

Global Experiences for Engineering Programs

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Abstract. This paper has the goal to present and discusses the internationalization process of a university starting by the engineering programs that the engineering school offers. The objective is to make it more attractive and promote the double diploma in order to higher the quality of the programs.

Keywords: international cooperation, double diploma, strategic plans, multiculturality.

1 Introduction

When people have the chance to dive into a second culture, some interesting things may occur. It can increase overall openness to new experiences, that often leads to more creative ideas; it helps people to recognize that everything in the world can be viewed in many different

ways, for instance, some cultures see mealtimes as opportunities to fuel the body, others see mealtimes as a time for social interaction [1]. The practical advantages are the diplomatic skills and sensitivity to different management styles as well as the capability to operate successfully in different settings and to adapt to a wide range of situations. Besides professionals with cross-cultural experience can think critically and act logically to evaluate situations, solve problems, make decisions and are able to respond quickly to changing circumstances. The key aspect of learning to adapt to a new culture is not that people have to decide which approach is better rather than recognize that everything in the world can be looked at in many different ways [2]. Seen by the current perspective this inter institutional international cooperation, in its essence, implies some fundamental conditions such as:

- to recognize the existence of people, protagonists of cooperation;
- all participants in the process should be involved and committed to the forms of cooperation, in accordance with the availability of available human and financial resources;
- the goals of cooperation have to be clearly defined and consistent with implementation strategies;
- projects should be included in the strategic development plans of the institutions optimizing the benefits and improving the levels of development of the partners; - the activities must be specifically established, respecting previously defined schedules and budgets;
- and finally, it is important the establishment of mechanisms directed to the development and evaluation of cooperation actions.

The study demonstrates that establishing internationalization strategies in an academic environment requires the observation of some characteristics that may limit the area of activity, such as: restrictions in terms of geographical location of partner universities; existence of language barriers; areas of excellence in teaching or research, as well as the level of development of the country where the institution is located [3].

2 Contemporary Education Demands

Many newly trained engineers do not always have the skills they need to succeed upon completion of the course. Several studies show that, on average, 40% of young graduates worldwide do not have the skills to make appropriate decisions outside of the university environment in which they have spent 4 or 5 years. The problem may arise from different environments: - On one hand, the highly structured environment of educational programs, and on the other, the changing, dynamic and challenging modern working environment. One way to improve this transition from the academic environment to the work environment is to modernize the students' curriculum. Nowadays there are harsh criticisms of the teaching methods that lead the professional to a long period of adaptation. However, there has to be a starting point that can start a new academic journey that allows students to acquire the necessary skills needed for a short adaptation to the job market [4]. Still there is no better place than universities to offer these opportunities, pushed by the enterprises collaboration offering internships opportunities.

3 The Project Boldness

To understand the relevance between school disciplines and how a career building journey takes place, it is helpful for young people to understand how work dynamics work. Engineering skills are internationally portable, leading to international mobility, which makes the profession extremely interesting. Intercultural skills, knowledge of languages and cultural prejudice management are very important also, because opportunities are extra boundaries and it is important to be able to adapt to any different cultural environment [5]. This is one of the proposals of COPEC's engineering education research team: – o embed a course with a more interesting activity for students, sooner, in the first year. It is a short-term workshop in order to show students the possibilities of performing as engineers in a global environment – a project developed for a private university in order to reduce retention rate among students of engineering courses. The main idea is during the first 3 months' period, in the second semester of the 1st. year,

provide the students with different classes, which are more dynamic, due to the mix of site visits, lectures, project proposals, travel period and project presentation. It is a way to reduce the evasion of engineering courses, showing a glimpse of what it is to be an engineer and to see that there are wide varieties of opportunities worldwide [6].

4 Science and Education Research Organization (COPEC)

This is an organization of about 18 years of existence a multi-disciplinary organization that is a leader on advance science and its application to the development of technology serving society. The objectives of COPEC are to promote professionalism, integrity, competency, and education; foster research, improve practice and encourage collaboration in different fields of sciences. Contents, tools and services provided by COPEC, through courses, publications and consultations, with national and international experts, contribute to the promotion of the professional who wants to be privy of new achievements and service of men to technology. COPEC enjoys respect and recognition internationally characterized by the open discussion, the free exchange of ideas, respectful debate, and a commitment to rigorous inquiry. Its IIE – International Institute of Education – is a bold and resilient source of innovation in higher education [7].

5 The Project Design and Implementation

The starting point of this project development is the establishment of some actions in phases, in steps that leads to the goal of internationalize the Engineering College Programs in a first moment, followed by other programs that the University offers.

The Phases are:

Phases	Description
1 - Conception	At this stage, it is established the estimates of achievement, dates, allocated resources, establishment of guidelines and elaboration of project

	outlines are discussed. The product of this stage is the project design
2 - Structuring	This stage involves all the technical part and activities necessary for the accomplishment of the project as: Hiring the operational team people; Basic schedule; Services to be contracted; Establishment of organization chart; among others. The product of this step is the entire action plan and timeline of final activities
3 – Execution	This stage consists of executing the project according to the action plan and timeline established between the stakeholders. The product of this step is the execution of all activities programmed in the project action plan.
4 - Closure	This stage consists of the closing of the project and the preparation of the reports with information about the project, with the necessary documents and documents to render accounts with the institutions involved in the project. The product of this step is the final report with the detailed description of all the actions of the project.

The Developed Activities are:

Terms	Activities
Short	<ul style="list-style-type: none"> - Establishment of an International Relations Office in Europe - Identification of partners to establish agreements in Europe and USA - Scheduling visits to partner universities
Mid	<ul style="list-style-type: none"> - Short-term courses outside the country for undergraduate, graduate and high school students - Agreements with universities in Europe, USA, and Canada - Implementation of top pioneer courses with

	unique characteristics *1
Long	Courses offered with double diploma International Courses Exchange of students and teachers Receiving students from outside *2 Opening of the advanced campus in Europe

1. The creation and offer Cyber Security Course on 3 different levels: High school; University under graduation; Graduation; Short international courses for: 1. Specialization; 2. University Graduation; 3. Executive MBA and Specialization Course for Engineering Teachers - International Engineering Educator
2. Focus on receiving students from CPLP – Community of Portuguese Language Countries component countries

About the agreements with other universities, they are the umbrella type with several possibilities such as student and teacher exchange, project development, double enrollment and others stipulated by the colleges involved. It is important to start in Europe for several reasons, as follows, being the main one the visa exemption for citizens, the second one Europe has a very high level of cultural life, depending on time of the year, depending on the season, the flying tickets have a more reasonable price. It is important to go to Canadian universities and US as well. The perspective is to offer: Short courses – Workshops - Joint projects and courses. The last accomplishment will be the establishment of an advanced Campus of the University in Europe once it is a very important economic block besides the fact that there is the Portuguese Speaking Country – Portugal considered one of the most important colonizer countries in the world history [8].

6 Implications of Internationalization for Engineering Schools

Different circumstances will be prevalent in different countries and for different cultures. In all cases, COPEC's engineering education research team strongly recommends serious reflection and much preparation. By taking the courses abroad, universities are replicating their educa-

tional models to another set of circumstances, a different place and culture, with a different job market, demands, needs, and expectations. Becoming international or even global can be one of the most intelligent and profitable moves to improve the quality of the organization, attract new talent and increase its resources whether human or financial. Otherwise, institutions would be neglecting increasing quality of education, acquiring new knowledge and experience and, more importantly, more opportunities for research development [9].

7 Students Personal Achievements

Although for many universities the needs of international students are for monetary reasons too, however universities will bring longer-term ethical and intellectual considerations to bear on the profit motive. Internationalization is a project with an agenda with intellectual implications. It gives students and scholars the opportunity – and indeed the pressure – to view themselves and their cultures in new ways. Universities must invest in the economic agenda of internationalization being prepared to embrace its intellectual consequences; otherwise they can embark in a doomed project. And so for universities to fully internationalize themselves, it is clear that they must look to internationalize their fellow professionals, the teachers and staff first [10].

8 Final Considerations

For professional careers many employers states that no skill is more valuable than a foreign language. Many consider English as the “lingua franca”. English as a medium of instruction is a prevalent way to offer international higher education as it continues to attract international students. English-taught degree programs continue to develop in many countries worldwide. With the multilingual environment come new challenges and responsibilities. Although the continued prominence of English is uncertain English continues to play an important role in international higher education as well as in work places [11]. People are considered literate when s/he speaks the mother tongue, English and another foreign language. So the first positive aspect of an

experience abroad is the learning of another language besides English. The internationalization project comes as an answer for the university that currently feels the need fostered by the incentives of governmental agencies as well as a way to attract more bright students and be at the top ranking. So far the organized actions that have been put in place are the agreements with universities abroad and a workshop in Europe for a group of students of the Civil Engineering Program.

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