ABET and QAA based Framework proposal for Higher Education in Iraq

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Received 11/11/2010 – Accepted 2/3/2011

1. Introduction

Teaching quality is a major requirement for higher education. Despite the large number of colleges in Iraqi higher education (HE) system, the teaching quality assurance system has not been a significant focus by most of the colleges. This effect negatively on the quality of the output (graduates students). Most of the graduate students have no confidence with the skills that they have. There is an urgent need for establishing a teaching quality assurance system for universities (private and governments) in order to drive the improvement of the quality of teaching. Currently there are trends in the Ministry of Higher Education and Scientific Research in Iraq to improve the higher education system throw working to attain the accreditation from Accreditation Board for Engineering and Technology (ABET) or the assessment from Quality Assurance Agency of Higher education (QAA). This paper focuses on the criteria that are dependent by these two organizations and unified these aspects in one proposal framework. The paper is structured as follows: section 2 describes quality and accreditation concept. Section 3 discusses ABET criteria. Section 4 discusses QQA aspects. Section 5 presents the proposal and section 6 is the conclusion.
2. Quality and Accreditation

Quality in higher education means the educational process is such that it ensures students achieve their goals and thereby satisfies the needs of the society and help in national development [1]. Quality assurance aims to give stakeholders confidence about the management of quality and the outcomes achieved.

The term accreditation expresses the abstract notion of a formal authorizing power, acting through official decisions on the approval of institutions [2]. The aims of accreditation in higher education can be summarized as [3]:
- To assure that the institutions meet their responsibility for the quality of the programs offered.
- To guarantee students, and employers that the program has to undergo a quality assurance.

The accreditation is a binary judgment (pass – not pass, positive – negative, meeting certain standards – not meeting)

3. ABET

It is a non-governmental organization in the United States. It is the recognized accreditation for college and university programs in applied science, computing, engineering, and technology. ABET does not rank programs but it declares that the programs are either accredited or not . The purpose of ABET are [4]:

a) Organize and carry out a comprehensive process of accreditation of pertinent programs leading to degrees, and assist academic institutions in planning their educational programs.

b) Promote the intellectual development of those interested in applied science, computing, engineering, and technology professions, and provide technical assistance to agencies having professional regulatory authority applicable to accreditation.

ABET accomplishes its purposes through standing committees and commissions. The commissions are Applied Science Accreditation Commission (ASAC), Computing Accreditation Commission (CAC), Engineering Accreditation Commission (EAC), and Technology Accreditation Commission (TAC). The more details for ABET accreditation polices in [4].

ABET annually has been issuing four criteria reports for accreditation. Each report is related to one of discipline (applied science, computing, engineering, and technology). These reports demonstrate two types of criteria that a program seeking for accreditation must meet. The two types of criteria are
3.1 General Criteria: consists of eight criteria all the programs seeking for accreditation should adhere. The criteria are Students, Program Education Objectives, Program Outcomes, Continuous Improvements, Curriculum, Faculty, Facilities and Support. These criteria are same in all the four reports but the content are slightly different because each report explains these criteria according to its perspective. For example, in the Program Outcomes criterion, the number of outcomes in computing report is 11 started from a and ended to k while in engineering report, they are from a to i. On other hand the content of continuous improvement criterion is same in all reports. The criteria are listed below with abstract details [5,6,7,8].

3.1.1 Students
The program must evaluate student performance, and monitor student’s progress to foster their success in achieving program outcomes, thereby enabling them as graduates to attain program objectives. The program must have and enforce procedures to assure that all students meet all program requirements.

3.1.2 Program Educational Objectives
The program has documented measurable educational objectives that are based on the needs of the program’s constituencies. Each program must have in place an educational program, including a curriculum that enables graduates to achieve the program educational objectives.

3.1.3 Program Outcomes
The program has documented measurable outcomes that are based on the needs of the program’s constituencies.

3.1.4 Continuous Improvement
The program uses a documented process incorporating relevant data to regularly assess its program educational objectives and program outcomes, and to evaluate the extent to which they are being met. The results of the evaluations are documented and used to effect continuous improvement of the program through a documented plan.

3.1.5 Curriculum
The program’s requirements are consistent with its educational objectives and are designed in such a way that each of the program outcomes can be achieved. The curriculum combines technical and professional requirements with general education requirements and electives to prepare students for a professional career.
3.1.6 Faculty

a) Faculty Qualifications
Faculty members teaching in the program have the educational backgrounds or expertise consistent with their expected contributions to the program. Each has a level of competence that normally would be obtained through graduate work in the discipline, relevant experience, or relevant scholarship. Collectively, they have the technical breadth and depth necessary to support the program.

b) Faculty Size and Workload
There are enough full-time faculty members to provide continuity, oversight, and stability, to cover the curriculum reasonably, and to allow an appropriate mix of teaching, professional development, scholarly activities, and service for each faculty member. The program must have sufficient responsibility and authority to define, revise, implement, and achieve program educational objectives.

3.1.7 Facilities
Facilities include:

a) suitable library, classrooms, laboratory, computer networks, and offices are adequate to support the educational objectives and outcomes of the program.

b) Internet and information infrastructures, including electronic information repositories, equipment catalogs, professional technical publications, and manuals of industrial processes and practices adequate to support the educational objectives of the program and related scholarly activities of students and faculty.

3.1.8 Support
Support includes administration, institutions that can be provided to assure the quality and the continuity of the program.

3.2. Program Criteria
They are specific criteria related to the program itself. Each program must satisfy program criteria that amplify the general criteria and provide the specifics needed for a given discipline. It is the responsibility of the program seeking accreditation to demonstrate clearly that the program meets the above criteria.

Programs wish to demonstrate that they meet the standard criteria should undergo an ABET accreditation general review. General reviewers are conducted once every six years, and include preparation of a self-study and a visit by an ABET evaluation team [9].
4. QAA

In United Kingdom (UK), QAA is one of the most important independent bodies that carry out HE evaluations. QAA was established in 1997 by subscriptions from UK universities and colleges of HE, and through contracts with the main UK funding bodies. Its mission is to safeguard the public interest in standards of HE qualifications and to inform and promote continuous improvement in the management of the quality of HE [10].

QAA also carries out external reviews and audits by visiting the universities and colleges and reporting on how well they meet their responsibilities according to six aspects. The review will examine the extent to which the student learning experience and the student achievement in each of the six aspects of provision contribute to meeting the objectives and the aims set.

The six core aspects of provision are:
- Curriculum Design, Content and Organization
- Teaching, Learning and Assessment
- Student Progression and Achievement
- Student Support and Guidance
- Learning Resources
- Quality Management and Enhancement

4.1 Curriculum Design, Content and Organization.

This aspect defines the curriculum development and design of study program, identifies the relevant aims and objectives. The curriculum should be effective in enabling students to achieve the intended learning outcomes for the program. The curriculum content is appropriate to each stage of the program. One of the best available guides for the formulation of learning outcomes is provided in the “Benchmarking Statements” by the QAA. This document could perhaps be adopted as the starting point for the definition of educational objectives, in terms of contents and levels [2].

4.2 Teaching, Learning and Assessment

This aspect is divided into two parts:

4.2.1 Teaching and learning:

It identifies the strategy for teaching and learning so that meet clearly with aims and objectives and outcomes of the program and the intended learning outcomes and curriculum content. It also contains:

[11]

- The range of teaching methods employed in relation to curriculum content and programs aims.
- How the quality of teaching is maintained and enhanced through staff development.
- How the materials provided support learning and how students independent learning is encouraged.

4.2.2 Assessments [11]
It describes any processes that appraise an individual's knowledge, understanding, abilities or skills. There are many different forms of assessment, serving a variety of purposes. The assessment should be effective in measuring the achievement of the intended learning outcomes of programs. The following should be considered:
- the assessment methods selected and their appropriateness to the nature of the intended learning outcomes.
- the security, integrity and consistency of the assessment procedures, the setting, marking, and the return of student work with feedback;
- the assessment strategy and the adequate formative function in developing student abilities, assists them in the development of their intellectual skills and enables them to demonstrate achievement of the intended learning outcomes.
There are ten principles for assessments are listed in [12] are used as guidance for college or institution.

4.3 Student Progression and Achievement
Identify effective strategies for recruitment, admission and guidance. The strategies facilitate students' progression and completion of the program.

4.4 Student Support and Guidance
Identifies the strategy for academic support, including written guidance, and the extent to which it is consistent with the student profile and the overall aims of the program and support to facilitate student progression.

4.5 Learning Resources
This aspect demonstrates a strategic approach to linking physical and human resources to intended learning outcomes at program level. The learning resources should be available successfully underpin the programs and the staff should be effectively contributed to the achievement of the intended learning outcomes.

4.6 Quality Management and Enhancements
Effective internal arrangement for monitoring, revisions, measuring has been taken to maintain and enhance academic standards and the quality of learning opportunities provided for the programs.
5. Framework Proposal
One of the aims of the ministry of HE in Iraq is to implement the quality assurance standardization on all the universities. And one of the plans is to adopt the QAA aspects for Art colleges and to adopt ABET criteria for Engineering and scientific colleges.

In this section, an attempt to combine the two above approaches and find out a proposal approach appropriate for all the universities in Iraq and can inspire the principles of both approaches. The aim is to follow a unified approach and to avoid the conflict that may occur during the understanding both. The unified can be considered as a basic framework to be adopted by all universities in Iraq. Table 1 depicts the proposal. It consists of three columns. The first one are the ABET criteria. The third is QAA aspects and the middle is the proposed standards. The total standards are five. Each one is a combination of aspect(s) and / or criteria. It important to mention that these standards should be performed in parallel not sequential and that requires several committees work together. The following describe briefly the practical outlines for each standard.

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5.1 Program and curriculum design management
This is the first standard that should be considered in a new program. It is divided into two parts: program design and curriculum design. A useful guide for this standard is available in [13, 14]
5.1.1 Program Design:

a. Program should identify clear missions, objectives and outcomes that the student should achieve.
b. A study plane should be available for each discipline.
c. The program should have modules classified as department requirement (core), college requirement and university requirement.
d. Prepare a program specification book.

5.1.2 Curriculum Design

a. The broad structure of curriculum should be based on international reference. There are many organizations that give outline advice and recommendation for designing curriculum. For example, several developments that have assisted computer science education in its pursuit of quality include the creation of widely accepted curriculum standards such as the ACM/IEEE standards [15] and the benchmark statements [16].
b. The outcome, objectives should be identified clearly in each course or module and consistent with the objective programs.
c. The aim of the core modules is to prepare students for more complex and specialist work which could be studied at a later stage.
d. E-learning is another strategy that is recently should be added to develop the curriculum.
e. The curriculum of all modules should be available on Web sites.

5.2 Teaching and Learning Management

5.2.1 Teaching and learning methods

a. Teaching and learning methods should be designed to achieve program mission, objectives and outcomes.
b. Teaching methods aims to improve student’s skills (communication, problem solving and social).
c. Staff members may communicate with students through email. This enables students to communicate easily in coursework supplement. Each staff member writes his/her email address in the course descriptor sheet that should be distributed to students at the beginning of the course.

5.2.2 Teaching Assessments

a. Teaching assessments strategy should be specified (quizzes, exams, classroom interactivity, seminars, laboratories, etc)
b. Assessment can be diagnostic, formative or summative.
c. The program should make sure that the methods of student assessment are fit for purpose and work well.
5.3 Student management
a. Data is collected and statistical report are issued about the data movements related to the number of students (new, dropped, failure and complete)
b. Statistical report is issued for the graduate students and grade they attain (Excellent, very good, good and pass)
c. Designing and implementing a strategy for student’s guidance. All students should have academic tutors to give the advice the student needs. The students remain with the same tutor until their graduation.
d. Providing students with a complete undergraduate handbook, which contains all the relevant information, required by students through their academic year. This handbook is available on the Web.
e. University Students Affairs Deanship is available.

5-4 Resources Managements
a. Convenient resources handbook describing the resources available and how to obtain and make use of these resources (laboratories, CDs, books, libraries and E-learning resources)
b. A web site for university, college and the department should be available.
c. Suitable training for staff in operational matters
d. Networking facilities used in teaching, learning, and communicating with students through Web-based exercises and assignments.
e. Standard number of students per classroom and laboratory and staff/students ratio
f. Suitable library, classrooms, laboratory, computer networks, and offices
g. The academic staff members are well qualified and experienced in teaching the material at undergraduate and postgraduate levels

5-5 Quality improvements
This standard is the hart of quality assurance process. It consists of two important processes: Quality Managements and quality Monitoring (Action Plan)

5.5.1 Quality Management
Manage the reports issued relating to ratio of poor, good, excellent students in each module.
a. Manage the problems the students face in each module.
b. Revision and updating of the aims and objectives of the program
c. Revision of the curriculum design and content.
d. Revision of the syllabus content.
e. Quality Management system should be built to analyze data. Data is collected from the academic activities.

5.5.2 Quality Monitoring
a. Reports are collected from the previous process. The reports are analyzed carefully to diagnose the weakness and strength points.
b. Action plan report is issued per semester to present new suitable actions to avoid the mistakes and improve the academic operation. The report should cover all the above criteria. This criterion is a spiral movement like towards the goals.

It is important to mention that these two processes play the role of evolution process. And each process completes the others.

6. Conclusion
This paper has investigated the criteria and the aspects of the ABET and the QAA respectively. Also the paper has combined the criteria and aspects into uniform proposed quality assurance standards. The proposal presents practical outline for each standard. The proposal is presented to avoid the misunderstanding and the confliction that may occur during the implementation and to ensure that all required tasks are completed without unnecessary demands.

It is important to mention that the most important things to remember in preparing for getting accreditation is that the administration leader should have the full convincing about the importance of the quality assurance.

Although the standards described above need more details but we are believed it is important to start the first step. The start could be with one specific department in order to minimize the effect of any mistake. Then we can generalize the expertise to other departments.

REFERENCES
4. ACCREDITATION POLICY AND PROCEDURE MANUAL, 2007, http://www.abet.org/Linked%20Documents-


