ACADEMIC PERFORMANCE AND SKILLS ACQUISITION IN THE UNIVERSITY AREA: A CASE STUDY

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Abstract

The change of the paradigm entailed in the European Higher Education Area (EHEA) has without question represented an improvement in the educational process. We consider that university teachers currently organize learning environments which involve their students. In the context of the EHEA, the evaluation system is designed to get to know the students' acquirement of knowledge and competences. In this framework, we consider that the students' tutored and self-directed learning favors their acquiring the knowledge and skills necessary to pursue their university studies and their professional and life project.

However, this change has also highlighted a series of problems which appear in the university environment in the EHEA. This work presents the results of the implementation of a series of innovations proposed with the aim of improving students' academic performance, reducing the drop-out rate, acquiring group work skills, and showing students the advantages of computer tools and virtual environments.

To do so, the research has been carried out over five academic years, compiling information via surveys and interviews of the students in a subject, which is taught in the 2nd. year of Degree of Political Sciences and Administration at the Pablo de Olavide University (Seville, Spain): "Quantitative Methods applied to Social Sciences". Being a quantitative subject that is taught in the area of Social Sciences means that from the start the students in general reject it a priori. To avoid this leading to the students dropping out or not passing the subject, we put into practice a teaching model based on the students' continuous evaluation. The teaching model means that 50% of the time is dedicated to theoretical classes and 50% to practical classes (which take place in smaller-sized classrooms or in computer labs). In the case of the theoretical classes, the students are evaluated at the end of the semester by a written examination. The practical classes are assessed using three individual tests during the semester and a weekly individual follow-up work.

After introducing the methodological and evaluating innovations, we have achieved an increase in the number of students who pass the subject, a reduction in the drop-out rate and a better use of Information and Communication Technologies. Although this has meant a greater workload for the teaching team and the students, the skills which we have worked on have had a satisfactory short-term result. At the same time, we consider that this experience can be applied to any subject studied in the university area.

Keywords: Quantitative techniques, teaching innovation, university professors, virtual classroom.

INTRODUCTION

In general, it may be said that the teaching of quantitative subjects causes, from the early stages of education, a certain rejection by students. In order to overcome this barrier, the tendency has been to find the right conditions so that mathematical modeling activities can be carried out successfully in the different educational levels (Gómez, 2003, Aravena, Caamaño & Giménez, 2008), by putting more emphasis on the study of situations that occur in real life (Barquero, Bosch & Gascón, 2014, Gallardo, González & Quintanilla, 2014).

This situation is also found in the university environment, forcing teachers to make an extra effort to attract students' attention when they do not have prior knowledge and are not motivated to study quantitative subjects. Thus, we consider it necessary for the teaching teams to try out different educational practices that enable improving the results, modifying the teaching-learning process to respond to the needs of the students. In this work, we want to show methodological innovations implemented in the university environment to improve the results obtained by the students of a quantitative subject, in a degree that is not quantitative.

Previously, we have referred to the model implemented at the university level at present. With the implementation of the European Higher Education Area (EHEA), the University has made a firm commitment to a teaching-learning model based on the acquisition of competences. Consequently, training is oriented more toward the resolution of real problems than toward memorizing the content (Tejada & Ruiz, 2016).

Following the Bologna declaration, the students have become the protagonists of their learning process, adopting an active and participatory role, while the teachers supervise the process (Lobato & Ilvento, 2013, García, Troyano & Vieira, 2014). In theory, this should lead to an improvement in student training, which in the University starts a learning process that ought to last a lifetime.

In practice, this paradigm shift must be accompanied by important changes in the teaching methodology, in the evaluation systems and in the teaching resources used (Méndez, 2005, Espinosa, Jiménez, Olabe & Basogain, 2006, Lozano & Romano, 2013). If the student becomes the main protagonist in the process of acquiring skills, the teachers, transformed into companions, go beyond their traditional role as mere knowledge transmitters (Álvarez & González, 2008, Monreal & Gordillo, 2009, Aguaded & Monescillo, 2013; Martínez, Martínez & Pérez, 2014).

In this context, we consider it essential to use teaching methodologies in which Information and Communication Technologies (ICT), such as those developed in the virtual classroom environment and in computer rooms, take on a special role, as they are instruments that facilitate meaningful learning (Padilla, Del Águila & Garrido, 2015, Vidaurre & Vallejos, 2015, García, Yot & Perera, 2016). If in the traditional model the classroom was the only learning space, after the implementation of the EHEA it is considered that the environment should not be exclusively face-to-face. This means that the virtual environment is called upon to assume a greater role, as the EHEA favors the use of ICT as didactic tools that allow improving the teaching-learning process (Escobedo & Arteaga, 2016, García, Yot & Perera, 2016; Guerra, González & García, 2010).

The incorporation of ICT can help solve problems that exist in university classrooms today. Specifically, they can play a key role in:

- Improving academic performance.
- Reducing the drop-out rate.
- Developing group work skills.

We consider that the change of paradigm that the implementation of the EHEA entails has represented an improvement in the educational process, but at the same time it has revealed problems that appear in the university environment.

Regarding the academic results of the students, in contrast to what might be thought, some experts suggest that after the start of the EHEA there has been a reduction in the students' academic performance (Esparrells, 2012).

A second problem that appears in university classrooms is a high drop-out rate. On many occasions, this is related to the training acquired by students in pre-university education, since this training is essential when assimilating the concepts of certain subjects (Mizala, Romaguera & Reinaga, 1999, Sánchez & Miguel, 2006, Muñoz- Comonfort, Leenen & Fortoul-van der Goes, 2014).

This idea acquires a special relevance in the subjects related to quantitative methods (Turégano, 1997, Gascón 1997, García, 2001, Jiménez & Areizaga, 2001, Posso, Gómez & Libeth, 2007, Lozano & Romano, 2016) because part of the student body is not familiar with these methods. Therefore, this lack of understanding of the basic concepts at the beginning of the course leads them to obtain a lower academic performance than expected and sometimes the demotivation prompts them to decide not to do the subject.

As a result, we believe that a training in which ICT have a prominent role can help to achieve the appropriate level for students who do not have it when they enter the University.

The third of the problems is related to the competence of group work. Most of the students do not have this when accessing higher education and it will be necessary to acquire it for their professional integration. This is because when working in any organization they will have to coordinate their tasks with part of the members of the entity.

On the other hand, we have observed in recent years that, although most of the students have a great capacity to function through using ICT- for example, in social networks - they are often reluctant to use them as a complement to the subjects. This is due to their not being aware that when ICT are incorporated into the world of work, they will probably play a fundamental role.

In this context, we consider that the university teaching staff must make an additional effort, increasing teacher training and innovation, so that students who study subjects with the aforementioned characteristics can be adequately evaluated (Méndez & Delgado, 2016; Royuela, López & Claeys, 2010).

In the next section, we discuss the method followed. In the third section, we analyze the main results obtained. The last section presents the main conclusions of the study.

METHOD

In this study, we have carried out a descriptive investigation, based on a non-experimental and transversal quantitative design. Within the descriptive methods, we have chosen the survey method.

1.1 Objectives

Based on these premises and with the aim of improving academic results, reducing the drop-out rate, working on group work and learning the advantages of using computer tools and virtual environments, we decided to introduce innovations that would allow modifying the teaching-learning process of students in a quantitative subject that is taught in a non-quantitative degree, which a priori was another handicap. These innovations were concretized in the implementation of several teaching innovation projects.

To assess whether these objectives are achieved with the implementation of these innovations, our first objective in the study that we present is to quantitatively analyze the academic performance achieved by the students. Knowing the use of new technologies and the virtual classroom and group work are other objectives of this work.

1.2 Sample

The sample has been selected through an intentional non-probabilistic sampling process. This includes students who have done the course during the courses from 2010-11 to 2015-16. Table 1 shows the information of the students taking part. The students were informed of the objectives that were sought and their consent was requested.

Table 1. Population studied

Course	Number of students	% with respect to enrolled
2010-11	42	87.5%
2011-12	41	97.6%
2012-13	42	100%
2013-14	51	100%
2014-15	43	100%
2015-16	42	100%

1.3 Data Collection and Analysis Procedure

As we have commented, we have carried out an investigation based on a quantitative non-experimental and cross-sectional design. We have chosen the survey method, within the different existing descriptive methods, since it allowed us to access the information provided by a large number of students in a short period of time (García, 2004).

The questionnaire items were designed to obtain information related to personal data, previous educational data, study habits, virtual platform management and assessment of the subject. The response time of the initial questionnaire was 15 minutes. This questionnaire included 30 items, of which 15 analyzed the student's profile and 15 were used to analyze the student's assessment and satisfaction. There were different types of questions: closed dichotomous (3), dichotomous in a fan (14) and open (13). Likewise, we have collected the students' perception through informal interviews.

In this paper, we present the results obtained after the implementation of the methodological and evaluative innovations, the information gathered through a questionnaire, the continuous assessment and examination qualifications, as well as interviews with the students.

In relation to the questionnaire that was given to the students, an analysis was previously carried out on its reliability. The students who were analyzed to carry out the reliability study studied the same subject, but in another degree, thus this sample is representative to do the reliability analysis. We obtained a result of 0.78% reliability of the total number of questions, using all the items related to satisfaction.

The data of the surveys, the qualifications and the questionnaire have been compiled in an Excel data file, which has subsequently been treated with the statistical package IBM SPSS Statistics 22. We must point out that we perform different non-parametric statistical analyses of the values obtained, since there is not a normal distribution and the different hypotheses are not met.

RESULTS

Before commenting on the results, we briefly describe the characteristics of the subject and the innovations introduced in order to alleviate or solve the three problems we have identified in university education. The subject in which the innovations have been applied is called "Quantitative Methods Applied to the Social Sciences". It is a compulsory subject of the 2nd Year of the Degree in Political Science and Administration, of the Faculty of Law of the Pablo de Olavide University in Seville. The innovations introduced from the 2011-12 to the 2013-14 academic years have been endorsed by this public university, with innovation projects included in the Call for Action 2, which includes projects aimed at designing and applying new teaching methodologies that are relative to the evaluation system. The granting of the projects and their execution have been positively evaluated by experts external to the University.

The teaching model of the subject is type C1, which states that 50% corresponds to theoretical teaching and the remaining 50% to practical lessons (EPD). The evaluation of the competences acquired in the theoretical classes is done through a written exam, while in the practical classes a continuous evaluation of the individual and group tasks is carried out. We place great emphasis on the continuous evaluation of the subject because we believe that, in line with other authors (Gómez & Naranjo, 2011, Royuela, López & Claeys, 2010, Guitert, Romeu & Pérez-Mateo, 2007, Haslam et al., 2006), this can improve academic performance. Likewise, students must demonstrate their computer skills by taking a test. This establishes a minimum qualification to pass the subject. With this minimum we want to highlight the importance of acquiring ICT-related competences.

Several studies confirm that, to pass quantitative subjects, such as the one we analyze in this work, it is essential to have acquired a minimum competency in pre-university educational levels, since if the students do not understand the basic concepts this will result in a low academic performance (Sánchez & Miguel, 2006; Rúa et al., 2010). Regarding the students who are studying the subject, approximately half of them do not have sufficient previous knowledge to pass it, since they have not done any subject related to statistical methods in the Baccalaureate. That is why we started the subject from scratch, thus avoiding 50% of the students not being able to follow the explanations.

To assess the effect of the innovations introduced with the innovation projects, we studied the results obtained in the previous course to its implementation (2010-11), the three courses in which the innovation projects were carried out (from 2011 to 2014) and the courses 2014-15 and 2015-16 where we do not propose the possibility of carrying out group work.

The first course in which the subject was taught was the 2010-11 academic year and the academic results

were low: the drop-out rate stood at 37.5%, the failures represented 18.75% and the remaining 43.75% passed the subject. In order to improve the academic performance and reduce the drop-out rate, different innovation projects were implemented in the following three years.

During the academic year 2011-12, to promote ICT use the material was made available to students through the virtual classroom and group work was delivered by email. With the completion of group work, students worked on generic competences (such as logical and critical reasoning, basic computer skills and autonomous work) and specific skills (data collection techniques, information search, data processing and analysis, etc.).

The fundamental objective in the 2011-12 academic year was for the students to not initially refuse to do a quantitative subject. With this in mind, great importance was given to individual and autonomous group work, to the use of computer programs and to the management of different statistical sources. The teaching team presented the students with the option of developing a group work (with a maximum of 5 members in each group) on issues related to two fundamental topics of the subject: "Study of the correlation between quantitative variables" and "Study of the association between qualitative variables". Each group had to formulate a similar problem, in terms of complexity, to those who worked in the classroom and in any case one that had a content related to subjects with which they will work when they join the labor market. Also, the problem had to include questions to be solved using concepts learned (such as, correlation or contingency tables, point clouds, regression lines, the Pearson correlation and contingency coefficients). Each work could be completed, including both position measurements and graphs, in order to clarify the approach and the resolution of the problem. At the same time, the suitability of the situation proposed in the area of the degree and if they worked with real or fictitious data was assessed.

As we will see in the Results section, after starting the innovation project, the drop-outs of the subject decreased and the number of passes increased. However, we believe that the results could improve in the following courses, because we verified that the number of failures and the drop-out rate were still very high. For this reason, in the 2012-13 academic year we proposed the realization of group work but introduced variations in relation to the model proposed in the previous course. Specifically, the reduction in the number of members of the group (2-3 people) and the substitution of the topic "Study of association between qualitative variables" by "Construction of indicators in Political Sciences" because we observed that this topic was more complex. Each group had to solve a problem that was posed to them using the acquired competences. To do so, they used double entry tables (correlation or contingency), point clouds, regression lines, series with nominal and real data, etc., being able to present graphs or solve the problem using the Excel spreadsheet or the SPSS statistical package.

Each group work was corrected by the teacher and by the students and to do so they had a rubric, a very useful instrument (Conde & Pozuelo, 2007, Martínez & Raposo, 2011, Raposo & Martínez, 2011, Sáenz, 2011) that was available from the beginning of the course in the virtual classroom. We consider the rubric to be a very valuable instrument when developing group work for two fundamental reasons. On the one hand, the students know a priori how they will be evaluated. On the other hand, each student had to solve a problem related to one of the subjects, while anonymously correcting a problem on a different subject than the one he/she had chosen written by another student, by filling in a rubric that he/she delivered through e-mail. Thus, they had to thoroughly work on the two most important topics of the subject. After implementing these innovations, academic results improved again in relation to the previous year. This made us propose a new project the following year with some variations.

In the academic year 2013-14, we set three objectives: to significantly decrease the number of students who abandoned the subject (as the drop-out rate was still higher than 28%), to increase the number of students who pass the course (less than 67%) and to enhance the students' autonomous learning. The first two objectives could be achieved by carrying out a group work, based on a rubric for its realization and correction, similar to that proposed in the previous course. To achieve the third objective, in the first sessions of EPD, the teaching team gave orientations to facilitate the students' autonomous learning. To control the evolution of this autonomous learning, in all the EPD sessions an individual record was made that enabled knowing the work that the students did before going to class. In this way we became aware of the students who lacked motivation or had problems in following the classes. To correct both situations we put into practice motivation strategies, and guidelines were given to effectively study the theoretical contents and solve the exercises independently. At the end of the 2013-14 academic year, we achieved the objectives set.

In the courses 2014-15 and 2015-16 we decided not to give the possibility of doing a group work, to check the effectiveness of the innovations put into practice, when comparing the results with the previous courses.

Having defined the main innovations introduced, we analyzed the results obtained.

Among the information provided by the questionnaires of the courses 2011-12 to 2015-16, we consider it interesting to comment on the results in the items related to sex and the baccalaureate studied.

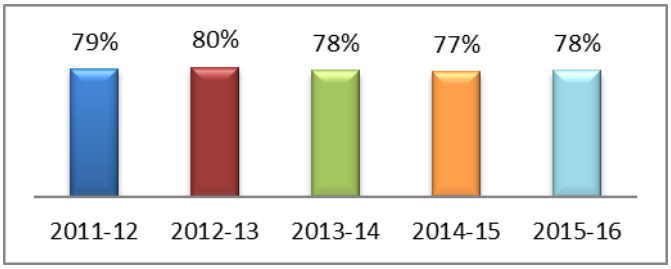


Fig. 1. Percentage of responses to the questionnaires.

Fig. 1 shows the percentage of students who answered the questionnaire, for the academic year compared to the students enrolled. We can see that from the beginning of the course some students do not attend class, because this questionnaire was given in the first two weeks of the semester and the response percentage is not 100%.

Regarding the distribution of the sample by sex, Fig. 2 reflects the percentages of men and women enrolled, with women representing a much higher percentage of the students enrolled in all the courses analyzed.

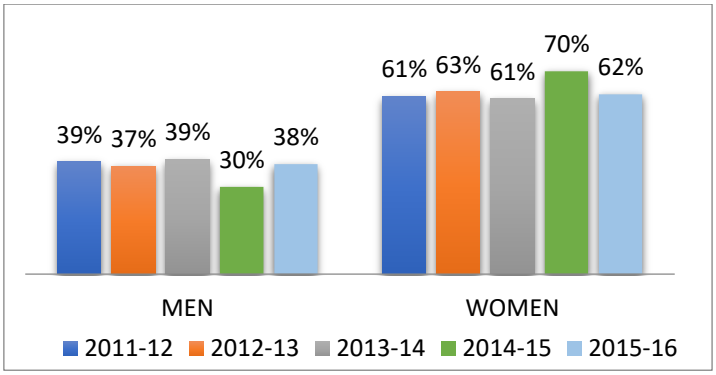


Fig. 2. Percentages of men and women per course.

Considering the type of Baccalaureate studied, most of the students had studied Humanities and Social Sciences (Fig.3) and, therefore, their knowledge in quantitative subjects was limited or non-existent.

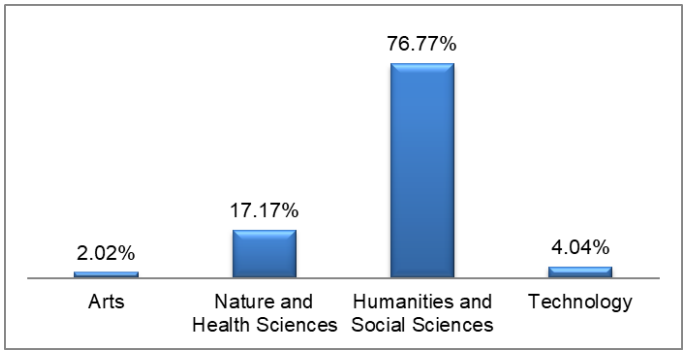


Fig. 3. Type of Baccalaureate studied.

Next, we analyze the consequences of the teaching innovations introduced to solve the three main problems that we consider exist in higher education and how ICT can play a prominent role in solving them.

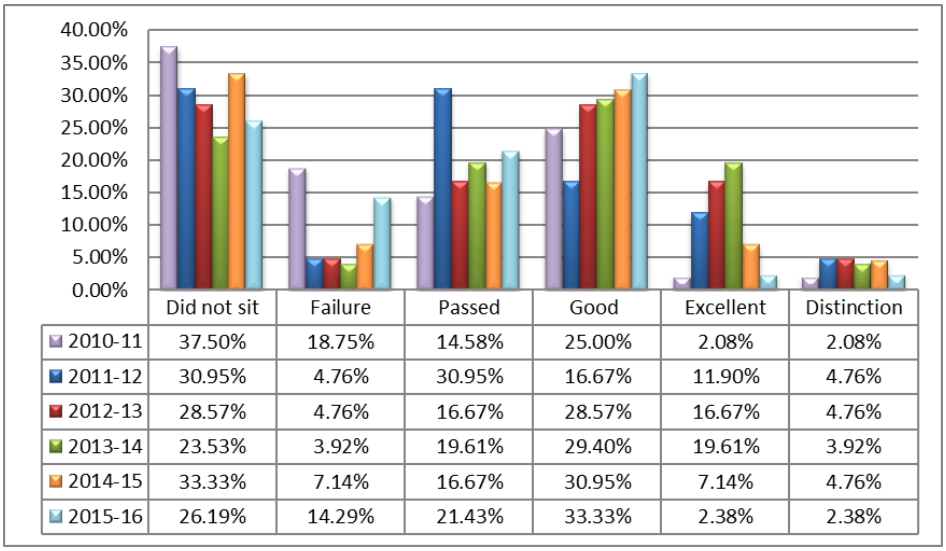
1.4 Drop-out Rate and Academic Performance

Analyzing the evolution of the scores obtained from the academic year 2010-11 (Fig. 4), we see that, on the one hand, the drop-out rate decreased, and, on the other hand, we find that student achievement improves

significantly.

In view of the data, we can say that with the implementation of innovations in the 2011-12 academic year, the number of students dropping out of the subject decreased by 6.55% and the number of those who passed increased by more than 20% (from 43.75 % to 64.29%). And if we analyze the number of passes in relation to those who sat the examination of the course, we see that this reaches 93.10%.

In the 2012-13 academic year, the results improved again: the percentage of students abandoning the subject decreases with respect to the total number of students enrolled (from 30.95% to 28.57%) and the percentage of students who pass the subject increases (more than two percentage points, reaching 66.67%). These data are exceeded, if we take into account the number of students who sit the written exam, because in this case 93.33% pass and achieve higher marks.



	Did not sit	Failure	Passed	Good	Excellent	Distinction
2010-11	37.50%	18.75%	14.58%	25.00%	2.08%	2.08%
2011-12	30.95%	4.76%	30.95%	16.67%	11.90%	4.76%
2012-13	28.57%	4.76%	16.67%	28.57%	16.67%	4.76%
2013-14	23.53%	3.92%	19.61%	29.40%	19.61%	3.92%
2014-15	33.33%	7.14%	16.67%	30.95%	7.14%	4.76%
2015-16	26.19%	14.29%	21.43%	33.33%	2.38%	2.38%

Fig. 4. Evolution of the ratings.

In the 2013-14 academic year, academic performance improved again: compared to the total number of students enrolled, the drop-out rate decreased (from 28.57% to 23.53%) and the percentage of students who passed increased (from 66.67% to 72.55%). If we calculate the percentages with respect to the students sitting the exam, we observe that they increase: 94.87% of those who sit the exam pass the subject.

As we have commented, in the 2013-14 academic year we wanted to evaluate the students' autonomous learning by means of a weekly control in practical classes. In these classes, the students assigned a different score based on their work done before attending class. Being a subjective procedure, we observed that some of the students overvalued their daily work (and in the end they did not get a high mark) and others underestimated it (they were very rigorous when evaluating the daily work that they did and finally achieved high marks).

Fig. 4 also shows that in the 2014-2015 academic year, when no teaching project was carried out, the drop-outs of the subject increased considerably (from 23.53% to 33.33%) and academic performance worsened. These percentages improve slightly in the 2015-16 academic year, although the highest marks decrease. In these two courses, it was decided not to follow up the students to check whether the changes established by the innovation projects influenced the academic results or they had improved due to a conjunctural issue, such as a higher level of students in statistical matters.

Likewise, it is to be said that three tests of continuous evaluation of the subject are done during each academic year. The qualifications obtained in them (Table 2) allow us to know if the students are acquiring the competences of the subject or if it is necessary to reorient the teaching-learning process. In general, the evolution is positive throughout each course.

In relation to ICT, being aware of their importance, from the first day the teaching team has wanted students to become familiar with handling them. To enhance their use throughout the semester, several sessions are held in computer rooms, with specific programs of the subject, such as the statistical program SPSS. The importance that the teaching team grants to acquiring these competences is reflected in the fact that in order to pass the subject it is necessary to achieve a minimum qualification in the final computer science exam.

Table 2. Evolution of the marks obtained by the students during the academic year

Course	EPD 1		EPD 2		EPD 3		EPD global	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
2011-12	4.1067	0.52609	4.2367	0.61188	4.7167	0.63004	4.3533	0.53160
2012-13	6.2833	0.48545	5.9926	0.56136	7.1852	0.47659	6.4870	0.45036
2013-14	4.9085	0.44222	6.1780	0.43431	6.5854	0.43293	5.8907	0.37272
2014-15	7.0450	0.36897	5.2967	0.50168	6.4500	0.33701	6.2639	0.33544
2015-16	4.5804	1.94755	6.2581	2.1757	6.1094	0.2555	3.7781	1.67055

Table 3 shows the computer test scores. Having checked by a test for normality (Shapiro-Wilk) that the distribution of the scores in the computer test does not follow a normal distribution, it was decided to perform a nonparametric test (Kruskal-Wallis) of independent samples and it is observed that there are no significant differences (p-value = .087) during the courses studied. This allows us to state that students relate in the same way to new technologies.

Table 3. Evolution of the qualifications in the computer test

Course	Mean	SD
2010-11	5.3707	3.1585
2011-12	6.0152	4.0131
2012-13	5.0774	3.6007
2013-14	6.2157	3.9424
2014-15	4.7791	3.7097
2015-16	6.5985	2.9638

Likewise, the teaching team conducted a quantitative study of several items included in the questionnaire to better understand the influence of these factors on the subject's drop-out rate and academic achievement. We have noted that the sex variable does not influence academic performance (p-value = .278, obtained by the Mann-Whitney U-test of independent samples).

However, the type of baccalaureate completed does have an influence (p-value = .019, obtained from the Kruskal-Wallis test), as does whether the student works or not, the students who work obtaining lower marks than those who do not work.

1.5 Team Work

As mentioned, during the 2011-12 to 2013-14 courses, students were asked to carry out a group work, in which new technologies played a fundamental role: work guidelines, deliveries and consultations were carried out through the virtual classroom or via email, they used the statistical program SPSS to solve problems, send and correct the rubrics by email, and so forth. In short, the realization of group work became a tool for students to become familiar with ICT and to put into practice their statistical knowledge.

Considering the gender variable, there are no significant differences between women and men in the marks obtained during the course, but there are in the marks of voluntary work (p-value = .02, obtained by the Mann-Whitney U-test of independent samples), the women being mostly the ones who have done it. On the contrary, if we look at the variable related to the baccalaureate studied, we see significant differences in the

scores of voluntary work (p-value = .09, obtained through the Kruskal-Wallis test of independent samples), those that come from the Bachelor of Humanities and Social Sciences being mostly the ones who have done it. This result was expected, given that 70% of the students came from this baccalaureate.

To know the opinion of the students concerning the group work, in the 2011-12 academic year, we conducted informal interviews and the students stated that they were very satisfied with the experience. In the 2012-13 academic year we wanted to formalize the opinion of the students with the experience of group work, giving them a survey of 7 items of dichotomous questions in a fan. This revealed that they considered voluntary group work as an enriching activity and that, therefore, they would recommend it to other students (4.76 on average out of 5, SD 0.53). Likewise, they highlighted the usefulness of having had the rubric to do the work (4.58 on average out of 5, SD 0.67) and of evaluating that of their peers (4.71 on average out of 5, SD 0.65).

In the 2013-14 academic year, the students also considered very useful doing group work (4.73 on average out of 5, SD 0.51), knowing the objectives of the group work (4.45 on average out of 5, SD 0.86), having a rubric to do the team work (4.24 on average out of 5, SD 1.02) and evaluating the group work of their classmates (4.79 on average out of 5, SD 0.64).

1.6 Virtual Platform

Another tool we use to familiarize students with ICT is the university's virtual classroom, where teachers and students interact, through email, virtual tutorials, forums, and so forth. Teachers use the virtual classroom as a means of communication with students, making the content of the subject and the teaching guides available to the students, as well as via emails and forums. The students use it mainly as a means to download the notes and access the platform frequently. Some students are reluctant to use it and try to download all the material on the first day. This is prevented by incorporating the content as the course progresses. To obtain more detailed information about the problems that students have with this tool, we include several items in the questionnaire, obtaining the following results. We verify that the virtual platform was used at least once a week by 95.5% of the students (Fig. 5).

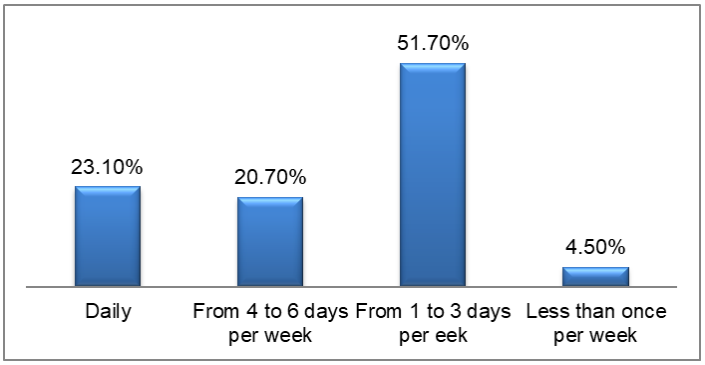


Fig. 5. Use of the virtual platform by the students

Likewise, 81.6% of the students said that it was not complicated to use the virtual platform. Although this is a high percentage, we believe that, in the current context, where the use of ICT in everyday life is widespread, this percentage should improve. The students who were reluctant to use the virtual classroom justified this by problems with the computer application (connection problems, slowness, problems with emails and with updates, and so on), not attributable to not adequately acquiring this competence when taking the course. Therefore, we consider that the competences related to ICT use are acquired by the students throughout the development of the subject.

Considering the sex variable, it can be seen that there are no significant differences between women and men in the use of the virtual platform (p-value = .01, obtained through the Mann-Whitney U-test of independent samples).

Nor are there significant differences between the types of baccalaureate in the use of the virtual platform (p-value = .01, obtained through the Kruskal-Wallis Test of independent samples), the study of Humanities and Social Sciences being the one that was done most. This result is to be expected if we take into account that 70% of the students studied this baccalaureate.

DISCUSSION AND CONCLUSIONS

In this work, we wanted to show how the implementation of methodological and evaluative innovations can improve the results obtained in quantitative subjects. We consider the motivation of the teaching teams to be fundamental. This usually entails the implementation of different work methodologies and there is currently a firm support in the use of ICT. We wanted to verify these starting hypotheses by choosing the case of a statistical quantitative subject in a degree that belongs to the field of Social Sciences: the Degree in Political Science and Administration.

The results obtained with the study allow us to reflect on possible ways to solve some problems that appear in the field of Higher Education. Specifically, we have been able to see that it is possible to achieve an improvement in academic performance, a reduction in the drop-out rate and the acquisition of group work skills through the introduction of methodological and evaluative innovations, supported by ICT management.

And all this has been possible in a subject that presented a priori an additional handicap: being a quantitative subject in a degree that is not quantitative, which is therefore rejected from the start by the students.

Of the different innovations set up, among those best valued by the students are the follow-up of the individual work done prior to attending the class, being able to know the main objectives of group work in advance and the rubrics with which the works would be evaluated. After carrying out an analysis of the results that have been obtained in the courses in which the possibility of carrying out group work (2010-11, 2014-15 and 2015-16) has not been offered, compared to the courses which encouraged teamwork (2011-12 to 2013-14), we conclude that this work methodology has clear positive consequences that result in an improvement of the process of skills acquisition.

Specifically, this fact is reflected in a reduction in the drop-out rate of students, an improvement in academic performance and marks, a greater knowledge and use of ICT and a greater satisfaction with the teaching by both students and teachers.

Consequently, the authors of this paper consider that, although the implementation of methodological and evaluative innovations has led to a considerable increase in the workload of the teaching staff, we have achieved the objectives set, and this has been reflected both in the competences worked on and in the academic results obtained by the students.

We believe that this study can be strengthened in the future by expanding the number of subjects, courses and degrees in which the innovations that we have tested in this research carried out over six academic years, as well as by applying it in both public and private universities.

Likewise, in the medium term we think that the results can be improved, taking into account the results of new experiences that are developed on a national and international scope. The exchange of good practices, the permanent training of teachers that bears in mind the career opportunities of the degrees and the support of teaching methodologies in ICT will, we believe, enable improving higher education in the medium and long term. And all this considering that the ultimate goal of this improvement of the process of skills acquisition is to start on a lifelong path which we believe will facilitate the employability of graduates, one of the objectives established in the framework of the EHEA.

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