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Local relevancy evaluation in the accreditation bodies for engineering master´s programs

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Abstract

Accreditation models in the international context mainly consider the evaluation of learning outcomes and the ability of programs (or higher education institutions) to achieve the educational objectives stated in their mission. However, it is not clear if these objectives and therefore their outcomes satisfy real national and regional needs, a critical point in engineering master's programs, especially in developing countries. The aim of this paper is to study the importance of the local relevancy evaluation of these programs and to analyze the main models of quality assurance and accreditation bodies of USA, Europe and Latin America, in order to ascertain whether the relevancy is evaluated or not. After a literature review, we found that in a free-market economic context and international education, the accreditation of master's programs follows an international accreditation model, and doesn´t take in account in most cases criteria and indicators for local relevancy. It concludes that it is necessary both, international accreditation to ensure the effectiveness of the program (achievement of learning outcomes) and the national accreditation through which it could ensure local relevancy of programs, for which we are giving some indicators.

Keywords: Relevancy evaluation, graduate programs, quality assurance, accreditation, engineering education;

1. Introduction

Local relevancy evaluation on higher education institutions is not a well supported approach, as indicated by Van Ginkel and Rodrigo Dias (2007). According to the authors, the opening of economies and the privatization of education led to the adoption of excellence standards as tools to achieve quality on educational programs regardless of local relevancy. Priority was given to the commercial aspect and higher education was considered as a commercial product that is regulated in accordance with the principles laid down by World Trade Organization.

Currently, higher education institutions have gone from evaluations with the purpose of quality improvement to evaluations with accreditation purposes, so it is necessary to review what the accreditation bodies are evaluating (Rama, 2008). The author also claims that we have gone from national accreditation process to international accreditation process, graduate education requires international accreditation and undergraduate education are associated with local evaluation and accreditation. Graduate education is mainly governed by international regulation and market, and the undergraduate is mainly governed by national regulations academic. The drawback

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of international accreditation is that relying on global standards and technical criteria only, means a low local relevancy.

This is the problem that we analyze in this paper: Is it important to evaluate the relevancy of Engineering master´s programs for accreditation? If yes, how could it be evaluated? In order to answer the questions we will analyze the current situation of engineering graduate education, international accreditation models and criteria used by major accreditation and quality assurance bodies.

2. Relevancy Evaluation importance

2.1. Current situation of engineering graduate education

Graduate education should be more relevant than undergraduate education. As indicated by Smerdon (2000), university in the past has focused on providing degrees to students and although degree is a measure of progress and mastery at a certain level of knowledge, the future student's will be more interested in the relevant knowledge than in the degree. Recent surveys clearly indicate that industry engineers who want training, are more interested in knowing what knowledge has immediate relevancy in their work and not interested in another degree, by itself.

The same author stresses the importance of the graduate courses relevancy noting that in the past, most degrees in the U.S. have focused toward research and academic achievement, educating graduate students to fill research positions. However, tomorrow's teachers have to watch the market and determine what do customers (students) want. The immediate agreement between graduate programs and career goals of graduates will be increasingly important.

Universities have only a limited role in the graduate development of engineering professionals (Maffioli and Augusti, 2003). If universities refuse to find ways to collaborate with professional learning beyond graduation, by default, they will be accepting a role that ends in a relatively early stage in the professional development system. We can expect, over time, universities lose its preeminent status compared to other institutions that will be seen as authorities on professional development (Etzkowitz et al., 2000).

2.2. Role of universities

The relationship between knowledge producers and users of this knowledge is changing. Universities no longer have knowledge production monopoly and now, they must compete and coordinate with other organizations, from government and industry spheres (Etzkowitz & Dzisah, 2008). This global phenomenon forces them to make training programs more relevant.

Relevancy evaluation let us evaluate the contribution to economic development of university, in other words, the contribution of university to generate solutions to problems of growth, welfare and development of the majority of the population, especially in the poorest sectors (Didriksson et al., 2007; Memon et al., 2009).

UNESCO also promotes the relevancy evaluation in universities since the World Declaration on Higher Education for the Twenty-first Century: Vision and Action (Paris, 1998) states that higher education must be regarded as a public service, although funding sources are private and public. In higher education, management must be instrument to improve quality and relevancy, they must be assessed in terms of the fit between what society expects of institutions and what they do.

2.3. Quality and relevancy

The quality and relevancy of engineering education is more important than ever before (Phillips et al., 2000). The concerns of the new millennium are efficiency, excellence and relevancy (Natarajan, 2000). As applied by the International Organization for Standardization to higher education, the definition of quality could be "specify learning objectives worthwhile and allow students to achieve them". Specify learning objectives worthwhile would

mean joint academic standards wich meet: i) the expectations of society; ii) the aspirations of students; iii) the demands of government, business and industry, and iv) the needs of professional institutions (Gola, 2003).

According to Sanyal and Martin (2007) there are two approaches to higher education quality: A first one based on quality standards, where the quality of the program is judged by the extent that it meets all the standards set for inputs, processes and outcomes. In the second approach, the quality is determined by the relevancy of the mission and goals of an educational program (fitness of purpose) and the level at which this program meets them (fitness for purpose). The authors prefer the latter because it checks if the program achieve goals and see if the goals itself are acceptable. Conclude that it is not possible to evaluate all institutions and programs with the same standards because supplying specific clientele in a diversified higher education system. Therefore, the quality assurance and accreditation can not be discussed without taking into account the national context of higher education system.

3. International Accreditation Models by Eaton (2007)

Judith Eaton (2007), President of the Council for Higher Education Accreditation - CHEA, describes five models of international accreditation: 1) international model, 2) national model, 3) regional model of accreditation bodies, 4) institutional model and 5) the market model.

In an international model, UNESCO or the International Network for Quality Assurance Agencies in Higher Education (INQAAHE), would be responsible for the direction of international accreditation space. In the national model agreements would be taken from different national quality standards but it can set an international coordinator. It would be like if, for example, Canada, Mexico and the United States share responsibility for its international accreditation space.

In a regional model can also set up a coordinating body, but the voluntary agreements between agencies for accreditation or quality assurance accreditation would lead the international space. The European registry proposed by the Bologna process and the EUR-ACE project in Europe are examples of this model.

In an institutional model, as in the US, colleges and universities should take over the authority and responsibility of an international accreditation area. The institutions should be responsible for the means to work together, perhaps by creating partnerships or accreditation bodies and other associations related to quality like CHEA or ABET in U.S.

In a market model, responsibility and authority for the area of international accreditation management, might reside in trade agreements. It would be like the General Agreement on Trade in Services (GATS) directed an area of international accreditation. Thus, accreditation could be in charge of the decisions of the GATS relating to the regulation of cross border exchange of people, institutions, programs and services. Competition among higher education providers would boost the quality. The institutions that offer low quality education would not be able to compete and would be offside. This model would be based on supply and demand, as well as competition.

Any of these models has advantages and disadvantages. For example, the international model would provide greater uniformity of quality. However, this model would limit the ability to respond creatively to the issues of international accreditation, and that all institutions would be tied to the same accreditation standards. Both the national and the regional model are less centralized and require some coordination in decision-making and standards in an area of international accreditation. The institutional model provides greater scope for institutional diversity in the area of international accreditation, but limits the uniformity. The market model raises questions about whether international accreditation space can serve the public good effectively.

4. Accreditation Bodies Relevancy Evaluation

The evaluation criteria of the international network of accreditation INQAAHE are very general and do not consider the evaluation of the relevancy of the training programs.

ABET uses the same criteria to evaluate undergraduate and graduate studies. ABET mainly assess and evaluate the achievement of learning outcomes (in the last year of study or in the first year of graduation) and the

achievement of educational objectives (after five years of graduation). That is to say, mainly evaluated the effectiveness of the program. Among ABET used criteria, do not include the relevancy of the training program.

In Europe there is an important experience about regional accreditation in engineering. The European Network for Accreditation of Engineering Education (ENAE), a network formed by national accrediting agencies in engineering in Germany, France, Italy, UK and others, have implemented the European Accreditation of Engineering Programmes (EUR-ACE) project, to provide an international quality label, additional to accreditation by national bodies (Payzin, 2010). The model used by EUR-ACE considered as the first criteria "Needs, Objectives and Outcomes", thus linking the definition of objectives and expected outcomes with the needs of the environment, that is indirectly evaluate the relevancy.

EUR-ACE model has an important advantage: the training program users (students) of the countries member of the network have the assurance of international quality required in a graduate program, and also have quality assurance supported by a national body, which takes into account the local and national realities. This mixed model is well suited to satisfy the needs of international accreditation and the needs of the local relevancy evaluation.

The Asociación Universitaria Iberoamericana de Postgrado - AUIP (2009) consider the relevancy evaluation of the programs in its accreditation model. AUIP identifies eight variables that can be evaluated considering the "Environment and Relevancy." It considers that the way in which the graduate program is linked with their environment affects the education quality. It includes elements such as mission and objectives, program influence area, effective relationships that the program has with other academic, social, scientific, production and services institutions regionally, nationally and internationally. It is also very important the way in which the graduate meets the social demands of the environment in which it is located.

The AUIP also considered a variable called "Graduate students and impact" which evaluate the expected profile and profile achieved by the graduate students, retention and performance in the program, as well as its effective contribution to the cultural, socioeconomic, scientific and technological development.

Some indicators for the relevancy evaluation include: undergraduate programs related to graduate programs, productive inter-institutional agreements and effective relationships with similar programs at other institutions, government agencies and non-governmental, scientific, technological and cultural.

5. Conclusions

Evaluations of engineering master's programs done by the universities are mainly for accreditation and the prevailing international accreditation models do not consider as a primary endpoint the relevancy of these programs.

If higher education is considered a public service, then it should not adopt a market international accreditation model.

It is necessary to evaluate the relevancy of engineering programs to reclaim the space that universities are currently losing, in the production and transmission of specialized knowledge. There is increasing providers of graduate programs that are not universities that offer training programs according to the graduates needs.

The graduate program quality is linked to its relevancy because the quality depends on the context in which the program is located. It is not possible to assess all institutions and programs with the same standards because they supply to specific customers in a diversified higher education system.

The most appropriate type of accreditation in this approach which considers the relevancy evaluation of the program is the "fitness of purpose and fitness for purpose", it means quality is determined by the relevancy of the mission and objectives of an educational program (fitness of purpose) and the level at which this program meets them (fitness for purpose).

In a free market economic environment and an educational context that seeks to promote international accreditation, is necessary both, international accreditation to ensure the effectiveness of the program (learning outcomes according to objectives) and the national accreditation through which it could ensure local relevancy of programs (if the objectives are achieved, are being met real needs of the environment). The European EUR-ACE fits these requirements.

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