Introduction

For many decades, the diverse accreditation agencies based their accreditation processes, including the self-studies and the team visits, on the INPUT – OUTPUT equation. Finally they realized that the bean counting was not providing the evidence needed to prove how much the students really knew about what was supposed to know at the moment of graduation in order to become highly competent professionals along the working life.

During the second half of the decade of 1990, the accreditation agencies transformed the accreditation processes to the Outcomes Assessment Criteria effective January 1, 2001.

A. Accreditation Board for Engineering and Technology (ABET)

Precisely, PUPR submitted the self-studies for the ABET accreditation of five engineering programs in June 2001 under the new outcomes assessment criteria already in effect. New ABET accreditation Criterion 3 – Program Outcomes and Assessment – reads as follows.

Criterion 3. Program Outcomes and Assessment

“Although institutions may use different terminology, for purposes of Criterion 3, program outcomes are statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that student acquire in their matriculation through the program.

Each program must formulate program outcomes that foster attainment of the program objectives articulated in satisfaction of Criterion 2 of these criteria. There must be processes to produce these outcomes and an assessment process, with documented results, that demonstrates that these program outcomes are being measured and indicates the degree to which the outcomes are achieved. There must be evidence that the results of this assessment process are applied to the further development of the program.

Engineering programs must demonstrate that their students attain:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs within realistic constrains such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(d) an ability to functioning on multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

Criteria for Accrediting Engineering Programs
Effective for Evaluations During the 2010-2011 Accreditation Cycle; ABET, Inc.
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

In addition, an engineering program must demonstrate that its students attain any additional outcomes articulated by the program to foster achievement of its education objectives.”

The program outcomes assessment process is composed of two cycles, a 1 to 2 year short term and a 5 to 6 year long term. The long term cycle requires the program to have detailed published educational objectives that are consistent with the mission of the institution and these criteria. The short term cycle is used to apply outcomes assessment tools, process the data raised, analyze the data, generate conclusions, propose improvements and implement them. Repeat the cycle to measure the effects of the improvements implemented until all outcomes have been measured two to three times. Then close the loop applying the long term cycle evaluating the educational objectives, make changes to them whenever necessary or define new ones as a result of their analysis and conclusions reached. During the evaluation of the educational objectives it is mandatory to re-evaluate information relating objectives and outcomes. Review once again the outcomes. Propose program curricular changes to support new objectives in consultation with all constituencies. After implementation of the new educational objectives, start all over again.

**Cycle in Program Outcomes Assessment Process**

- Evaluate/Change Educational Objectives
- Apply Outcomes Assessment Tools
- Implement Improvements
- Propose Improvements
- Analysis & Findings
- Process Results
- Re-evaluation of Information relating objectives and Outcomes. Review Outcomes.
- Propose Program Curricular Changes to Support New Objectives.
- Input from Constituencies

**5 – 6 year cycle**

**1 – 2 year / term cycle**
B. Middle States Commission on Higher Education

Middle States' accreditation is an expression of confidence in an institution’s mission and goals, its performance, and its resources. Based upon the results of institutional review by peers and colleagues assigned by the Commission, accreditation attests to the judgment of the Commission on Higher Education that an institution has met the following criteria:

- that it has a mission appropriate to higher education;
- that it is guided by well-defined and appropriate goals, including goals for student learning;
- that it has established conditions and procedures under which its mission and goals can be realized;
- that it assesses both institutional effectiveness and student learning outcomes, and uses the results for improvement;
- that it is accomplishing its mission and goals substantially;
- that it is organized, staffed, and support so that it can be expected to continue to accomplish its mission and goals; and
- that it meets the eligibility requirements and standards of the Middle States Commission on Higher Education.

Dr. Michael F. Middaugh illustrates in a very effective manner the institutional mission to seven standards (8 to 14) that assess the educational effectiveness, as well as to the other seven standards (1 to 7). See the following three charts.

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2 Characteristics of Excellence in Higher Education
MSCHE, 2006 Twelfth Edition

14. Assessment of Student Learning

Michael F. Middaugh – Handout at the Seminar “Integrating Higher Education Planning & Assessment”
The Regional Learning Alliance Center, Cranberry Township, August 17-18, 2010
Creating and Closing the Loop

Characteristics of Excellence

1. Institutional Mission

Institutional Effectiveness
2. Planning, Institutional Renewal and Resource Allocation
3. Institutional Resources
4. Leadership and Governance
5. Administration
6. Integrity
7. Institutional Assessment

To what extent has the institution acquired and allocated human and fiscal resources in a manner that supports the achievement of its goals?

Creating and Closing the Loop

Characteristics of Excellence

To what extent are an institution’s policy, decision making and resource allocation processes shaped by a systematic, evidence-based, and mission-guided planning process?

- Assessment of Student Learning (Standard 7)

- Assessment of Student Learning (Standard 2)
It is now easy to observe that what ABET signifies with closing the loop is something very different to what MSCHE is saying.

ABET is referring to close the loop at each program under its jurisdiction. In PUPR’s case are, so far, eight different programs accredited by ABET, therefore, are eight loops to close.

National Architectural Accrediting Board (NAAB) and International Assembly for Collegiate Business Education (IACBE) providing accreditation nationally in the United States of America and its territories operate in a similar way to ABET. The loop to close corresponds to that responding to the program scrutinized for accreditation.

MSCHE, however, does not accredit programs. It accredits the PUPR as an institution. There is only one loop to close. Otherwise PUPR may not be accredited.

Closing Remark

In both cases – the program accreditation or the institutional accreditation – closing the loop depends on the Institutional Mission and the supporting evidence we may raise. It is the foundation of, and our reason of being. It is essential to have it up to date.