TRAINING AUTONOMOUS MANAGERS FOR A DYNAMIC ENVIRONMENT[♦]

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Abstract

Purpose: the goal of this paper is to explore self-regulated learning among university students, the role played by motivation and its impact on academic performance. This paper presents a teaching strategy aimed at self-regulation which draws on the educational value provided by the evaluation system.

Design/methodology/approach: this research includes a quantitative analysis to examine the dependency relation between self-regulation, motivational orientation and academic performance. The impact of the teaching strategy on the relation between self-regulation and academic performance is also explored.

Findings: the findings indicate that self-regulation is closely linked to motivational orientation and is a determining factor in academic performance. In addition, implementing a teaching strategy focusing on self-regulation alters said relation.

Practical implications: this research reflects the value of fostering the level of student self-regulation with a view to enhancing not only their current learning, but also the self-directed learning that will ensure professional success. The research also evidences the potential of the evaluation system for encouraging the development of self-regulation.

Originality/value: the conclusions to emerge from this research will help educators gain an awareness of the usefulness of strengthening student self-regulation and the potential offered by the evaluation system as a teaching resource. This research also merges extremely interesting elements –student self-regulation and the evaluation system- which to date have not been explored jointly.

Keywords: self-regulated learning, motivation, teaching strategy, evaluation system and academic performance.

Paper type: Research paper

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1. INTRODUCTION

Modern-day managerial activity is conducted in complex and dynamic environments. Firms thus require workers who possess not only substantial theoretical and practical knowledge but who are also capable of adapting to such complex and dynamic contexts (Fallows and Steven, 2000). In short, firms need active people with a critical capacity and a reflective attitude (Asher, 2005). University education must rise to the challenge of preparing students for what is an increasingly dynamic, social, economic and technological milieu, and creating students who are capable of learning and reflecting on their actions and the implications these might have. This new objective is furthered by the fact that for years we have been witnessing ever-more wide-ranging and diversified teaching methods that provide the support for business management training (Robinson et al., 2016; Scott et al., 2016). In this regard, the role of the educator cannot be confined to merely conveying knowledge but must also face up to the challenge of fostering student self-regulated learning as a necessary channel for the future development of professional skills. Self-regulated learning offers the possibility of training independent learners who are able to manage their own study process and to develop the skills required to achieve success both inside and outside the academic world.

Self-regulated learning refers to students' proactive approach when focusing their own learning process and is a skill related to individual traits such as motivation and contextual learning variables. The literature also stresses that self-regulated learning is linked to the application of deep learning approaches (Pérez et al., 2011; Núñez et al., 2011) which enable students to achieve high levels of mastery of the subject and to enhance their academic performance (Zimmerman, 2002; Núñez et al., 2006; Salmerón and Gutiérrez-Braojos, 2012; Vázquez and Daura, 2013).

Research has also shown that self-regulation can be both taught and enhanced by using the appropriate strategies (Zimmerman, 2008; Rosário et al., 2010; Fernández et al., 2013), which is a clear invitation to devise teaching strategies aimed at developing student self-regulation. It is the teachers who are responsible for encouraging students to acquire the specific knowledge involved in the particular subject matter. Yet educators must also assume the responsibility of ensuring students acquire other

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useful skills, such as the skill of "learning to learn", that will help them when seeking to find their way in the job market. With these goals in mind, educators organise and design teaching resources that guide student learning (Wilson and Fowler, 2005; Gil and Padilla, 2009). Of all the resources available to teachers, the evaluation system is the one that arouses the greatest interest among students and which most shapes their learning strategies (Cambra-Fierro and Cambra-Berdún, 2007a). As a result, the evaluation system offers training that can be used to encourage student self-regulation.

The present research explores the self-regulated learning of undergraduate students in Business Administration and Management at the University of Valladolid. We also present an action plan aimed at boosting the level of student self-regulation and we examine how this teaching strategy affects the relation between student self-regulation and their academic performance.

2. SELF-REGULATED LEARNING

The term self-regulation underscores students' self-regulated learning and refers to the skill known as "learning to learn", a basic skill on which lifelong learning is grounded. Academic self-regulation is perceived as action performed by students at various moments during their learning process. Self-regulated students first and foremost participate actively in their own personal learning processes (Zimmerman, 1989: 329). Self-regulation is conceived as an active process in which students set out their principal learning goals and seek to understand and control their cognitions, motivations and behaviour in order to achieve said objectives (Valle et al., 2008; Polydoro and Azzi, 2009; García, 2012).

Students who self-regulate their learning supervise their goal-related behaviour and reflect on the progress being made. This furthers their personal satisfaction and motivation to continue and enhance their learning technique, which ultimately leads to improved academic performance and brighter prospects for the future (Núñez et al., 2011; Pérez et al., 2011; Rosário et al., 2014). Self-regulated students thus apply deep learning strategies (more focused on understanding than on reproduction) which in

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the short term leads to improved academic performance and in the long term to developing better skills (Cleary and Chen, 2009, Fernández et al., 2013). This accounts for the link between self-regulation and the ultimate outcome of the learning process (Daura, 2011, 2015; Vázquez and Daura, 2013).

Several personal as well as learning context variables are involved in self-regulated learning. Student motivation is a key variable in students' learning process and in their level of self-regulation. In this regard, the present research distinguishes between intrinsic and extrinsic motivation (Pintrich and García, 1993; Moldasheva and Mahmood, 2014). Extrinsic motivation refers to what drives students to undertake a given action in order to satisfy motives that are not related to the activity itself but rather to achieving other goals such as getting good grades or gaining the approval and recognition of others (Lamas, 2008). In extrinsic motivation, behaviour is guided by the desire to achieve a goal or reward that is beyond the activity itself. Intrinsic motivation refers to what drives students to undertake action out of their own interest in the activity. On the part of the student, intrinsic motivation is linked to a deep learning approach and, as a result, to superior educational achievement (Maquilón and Hernández, 2011; Santos and Vallelado, 2013). Intrinsic motivation includes higher order factors and guides behaviour with pleasure or enjoyment. Research shows that intrinsic motivation, as compared to extrinsic, uses increasingly effective learning strategies, leading to enhanced academic performance (Moldasheva and Mahmood, 2014). Furthermore, a close link has been shown to exist between self-regulation and intrinsic motivation (Zimmerman and Schunk, 2011; Fernández et al., 2013).

In sum, it may be concluded that self-regulation is a much sought-after skill in the learning process. In addition, research has highlighted that said skill can be taught through instruction and the repeated practice of experiences in the academic context (González, 2001; Pozo et al., 2001; Núñez et al., 2006; Zimmerman, 2008). Individuals develop the capacity for self-regulation based on four levels: observation, emulation, self-control and self-regulation (García, 2012). Designing appropriate teaching strategies is a tool that can help develop and encourage student self-regulation. Educators have a range of elements at their disposal to help them devise their teaching strategy. Of these, evaluation is one of those to arouse the greatest interest among

students, above the actual goals established, the teaching methodology or the resources used. Depending on how intense the evaluation is, as well as the procedure and level of requirements this demands, students adjust their efforts, focus their study of a given subject matter, and intensify their work accordingly (Gil and Padilla, 2009; Cambra-Fierro and Cambra-Berdún, 2007a, 2007b). It can thus be deduced that the evaluation process contains a formative dimension and, therefore, may serve as a linchpin when devising the teaching strategy that guides the learning process.

Therefore, in the present research we posit the design and implementation of a teaching strategy aimed at boosting student self-regulated learning. The teaching strategy focuses on the system for evaluating students. The design of the evaluation system must make students able to assess their own progress and to feel they are an active part of the learning process (Cassidy, 2006; Cambra-Fierro and Cambra-Berdún, 2007b). In this sense, the evaluation system must form part of the overall learning process and must act as a guiding light for students. In addition, students' academic performance can be improved if they think and reflect not only upon the content of their curricula or subject matter but also on the effort they put in and their attitude towards it (Irving et al., 2003). Students need to know what the result of their activity is in order to be able to determine their position in relation to the demands made of them and the objectives they need to fulfil. This possibility of control also exerts an important motivating effect. For this reason, students need to know regularly and immediately the results of their activity. Moreover, students' attitude towards the evaluation itself depends on the information they receive (Robinson, 2001). As a result, students must be familiar with the design of the evaluation system at the start of the learning process and must also be provided with the outcomes of the evaluation as soon as possible.

3. EMPIRICAL APPLICATION

The empirical application seeks to measure the level of self-regulation of an analysis group and the relation this has with motivational orientations. In addition, we explore the effect of students' self-regulation on their academic performance. Finally, we examine whether introducing an evaluation system aimed at student self-regulation impacts on this relation.

3.1 Analysis context

The analysis group is made up of undergraduate students in Business Administration at the University of Valladolid (Spain). Specifically, we analyse, in comparative terms, students taking two courses in the area of Business Organisation: "Operations Management" (120 students: 65 female and 55 male) and "Introduction to Business" (189 students: 93 female and 96 male) during the 2015/2016 academic year.

When teaching commenced, students taking the courses were provided with the basic content of the subject matter together with additional information relevant to the course. Said information included the teaching guide, the content structure set out in thematic blocks, the number of hours devoted to teaching theory and practical aspects in each block and the timeline in thematic blocks. As regards the content, the course teacher provides students with the relevant bibliography together with some guides that help them to follow the progress of the lessons and to prepare the subject matter. As for the courses, "Operations Management" (OM), a third year second semester course, deals with topics related to a firm's operational sub-system. The literature recognizes that the concepts, principles and strategies taught in this course are difficult to comprehend for students (see, among others, Alfalla and Machuca, 2001; Yazici, 2006; Fish, 2008; Alfalla et al., 2011). The course merges theory with practical applications involving quantitative problem-solving. As a result, the course material also includes numerous practical exercises to be solved either in class or by the students on their own. Also provided are so-called "self-evaluation practical exercises", in other words exercises that have appeared in past examinations and thus help students to familiarise themselves with the practical application required in the course, and which also serve as a pre-test when taking the practical tests and the final exam. "Introduction to Business" (IB) offers an introduction to business administration and primarily offers theory. The course is taken in the second semester of the first year and requires hardly any previous knowledge.

During the first lessons of the courses selected for this study, we conducted the surveys aimed at gauging students' level of self-regulation as well as their motivational orientation. In order to reflect self-regulation, we used the questionnaire proposed by Contreras and Lozano (2012) which is extremely easy to fill out. Specifically, it consists

of 12 questions, each with four possible answers, and each allocated to a different level of self-regulation (high, average, low, very low). For each question, the student indicates the answer they most closely identify with. The number of answers corresponding to each level of self-regulation considered is then counted. Using these scores, a self-regulation indicator is then calculated as a weighted sum of the student's score in the various levels. This indicator ranges from 12 to 48 points, and is finally converted to a scale of 0 to 10.

In order to represent motivation, we drew on the Higgins "Regulatory Focus Theory" (RFT) (1997, 1998). This theory posits that individual behaviour is shaped by two alternative focuses: promotion focus and prevention focus (Baron, 2004; Brockner et al., 2004). Promotion focus individuals are keen on progress, development, success and display intrinsic motivation. Prevention focus individuals are more concerned with safety, stability, display a great commitment to obligations and exhibit extrinsic motivation. Promotion focus individuals are particularly interested in personal goals, whereas prevention focus individuals pursue goals that are more closely linked to obligation or professional responsibility (Brockner and Higgins, 2001). In order to represent individuals' motivational orientation, we used the Arnold and Reynolds scale (2009), based on Semin et al. (2005), which includes six items that deal with prevention motivation (extrinsic) and six items addressing promotion motivation (intrinsic).

Academic performance provides the benchmark to gauge the outcome of the teaching-learning process and is considered an indicator of the level of learning attained by the student at the end of the process (Santos and Vallelado, 2013). It is defined as the subject's productivity, the final outcome of applying their efforts adjusted by their activities (Santos and Garrido, 2015). In order to represent this, we drew on the grade/mark awarded to the student in the course being analysed.

3.2 Designing the teaching strategy: action plan

In order to encourage student self-regulation, we designed a plan of action – henceforth PA- which is grounded on the evaluation process and which we

implemented in the OM course. We selected this course because it was a core course in the bachelor's degree in Business Management and Administration and since it is perceived by students to be a difficult course.
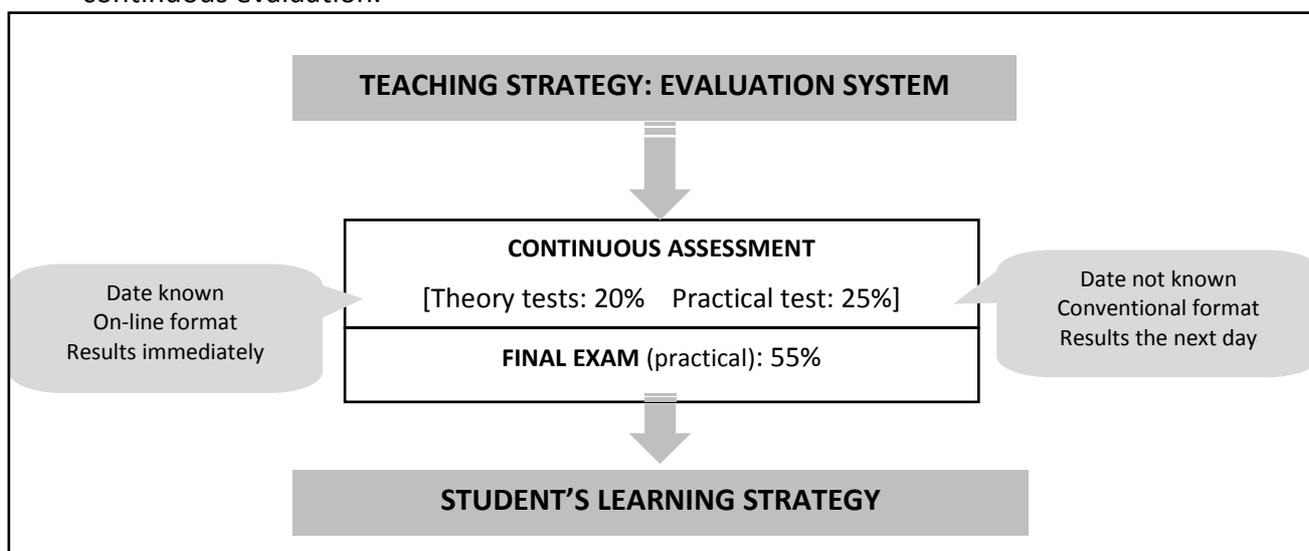
The PA involved instilling in the student regular dedication in the follow-up and preparation of the subject matter as well as a feeling of responsibility towards the outcomes of their learning process. In this sense, the aim was to provide students with elements that would enable them to establish objectives in their learning process and above all to appraise their progress. With this purpose in mind, the evaluation system was designed (Figure-1). Specifically, it was established that the course evaluation should involve a final examination covering all the subject matter (55%) together with the marks awarded for a series of activities carried out during the course and which might be termed "continuous evaluation" (45%). The final examination only consists of activities which have a practical application. Continuous evaluation consists of two tests which assess students' knowledge of theory (20%) and three which have a practical focus (25%). In addition, students are informed that all the continuous evaluation tests are voluntary and that no minimum thresholds are established which determine whether or not students may take the final exam or what final mark they are awarded for the course. Certain conditions governing the evaluation process are also set out. The tests which assess students' knowledge of theory are given once the content has been taught and consist of a series of questions that have only one correct answer. Students are notified of the test one week before it is to be taken. These tests are taken on-line through the Moodle platform[3] which enables a multiple-choice test to be given and to be self-corrected (Padilla-Meléndez et al., 2015). We feel this instrument to be very suitable to our purpose since it allows the marks to be known almost instantaneously (as soon as all the students have finished the test) in addition to which it relieves the teacher of a great deal of work. The practical continuous evaluation tests are taken in the classroom and students are given no prior warning of when they will take place. The final exam involves only practical applications and is held on the day set for the official examination for the course. As pointed out

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[3] Moodle is a learning platform enabling teachers to design private websites for their courses. Among other resources, teachers can upload contents, add gradable tests and collaborative activities.

previously, no minimum thresholds are established in the continuous evaluation and any student may sit the final exam.

The results of the practical continuous evaluation tests are published the day after the tests are taken. The average mark for the group is made public, the answers to the practical application are given and the most frequent errors are discussed. Publishing and discussing the marks provides students with almost instant *feedback* on the mastery, or otherwise, of the content and allows them to see their marks in the context of the group, such that a low mark in a difficult test (with a low average mark in the group) enables them to put their performance into perspective. In addition, the continuous evaluation practical exams which assess the practical content allow students to gauge their knowledge of the practical application of the content, whilst knowing that it will have only a limited impact on their final mark for the course. As a result, the effects of these tests are asymmetrical. Obtaining a high mark will act as an incentive for students to prepare the upcoming content. It will also contribute to the final mark for the course and provide assurance in the sense that the practical applications will be dealt with in the final exam without difficulty. In contrast, a low mark will have little impact on the final mark but will act as a warning as to how little a student has mastered the content assessed. It should also be highlighted that the practical content tests in no way reduce the amount of subject matter students will be tested on in the final examination, whatever the marks they may have obtained in the continuous evaluation.

TEACHING STRATEGY: EVALUATION SYSTEM

CONTINUOUS ASSESSMENT

[Theory tests: 20%   Practical test: 25%]

FINAL EXAM (practical): 55%

Date known
On-line format
Results immediately

Date not known
Conventional format
Results the next day

STUDENT'S LEARNING STRATEGY

**Figure-1**: Teaching strategy aimed at boosting student self-regulation.

This is therefore a PA which focuses on evaluation, yet from a holistic standpoint – global and comprehensive- and which is not restricted to setting conventional style examinations, but posits a series of activities that have a value and a meaning relevant to the learning process and which focus on developing self-regulation. This strategy also contributes to enhancing self-esteem and emotional control when facing the stress brought on by evaluation processes.
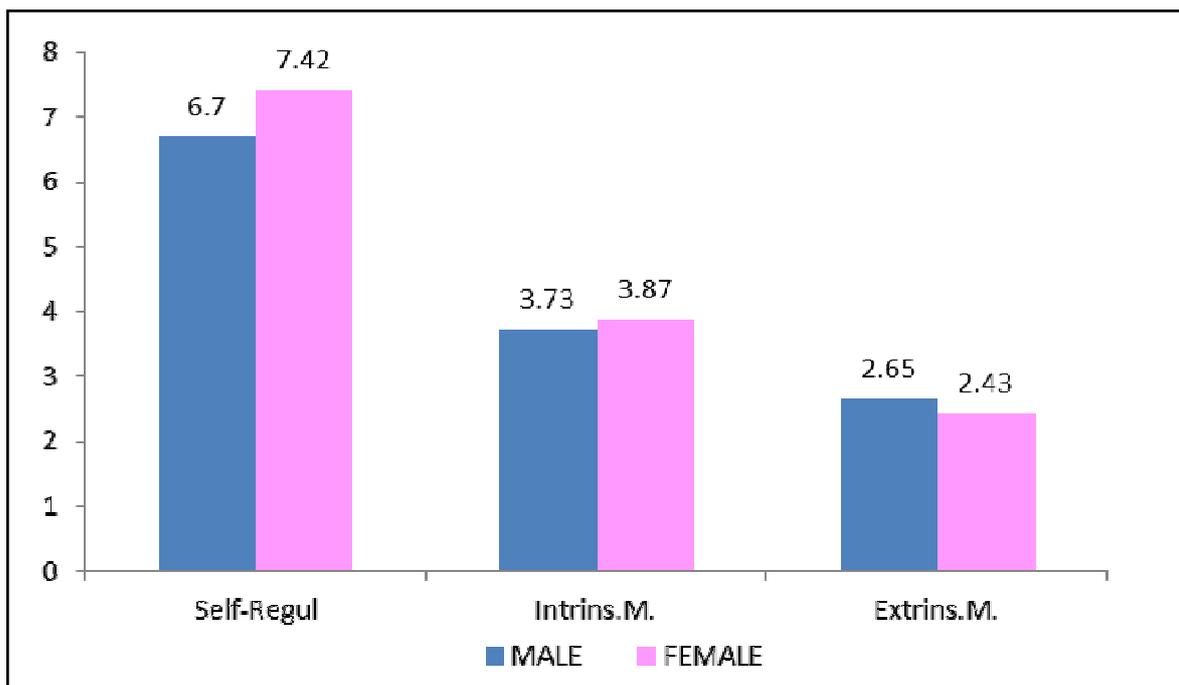
3.3 Analysis of the results

We now look at the indicators of the self-regulation variable, the focal point of our study, and its link to other variables such as motivation and academic performance. Analysis of the results is divided into two stages. In the first, we comment on the behaviour of self-regulation in the two analysis groups we worked with and the link to the motivational focus. In the second stage, we then explore the dependency relation between academic performance and the level of self-regulation.

First stage

In this stage, we analyse the data concerning the self-regulation and motivation of the students in the sample. We are primarily interested in ascertaining whether these variables reveal contrasting behaviour in the courses selected (Graph-1). To achieve this, we calculate the descriptive statistics and conduct a difference of means test.
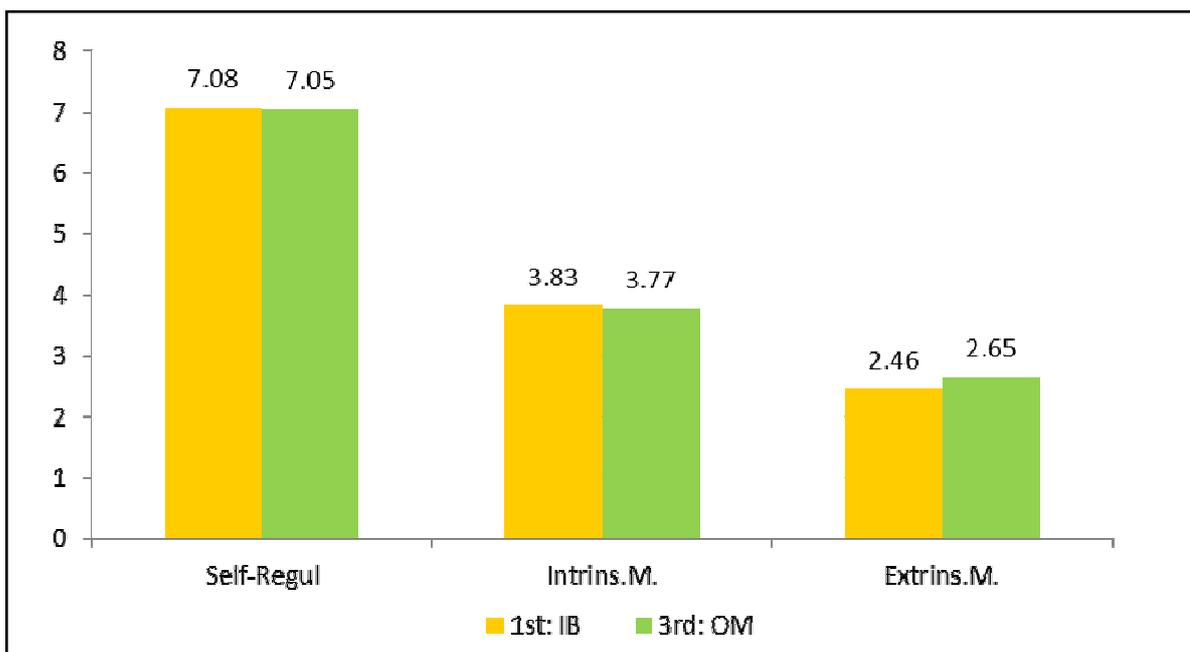
Graph-1: Indicators by group.

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Graph-2: Indicators by gender.

The results obtained indicate that the level of self-regulation is very similar in students in both of the groups analysed (in the two groups, the indicator is around 7 out of 10), despite the difference in academic level between them and, as a result, in age (F= 0.025, Sig. 0.087). It can thus be inferred that over the two academic years which separate the two groups, students do not significantly improve their level of self-regulation, at least in an aggregate manner. As regards motivational orientation, our attention was drawn to two questions. Firstly, in both groups the intrinsic motivation exceeds the levels of extrinsic motivation (Intrins.M reaches an average of 3.80 compared to an average Extrins.M of 2.54). Secondly, the results show that significant differences emerge between first and third year students with regard to extrinsic motivation (F=7.55, Sig. 0.006), with those in the third year displaying the highest levels. We therefore infer that students have strengthened their commitment to their obligations over the two year gap.

If we compare the results by sex (Graph-2), we find significant differences both in the level of self-regulation (F= 27.47, sig. 0.00) and in the motivational orientations (Intrins.M: F= 5.23, sig. 0.02; Extrins.M.: F=11.01, sig. 0.00). Specifically, female students exhibit the highest degree of self-regulation and intrinsic motivation. Nevertheless, male students score higher on extrinsic motivation. If the comparison of

students by sex is carried out among students in the same academic year, similar results are obtained. Among first year students, significant differences by sex can be seen in the level of self-regulation (higher among females) and in extrinsic motivation (higher among males). In the case of third year students, significant differences are seen both in self-regulation and in motivation, in line with the overall outcomes. It would seem that in the two academic years the differences between sexes with regard to intrinsic motivation are accentuated: compared to their male counterparts, female students become noticeably more motivated by progress, development, success and personal goals.

To conclude the study, we now analyse to what extent the level of self-regulation depends on the various motivational orientations and on gender. For this purpose, we estimate a regression model for students in the two groups (Table-1).

Dependent variable: SELF-REGULATION	3rd year students: OM	1st year students: IB
R² adjusted	0.369	0.289
F (Sig.)	24.33 (0.00)	37.88 (0.00)
INTRINS M.	β: 2.48**	β: 2.96**
EXTRINS M.	β: -1.68**	β: -2.98**
GENDER	β: 2.55**	-

Table-1: Results of the model estimation.
*: 95% level of significance
**: 99% level of significance

Estimation of the models shows that the motivation variables prove extremely relevant vis-à-vis explaining the variability of self-regulation, as can be seen in the goodness of fit of the models (third year students: F= 24.33, sig. 0.00; first year students: F=37.88, sig. 0.00). Moreover, in the case of students taking "Operations Management" (third year), motivational orientations and gender jointly endow the model with enormous explanatory power (R^2 adjusted reaches almost 40%). As expected, results indicate that self-regulation displays a very close relation to motivational orientation. Specifically, it is positively linked to intrinsic motivation and also closely, although negatively, to extrinsic motivation. Furthermore, in the case of

third year students, gender also proves to be determinant in the sense that it is usually the females who display greater levels of self-regulation.

Second stage

In order to round off the study, we examined to what extent students' academic performance is due to their level of self-regulation. More specifically, we were keen to ascertain whether this relation evidences any differences in the two groups analysed, bearing in mind that in the OM course we implemented a PA aimed at boosting self-regulation. Since we were working with two analysis groups in two different courses and with different evaluation processes, we feel that the academic performance of students in the different groups is not comparable. As a result, we did not posit any comparative study by groups. Nevertheless, it should be highlighted that both the final marks in OM and the students' appraisal of the course were significantly higher than those of preceding years. In this regard, students expressed an extremely favourable opinion of the course both in terms of how it was taught and in the final results[4].

As for the dependence relation between self-regulation and academic performance, we estimated a linear regression model for each of the groups analysed (Table-2).

Dependent variable : ACADEMIC PERFORM.	3rd year: OM	1st year: IB
R^2 adjust.	2.6%	9.9%
F (Sig.)	4.18 (0.04)	21.55 (0.00)
AUTORREG	β: 0.163*	β: 0.092**
INTRINS M.	-	-
EXTRINS M.	-	-
GENDER	-	-

Table-2: Results of the model estimation.
*: 95% level of significance
**: 99% level of significance

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[4] To verify this, readers may refer to the surveys conducted regularly by the University of Valladolid among students to gauge the level of satisfaction with courses and teaching development.

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The self-regulation variable proved highly significant in both models, a fact borne out by the significance test of the model (3rd year students F= 4.18, sig. 0.04; 1st year students: F= 21.55, sig. 0.00). Self-regulation is thus seen to be determinant when explaining the variability in students' academic performance and, as expected, displays a clearly positive influence. This underscores the value of implementing teaching strategies aimed at encouraging self-regulation as a means of enhancing learning outcomes. Furthermore, the findings show that the explanatory power of self-regulation is substantially higher among first year students (the level of significance is 99%), compared to those in the third year (the level of significance is 95%). This result brings to light a key issue, namely that in the group of third year students, the PA has exerted a disciplinary effect on the regular follow-up of the course and has led students to become aware of the role they play in achieving enhanced performance. As a result, the teaching design of the course has enabled individual problems in the level of self-regulation to be overcome and, as a result, has meant said difficulties have had less of an impact on academic performance.

It may be concluded that applying such a strategy aimed at self-regulation enables the effect of a low level of self-regulation in students to be offset and favours deep learning as well as a better understanding of concepts and relations in the subject. Likewise, the PA allows student self-regulation to be taught and for students to learn how to learn.

4. CONCLUSIONS

The present research is the result of an interest in exploring the issue of self-regulation as a skill able to encourage independent learning in our students and proves key to their professional future development. Self-regulated learning is a process which involves a proactive focus on the part of students aimed at guiding their learning process and which invites them to engage in lifelong learning. Self-regulation is linked to other individual variables, prominent among which is the student's motivational orientation, specifically an intrinsic motivation. The literature also points out how self-regulation can be taught and enhanced within the learning process. Devising an

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appropriate teaching strategy enables individual self-regulation to be taught and strengthened. As a result, we feel that exploring the level of our students' self-regulation and delving deeply into designing teaching strategies aimed at fostering student development is an issue of interest.

For the analysis, we use as a reference a group of university students taking a degree in Business Administration in two core courses in the area of Business Organisation: "Operations Management" and "Introduction to Business". In the two groups, we explored students' level of self-regulation and the relation this has with motivational orientation and gender. The results confirm the close link between self-regulation and motivation, which proves positive in the case of intrinsic motivation and negative in the case of extrinsic motivation. In our study, the two groups of students analysed display similar levels in intrinsic motivation and, with this, similar levels of self-regulation. However, when comparing students in terms of gender significant differences in the two motivational orientations do emerge and, as a result, also in the level of self-regulation, with this being greater among females. It may thus be concluded that the teaching strategies aimed at fostering self-regulation prove particularly appropriate in either of the two academic years in the degree although chiefly so for students who display a predominantly extrinsic motivation.

Having accepted the central notion set out in the study, namely the value of boosting and fostering student self-regulation, the challenge which remains is to devise teaching strategies that will help achieve such a goal. To accomplish this, we need to redefine certain elements of teaching, capitalise on the possibilities afforded to us by new technologies and to merge different resources. In line with this, we have designed a PA which was introduced in the course on "Operations Management". Aware of student interest in the process of evaluation and its ability to guide learning, the PA is based on an evaluation system. The idea is not only to put forward a continuous assessment system that encourages students to engage in regular follow-up of the subject matter but also to make students aware of the usefulness of activities which have a value and relevant significance within the development thereof. The PA thus helps evidence the active role played by the student when following up and benefitting from the course.

To complete the study, we explore the link between self-regulation and academic performance in students and compare the outcomes in the two groups.

The results obtained reflect how relevant a role self-regulation plays when explaining learning outcomes. Self-regulation is thus seen to lead to higher levels of academic performance, no doubt evidencing a deeper and more relational learning of the subject matter. In the latter, it has been shown how, in the short term, implementing a PA has helped offset individual shortcomings with regard to self-regulation. It should be remembered that the effects of self-regulation do not end there. In the long term, said skill ensures the student's ability to learn, thus providing an additional incentive for work to be carried out thereon. Applying the strategy aimed at encouraging self-regulation also serves to foster within the student the skills that will allow for autonomous learning in their future professional career. In sum, applying teaching strategies aimed at fostering self-regulation provides multiple benefits which more than make up for the effort involved in setting it in motion. All of this helps to make further progress when training independent students who are capable of facing up to the challenges posed by a changing and uncertain environment.

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