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To cite this article: R I Laguado *et al* 2019 *J. Phys.: Conf. Ser.* **1388** 012049

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# Students' perception of an engineering program on student mobility and its impact on integral formation

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**Abstract.** Student mobility is considered as one of the strategies used in universities for the internationalization of higher education, an important factor within the program accreditation model defined by the National Accreditation Council. In this context, the following study sought to understand students' perception of mobility processes and the significant experiences generated within the academic and multicultural process, becoming an opportunity to analyze the main variables that students take into account in order to participate in this mechanism of internationalization in Universities. This article analyses the students' perception of an engineering program in the period 2013-2018, on student mobility and its impact within integral formation. Based on the results obtained, strategies are generated to encourage mobility among engineering students, highlighting the importance of internationalization as an enriching tool for professional training.

## 1. Introduction

Today we find ourselves in a globalized world heading towards the knowledge society, where synergy in global relations and social interaction has gained importance, to strengthen scientific and technological advances through the flow of information. For this reason, educational systems have seen the need to integrate the international dimension in education, arising the internationalization of higher education, where academic programs use different strategies such as student exchange, foreign language, mobility of academic and administrative staff, programs in agreement at master's and doctorate level, international lecturers, visiting professors, mirror classes, joint projects, seminars, congresses, academic and scientific productivity [1].

The internationalization of higher education is an institutional process of integral transformation that articulates the international and intercultural dimension in the mission and objectives of the institutions, being representative elements of their identity and culture. This implies having a process of internationalizing the curriculum, facilitating mastery of foreign languages, internationalizing research and extension [2]. In this context, the foreign academic community are the most representative elements for internationalization, since they are protagonists not only to be receivers of knowledge, but also producers of it [3], which leads to the creation of global networks for the internationalization of knowledge and research in a globalized economy [4].

One of the most widely used strategies in higher education institutions is student mobility, which offers numerous benefits to students who decide to live this experience. Student mobility consists of studying abroad for a certain period, in a university with which there is an agreement, and within this



period of study the student will be exposed to another culture and will project himself internationally now he continues with the studies of his career [5].

Student mobility enriches both the personal training of students, as well as their academic training by having access to greater specialization in certain areas of knowledge, due to the installed capacities of the host universities. Another benefit is that it improves the knowledge models of academic programs to improve the quality of the program, institutional development and critical capacity on the part of students [6].

Student mobility allows the construction of knowledge, using new methods and practices that strengthen social, cultural, academic learning, participating in the life of another university [7]. Among the reasons that motivate student mobility between countries are: the academic challenge, the possibilities of a research place, the connection with scientific networks and expectations of work opportunities outside the country with better conditions [8]. Through student mobility programs, education is internationalized, improving its quality and visibility, which favors the processes of qualified registration, high quality accreditation, improving professional standards, competitiveness, and international prestige to the institutions that have these programs.

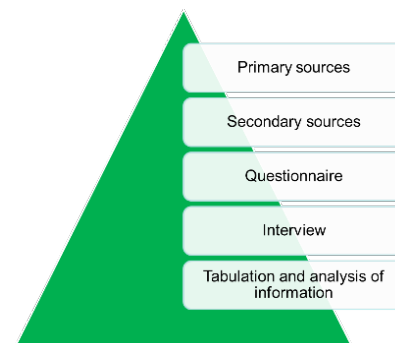
Through different studies, the experience of student mobility has been analyzed, obtaining results oriented to the positive linguistic, cultural, academic and professional impact [9]. Intercultural competence integrates dimensions such as cultural, cognitive and affective, which have had a positive impact on the processes of face-to-face mobility, increased capacity to adapt to contexts and situations that are not every day, growth in cultural tolerance and changes in perception of themselves and their own context [10]. From the students' perspective, the main motives students seek for student mobility are the desire to improve language proficiency and increase academic knowledge [11]. Therefore, the studies carried out in universities to learn about the benefits promoted by student mobility are very important [12].

This research sought to know the students' perception of mobility processes and the significant experiences generated within the academic and multicultural process, becoming an opportunity to analyze the main variables that students consider in order to participate in this internationalization mechanism. It analyzes the students' perception of an engineering program in the period 2013-2018, on student mobility and its impact on integral formation.

## 2. Methodology

The methodology used to carry out this study was based on the application of a questionnaire and its subsequent compilation of results in order to ascertain the perception of students of an engineering program in the period 2013-2018, on student mobility and its impact within integral training.

Completed questionnaires are taken in their entirety for processing and analysis of the information collected. The following stages of development were taken into account, see Figure 1.



**Figure 1.** Methodological stage.

Within the methodology applied, the questionnaire is divided into three sections of questions. The first section is related to the perception of the motivation to perform international mobility, the second

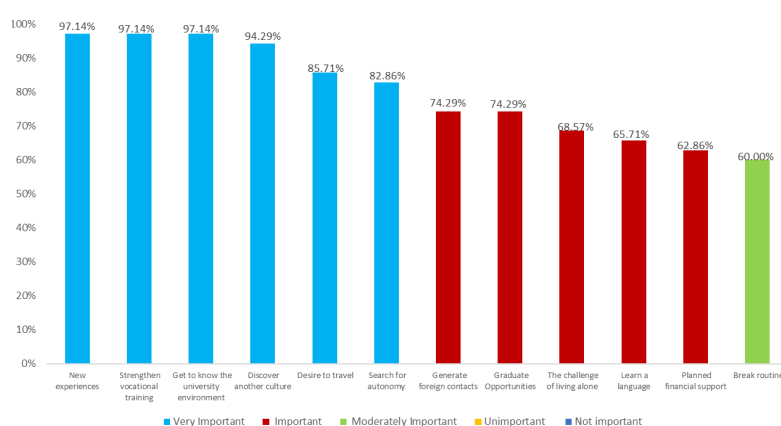
section seeks to know the perception of academic competences, the third section is related to the perception of generic academic competences.

The first section investigates: New experiences, desire to travel, discover another culture, generate foreign contacts, break routine, expected financial aid, search for autonomy, challenge to live alone, learn language, strengthen professional training, get to know the university environment, graduate opportunities. In order to learn about academic competences, which are contained in the second section, it was requested to learn about specific academic competences and interest in the career, cognitive competences (reflective and critical thinking), problem-solving capacity, self-learning capacity, research competences and mastery of a foreign language. With regard to generic academic competences, it was requested to know the assessment of social-communicative competences, intercultural competences (adaptation to different cultures), values and attitudes towards the training process and leadership competences.

### 3. Results and discussion

Within the first section, in reference to the perception of the motivation to carry out international mobility, the factors that on average are valued by students with a very important degree within a range of 82.86% to 97.14%, are to acquire new experiences, strengthen professional training and get to know the university environment. Next, the desire to travel and the search for autonomy respectively have a very important participation of 71.4% and 42.9%. These results are due to the fact that the students who perform mobility have a high academic average and seek to have other academic and cultural experiences that allow them to strengthen their professional training and check whether they have the basic skills necessary to respond to the demands and challenges demanded by other countries of the industrial engineer. Among the factors considered on average in an important degree within the range of 62.86% to 74.29% are generating contact with foreigners, obtaining postgraduate opportunities, the challenge of living alone, learning a language and having an expected economic support. These factors enrich the student in his personal life and seek to open new spaces that in the future may generate new opportunities for academic or professional development.

As moderately important is the factor of breaking with routine, with an average of 60%, where the student seeks to know other cultural contexts, academic, interpersonal, different to those he has experienced, which fills him with expectations to leave the comfort zone in which he has been so far, see Figure 2.

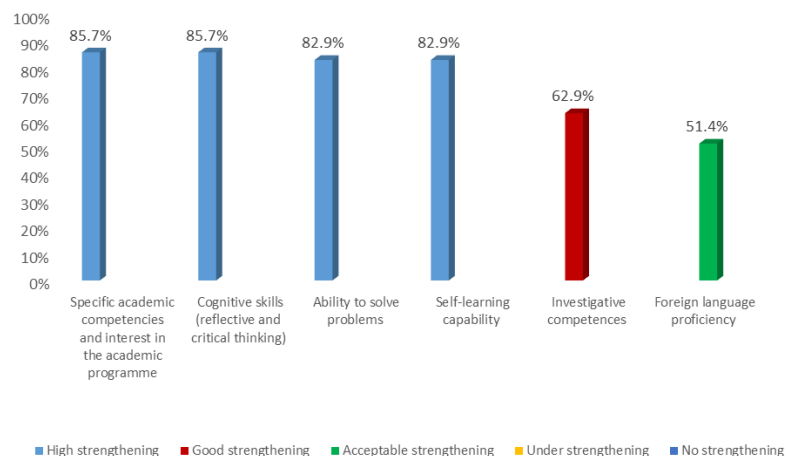


**Figure 2.** Perception of the factors motivating the development of student academic mobility.

In the second section, when investigating the perception of the strengthening of generic competences, the capacity for self-learning, specific competences and interest in the career, cognitive competences and capacity for solving problems valued as very high by students are highlighted, in a range between 82.9% and 85.7%. These results are since the academic exchange has lasted one semester, where

students must take at least three subjects, which must be approved in order to be homologated by the academic program; as part of their academic formation process, students face new challenges that make them strengthen these competencies in order to successfully develop their mobility.

Within a good level of strengthening is the research skills, with an average of 62.9%; although the instance of mobility is short, students strengthen the skills of research training that are taught from the classroom and applied work that are required within the development of subjects. At an acceptable level of competence strengthening, is the command of the foreign language, with an average of 51.4%, where it should be borne in mind that 53% of mobilities have been carried out in Spanish-speaking countries and 47% in Portuguese-speaking countries, see Figure 3.



**Figure 3.** Perception of the strengthening of academic competencies.

In the third section, inquiring about generic academic competencies, intercultural competencies, socio-communicative competencies, values and attitudes, and leadership, were highly empowered for students with average participation within 91% to 100%. The student, facing a new socio-cultural scenario, far from family and friends, strengthens interpersonal relationship skills, tolerance and adaptation to a new culture, both academic and social values and guidelines, and leadership skills to express their ideas and integrate into the new community in which they are participating, in order to achieve both academic and personal purposes, see Figure 4.



**Figure 4.** Perception of the strengthening of generic academic competencies.

#### 4. Conclusions

Student mobility is an attractive factor that allows for the strengthening of professional training. Therefore, it becomes an opportunity to get to know the perception that students have of an engineering program, who have enjoyed the opportunity to do at least one academic semester at a University in a

foreign country and to investigate the aspects that students' value best in internationalization processes and that becomes a fundamental tool in their professional training.

The students' perception of the motivation for international mobility was strongly oriented towards the factors of acquiring new experiences, strengthening vocational training and getting to know another university environment. This reflects a perception oriented to the strengthening of new processes and experiences in other universities. In addition, within the aspects of motivation, acquiring a certain degree of autonomy by being outside their usual environment is an interesting factor for the students and a challenge of their own demand to solve problems outside their comfort zone.

The motivational factors for international mobility that have an important degree of value is to generate contact with foreigners, get postgraduate opportunities, challenge to live alone, learn a language and have a financial support provided. At the same time, breaking the routine has a moderately important value for the students. On the perception of the strengthening of generic competences, students greatly value within a range of 82.9% to 85.7% self-learning capacity, specific competences and career interest, cognitive competences and problem solving capacity, which greatly strengthens the capacities of the professional competences of industrial engineering students to subsequently face a working environment where problem solving can be seen from the different perspective and experience lived in a foreign university that allows other points of view, as well as they positively value learning another language.

The study also allowed to know the perception of intercultural competences, socio-communicative, values and attitudes and of leadership which obtained a very positive valuation within a range of 91% to 100%, allowing the student to experience a different scenario, to acquire a different role and of high competence, far from his habitual environment. Adapting to a new culture proved to be highly valued by students who perform international academic mobility and a valuable tool within the overall strengthening of professional training.

### Acknowledgments

Gratitude is expressed to o the Faculty of Engineering for the support and collaboration for the development of the research " Students' perception of an engineering programme on student mobility and its impact on integral formation", where the main results obtained are shown in this article.

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