

**AC 2010-779: THE OAS-EFTA/LACCEI ACCREDITATION WORKSHOPS:
EVOLVING WITH LATIN AMERICA AND THE CARIBBEAN FOR QUALITY
ASSURANCE, CAPACITY BUILDING AND ECONOMIC DEVELOPMENT**

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The OAS-EftA/LACCEI Accreditation Workshops: Evolving with Latin America and the Caribbean for Quality Assurance, Capacity Building and Economic Development

Abstract

Accreditation is an essential element in the standardization of global engineering education and is a means of quality assurance for engineering programs and their graduates. For developing countries, this is especially important if they are to play a significant role in the development of global engineers who can be strong contributors to the world economy. The Latin American and Caribbean Consortium of Engineering Institutions (LACCEI), in collaboration with the Organization of American States (OAS) and Engineering for the Americas (EftA), has developed and presented accreditation workshops at its annual conference for the last five years. The accreditation workshops have included efforts from several institutions and sponsors. These workshops provide a framework to help institutions of higher education prepare for accreditation, select an accreditation model, and implement procedures to meet accreditation requirements.

This work describes the evolution of the OAS-EftA/LACCEI accreditation workshops and their impact in Latin America and the Caribbean. The key components of the workshops applicable to institutions throughout the world are highlighted. The program under development to assist institutions to prepare for accreditation, select the best accreditation method, identify and select peer-evaluators and peer-assistants, and implement accreditation procedures that integrate accreditation requirements with cultural considerations is described. These workshops provide an infrastructure to promote accreditation that is transferable worldwide and serves to enhance capacity building, economic development and to promote global engineering education and quality assurance in engineering programs.

Introduction and Background

Education is a critical component of progress for countries throughout the world. Countries with strong and accessible educational systems are characterized by greater development and their peoples enjoy a higher quality of life. Engineering education is especially important in enhancing the quality of life because technology is such a critical component of progress and development.¹⁻⁶ Historically, the competencies of engineers and technology practitioners have been strongly linked with individual countries.⁷ This is inconsistent with the internationalization of engineering education resulting from the explosion of the global economy in more recent years. The need to educate engineers that are technically strong and can face the challenges of a global economy is a common theme in engineering education.⁸ Engineers and technology practitioners create and disseminate the knowledge required to fuel the engine of the global knowledge economy. Engineering education has an important role to play in sustainably reducing poverty and enhancing the world's economies. The resulting enhancement in the quality of life serves to promote stability and peace throughout the world³. Latin America and the Caribbean have lagged compared to other parts of the world such as Asia and India in the development of the infrastructure for globally competitive engineering education programs with

integrated quality assurance⁴. The quality assurance that results from accreditation leads to the development of the technical capacity that generates socioeconomic development.

Developing countries face the double bind characterized by very limited resources and the fact that many of their graduates seek graduate degrees and become employed in more industrially advanced nations⁹. As a result, these engineering programs must strive to prepare their graduates for graduate work in other countries, and this can lead to lack of consideration for local needs. Often, there is a lack of clarity as to whether the local and/or the global engineering education goals are met if there is no assessment or quality assurance measures in place. Accreditation can be an effective vehicle for integrating local and global engineering education goals and developing the quality assurance practices that lead to globally competitive graduates and enhanced technical capacity.¹⁰ Accreditation practices are also the key to continuous improvement so that programs can develop and become sustainably competitive worldwide. Accreditation efforts vary widely throughout the world¹¹ and although local and regional considerations should be part of any program assessment and accreditation, standards that are recognized by the global education community are critical for the success of graduates, and by extension, capacity building and socioeconomic development. In Latin America and the Caribbean, many institutions are seeking accreditation from accrediting bodies in the United States, Europe and Canada while they are building their own accreditation agencies. This latter effort is of critical importance if Latin America and the Caribbean are to develop the capacity and economies necessary to compete in the global market place. There is evidence to suggest that the standards of accrediting bodies in Latin America and throughout developing countries are similar to those of well recognized agencies. For the most part, institutions in developing countries of Latin America and elsewhere have intelligently used the available standards and adapted them to their programs.¹²⁻¹⁴ However, a strong preparation and documentation by the engineering programs are lacking. Developing and strengthening international accreditation in Latin America and elsewhere will not only benefit developing countries. It will also benefit the industrialized nations that do business and outsource jobs to developing countries.¹⁵ In essence, the global economy has created connections between countries so that the success of all countries are intertwined at some level. This is an impetus for all countries, regardless of development level, to be concerned about global engineering education standards, accreditation and quality assurance. Accreditation is the quality assurance mechanism for engineering institutions.^{16, 17} Quality assurance is the essential element in developing the globally competitive engineering graduates that will build the capacity and enhance the socioeconomic development of developing countries in Latin America and throughout the world.

In Latin America and the Caribbean there is awareness and a solid understanding of the benefits of accreditation. However, in general, institutions are not accreditation-organized nor have the documentation processes necessary to meet established and recognized standards from developed or their own countries.¹² What is needed is a mechanism to assist institutions to become accreditation-ready and to select the appropriate accreditation system for them. The [...] of Engineering Institutions has launched an initiative based on four years of developing workshops to increase awareness and understanding of accreditation standards in Latin America and the Caribbean. This work describes the evolution of efforts to date and the launching of a hands-on, interactive and targeted initiative to assist institutions in selecting and readying themselves for accreditation. There are three major goals for this effort: for institutions 1) to view accreditation

as an important tool in the development of globally competitive curricula, pedagogies, and a continuous improvement and quality assurance mechanism 2) to develop the strategies to ready themselves for accreditation and 3) to select and implement an accreditation system that is consistent with their needs and goals. It is this type of effort that will help Latin American and Caribbean institutions to produce the global engineers who will bring forth a future of socioeconomic development and an enhanced quality of life.

The LACCEI Workshops and Initiatives

The Latin American and Caribbean Consortium of Engineering Institutions began sponsoring the Advancing Strategies for Achieving Quality Assurance in Latin American and the Caribbean Engineering Education in 2006. Since then, it has sponsored four workshops, one at each of its annual meetings from 2006 to 2009. The concept for the workshops originated in the 2005 Engineering for the Americas Symposium in Lima, Perú. At that meeting, representatives from several Latin American and Caribbean engineering institutions, presented possible use of existing accreditation systems in their institutions. It was concluded that there was a scarce number of Latin American and Caribbean engineering programs that were accredited or certified as substantially equivalent by an internationally recognized agency. A model for assisting institutions to ready themselves for accreditation was presented and it was concluded that there was a significant need to integrate accreditation into the Latin American and Caribbean engineering education initiatives. The Latin American and Caribbean Consortium of Engineering Institutions agreed to hold the first OAS-EftA Accreditation workshop at its 2006 annual meeting. The following is a description of the workshops and the launching of the LACCEI initiative to assist institutions in readiness for and selection of an accreditation system.

OAS-EftA advancing strategies for achieving quality assurance in Latin American and the Caribbean Engineering Education Workshops

1) June 18, 2006 – El San Juan Hotel and Casino, San Juan, Puerto Rico

The workshop started with a presentation by the Chief of the OAS Department of Science and Technology on the state of science and technology in Latin America and the Caribbean and the importance of engineering for economic and social development. It was followed by panel and discussion sessions that included the perspectives of diverse accrediting agencies. ABET(US), CEAB(Canada) and ECUK(United Kingdom) were represented at the workshop. The perspectives of engineering deans and chairs were also presented and ANFEI(Mexico), ASIBEI(Iberoamerica), ACOFI(Columbia), and CONFINI(Perú- Industrial Engineers) were represented at the workshop. The workshop included four round tables to develop an action plan for Latin America and the Caribbean. There were over 40 participants at the workshop representing 13 countries. The cost of the workshop was \$5000. Part of the workshop was funded by the University of Turabo and funding for travel for the OAS speaker was provided by OAS-EftA.

Outcomes:

- The Turabo Declaration recommending that an accrediting system be formed for the Caribbean Region

- Refereed publications and presentations in national and international conferences- SEFI (Belgium), ASEE Global Colloquium (Brazil), LACCEI (Columbia), ASEE (USA)
- Participation and signer in the Engineering Education Collaboration Agreement for the Americas in Rio de Janeiro, Brazil, October 2006

The first workshop was the beginning of the effort to generate familiarity with accreditation systems and recognition of the importance of accreditation to engineering institutions in Latin America and the Caribbean.

2) May 28, 2007 – Club Maeva Hotel in Tampico, Tamaulipas, Mexico

The workshop started with a presentation by the Head of EftA presenting the industry perspective on the state of science and technology in Latin America and the Caribbean. The presentation highlighted the impact on competitiveness of quality assurance in education.

The panel and discussion sessions that followed included the government perspective from Mexico. Industrial perspectives were presented by representatives from Hewlett Packard, Motorola, EftA, and ISTE (Iberoamerica and US). Panel discussions included deans and chairs [ANFEI(Mexico), ACOFI(Columbia), ASIBEI(Iberoamerica), CONFINI (Perú) Dominican Republic, Puerto Rico]. CFIA(Costa Rica) and UMAI(Mexico) represented the perspective of the profession. There was also a panel discussion with accrediting agencies. Those represented were SINAES(Costa Rica), UNESCO, CACEI(Mexico), CEAB(Canada), and ECUK(United Kingdom).

The workshop included roundtables to discuss strategies to advance the action plan. Several accreditation sessions, an accreditation panel and a key note address provided a continuing thread throughout the subsequent three-day conference. Thus, a significant number of conference participants were exposed to topics in accreditation. The cost of the workshop was \$5000 and there were 40 workshop participants from 13 countries.

Outcomes:

- The Tampico Declaration recommending that a model for comparison of accreditation systems be developed so as to provide the structure necessary for institutions to progress toward accreditation regardless of accreditation system selected.
- The additional accreditation sessions, panels and key note address provided for the interaction necessary to form a group of 20 individuals who had an interest in accreditation matters and stated a desire to work on an action plan for accreditation in Latin America and the Caribbean.
- Refereed publications and presentations in national and international conferences – ASEE Global Colloquium (Turkey), LACCEI (Honduras), ASEE and IEP(USA),

3) June 3, 2008 – Tegucigalpa Marriott Hotel, Tegucigalpa, Honduras

In addition to including panel and discussion sessions coordinated by engineering education associations, industries and accrediting agencies, this workshop focused on the university and educator perspective. Universities from Puerto Rico (UPRM), Venezuela(TECNAR and UNITEC), Honduras (UNITEC) and Jamaica (UTECH) along

with organizations representing deans and program chairs from Mexico (ANFEI), Iberoamerica (ASIBEI), Columbia (ACOFI), and Perú (CONFINI-Industrial Engineers) took the lead in identifying the key challenges to accreditation and developing an outline of strategies to address these challenges and other concerns.

The three-day conference that followed the workshop included accreditation sessions, panel discussions and a keynote address. This, for the second year, provided a wider forum for participants to be exposed to and participate in activities related to accreditation. The cost of the workshop was \$5000 and more than 40 participants representing 14 countries attended.

Outcomes:

- Tegucigalpa Declaration recommending collaboration between ISTEAC and LACCEI to develop a model and software platform to facilitate the process of accreditation independent of selected accrediting agency.
 - A special interest group on accreditation was formed and met concluding that an interactive, hands-on workshop to illustrate the procedures for accreditation for faculty should be the next step in the workshop series.
 - Refereed publications and presentations in national and international conferences – ASEE Global Colloquium (South Africa), LACCEI (San Cristobal), ASEE(USA), 21st Annual Conference on Engineering Education in Chile (Chile)
- 4) June 2, 2008, Universidad Nacional Experimental del Táchira, San Cristóbal, Venezuela
The fourth workshop had two major goals. The first goal was to present the five step CMM model as a vehicle for development of accreditation readiness and connect it with accreditation procedures using interactive activities. The second goal was for participants to engage in assessment of courses from their universities in terms of accreditation criteria. For the purposes of this workshop, ABET criteria were used. The workshop was composed of more than 65% interactive team-based assessment exercises. Faculty and administrators had the opportunity to discuss assessment vehicles, criteria and methodologies. Presentations of assessment methodologies and accreditation procedures from ACAAI(Central America) and from the Regional Engineering Accreditation System for the Greater Caribbean Project were also part of this workshop.

The cost of the workshop was \$3000 and 50 participants representing 15 countries attended. An Accreditation Committee of fifteen members was formed as a result of this workshop and a Vice President for Accreditation was elected. The subsequent three day conference again included accreditation sessions and panel discussions.

Outcomes:

- Formation of Accreditation Committee and election of Vice President for Accreditation
- Development of strategic objectives for the year and the development of a mission statement as follows

Mission: *To assist engineering institutions throughout Latin America and the Caribbean to prepare for accreditation procedures of their choosing especially in the area of self-evaluation by providing*

- *an accreditation preparation mechanism and assistance in its implementation*
- *access to peer-assistants and evaluators to provide assistance in a direct and cost-effective manner as institutions prepare for accreditation*
- *materials and workshops on accreditation and evaluation for courses and programs*

- Development of questionnaire to identify peer-evaluators and peer-assistants. This questionnaire will be distributed throughout Latin America. The goal is to have a list of individuals familiar with accreditation processes who are willing to assist institutions getting ready for accreditation. An institution seeking help with accreditation would obtain the names, affiliations and expertise of potential peer-assistants from the web site. These individuals would assist the institution with accreditation matters prior to a formal evaluation visit.
- Development of an interactive workshop to be delivered in May 2010. Planning for this workshop was completed in December 2009 by the Committee. It will include interactive exercises and panel discussions for faculty, chairs and deans highlighting their roles and duties during the accreditation process. It will also include training sessions for peer-assistants in several accreditation systems and sessions on the governmental and legal aspects of accreditation that are unique to Latin America and the Caribbean.
- Refereed publications and presentations in national and international conferences—LACCEI (Perú), ASEE(USA), CONFINI Conference (Perú)

Conclusions

Since 2006, the Latin American and Caribbean Consortium of Engineering Institutions has provided a forum for matters regarding accreditation in Latin America and the Caribbean. These efforts have resulted in the advancement of accreditation efforts in the region and an enhanced understanding of the importance of accreditation as evidenced by the degree of participation in accreditation sessions and panels at annual meetings. The case for accreditation as the best method for quality assurance in engineering education is a strong one. Also, quality assurance is critical for the global engineering education of the future. Quality assurance and continuous improvement through accreditation will be the hallmark of the engineering education that will produce professional engineers who will lead the socioeconomic development of the region. Providing a bridge toward accreditation for institutions within the guidelines of regional and national accreditation agencies is an important LACCEI contribution to engineering education in

Latin America and the Caribbean, and global engineering efforts in general. The clear need is for hands-on assistance to institutions so that they can select the accreditation model best suited for them and go through the accreditation process to completion. This is especially true for institutions that are just beginning their efforts toward accreditation.

Through workshops, presentations, roundtables and direct assistance to institutions from faculty and administrators with accreditation experience, LACCEI has made significant contributions to the accreditation of institutions throughout Latin America and the Caribbean. The OAS-EftA/LACCEI Accreditation Workshops described in this work have built on the outcomes achieved each year, and are a central component in the efforts to assist institutions in accreditation for their programs. LACCEI has also disseminated the results of these workshops in an effort to enhance accreditation activities throughout the region and the world.¹⁸⁻²⁰ The economic development of countries depends, to a large extent, on the quality and quality assurance of their engineering and technical education. The workshops described in this work are a valuable mechanism for the development and maintenance of the quality assurance and capacity building necessary for true and significant economic development.

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