Outcomes-Oriented ABET Accreditation: Mechanisms for Review and Feedback

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Abstract

Over the last few years EAC and TAC ABET-accredited programs have converted their accreditation requirements to an outcomes-oriented approach rather than a topic-hours approach. CAC-ABET is now following suit for computer-oriented programs.

Information Technology programs seeking to accredit through CAC have a few special challenges relating to several factors changing in recent years as the Computer-Science Accreditation Board (CSAB) has evolved into CAC and IT has been created. This paper describes methods developed for a four-year IT program to pursue accreditation using new CAC guidelines and new accreditation requirements and to create and set up appropriate feedback mechanisms for continuous quality improvement, while considering the several new factors related to accrediting in this new and constantly evolving discipline.

Key issues in creating the appropriate structure for accreditation include setting goals related to institutional and college goals, choosing measurable outcomes, relating outcomes to teaching, measuring outcomes and using outcomes to modify both program structure and even to modify goals and outcomes. A significant challenge for all such programs is measuring the outcomes graduates of the program have achieved. How do you measure the outcomes a new discipline achieves with its graduates? Many programs have been and still are in transition. How do you obtain credible feedback as to whether the program meets the defined objectives especially if the standards are still evolving? How does a program use this feedback to modify the program and the objectives so that changes add value to future graduates?

CAC programs have traditionally also had a “model curriculum” which, while not officially part of the accreditation criteria, creates expectations for computer-oriented programs.

This paper will discuss how these key issues are related and present organizational mechanisms for completing these requirements.

1. Introduction

Assessment is an ongoing process aimed at understanding and improving learning.... When it is embedded effectively within larger institutional systems, assessment can help us focus our collective attention, examine our assumptions, and create a shared academic culture dedicated to assuring and improving the quality of higher education.... Thomas A. Angelo, Director of the Assessment Forum, American Association for Higher Education

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Based on various studies\textsuperscript{1} ABET is promoting, through its accreditation efforts, the use of continuous assessment, feedback and continuous improvement in all the technical educational programs that choose to use their services. For many years accreditation through ABET has largely been based on ensuring that tertiary technical education institutions offered programs with an appropriate balance of credit hours in various scientific and technical subjects and that those credit hours of instruction were of a high quality. During the 1990s ABET started changing to a model focused on achieving various educational outcomes. Furthermore individual institutions were encouraged to define their own objectives and outcomes for their programs. In this environment institutions take a much larger role for evaluating their own performance against their own criteria. As the quote above indicates, assessment then becomes part of the institution’s pedagogical structure.

One of the expected benefits of the new approach is that institutions will be able to create unique or experimental programs which, while nontraditional, still meet accreditation requirements. This hoped-for benefit also has a challenge. Accreditation is high-stakes; it is expensive, intensive and time-consuming. The temptation is strong for any institution to just “do what all the others do” to ensure that a favorable accreditation result is achieved and any experimentation and non-traditional approaches to the curriculum or pedagogy are de-emphasized while accrediting.

There are three key issues which affect any institution pursuing IT accreditation through the CAC of ABET. All three reflect significant new endeavors within the ABET system. Firstly IT is a new discipline. Accreditation criteria have not yet been approved for IT within CAC-ABET. Secondly outcomes-oriented accreditation is relatively new for all ABET Commissions; it was formally introduced for the EAC in 2000, followed by the TAC in 2004 and is currently being piloted in CAC. This means that not all EAC programs have been accredited in this format, only a few in TAC and only pilot programs in CAC. Thirdly CSAB only recently integrated with ABET to form the CAC and many of those involved in CAC and CSAB have a quite different background, standards and expectations than others in ABET. Accreditation through CAC is based on the accreditation principles of the Computer Science Accreditation Board (CSAB) which for many years was an independent body but which merged with ABET to form the CAC in November 2001\textsuperscript{2} after years of discussion.

Accreditation in CAC covers several disciplines but has focused primarily on computer science programs; even today, over 90\% of the programs accredited by CAC are computer science programs, with the remaining 10\% being made up of programs in information systems, information science, and computer engineering. However, with the many changes that have recently been taking place in the computing disciplines, this will soon be changing, as described below.

Any of the three issues cited above will ensure that accreditation is a challenging prospect. Dealing with all three simultaneously to set up an accreditable evaluation structure for IT requires careful attention to both the letter and the spirit of the accreditation guidelines and expectations.

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Computing Curricula and Computing Disciplines

In 1968, the relatively new discipline of computer science published *Curriculum ‘68*, which “offered detailed recommendations for academic programs in computer science, along with a set of course descriptions …”3 (Ch 2, p. 1) This was later superseded by *Curriculum ’78*, then *Computing Curricula 1991*, then *Computing Curricula 2001* (CC2001)3. The 2001 version significantly expands the scope of the document, openly embracing the new computing disciplines of computer engineering (CE) and software engineering (SE), and incorporating the discipline of information systems (IS), traditionally housed in schools of business. Both of the new computing disciplines (CE and SE) were invited to submit a volume similar to CC2001, as a subset of the entire field of computing curricula. With the emergence in 2003 of a society for information technology (IT) education (SIGITE, the Special Interest Group for Information Technology Education of the ACM), the CC document was further expanded to include an invited volume from the IT discipline.

The relatively new computing disciplines of Computer Engineering (CE) and Software Engineering (SE) have completed their curriculum volumes, and together with the Information Systems (IS) volume are available as part of the computing curricula documents4. The IT volume6 is nearing completion. With the existence of formal model curricula documents for each computing discipline, accreditation under CAC has a distinctly different flavor that in the other ABET commissions.

IT completed work on accreditation criteria, tied to its model curriculum draft, in 2003, and these were submitted to ABET. Several institutions are now seeking accreditation using these new IT criteria. This paper describes a structure for an IT program that meets the requirements for a continuous improvement system.

The intent of this new approach to accreditation is that programs will craft their own, unique mission and have measurable outcomes which lead back to the program’s objectives and mission. The institution is free to teach the way they choose. Furthermore the institution will institute continuous improvement mechanisms and will weave those mechanisms into the fabric of the program so they become a normal and on-going part of the program structure and the program will, indeed, continuously improve.

If the program is successful in following this vision then accreditation will merely be a simple reporting of all the measures that are already in place and are regularly being used. In theory, once a well defined and carefully followed program is in place, it this should reduce the anxiety and stress of going through accreditation and convert it from an occasional high stakes event to a simple (but still high-stakes) reporting of on-going progress.

In order to achieve this, institutions need to understand and define their roles in terms of their goals, their assessment mechanisms and, most importantly their feedback and improvement mechanism.
2. Missions, Objectives, Outcomes and ABET

It is important to understand the relationship between the terms mission, objective, and outcome, and also to understand how ABET uses these terms. Furthermore it is important to understand the relationship between ABET’s required outcomes and those defined by the institution.

Every institution should have a mission statement or a statement of their overall goals. Programs should develop a coordinated vision between the mission of the institution and the mission of their specific program. Additionally, the missions of their college and/or school must also be considered.

Usually the mission of the institution is very broad, focusing on a broad liberal education, supplemented by issues such a contributions to the community, diversity and so on. For example part of BYU’s mission statement is, “BYU seeks to develop students of faith, intellect, and character who have the skills and the desire to continue learning and to serve others throughout their lives.” MIT’s mission statement is “The mission of MIT is to advance knowledge and educate students in science, technology, and other areas of scholarship that will best serve the nation and the world in the 21st century.” RIT’s statement of vision is, “RIT will lead higher education in preparing students for successful careers in a global society.” These institutional statements are broad and reflect the character of the institution. They seldom include any details of the programs offered and often include statements relating to the institution’s commitment to the broader community.

In a similar fashion the organizational unit that houses the program (usually a college) will also have a mission statement. This too will be broad, although focused within its domain. Finally the program itself will have some mission statement or overarching objective. The mission statement of the program is also usually broad, however it is the opinion of the authors that since the missions of the institution and college already form an over-arching umbrella, the mission of the program should be broad only within the context of the discipline.

From its mission statement the program derives objectives and outcomes. The mission statement of the program is sometimes integrated into the program objectives. Program objectives are general statements of what the program wishes their graduates to achieve as a result of their education. From the ABET point of view objectives are usually viewed as something the graduates will only achieve a few years after graduation. Outcomes, on the other hand, are specific measurable attributes of students and graduates in the program. These are normally measured as the students progress through the program and must be measurable no later than the time the student graduates.

Individual classes and other learning experiences within the program also should have defined outcomes. These outcomes should be traceable back to program outcomes. Since most of what the students do happens within the context of classes and is measured there it is necessary to establish a complete chain from the classroom activities through the various levels of outcomes and objectives to finally show that the mission of the university is being fulfilled. While it may be theoretically possible to directly trace a measurable link all the way from classroom to institutional mission in practice this is never done. The transitions from classroom outcomes to
institution mission are going through increasing levels of abstraction. A better approach in practice is to use the various higher-level mission statements to derive the successive ones and the program objectives and to show that they are clearly aligned. It is then assumed that if the program objectives are achieved that the higher level ones will be also. The class outcomes, however, should be directly linkable to the program outcomes and objectives, as well as to accreditation standards as will be discussed later. Figure 1 below shows this relationship.

Some important educational objectives do not fit neatly into a particular course. For example, in IT in particular knowledge areas evolve very rapidly. While this will probably settle down in the future at present it is essential for IT professionals to be able to stay on top of a moving field. Thus it is essential that the attitudes and skills of life-long learning are inculcated into the students. This can be encouraged by assignments with specific outcomes in multiple classes and should be measured and reported in each of those classes and then reflected back to the major program objective.

![Figure 1 From Institution Mission to Class Outcomes](image)

### 2.1. Outcomes: Program vs. ABET

Figure 1 above also shows another issue that institutions have to deal with. ABET has defined accreditation criteria for specific programs. This is usually a list of specific outcomes that any accredited program must achieve. The problem of choosing your own vision as ABET encourages programs to do is that you then have to relate your derived outcomes to the program specific outcomes approved by ABET for your discipline or program. For example TAC-ABET uses program outcomes 2a-k and CAC-ABET IT programs have recently established their own accreditation criteria which includes 11 criteria which can be viewed as outcomes.

The assessment system will show that you have achieved your classroom outcomes. This will therefore show that you have achieved your own program outcomes. It is, however necessary to show that the program outcomes ensure coverage of all the ABET criteria (outcomes). There are a number of different approaches to doing this. One approach is to choose the ABET criteria to
be the program outcomes. While this certainly ensures that ABET criteria are being measured it impedes the purpose of defining your own outcomes and creating your own unique program. This may be more than just quibbling. One of the key issues in implementing a Continuous Improvement (CI) system is getting the faculty to “buy in”. If the CI is not supported by the faculty, who have to implement it, then it will be extremely difficult to make it more than a token effort, staged purely for accreditation reasons. Involving the faculty in creating the unique objectives and outcomes of the program and classes can only help them to feel a part of the process and be more willing to implement all the stages of the CI process.

One of the other differences with CAC accreditation vs. other commissions in ABET is that, instead of outcomes, the current (2004) accreditation criteria are phrased in terms of Intents and Standards as expressed in the self-study questionnaire. There is, at this time of this writing, no approved self-study questionnaire for IT but the self-study questionnaires for CS\textsuperscript{5}, IS and CE all reflect the same structure. Intents and standards bear considerable similarity to objectives and criteria but the standards reflect more of a model curriculum approach. The intents and standards approach will probably continue to evolve as CAC continues to adapt. In the meanwhile programs need to look at both as they prepare for accreditation.

2.2 Model Curriculum

Another significant input to the process, which is specific to computing accreditation, is the model curriculum\textsuperscript{6} mentioned earlier. Although this document is not officially part of the accreditation requirement it must be considered. The CC2001 and other documents mentioned earlier have been very much a part of computer curriculum evaluation for some years. A program pursuing IT accreditation (or any other computer-based accreditation) should review the model curriculum document and their own program together. In preparing for accreditation BYU used the Body of Knowledge (BOK) in chapter 5 of the IT document\textsuperscript{6} and then evaluated how each requirement BOK was satisfied in required aspects of the BYU curriculum. This, in turn, led to changes in the BYU curriculum. No effort was made to re-model the BYU curriculum to “look like” the model curriculum, rather a mapping was created between the BYU curriculum and the model curriculum to ensure that important aspects were satisfied. This review process and the resultant changes in the curriculum are then documented as part of the continuous improvement process for the program as a whole.

2.3 Stakeholders

The mission and objectives of the program are defined to varying degrees, by the different stakeholders. The stakeholders can also play a significant role, in their various spheres, in the evaluation process. As part of the accreditation process we defined our stakeholders and briefly analyzed their degree of involvement.

Using the Stakeholder analysis table from Worthen et al.\textsuperscript{11} in table 13.1 we can define stakeholders and give an initial indication of their role. The obvious stakeholders are students, faculty, administration and future employers of the graduates of the program. There are a few others whose needs should be considered. The modified version of Worthen’s table for this application is shown as Table 1 below. This table is ranked in approximate order of the
significance of the stakeholders. The ranking is only approximate because various stakeholders have differing needs and cannot be compared directly.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Make Policy</th>
<th>Operational Decisions</th>
<th>Provide Input</th>
<th>To React</th>
<th>Interest Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students &amp; Alumni</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty in Program</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accrediting Agency</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employers of Graduates</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Dept. Administration</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BYU Administration</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Board of Trustees of BYU</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nation/worldwide IT educational community</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family of students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Public at large</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

We will now consider each of these stakeholders with particular reference to their contribution to the evaluation of the program objectives.

**Students and Alumni:** Students in the program are the consumers of the educational resources and materials. They have considerable interest in the quality of the program. Past students who are graduates from the program may provide another important source of information for evaluation of the goals.

**Faculty in the program:** Faculty have a strong sense of ownership in the program. They created and defined the objectives, they daily implement the program, they are responsible for maintaining and updating program objectives and they are held to account for program quality by all other stakeholders.

**Employers of the graduates:** Both current and prospective employers of the graduates have a strong and direct interest in the technical competency of the graduates in this field. It should also be noted that some graduates will work for themselves in entrepreneurial enterprises and thus will include the stakeholder characteristics of both graduates and employers.

**Accrediting Agency:** The role of the accrediting agency is to ensure that the program meets certain standards of quality as a form of warranty for the students and for the employers of the graduates. The accrediting agency do not provide active input on an on-going basis since they have no mechanism for doing so but the official publications of the board and commission certainly provide direction.

**Local Administration:** Here local administration is intended to mean the administrative level directly supervising the program, in other words the director of the School of Technology and the Dean’s office. Their interest is somewhat indirect. It is based on their desire for programs and students to be successful and thus fulfill the mission of the department and the college. Policies
encouraging life-long learning exist but their implementation is left to the faculty within the program.

**BYU Administration:** The interest of the BYU administration is similar to that of the local administration except the wider university issues are more influenced by financial efficiency and the overall goals of a BYU education in terms of support for the Church and development of leadership in future graduates. See the *Aims of a BYU Education*² for detailed exposition of the administration’s goals.

**Board of Trustees:** Once again the concern here is more remote. The Board is very concerned about the spiritual and educational welfare of the students but very rarely get involved with specific program issues.

**Nation/worldwide IT educational community:** IT programs nationwide and worldwide have an interest. They can provide input in the form of comparative programs. Websites, published material and discussions with faculty at other programs will also provide input. Feedback often will be provided to this audience through publication in technical conferences or journals.

**Family of Students:** Family members are directly concerned with the personal welfare of the students. They have no direct input into the program but are an interested audience of the results.

**Public at large:** The public at large relies heavily on technology. This is particularly true in so-called “first-world” countries but is true to a significant extent almost everywhere. Students who have successfully internalized goals of the program, particularly life-long learning, are more likely to accept challenges in working within the church and community and thus contribute to each of them. Technology is cumulative, adding new successes to old accomplishments, or as Sir Isaac Newton expressed it, “Standing on the shoulders of giants”. Our dependence on technology and the dependence of our economy on technological growth are in turn dependent to a significant extent on life-long learning. Technology, and especially the business of technology, thrives on new inventions. However, although the public are an audience for what we do they have no direct input to this process.

2.3.1. Summary of Stakeholder Analysis

Stakeholder input will be sought according to their depth of investment. Input from accrediting bodies is not actively available in advance but they provide extensive documentation to evaluate outcomes prior to the formal accreditation process. This documentation will be used. Other stakeholder inputs will only be considered indirectly, using available published documents.

3. Assessment

Once objectives and outcomes are defined a continuous improvement plan can be developed. Although assessment is necessarily an integral part of the CI plan we will first discuss aspects of assessment and then show how they fit into the overall plan.

3.1 Direct vs. indirect measures.
There are a variety of measures that we can use to measure achievement of the outcomes. These range from statistically defensible measures of performance that directly measure student achievement of the outcomes to indirect measures of student performance that give reliable indications of how well the objectives are being met. External review and feedback from employers, Industrial advisory board members and other stakeholders also provide measures of outcome achievement.

As quantitatively-oriented professionals we have an inclination toward direct measures and hard facts. It sounds attractive to have an exam which specifically measures each of our defined outcomes. The student’s achievement of the outcomes is then simply the score on the exam and individual outcomes are represented by the scores for the appropriate questions. There are some concerns with this approach. There is always a risk with methods such as this that people rely absolutely on the scores achieved when in fact there are several possible disconnects between the scores from the exam and the desired program mission and objectives. Some issues that must be considered include:

- The class outcomes are not a perfect reflection of the program (and ABET) outcomes, they are probably just a good approximation
- Similarly the outcomes are not a perfect embodiment of the program objectives and mission but, once again, just an approximation.
- The questions selected for measuring the outcomes are less than perfect measures.
- A single measuring point for any outcome is a very high-stakes measurement. If the students perform poorly or well due to local and temporary factors (e.g., illness) then the results will be distorted.

Multiple measures should be used at different points in the program. Less numerically direct methods can also be valid such as faculty or external reviewer subjective evaluations. We need to relate such measures carefully to the outcomes they are measuring. In fact these less direct measures provide a more holistic picture and may make up for the probability that our defined outcomes are not perfect measures of our desired objectives and mission, but merely our current best approximation.

Another factor is that direct measures tend to be numerically intensive and require collecting and analyzing large quantities of detailed data. This is hard to justify if it places a significant extra burden onto already busy faculty and their support staff. It must either be incorporated into normal teaching operations or must be minimized.

In summary a mixture of measurements are called for with careful consideration of the validity, generality and practicality.

3.2 Examples of measurement mechanisms

Some examples of specific measures can illustrate the above.

Specific exam questions can be included in various courses which are designed to measure specific outcomes. These questions must be scored and tabulated separately in addition to normal grading of the exam paper.
One mechanism that has been used is to select a particular assignment near the culmination of the student’s education. This assignment is then evaluated by a panel of faculty to assess the students’ achievement of several outcomes such as writing ability, problem solving ability and technical competence. The assignment is also graded and returned to the students by the class instructor as part of the normal teaching sequence.

Students can be asked to evaluate their achievement of the various outcomes. Previous research has shown\(^\text{13}\) that student evaluations of instructor and course are valid. Students can therefore be asked for their evaluation of achievement of specific class outcomes. This can then be assessed by a panel (of faculty and/or external reviewers) to see if they are achieving program outcomes.

Another approach is to take advantage of the senior project. A high percentage of programs require students to complete a major project in the last semesters in the program. By design the project includes most of the skills the students have acquired throughout the program. This then is a natural candidate for assessing outcomes. This can be done by multiple assessors (several faculty) who are looking for achievement of several outcomes. This can also be supplemented with assessment by external evaluators, such as the Industrial Advisory Board (IAB) for the program. The IAB members need to be aware of the range of assessment they are expected to provide and to be given appropriate assessment instruments.

Faculty assessment of class achievement: an important measure. Faculty as key stakeholders \textit{must} also be involved in the evaluation of the validity of the outcomes themselves and be involved in the process of evolving them. If you don’t have the hearts and minds of the faculty you don’t have anything except a paper process, to be dusted off once every six years.

\section*{4. Closing the loop: feedback mechanisms}

Having assessed the performance of the students relative to the outcomes a mechanism must be implemented to provide feedback to faculty so they can improve the courses.

The results of the assessment must be accumulated and reviewed. From this specific recommendations for improvement are made. A follow-through process is required to ensure that these improvements are implemented. There are two important facets to this part of the process. Firstly, since the faculty will be the ones to implement any changes they must be integral to this process. While consolidating results can be delegated to sub-committee, particularly where results apply to more than one course, in the end the results must be provided to the faculty responsible for the class for implementation. The second important factor is that this process must be documented. Not only is this essential to establish if long-term improvements are in fact being achieved it is also a requirement for ABET accreditation.

The procedure itself must be reviewed periodically. On a much slower time scale the faculty should review the objectives and outcomes to ensure they are still the best ones for the program. This process also helps to ensure that all involved know what the objectives and outcomes are.
This meta-review should be on a slower time-scale that the outcome assessment steps. Firstly it will be almost impossible to determine if the objectives are being met if the objectives are changing faster than the cycle that measure them. Secondly this is usually a lengthy process and it is difficult to allocate faculty time to this activity too frequently. There are natural cycles in academic environments. The natural cycle for updating courses is once a year, unless all courses are taught every semester, in which case it could be once per semester. The natural cycle for changing program structure is once per student graduation cycle, although smaller cumulative changes can be done more frequently, on a yearly cycle.

The feedback mechanism is graphically represented by the following diagram (see figure 2):

![Figure 2 Feedback loops within the CI process](image)

An essential element of the process, mentioned briefly before, is that the feedback must be part of a documented and controlled process. At regular intervals, dictated by the cycles of change of the various elements the data from the assessment process must be reviewed and changes must be implemented. Feedback from individual classes on outcomes should be reviewed by the instructor shortly after the class is concluded. This feedback, together with her own evaluations should be past to central point to coordinate the feedback with that obtained from other classes, particularly classes which are part of the same pre-requisite and successor chain. Local changes could be implemented by the instructor immediately but due consideration must be given to their effect on successor classes. Changes affecting several classes should be considered by the affected faculty or a sub-committee which can review all results. Changes which affect the program as a whole should be decided by the faculty as a whole and finally the mission, objectives and outcomes themselves should be considered by the faculty as a whole.

5. Conclusion
This paper has described methods developed for a four-year IT program to pursue accreditation using new CAC guidelines and new accreditation requirements and to create and set up appropriate feedback mechanisms for continuous quality improvement. One of the most important of these mechanisms is measurement and one of the most important sources for feedback is our graduates.

There are multiple ways to measure the outcomes that graduates have achieved after leaving the program. Some of these measures may include simple surveys which identify if graduates have gone on to do graduate work at other institutions and which institutions they have attended. Another data point may be gathering information about which professional organizations graduates belong and the offices they hold in those organizations. Graduates can be surveyed to determine how they feel they compare to their peers and whether the institution’s educational objectives were met and how well these objectives prepared them for a professional career.

Employers can always be questioned to determine how your graduates compare to graduates of other institutions, what strengths they have that enhance the companies’ competitive advantage and what positions the graduates hold within the company.

Many mechanisms are already in place for measuring a student’s performance. These existing mechanisms can easily be adapted in order to determine whether students have achieved the desired outcomes and the program objectives. In some cases the measurement of the success of teaching these outcomes may be easily statistically defensible. In other cases it requires softer measures than our quantitative orientation may appreciate. However, the mechanisms are there or can be simply added to become a part of our normal operation. The extent of the achievement of these outcomes can involve all of the stakeholders in the final evaluation.

The most important thing is to make sure that we develop a process for accepting input and deriving and implementing output that is part of our normal routine of continuous improvement. The process is essential but can only be ultimately successful and have long term benefit if it has the buy-in of the stakeholders and especially the faculty. As faculty members in IT programs we must be willing to accept the absolute fact that change and adaptation is part of the profession we profess and we must be willing to adapt and change with it. This adaptation and change extend beyond our own personal knowledge to the courses we teach, the way we teach them and the outcomes we expect our students to master.

A change in attitude that should arise from this accreditation approach is that finding aspects of the program that do not meet requirements is a good thing, rather than a bad thing. If continuous improvement is really to become a way of life for technical programs then we should want and expect the process to reveal areas that need improvement. IE problems identified by the system are evidence that the system is working. If we then have a procedure for addressing those problems then the system is working well.

The last few years have been an interesting period for all institutions that look to ABET for their accreditation. Some have made only perfunctory efforts to comply in order to obtain continuing accreditation. Others have embraced the new requirements for what they really are – a chance to implement continuous improvement processes in the practice of education not just the teaching
of it. Continuous improvement, if implemented properly, provides an unparalleled understanding of what we are really doing with our students. For this reason, some faculty have embraced the new requirements and actually found the end result to be more fulfilling in terms of finding greater satisfaction in their teaching assignments and better prepared graduates. Others have buried their heads in the sand hoping that these new requirements will go away.

The new accreditation requirements are not going away! The change was needed and can only help our institutions and faculty become better at preparing graduates who can quickly adapt to their environment and the inevitable changes that are going to happen with greater rapidity as we move to a global economy.

Likewise, those educational institutions who embrace this new way of thinking and teaching will be better prepared to accept and prosper with the coming changes and prepare graduates who will likewise continue to be a valuable asset to employers around the world.

The new discipline of IT has the challenges of newness discussed earlier but also has the opportunity to embrace the new approach to technical education and to develop teaching and assessment practices that will provide a rapid and sustained improvement in the quality of IT education.

Bibliography

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