AN ASSESSMENT JOURNEY

Peg Pankowski

Abstract – I attended the January 2005 ABET TEI workshop in Manhattan Beach, CA. Although several engineering technology faculty had attended earlier workshops, I was the only representative from my division in attendance. It was clear that student success would be improved if we implemented the continuous improvement models presented during the conference. Implementation of the concepts was especially important in that we were applying for our first ABET accreditations(s) and the college was at the beginning of another NWCCC accreditation. During the fall 2005 term, our community college required all programs to submit and implement new assessment plans, with results analyzed and reported at the end of the spring 2006 term. This coincided with our application for outside accreditation of two programs within our division. This article outlines the steps taken along the way to accreditation, highlighting efforts to articulate a program assessment plan. New college assessment forms are referenced and sample plans included.

Index Terms – assessment, outcomes, engineering technology, accreditation

INTRODUCTION

My assessment journey began in 2004 when I accepted a position as dean for a newly formed division at a large multi-campus community college. During the fall term, as the division faculty began to work together as a unit, the Engineering Technology group approached me with their plan to seek outside accreditation for their Applied Associates in Science (AAS) degree from the Accrediting Board for Engineering and Technologies, Inc. (ABET). The accreditation would require a great deal of time and money but would, in our opinion, be a worthwhile investment in the program. In addition to the recognition that ABET accreditation would provide, we expected to reap additional benefits from the stringent self-examination required by the process. Simultaneously, the college was preparing for a full-scale visit from our regional accrediting body so our efforts would serve a dual purpose.

One of our faculty members was identified as the lead for the accreditation effort and he began to amass the needed materials. Then, in January of 2005, I attended an ABET/TEI (Technology Education Initiative) Conference. This particular workshop was the last of a series of three day workshops held in various regions of the country that were supported by an NSF grant. “The TEI workshops provided attendees with an understanding of outcomes-based assessment and gave them the tools to apply assessment to improve the quality of their programs. Key elements of the workshops included intensive small-group work using true-to-life case studies and unique interaction with industry through plant tours and presentations from quality management and executive personnel. More than 660 faculty members from over 350 institutions participated in the TEI workshops.” [1]

This paper details our efforts to incorporate outcomes assessment as part of our programs and, in the process, to obtain ABET accreditation for two of those programs while
reaffirming regional accreditation for the college. Our efforts are detailed in four phases.

Phase 1, Change and Assessment, details the preliminary efforts, including the college’s new assessment forms. Phase 2, Program Director Workshop, explains how information was conveyed to program directors and concludes with the initial submission of the new Assessment Plans. Phase 3 details efforts to fine tune the assessment process and Phase 4 concludes with a description of preliminary results, next steps, and dissemination efforts.

**PHASE 1 - CHANGE AND ASSESSMENT**

The tasks and case studies from the ABET/TEI workshop, together with Gloria Roger’s Assessment Planning Flow Chart [2] and ABET published “Criteria for accrediting engineering technology programs, effective for evaluations during the 2005-2006 accreditation cycle” [3] provided the foundation for our accreditation and assessment efforts.

As we conducted the internal evaluation and completed the self-study questionnaire required by ABET, it became apparent that one of the areas where we were deficient was outcomes-based assessment. Our college had previously adopted a framework for assessment reports that attempted to link programs to the college mission and listed specific student outcomes such as “construct, test and verify the operation of various digital circuits”. These reports listed tests and laboratory reports as measurement devices. The reports had been completed in spring 2003 and filed but no data had been collected. We had no records of the assessments actually being conducted nor were any results available. The reports had been shelved and not acted upon. Thus, there was no viable outcomes-based assessment process in place.

Further, when we examined the reports for the two engineering technology programs applying for ABET accreditation; we noted several items that were missing. ABET criterion 2 lists eleven program learning outcomes that an engineering technology program must demonstrate. Several of these were not included in those assessment plans. Specifically, criterion 2, items e, g, and i were missing. These were the ability to:

- function effectively on teams
- communicate effectively
- understand professional, ethical and social responsibilities [4]

Thus we knew that, somehow, we would need to identify program outcomes that included these competencies. We also had to determine appropriate measurements that could be used to assess student achievement of these outcomes.

Unfortunately, none of the faculty involved in this effort had any experience or expertise in the area of outcomes assessment. The division consisted of two departments and a dozen programs. Each program is led by a faculty member with release time to coordinate staffing, 

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1 Peg Pankowski, Ed.D., Dean, Community College of Southern Nevada
course offerings, course development and curricular changes. But none of the program directors had a background or formal training in assessment nor did anyone have experience with outcomes-based assessment.

Considering all of the above factors, I decided that the best way to facilitate our outcomes-based assessment process would be to conduct a workshop for the program directors and to present the activity as an opportunity for program directors to learn and work together.

**PHASE 2 – PROGRAM DIRECTOR’S WORKSHOP**

The workshop began with a short power point presentation detailing the college’s continuous assessment plan (CAP), along with an introduction to assessment terminology and sample program outcomes. The college’s assessment plan stated that all courses would include communications, critical thinking, quantitative reasoning, technological competency, diversity appreciation and/or life enhancement.

Further, CAP provided for direct measures of student learning outcomes at the student level. That is, indicators of student learning obtained directly from the student or from the performance of the student in an academic endeavor were required. The CAP concludes with post-curricular assessment activities such as success in employment, employer satisfaction, and student transfer to baccalaureate programs. All programs at the college must submit assessment plans and reports. All assessment plans include:

1. A statement of department goals as related to student outcomes and linked to institutional mission.

2. A list of intended measurable learning outcomes/objectives for program graduates.

3. Statements of assessment criteria and procedures used to measure the proficiency of graduates toward meeting measurable program learning outcomes.

At the start of the workshop, each program director received

- Copies of the “old” assessment plan for their program
- Copies of the new college assessment forms
- Handout of the power point presentation
- A disk containing electronic copies of both the old and new assessment forms

The workshop was conducted in a computer classroom so that the program directors could take notes and input items on the new forms. Although the workshop was on a Friday afternoon, when most academics are busy with other things, the majority of program directors attended and, albeit begrudgingly at first, came to enjoy the experience and expressed appreciation for the opportunity to work together.

For example, all were concerned about the need to incorporate interpersonal skills as an important program outcome. One program director stated this outcome as “demonstrate positive work ethics and interpersonal skills in a group environment.” [5] That phrasing was shared and subsequently incorporated into almost every program assessment plan.
Additionally, as program directors developed methods of measuring and assessing that outcome, those methods were shared and adapted to fit individual program requirements. For example, one of the assessment plans that includes the outcome “demonstrate positive work ethics and interpersonal skills in a group environment” now lists the following assessment methods:

“Ethical practices are emphasized throughout the course of study and student actions (academic practices and honesty) are continuously observed and corrected during academic instruction.

Students assist in the completion of group projects and receive satisfactory participation grade from peers.

Students must display ethical and interpersonal skills during group presentations.

Results of individual group assignments and peer comments will be evaluated.”[6]

It was gratifying to watch the synergy develop and to observe the program directors enjoying the experience of learning and working together. As the workshop ended, I was pleasantly surprised when several participants thanked me for scheduling the workshop! Further evidence of success is the fact that all program directors completed and submitted their program assessment plans on time, so that the division was able to forward a complete package to our institutional research department, the office that had been designated to oversee this project.

PHASE 3 - FINE-TUNING ASSESSMENTS

While several program directors were able to submit their completed assessment plans at the conclusion of the workshop, most needed additional time to articulate outcomes, measurement activities or both. All plans were completed and submitted as a group to our Institutional Research (IR) department on time though.

IR reviewed the program plans and returned them about six weeks later with suggestions for improvement. For example, the Telecommunications program had listed its program goals as “This two-year program provides the students with the methods and procedures used by technicians in the telecommunications industry. Instruction takes place in a hands-on, state-of-the-art environment.” IR responded that these were “general statements about knowledge, skills, and values expected in graduates.”[7] and suggested they “focus on what the students will learn rather than what faculty will cover.”[8]

Such suggestions necessitated revisions to many of the program assessment plans in the division. By now it was early December and faculty members were more concerned with final exams, grades, and other end of term activities than with writing assessment plans. However, since the first workshop had proven so valuable, they requested a second session. We met again on a Friday afternoon to formulate revisions based on suggestions from IR. Again, there was tremendous collaboration as they came to see that the comments and suggestions could be categorized and that there were many similarities among the programs.
For example, the program director for the Telecommunications program revised the assessment plan and the program goals now state “The students will learn the engineering technology methods and procedures used by technicians in the telecommunications industry. Students will become skilled applying practical knowledge using applicable test equipment in a state-of-the-art environment. Ethical practices are emphasized throughout the course of study and student actions (academic practices and honesty) are continuously observed.”[9]

This time I followed up the workshop with individual conferences with each program director. During each conference we examined program strengths and weaknesses with regard to faculty, both full- and part-time, facilities, equipment, and curriculum. These meetings provided an opportunity to celebrate our successes, while planning for the future. We were able to discuss each assessment plan in far greater detail and to determine which assessment methods already identified were appropriate and which were inadequate. In several cases, additional outcomes were added to the assessment plan in order to ensure that graduates would be adequately prepared to communicate effectively with team members and to understand ethical responsibility (see [6] above for an example).

**PHASE 4 - RESULTS, DISSEMINATION, AND NEXT STEPS**

Following the second program director’s workshop and meetings, each program director submitted revised assessment plans that were then forwarded to IR. At the conclusion of the spring 2006 term, program directors and faculty collected data and began their analysis of assessments.

In several cases, the program assessment plan hinged on measurements of student learning obtained from a capstone course that had not been offered during the term; hence those assessment reports were deferred to the next academic year.

The results of this process for our information management systems (IS) program were most dramatic in that, prior to this academic year, faculty had been unable to agree on a text, and unable to agree on common outcomes. The effort to institute an outcomes-based assessment program in this case resulted in a faculty effort, led by the department chair, to agree on an exit exam that would be administered to all students completing the course. The program faculty members were finally able to agree on all test items and the test was administered at the end of each class this past spring. Additionally, the program director has collected data from all faculty members showing the number of students who answered each item incorrectly. That data is now being analyzed to determine whether there are statistical differences among classes taught by different instructors and whether there are any questions that a significant number of students answered incorrectly. When the analysis is complete, results will be shared with program faculty to determine whether specific items are not sufficiently addressed during the course or whether specific test items should be reworded or otherwise edited to improve student performance. The preliminary report indicated that 87% of students taking the exam score above 70%, indicating that course outcomes are being achieved.

Efforts to incorporate communication skills have resulted in team projects and presentations now included in all engineering technology courses. Additionally, faculty members have
increased efforts to recruit students and employers for internship programs, and program advisory councils are being revitalized.

Dissemination has also resulted in several conference presentations. In particular, the program director assigned to lead the ABET accreditation and the dean teamed up to present at the National Institute for Staff and Organizational Development (NISOD) conference this year.

**CONCLUSION**

It has been an exciting journey. Over the course of 24 months, I have learned much about assessment of learning outcomes. I have facilitated application for ABET accreditation. My division has submitted revised assessment plans for all academic programs. I have received some assessment reports, although most program directors still have not submitted them.

More importantly, faculty members have followed their assessment plans by conducting assessments of learning outcomes, documenting both successes and failures. We hope to learn from these assessments, to continuously improve academic programs. We are still waiting to learn the results of our ABET accreditation visit but the report was positive, identifying strengths, weaknesses and concerns and finding no deficiencies. Regardless, students, faculty, and programs are already benefiting from the first steps in our continuous improvement process.

**REFERENCES**