

# Consolidation of Accreditation Activities to Improve Assessment of Student Learning Outcomes in Technical Disciplines

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*Abstract— Lack of coordination in accreditation activities results in assessment being a burdensome and inefficient process. This work emphasizes the need of a preemptive and coordinated effort to consolidate various accreditation activities to make the assessment process more streamlined and efficient within the context of technical discipline. Specifically, this work demonstrates common grounds of assessment activities between the regional standards and ABETS accreditation criteria to attain assessment efficiency.*

*Index Terms— Assessment, Accreditation, Engineering Education*

## I. INTRODUCTION

Accreditation is a mechanism by which institutions of higher learning are evaluated by external bodies [1-3]. It is an assertion that an institution adequately prepares its students to meet the expectation of the stakeholders. A peer review board of faculty members from various institutions sets the standards of accreditation. It encompasses numerous programs throughout a range of professions and specialties including engineering, medicine, law, business, nursing, journalism etc. [4].

Accrediting bodies can be divided into four categories according to their scope and among them the regional and program accreditors are more common; this work focuses on these two types of accreditors. There is a major difference between regional and program level accreditation. Regional accreditation is an institutional process which means an entire institution is accredited; thus giving credibility to the institution as a whole. The United States is divided into 6 regions—each with a regional accrediting body. Six of the commissions are recognized by the Council for Higher Education Accreditation (CHEA) [5]. There are more similarities among them than differences in terms of accreditation standards. This work takes the Middle States Commission on Higher Education (MSCHE) [6] as an instance of regional commissions.

In contrast to the regional accreditation, the program level accreditation gives credibility to a specific program/discipline within an institution; it certifies that a specific program adequately prepares its students to meet the expectations of the profession for which they are being prepared for.

For instance, an engineering program must meet the standards set by the engineering profession (e.g Accreditation Board for Engineering and Technology - ABET) [7-8]; a business program must meet the standards set by the AACSB (Association to Advance Collegiate Schools of Business).

This work uses ABET as an instance of program level accreditation (within the context of engineering/ technical education).

For accreditation to take place there must be a demonstration of achievement of certain goals. This process requires a systematic understanding of the students' learning via a process called assessment. Assessment is one or several processes that collects and prepares the appropriate data to examine the fulfillment of the student learning outcomes. Assessment leads to Continuous Improvement (CI), which is often the goal of accreditation. CI is the program's apparatus of assessing, evaluating, and implementing the required improvements consistent with its stated educational goals and student outcomes. Typically, the accreditation process involves (at least) two fundamental elements (or some variation of them):

1. Self-study report: Institutions and programs prepare a written summary of their performance according to the standards of accrediting organization.
2. Campus visit: Accrediting organizations normally send a visiting team to review an institution or program.

According to the National Institute for Learning Outcomes Assessment (NILOA), accreditation is among the most important reasons to assess student learning outcomes [9].

In agreement with NILOA, the Outcomes Assessment Accreditation Handbook states that one of the objective of Technology program accreditation is to measure student outcomes and utilize them to continuously improve programs [10]. The MSCHE, for example, requires that the results of assessment be used to improve teaching and learning student outcomes [11]. This is also the core of ABET accreditation criteria-4, named Continuous Improvement [8].

Therefore, programs are compelled to anticipate change in the emphasis on various skills that could affect the preparedness of graduates for the job market and it paves the way to continuously reassess how institutions educate our students [12]. The remaining sections of this work are organized as follows: section II describes current practices, section III describes the proposed approach and section IV provides a conclusion.

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**TABLE 1: ALIGNMENT OF ASSESSMENT COMPONENTS**

ABET Criterion	MSCHE Standards
<p><b>3. Student Outcomes (SO)</b></p> <p>(a) ... <u>apply knowledge of mathematics, science</u></p> <p>(e) the ability to identify, <u>formulate, and solve engineering problems</u></p> <p>(g) the ability to <u>communicate effectively</u></p> <p>(k) the ability to use the techniques, <u>skills, and modern engineering tools</u> necessary for engineering practice</p>	<p><b>11. Educational Offerings</b></p> <p>Student learning goals and objectives, including <u>knowledge and skills</u>, for its educational offerings.</p> <hr/> <p><b>12. General Education</b></p> <p>The institution’s curricula are designed so that students acquire and demonstrate college-level proficiency in general education and essential skills, including at least <u>oral and written communication, scientific and quantitative reasoning, critical analysis and reasoning, and technological competency.</u></p>
<p><b>5. Curriculum</b></p> <p>The curriculum must effectively <u>develop the relevant subject areas in support of student outcomes and program educational objectives...</u></p>	<p><b>11. Educational Offerings</b></p> <p>The institution’s educational offerings display <u>academic content, rigor, and coherence appropriate to its higher education mission</u></p>
<p><b>7. Facilities</b></p> <p><u>Facilities, classrooms, offices, laboratories, and associated equipment must be adequate to support attainment of the student outcomes</u> and to provide an atmosphere conducive to learning.</p>	<p><b>3. Institutional Resources</b></p> <p>The human, financial, <u>technical, physical facilities, and other resources necessary to achieve an institution’s mission and goals</u> are available and accessible. In the context of the institution’s mission, the effective and efficient uses of the <u>institution’s resources</u> are analyzed as part of ongoing outcomes assessment.</p>
<p><b>8. Institutional Support</b></p> <p><u>Institutional support and leadership must be adequate to ensure the quality and continuity of the program. Resources including institutional services, financial support, and staff (both administrative and technical) provided to the program must be adequate</u> to meet the program’s needs.</p>	

## II. PRESENT APPROACH

In many instances, an institution has to fulfill requirements of a number of program accreditation assessments along with the institutional (regional) accreditation assessment. In each of those cases, there are extensive assessment requirements. It generates a large volume of assessment work for the faculty, which is often looked at as an additional unpleasant task. As a result, there is no enthusiastic effort to explore assessment issues from the side of the faculty. Most of them are unaware of regional commissions and ABET assessment requirements (except assessment coordinators); furthermore, faculty are unaware of any similarities in the requirements between ABET’s assessment and the regional commissions’ assessment. Consequently, many institutions conduct a number of independent, uncoordinated, and redundant assessments requiring a development of redundant instruments and result analysis. Therefore, too often, assessment is an uncoordinated and unfocused effort for Accreditation compliance. Now, it requires a proactive and

Coordinated effort across the institution to align assessment requirements to make it more streamlined, focused and meaningful.

## III. PROPOSED APPROACH

We need to find similarities among various accreditation assessment requirements to streamline assessment planning and instruments. Institutional (regional) accreditations (e.g MHSCE), share common accreditation goals among the regional bodies, such as Mission and Goals, Planning, Resource Allocation, Student Learning, Leadership etc. They, as opposed to discipline-specific accreditation/assessment, usually do not specify course or curriculum content or instructional methods. Generally, they require the institutions to demonstrate the following:

1. Stating Student Learning Outcomes (SLOs) that are directly related to institutional missions.
2. Evidence of a systemic process that assesses the attainment of the SLOs.
3. Availability of resources to support the SLOs.

Additionally, a number of those standards including SLOs align with the program level accreditation criteria. Program level assessment, unlike institutional/regional assessment, concentrates on how an academic program is contributing to the learning and development of students within a discipline. It is to be noted that, at the least, a number of general education student outcomes (e.g. communication skills) is common to most of the program level accreditations. Since program level assessments are more specific to a discipline, we are to focus within our context of engineering program accreditation (e.g. ABET). ABET's eight criteria (for engineering/technology accreditation) includes Student Outcomes, Continuous Improvement, Curriculum, Faculty, Facilities, Institutional Support etc [8].

#### A. ABET vs. MSCHE

ABET criterion 3[8] defines the student outcomes and MSCHE [6] addresses similar outcomes in standards 11 and 12. Table 1 details components of alignment between ABET and MSCHE; it illustrates the common assessment points that can be aligned to increase efficiency (e.g development of common assessment rubrics). This very common ground has to be exploited to bring about assessment efficiency. The common grounds of assessment include curriculum, institutional support, facilities, faculty etc.

General education assessment covers most types of accreditation assessment. Therefore, assessing the general education outcomes serves a number of purposes. Consequently, the development of common assessment instruments and planning for general education assessment should be the first step towards efficiency via alignment of the program level and regional accreditor learning outcomes. Additionally other assessments related to resource, facilities, institutional commitment etc. can be coordinated to increase efficiency.

#### IV. CONCLUSION

Assessment is an accreditation requirement. It helps institutions measure their success in terms of preparing students for the future workplace. Many instances an institution needs to fulfill requirements of a number of accreditation assessments. Lack of coordination in accreditation activities results in assessment being a burdensome and inefficient effort. We demonstrated the pathway to attain the needed efficiency and success in assessment through exploiting the common accreditation requirements and initiating collaborative efforts for streamlining the process.

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