results to know what the data mean, and any suggested remedy would be, at best, a guess. For example, the bar graphs below represent the percent of students who demonstrate acceptable student performance (as decided by the faculty) in the team skills outcome. Graph 1 is for the aggregated results, and Graph 2 is presented by performance indicator. Which graph depicts "data" and which depicts "information?"
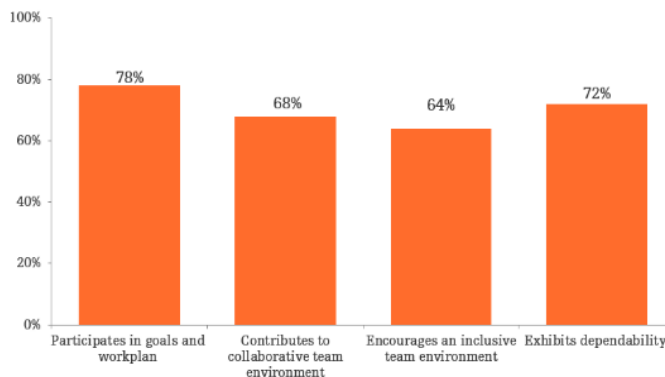
Graph 1

Effective Teaming Skills
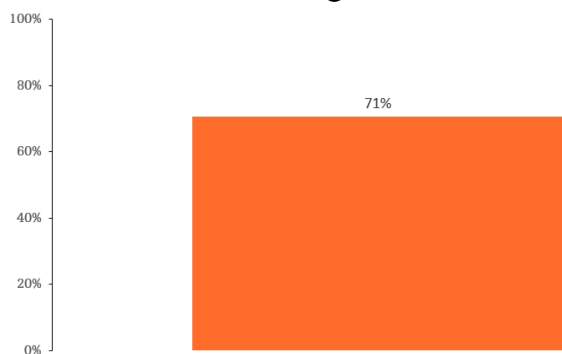
Graph 2

Effective Teaming Skills

When programs begin to focus on a few performance indicators for each student outcome and measure the performance indicators in meaningful (and efficient) ways, the "continuous quality improvement" of student learning will result in meaningful improvement that will be worthy of faculty time and support.