

# RESPONSES TO ISSUE BINS: ADVANCED PROGRAM ASSESSMENT WORKSHOP

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## WHY NOT USE STUDENT OUTCOMES DIRECTLY INSTEAD OF ANOTHER LAYER OF WORK WITH PERFORMANCE INDICATORS?

The continuous improvement process is predicated on the fact that when you collect the data on student outcomes that the program knows what students' strengths and weaknesses are related to the outcomes. This enables programs to develop focused strategies to maximize the strengths and improve the areas of student weaknesses. Without a clear definition of what each of the student outcomes mean for the program (that is, to develop a few performance indicators) then there is no common view of the student outcomes among the faculty. This generally results in an increased workload for faculty as the strategy becomes one of collecting data in every course where students demonstrate the outcome and aggregating results across the courses. This results in lots of data but no information about student performance that can be used for continuous improvement purposes.

Recall the example of a poor assessment program in the workshop: each faculty member could individually decide on what an outcome "looked like" in his/her course and on corresponding acceptable levels of achievement. The results aggregated for the entire program gave no useful feedback on student strengths and weaknesses.

The goal is to be specific about what an outcome means so that data can be collected in a summative course where students are getting a culminating, substantive experience related to the outcome (see also response to #8 below). ***As a point of clarification: although assessment could/should be taken in multiple courses where students get a chance to learn, practice and develop the outcomes, summative assessment need only be taken in one course for any one set of performance indicators as evidence of summative achievement.*** The goal is to be specific about what an outcome means so that data can be collected in the ONE summative course where students are getting a culminating, substantive experience related to the outcome (see also response to #8 below). The results can then be shared with the faculty who also address the outcome in their course(s) which have contributed to the results so that a systematic strategy can be developed to improve student learning. In effect, defining the outcomes through the use of performance indicators actually REDUCES faculty workload and maximizes their understanding of the outcomes and, as a result, improves student performance.

This is not to say that data cannot be collected in multiple courses and the results used as a part of the discussion of the final assessment results where it is determined what actions should be taken (the evaluation process). The use of multiple course assessment is a way to examine your assessment tools, performance indicators and the reliability of the data as well as just looking at results. Best practice would expect that there would also be formative assessment (early, benchmark assessment) in an early course where students demonstrated the desired performance so that the program can identify the students' strengths and weaknesses before the end of the program. These data would be used to make adjustments early so that students can maximize the likelihood of demonstrating the desired performance prior to completing the program.

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## DO YOU NEED TO LIST “FACULTY” EXPLICITLY IN YOUR LIST OF PROGRAM CONSTITUENTS?

Program Educational Objectives are defined in the ABET Criteria as, “broad statements that describe what graduates are expected to attain within a few years after graduation. Program educational objectives are based on the needs of the program’s constituencies.” The question becomes whether or not your faculty are also one of your constituents. If you list them as one of your constituents then you need to indicate in what way. If you have a graduate program and many of your students continue into your graduate program then you could certainly make the argument that they are a constituent. It will be your responsibility to make the case for who you have listed (or not listed) as a constituent for the purpose of defining and reviewing your program educational objectives.

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## CASE STUDY: 4 PROGRAMS AND EACH PROGRAM HAS SEPARATE PEO. SHOULD THE OVERALL DEPARTMENT OF OBJECTIVES SIMPLY RE-STATE THE PROGRAM OBJECTIVES?

Under the ABET criteria, there is no requirement to have “departmental objectives”. The point of learning from the exercise was that if a department has more than one program, they should each have their own program educational objectives and you should not use the same program educational objectives for all programs, as they will have different constituencies who will have different needs. A department (that may contain more than one program) may have an overarching mission/vision statement that is reflected in the program educational objectives for each of the programs, but again, this is not an ABET requirement. The program educational objectives only need to be consistent with the institutional mission and meet the needs of the program’s constituents.

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## IF YOU ARE NOT USING RUBRICS TO ASSESS THE STUDENT OUTCOMES, WHAT OTHER OPTIONS DO YOU SUGGEST (MAYBE NEXT TO BEST PRACTICES)?

It is important to remember that a rubric is a scoring mechanism for student performance. For example, the actual context of the assessment may be project report, oral presentation, or classroom observation (e.g., lab techniques). A rubric provides a structured, systematic method to score student performance to ensure consistency within a course or across multiple faculty raters.

After defining a student outcome (development of performance indicators) faculty should determine the best assessment method that would enable students to demonstrate their performance of the outcome. For example, if we look at the ABET outcome dealing with “application of the knowledge of mathematics...” a program must first determine what the highest level of mathematics application is expected of the students by the time they finish the program. Once that is decided, the program should identify all the courses where students are provided a substantive experience related to the expected performance. The decision then becomes where to assess the performance. In this example, a rubric may not be needed. The demonstration of students’ abilities to apply their knowledge of mathematics could be a part of the grading of project papers or an exam where students are being asked to apply the math skill to a problem in the discipline. It is possible that this would be a “yes/no” assessment with no rubric required.

Rubrics are best used for those outcomes which are abstract or more complex—especially those where faculty need to agree on what the outcome means and what performances will be assessed as indicators that students have met the outcome. This is especially true where there can be several interpretations of what is important to the program related to the outcomes (e.g., communication skills, teaming, professional and ethical responsibilities, professional development, a commitment to quality, timeliness,

and continuous improvement, etc.). Having a common definition and a scoring mechanism for those indicators maximizes the likelihood of reliable results regardless of who is doing the scoring.

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#### WHAT ARE THE BEST PRACTICES THAT CAN BE USED ACROSS DIFFERENT PROGRAMS (SAY, 12 PROGRAMS)

It is important to remember that each program is different and has unique characteristics, even within the same institution (number of students, student background, size of faculty, resources etc.). Many best practices were discussed in the workshop, such as the use of performance indicators, developing and pilot testing rubrics, getting faculty input to create a curriculum map, and presenting data in a useful and meaningful way. Another best practice that should be employed across multiple programs in a single institution is to have a defined, documented and systematic processes. It is important that each program knows when it will review program educational objectives, who will be involved in the process, when student outcomes will be assessed, in which courses and by whom, when the evaluation will be done, and who will be responsible for implementing changes. Establish an annual schedule so the faculty knows when items need to be completed and when meetings will be held. You may also need to establish a 6 year plan so you know when PEOs will be reviewed and which student outcomes will be assessed/evaluated in each year.

Another possible approach for multiple programs is to use what the college or institution may already be doing in terms of assessment and institutional research. As long as college/institutional data can be broken down by program, these data may be useful in providing an additional “free” source of feedback about student knowledge, skills and/or attitudes. Be sure, however, that the data are then analyzed and incorporated into the continuous improvement process, as required by Criterion 4.

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#### ARE PERFORMANCE INDICATORS MAPPED TO COURSES TO DERIVE FROM THEM SPECIFIC PEOs?

Performance indicators are mapped to courses so the program can see:

- a) How well the curriculum supports attainment of the performance indicator and therefore attainment of the student outcome
- b) Where the appropriate places are in the curriculum for collecting assessment data for summative assessment and/or formative assessment
- c) Identify how the curriculum can be modified if student performance for a particular indicator is below the target.

It is better to map performance indicators to courses than to map student outcomes because not all performance indicators for a given student outcome might be covered in a particular course. For example, EAC outcome (b) states students should demonstrate the ability to design and conduct experiments, as well as analyze and interpret the data. One possible performance indicator might be “an ability to design experiments”. In a course containing a lab section, students might not be required to design experiments but they would be expected to conduct experiments and analyze and interpret data. If student outcomes were mapped to the course it would not be apparent that students don’t have an opportunity to design experiments; however, by mapping performance indicators to the course this would be known and the added specificity provides more information about the program.

This approach does not preclude a program from writing general (not task-specific) performance indicators that can be used in program assessment. It is not uncommon that, for any given assessment of

student performance, some of the performance indicators may not apply—even if the performance indicator is mapped to that course.

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#### CAN A REPRESENTATIVE ADVISORY BOARD BE USED EXCLUSIVELY TO REVIEW PEOS?

The ABET Criterion 2 says, “There must be a documented, systematically utilized, and effective process, involving program constituencies, for the periodic review of these program educational objectives that ensures they remain consistent with the institutional mission, the program's constituents' needs, and these criteria.” Who you choose to be involved in the “period review” should reflect the diversity of the areas where your students go after completing your program—business, industry, entrepreneurial endeavors, graduate school, military, etc. The constituents that you involve should represent the experiences of your graduates and should be representative of those groups. It will be up to the program to defend how the process used for getting input is “effective” in involving program constituents. An often-cited issue in accreditation visits is that programs list constituencies, but some on the list are not involved in the program educational review process.

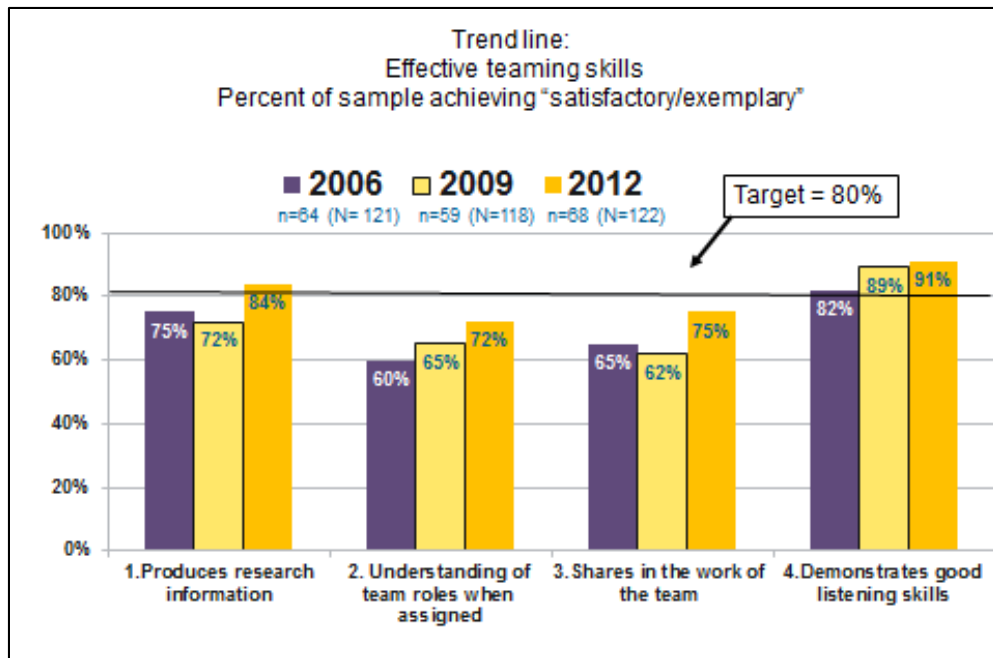
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#### KINDLY ADVISE ABOUT AGGREGATING RESULTS OF RUBRICS FROM DIFFERENT COURSES FOR AN OUTCOME.

IF OUTCOME X IS ASSESSED IN 2 COURSES, AGGREGATION OF RUBRIC RESULTS FROM MULTIPLE COURSES: SCENARIO FOR OUTCOME X—COURSE #1 P.I. 1 = 60%; P.I. 2= 80% AND COURSE #2 P.I. #1= 80%; P.I. #2= 50%. IS OUTCOME X ATTAINED? TARGETS: P.I. #1 =70% AND P.I. #2 = 70%.

Anytime a program chooses to aggregate data across different courses there is an opportunity for confusion. The first thing to determine is whether or not the student experience in each course is comparable. That is, was the complexity of the assignment similar (e.g., did one use the rubric to score a project report while the other scored a one page reflection paper?) and was the focus on the anticipated performance the same (i.e., did the instruction leading up to the assignments have the same breadth and depth). Although both courses (multiple sections?) produced results at the performance indicator level, this does not mean that they can be interpreted in the same way. Many times there is so much “noise” in the aggregation of results across multiple courses that is difficult to know what the data really mean.

The question, “Is outcome X attained?” is one that can be asked whether or not the results are different across courses. See the graph below:



Would you say the outcome has been met when only two of the four indicators are above the "target" of 80%? It is important not to confuse "have you met the outcome" with "to what extent are you meeting the outcome."

ABET Criterion 4 states: "The program must regularly use appropriate, documented processes for assessing and evaluating **the extent to which the student outcomes are being attained**. The results of these evaluations must be systematically utilized as input for the continuous improvement of the program..."

In this example you can certainly say that the program has attained the outcome on two of the four indicators and is making progress on the other two indicators. Improvements are being implemented to address the two indicators that have not yet met the target. These improvements are: ..... (Identify the improvements)