EDULEARN 16

8TH INTERNATIONAL CONFERENCE ON EDUCATION AND NEW LEARNING TECHNOLOGIES

BARCELONA (SPAIN)
4TH - 6TH OF JULY, 2016

CONFERENCE PROCEEDINGS

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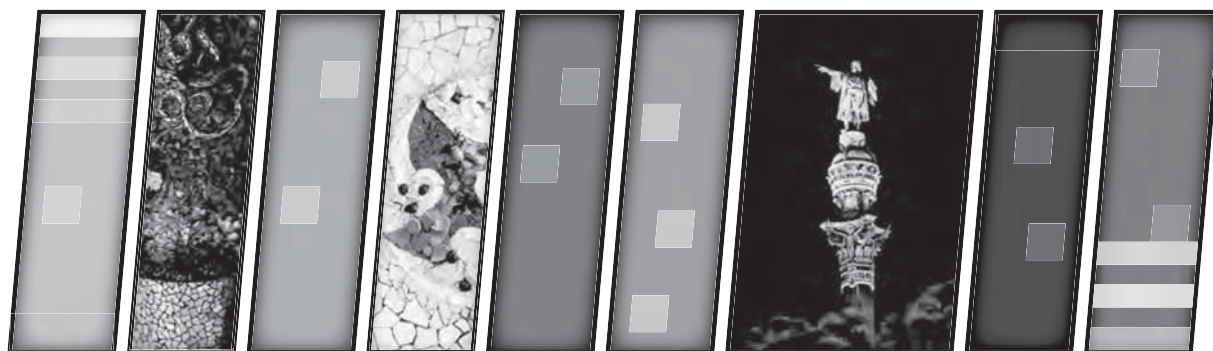**BARCELONA (SPAIN)**
4TH - 6TH OF JULY, 2016

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BASES FOR UNIVERSITY ACADEMIC ACHIEVEMENT ANALYSIS: VALUATION CONTRAST STUDENTS VS. GRADUATES, EVALUATION AND ASSESSMENT OF LEARNING

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Abstract

Nowadays, there are numerous endeavours to improve teaching-learning processes, with the final purpose of improving academic performance in all areas of education, including university. When these teaching-learning processes at educational centres are analyzed, a series of variables intervene that merit special consideration, as the achievement of educational aims depends, in large measure, on their organization. We may with complete confidence state that many varied factors affect the academic performance of undergraduate students. However, the objective of this investigation is to gather information on teaching methods from the student perspective. Our intention is to reflect on their perceptions of the teaching they received and its organization, the quality of the environment in which those teaching-learning processes took place and the personal motivations of students for learning in this context. The study will moreover contrast assessments from within the University with those provided by graduates, because students who have completed their academic training and entered the job market can express different views on the skills and theoretical knowledge they received on their academic courses in relation to the day-to-day requirements of their profession. This paper is, in turn, intended to lay the foundations, so that a relationship may be established between academic achievement and teaching–learning processes. Throughout the study, the methodology in use is presented and different data are analyzed, to establish various correlations that also lead to proposals for actions that might bring improvements to those processes.

Keywords: teaching-learning process, academic achievement, higher education, graduate.

1 INTRODUCTION

Modern-day society delegates the task of developing student skills to higher education, so that students may act effectively in that society [1]. The graduate profile of each academic qualification defines the desired characteristics of the students who qualify, so they may, in the best possible way, develop as professionals and as citizens. The professional profile defines the skills needed to perform their roles properly, and the profile of the citizen implies "being in society" in a proactive way, committed to its improvement and to personal self-development and the development of others. This profile is therefore a fundamental reference point for university education [2].

Different studies over recent years have pointed to substantial levels of recognition among students of the efforts of teaching staff to fulfill obligations, and develop programs and teaching methods [3-4]. This article raises the need to connect that vision with their own future professional activity [6-7]. The objective of this study is to analyze student assessments of the teaching-learning process in their curricular development and its organization, together with the (day-to-day) study environment in which it is imparted, and their assessments of their own independent study and work, so as subsequently to contrast their views with the assessments of graduates who have since gained employment in the job market.

The responses to the survey were gathered from students at the University College of Technical Mining and Civil Engineering (EUITMOP) at the University of the Basque Country (UPV/EHU).

Before going into further detail, we need to clarify that during the current year, 2015/2016, a reorganization of educational institutions took place at the UPV/EHU. The aforementioned EUITMOP was incorporated into the Bilbao Faculty of Engineering, together with two other educational centres; the University College of Technical and Industrial Engineering and the Higher University College of Seafaring and Naval Machinery. Although the information presented in this paper was obtained during an academic year prior to this reorganization, reference is made to the Centre with its new name of the Faculty of Engineering of Bilbao, Mining and Civil Engineering Section.

2   METHODOLOGY

The data in the present study were gathered, on the one hand, from a sample of students at the Faculty of Engineering of Bilbao, Mining and Civil Engineering Section (Escuela de Ingeniería de Bilbao, Sección Minas y Obras Públicas EUIMOP). Participants were selected at random from among students from all four years of the two degree courses (Degree in Civil Engineering and Degree in Mines) that are taught there. On the other hand, information was gathered by emailing a questionnaire to ex-students who had successfully graduated from the two degrees courses.

The surveys were administered to students in February 2015 in different groups, as mentioned above. A total of 263 students (104 from the Degree in Mining Engineering or "**ME**" and 159 from the Degree in Civil Engineering or "**CE**") completed the surveys. Participation in the survey represented 40.4% with respect to the total number of students enrolled on the course in 2014/15. Its format is detailed below.

Fig. 1 shows the content of the survey that has four different blocks. In the first block, the responses to three questions define the profile of the student; in the second, the student's assessment of the teaching-learning process (corresponding to the fourth question) is analyzed; in the third, the teaching-learning environment where the student participates in classes is assessed (fifth question); and, finally, the independent and private study of the student (questions six, seven and eight) is analyzed.

Fig.1 Format of the survey: Block 1 and 2 (left) and Blocks 3 and 4 (right).

With regard to graduates, a similar survey was e-mailed on 12 January 2015 to a total of 101 ex-students who had graduated in 2013/14, to which a total of 41 (15 from ME and 26 from CE) responded during the months of February and March, or 40.5% of the total. In the case of the graduates, the questions were not work-related, as their jobs are considered irrelevant to the academic context of this work.

3   RESULTS AND ANALYSIS

The survey results are set out below. First of all, we will analyze the profiles of the respondents and then the specific responses to each of the aforementioned blocks in the questionnaire.

3.1   Profile of the survey respondents at the Centre

A total of 60.5% of the surveys were completed by students at CE and 39.5% by students at ME (Table 1). These percentages are proportional to enrolment figures on each of the degrees at the Centre (63.1% at CE and 36.9% at ME).

Table 1. Student profiles.

Degree	Surveys	Total
CE	159	60.5%
ME	104	39.5%

A total of 57% of all respondents were male; this percentage is an approximate reflection of gender distribution on the two degree courses (Fig. 2).

Gender	CE	ME	Total
Male	94	56	150
Female	59	40	99
DK/NA*	6	8	14
TOTAL	159	104	263

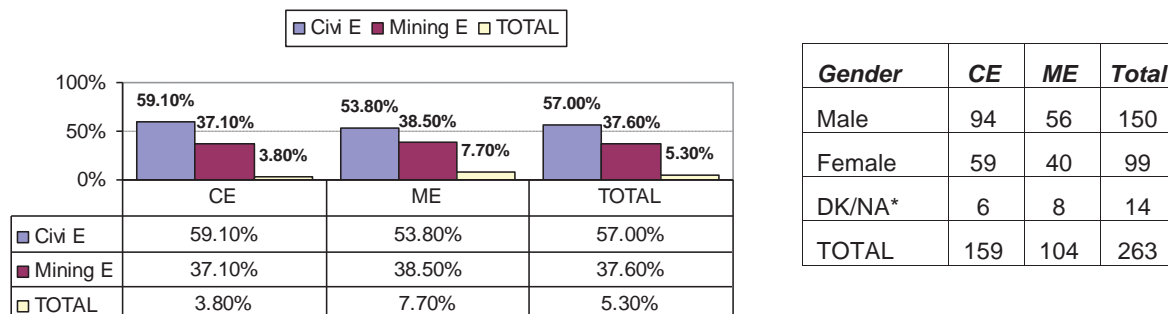|	CE	ME	TOTAL
Civi E	59.10%	53.80%	57.00%
Mining E	37.10%	38.50%	37.60%
TOTAL	3.80%	7.70%	5.30%

Fig. 2 Profile surveys by degree and by gender (*Don't Know/No Answer).

The questionnaire also contains the analysis of the language in which their studying (Fig. .3). The 60.1% says do it in Spanish and in Basque 39.9%. In this sense both the sample size of gender as the language, quite accurately reflect the collective total enrolled.

Language	CE	ME
Basque	60	45
Spanish	99	59
Total	159	104

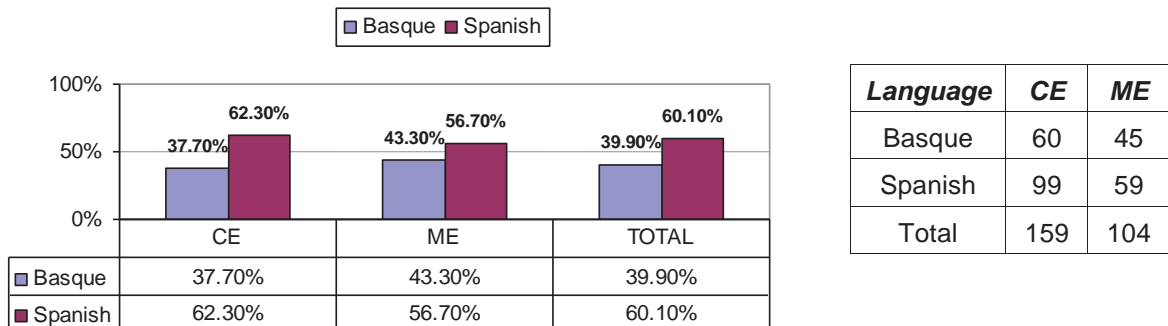|	CE	ME	TOTAL
Basque	37.70%	43.30%	39.90%
Spanish	62.30%	56.70%	60.10%

Fig. 3 Profile surveys by language.

To analyze the results of the survey it is followed the logical order of the questionnaire: Block 2: Teaching and learning; Block 3: Facilities and equipment; Block 4: Independent and Private study. In each block, there are a number of items that the students had to assess on a scale from 0 to 10.

3.2   Block 2: Teaching and learning

If we analyze Block 2 (teaching and learning), we can see that the response rate exceeds 90% in the majority of items (Table 2). The most highly valued aspect is the "Number of students" (6.7) followed by the "Theoretical training" (6.1). "Mobility" and "Practices in Enterprise" received lower ratings. The assessments given by CE students are in general higher than those given by ME students, although the latter gave a slightly higher score of 6.9 to the "Number of students.

Table 2. Results by degree for Block 2 "Teaching-learning".

Block 2: Teaching and learning	Total	Answer	CE	ME
Academic organization of the university	5.5	99.2%	5.9	5.0
Organization of studies	5.6	99.6%	6.1	4.8
Coordination between teachers who taught the same subject	5.3	93.9%	5.8	4.6
General coordination between subjects	5.6	95.8%	6.0	5.0
Number of students	6.7	98.1%	6.6	6.9
Theoretical training received	6.1	99.2%	6.3	5.8
Practical training received	4.7	99.2%	5.0	4.1
Cultural activities and sports, conferences, seminars and tech. conferences	5.1	93.2%	5.2	5.0
End-of-course project	4.7	27.0%	4.7	4.7
Practices in companies	3.7	27.0%	4.4	3.1
Mobility** (number of bids, destinations and information)	3.5	31.9%	3.7	3.3
Language policy (Basque - Spanish offer)	5.3	85.9%	5.9	4.4
General assessment	5.6	99.2%	5.8	5.2

3.3 Block 3: Facilities and equipment

In Block 3 "Installations and equipment" all the questions had a response rate of over 94%. The highest rating was given to the "Café-dining room" and the lowest to the "Study rooms" (Table 3).

Table 3. Overall results of the block 3 facilities and equipment.

Block 3: Facilities and equipment	Total	Answer	CE	ME
Classrooms	5.4	98.1%	5.3	5.6
Computer classrooms	5.0	98.1%	5.0	4.9
Teaching Labs	5.1	96.6%	5.4	4.7
Library	5.0	95.8%	5.1	4.8
Study rooms	4.7	96.2%	4.7	4.5
Reprography service	5.3	97.0%	5.4	5.1
Cafe - dining room	6.6	96.6%	6.9	6.1
Toilets	6.1	97.7%	6.0	6.1
Access and transport	5.8	94.7%	6.0	5.4
General assessment	5.7	96.6%	5.8	5.4

3.4 Block 4: Independent and private study

The final block of independent and private study (Table 4) collected higher response rate (over 95%). The item "I attend class" received 8.6 points, while "I Consult the recommended bibliography" scored 4.2 points, both out of possible 10.

In relation to average assessments by degree course, we see no major differences, although the CE students scored the item "I attend complementary training activities" with 5.4 points, while the ME students scored it with 4.7 points.

Table 4. Global results and results by degree course for Block 4 private study.

Block 4: Independent & Private Study	Total	Answer	CE	ME
I attend class	8.6	99.2%	8.6	8.6
I attend tutorials	4.9	98.1%	4.8	4.9
I consult the recommended bibliography	4.2	98.9%	4.4	3.8
I attend complementary training at school	5.1	95.4%	5.4	4.7
I am up to date with the subjects	6.0	98.1%	6.1	5.8

A total of 39% of students acknowledged that they did not combine their studies with other activities. The percentage of those who combined their studies with other activities was 42%. The 111 students claiming to combine their studies with other activities mentioned: work (55); sport (27); languages (21); courses (5).

A total of 48.7% of respondents acknowledged receiving or having received external support to study the modules on the degree course. See Table 5.

Table 5. Support from academies.

Support from academies	Total	Total
Yes	128	48.7%
DK/NA	114	43.3%
DK/NA	21	8.0%
Total	263	100%

Among the 111 students claiming to combine their studies with other activities are mentioned: work (55 mentions), sport (27), languages (21) and courses (5). The 48.7% of the respondents acknowledge that it has received or is receiving external support to overcome the subjects of the degree (Table 5).

3.5 Profile of graduates

In relation to the survey data provided by graduates, 63.4% corresponded to students from CE and 36.6% to ME students. Their profiles are presented in Table 6.

Table 6. Profile of graduate students.

Grade	Surveys	Total
CE	26	63.4%
ME	15	36.6%
Total	41	100%

3.6 Block 2: teaching and learning graduates

The item given the highest assessment is the "number of students" (6.7) followed by "Theoretical training" (6.1). "Mobility" and "Practices" received lower ratings. See Table 7.

Table 7. Overall results of block teaching-learning graduates.

Block 2: Teaching and learning	Total	CE	ME
Academic organization of the university	6.6	5.8	7.0
Organization of studies	7.0	6.4	7.3
Coordination between teachers teaching the same subject	5.3	5.3	5.0
General coordination between subjects	5.8	5.8	5.8
Number of students	6.1	6.2	5.8
Theoretical training received	6.7	6.2	6.9
Practical training received	4.1	4.4	4.0
Cultural activities and sports, conferences, seminars and technical conferences	5.6	5.7	5.6
End-of-course project	6.1	6.6	5.8
Practices in firms	7.6	6.4	8.3
Mobility (number of applications, destinations and information)	4.8	5.2	4.0
Language policy (offer in Basque/in Spanish)	4.8	4.9	4.7
General assessment	6.2	6.2	6.1

3.7   Block 3: facilities and equipment graduates

As detailed in Table 8, for Block 3 "facilities and equipment", higher assessments were given to "Cafe-dining room" and "Access and transport".

Table 8. Overall results of the block 3 facilities and equipment.

Block 3: Facilities and equipment	Total	CE	ME
Classrooms	5.9	6.0	5.8
Computer classrooms	5.6	5.5	5.6
Teaching Labs	6.4	6.5	6.3
Library	6.6	6.7	6.5
Study rooms	5.6	5.7	5.5
Reprography service	6.8	6.6	6.9
Cafe - dining room	7.8	7.9	7.7
Toilets	7.6	7.7	7.6
Access and transport	7.7	8.0	7.6
General assessment	6.7	6.7	6.6

4   DISCUSSION AND CONCLUSIONS

- Comparing the responses to the questions in Block 2 (Fig. 4 teaching-learning process), we can see that in general and almost without exception the graduate students gave higher assessments than the students who were following an academic training.
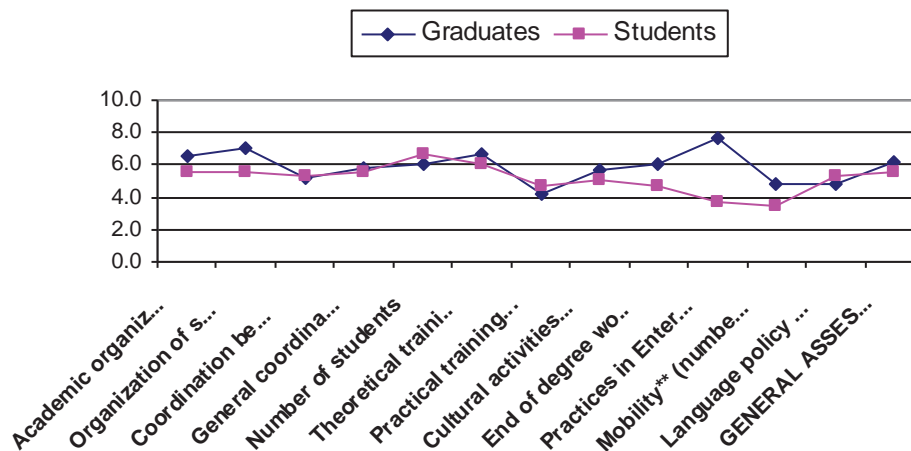

Fig. 4 Comparison students/graduates Block 2.

The assessments show that graduate students having entered the job market gave higher scores to the completion of the end-of-course project than during their training at the Centre. We may also make the same observation with regard to the practicums in companies.

The data indicated that both groups considered that the theoretical training they received was appropriate and it was more highly valued once students had completed their studies (6.1 for students and 6.7 for the graduates). We could refer to the assessment of teaching organization in the same terms. These results lead us reflect on how to transmit the importance of these two points (theoretical training and teaching organization) during the training process.

- A comparison of the values obtained in Block 3 (Facilities and equipment of the Centre Fig. 5) shows that the graduate students at all times give higher assessments than the students. This leads us to the conclusion that the conditions at the Centre respond to their educational needs, so their influence on Block 2 must be positive
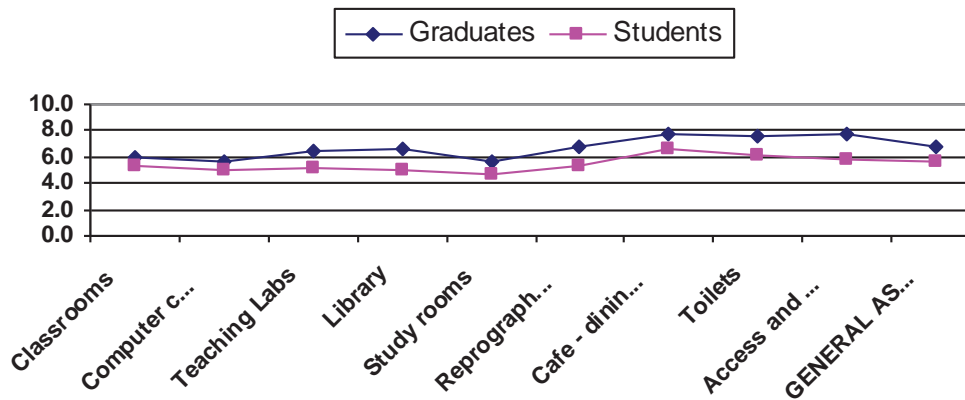
Fig. 5 Comparison students/graduates Block 3.

- Finally, analyzing the assessments of Block 4 –Private Study -, we can see that a relatively large percentage of students sought academic support to gain the knowledge that is required to pass some degree subjects. These assessments invite an analysis of the subject modules that present the worst performance ratios, so as to improve them, without changing the knowledge that is imparted, as the assessments that have been compiled show levels of adaption to the demands of professional commitment

ACKNOWLEDGMENTS

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