

The Teaching of Psychology through learning activities from a multidisciplinary approach: increasing motivation and performance

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Learning activities may affect specific aspects of certain disciplines and an effort to increase motivation in our students is needed. This study deals with an activity in which students handle content close to two Psychology subjects (Personality and Social Psychology). The main aim was to relate concepts that are approach from the two disciplines by different, but similar, points of view and to increase students' motivation by their active implication in a learning activity. Students conducted real research which managed theoretical content of these two courses. Two groups of students (experimental and control) participated in this study (N=286). Our results show a significant increase of the participants in this experiment in academic performance in both courses. Participants in this activity have achieved better final grades than their non-participant peers (in both disciplines), and also improved their own performance, enhancing their grades in comparison with the ones they obtained in the first semester. Finally, our results show that there is an increase in performance with these methodologies, even when the subjective assessment of students about their motivation is not so positive.

Key words: Training in skills, learning activity, motivation, performance.

La enseñanza de la Psicología a través de actividades desde una perspectiva multidisciplinar: aumento de la motivación y rendimiento. Las actividades de aprendizaje en la enseñanza superior deben tener en cuenta que puede afectar a más de una disciplina y que es importante incrementar tanto la motivación como el rendimiento. Nuestro trabajo consistió en un experimento en el que se integraban conocimientos de dos materias (Psicología de la Personalidad y Psicología Social). Estas materias abordan algunos conceptos comunes y se pretendió aumentar la motivación de los alumnos implicándolos activamente en esta actividad que consistió en un experimento real. Participaron dos grupos (experimental y control) (N=286). Nuestros resultados muestran un incremento significativo en el rendimiento en las dos materias para los alumnos del grupo experimental. Además, consiguieron mejores notas e incrementaron su rendimiento, incluso aunque su evaluación subjetiva sobre su motivación no fuera tan positiva.

Palabras clave: Entrenamiento en habilidades, actividad de aprendizaje, motivación, rendimiento.

The study on the variables that influence and predict academic performance is a constant question in educational research (Martín, Martínez-Arias, Marchesi & Pérez, 2008; Jiménez & López-Zafra, 2009). The paradigm shift for school, from classic cognitive model to self-regulated learning model, has brought a new direction for research and learning is considered the active construction of knowledge, the pupil is the central element of the teaching-learning process (González-Pienda *et al.*, 2003). Therefore, the analysis of performance has attracted a great attention and, among other results we have to highlight the importance of intelligence (Almeida, Guisande, Primi & Lemos, 2008), emotional intelligence (Jiménez & López-Zafra, 2009), attentional processes or mindfulness (León, 2008), or structural variables, as the organization of the classes and contents or the way to learn, among others. This is the great change and chance that European Higher Education has promoted in the context of the university.

Teaching Psychology within the framework of higher education implies a new more planned concept of courses. Until now, and especially in the context of university teaching, teaching-learning process has been excessively marked by a purely cognitive model (concepts, relationships, theories...), leaving aside procedural and attitudinal content (Ausubel, Novak & Hanesian, 1986; Carey, 1991). In addition, this system emphasizes the learning and work of the student (Mas & Medinas, 2007). To this end, new learning experiences are being devised in which the student is an active part of this process. However, most of the activities are used exclusively to develop partial aspects of a competence in specific topics. And this is despite the fact that the methodology associated with the ECTS offers opportunities for studying content from different complementary perspectives.

One way to generate hypotheses is to use scientific knowledge, theories or strategies of various disciplines to create a common ground of explanation (Wilson, 1999). There is broad consensus in the idea that students' performance will be improved by the application to education of the procedures that are useful in science (Gil *et al.*, 1999).

The areas of Social Psychology and Psychology of Personality, Psychological Assessment and Treatment have in common part of their history, and have much closer ties than with other areas of psychology, as some authors and content or topics are common to both disciplines. Therefore, it is much more rewarding for the student to obtain an overview of a single phenomenon taking into account the contributions of both areas.

Moreover, the relationship between motivation and performance is well established in the literature (González-Leandro & Pelechano, 2004; Navarro, 2003). The study of motivation implies several problems (González, 2005). According to Garrido

(2000), the main problem may be the large number of meanings associated with the word "motivation" (impulses, incentives, expectations, volition, interests, goals or attributions). Possibly the most motivational aspect related to academic performance is intrinsic motivation (Reeve, 2002). Intrinsic motivation relates to the self-regulation of behaviour and the internal attributional style, which stimulates an orientation towards autonomy (Eysenck, 1985). Self-regulation theory distinguishes meta-cognitive, motivational and behavioural aspects of learning (Boakaerts, 2006). These skills determine how students regulate their learning in order to attain their goals. Research shows that students with higher self-regulatory skills perform better (Boakaerts & Corno, 2005). Thus, a joint venture between disciplines with a high degree of independent and autonomous work should have all the conditions to increase the academic performance of college students, and this would be specially the case in high motivated students.

In this study, a research activity that covered common content from both courses was implemented. The students participated in the whole research process, and were given full control of the activity. As a general objective, our intention was to develop an explicit set of skills that would improve performance in the fields covered by this educational innovation. As a hypothesis, it was expected that the participation of the students in all phases of an actual experiment increased: 1) the students' motivation, 2) the subjective perception of acquiring skills and 3) the performance of the student.

METHOD

Participants

286 students from the first year of Psychology at a University in the South of Spain volunteered to participate in this experience. They had to be enrolled in both courses: Social Psychology and Psychology of the Personality. They were divided into two groups: Group 1 (59 students) consisted of those who carried out the experiment and Group 2 (227 students), those who did not carry out the experiment. All students in group 1 were volunteers who were enrolled for the first time in both courses, and teams of three members were formed (20 teams). There should have been 60 students, but one of them left the experiment for personal reasons once it had started, and it was not possible to replace him with another. Thus, one of the teams in group 1 consisted of two members only, while the other 19 teams contained three members. Group 2 consisted of students who did not want or who were unable to participate in the experiment (either because they were not enrolled in the two courses, or it was not the first time they were enrolled in one of the two courses, or because they were not randomly chosen, despite their request to join group 1).

Instruments

In this study we used the following instruments:

Academic results obtained by the students in the two semesters for both courses. The researches asked for permission to obtain the results of all the students in class for both disciplines.

A Questionnaire about the Motivation and Involvement in both disciplines. This questionnaire was administered in two versions one for Social Psychology, and another for Psychology of Personality. These questionnaires were prepared “ad hoc” for this research and consisted of 40 items each. They assess aspects of planning and studying of the course, participation and attendance in classes and tutorials, satisfaction with the course and its results, comparisons of this course with others, etc.

Evaluation Questionnaire and self-assessment about the experience. This was prepared “ad hoc” for this study, and consisted of five items that assessed the degree of satisfaction at having participated in the experiment, their opinion on whether their participation had increased their interest in research in psychology or the theoretical and practical skills and attitudes of students in each course. (See appendix 1).

Researchers’ Journal. Annotations made by the students themselves regarding their personal observations (for each team of three students), during the course of their work as researchers in this teaching experiment, relating to all stages of the research in which they took part.

Procedure

Experimental research covering topics common to both courses (social cognition, personality traits, expectations and Emotional Intelligence) was designed.

The research consisted of conducting a real experiment. Students in group 1 attended a briefing in which they were informed about the design of the experiment and their specific work in it. This experiment consisted of carrying out a computerised Choice Reaction Time task (from a series of images, the subjects had to press the F key when a balloon appeared and J key when a horse appeared).

This task would be carried out simultaneously by two individuals in competition: an experimental individual (who should not be a Psychology student) and an accomplice (one of the participating students, who would not actually do the task, as the keyboard of his computer was disconnected, but would simulate the task). The task had two parts: a first part in which each subject received false information after every 50 tries about their performance compared to that of the accomplice (half the subjects were told that they were performing better, and the other half were always told they were performing worse than their competitor.). In the second part of the task the participants did not receive any information about their performance.

Each member of the teams of three in group 1 had to look for two people to take part as experimental subjects. These subjects had to go to the laboratory thinking that they would participate in an experiment on reaction time and without any knowledge about the accomplice, the specific task or the competition situation. Student-experimenters were clearly informed that deception can be used in psychological research when there is no harm to the participant and the truth is told once the experiment is over. They had to observe these standards to guarantee good practice and research from an ethical point of view.

Each of the three team members had to assume a particular role to perform: the Principal Researcher (explaining to the subjects- both the real and the accomplice- what they had to do), the Collaborator, who collected a series of data from questionnaires that measured psychometric aspects (eg. assessing emotional intelligence, personality traits and optimism) in the break between the two parts of the computerized test, and the accomplice, who pretended to do the same task as the real subject. The first two wore a white lab coat to play their role with greater conviction and the three were instructed separately on what they should do and how to do it. They were shown the lab where the experiment was conducted, the schedule to sign and were left alone during the whole experiment (one of the faculty researchers of this educational activity was always available in their office in case any unforeseen problem arise).

The objectives of this “secondary research” were to analyze the influence of personality traits, optimism or emotional intelligence on the performance of the task reaction time when expectations are positive (if the subject believes that they are doing better than their opponent) or when expectations are negative (the subject is made to believe that they are doing worse than their opponent), comparing the actual performance of the subjects between the two parts of the task (with and without information about their performance).

Once the data were collected, each participant had to search for and read information about the factors studied in the experiment (the influence of personality, type of expectations, emotional intelligence or optimism over performance).

Subsequently, all the participants attended a session in which the teachers discussed with the students the topic of study, the type of assumptions and the expected results of the experiment and, together, the final report was drawn up. The daily reports that the principal researcher had to fill in were handed in to teachers when the experiment finished.

Students from both groups were evaluated with the measures outlined before the experiment (academic results for the first semester and the Motivation and Commitment questionnaire for both courses) and after (academic results for the second semester, the Motivation and commitment questionnaire for both courses and a Questionnaire about the evaluation and self-assessment of the experiment).

RESULTS

We do not present the results of the experiment carried out by the students on performance expectations and personality variables, as that is not the purpose of this paper. However, it must be said that the assumptions made by the students according to what they read in the scientific literature were confirmed in the analysis of the results (which may have influenced the motivation of the students).

We found, that the positive feedback about self- performance created positive expectations and improved performance in the task, and also that with positive expectations, the personal variables that improved performance were: emotional stability, extraversion, liability or emotional intelligence (Muela, López-Zafra, García & Augusto, submitted).

To assess the innovative nature of this study, we analyzed the data with the SPSS 12.0, and highlighted the following results:

Relationships between academic results for Social Psychology and Personality Psychology

As a prelude to the analysis of objectives and assumptions of this study, we studied the degree of homogeneity of the two courses chosen. Therefore, we calculated the Pearson correlation coefficients among the marks of the two courses and conducted an analysis of variance inter- group (Psychology of Personality, Social Psychology) for the final mark variable.

We found a strong positive relationship between the academic results in the first semester for both courses ($r= 0.535, p<0.001, n= 120$). The same result was found when we analysed the results for the second semester ($r= 0.621, p<0.001, n= 131$). Finally, no differences were found between the final marks for both courses ($M= 4.67, SD = 2.49$ for Psychology of Personality vs. $M= 4.64, SD= 1.74$ for Social Psychology).

Effects of the experiment on student motivation

Based on the diaries of researchers (students), a qualitative analysis of their input and comments on the experiment yielded the following results.

1) The comments made by the research teams referred to situations and events such as the presentation time of stimuli (e.g., it was too long), or the failure to attend by an experimental subject, that had to be resolved by going to the University cafeteria to seek a replacement, or, on a couple of occasions, to the suspicion that the participant realised that the accomplice was not really carrying out the task and that the results that were offered were not real. In both cases, and given that those suspicions were not confirmed completely, students chose not to exclude the data from these subjects and they were analysed together with those of others.

The comments of the students never referred to the organization and structure of the teaching experiment itself. There were no problems either in the laboratory work, or in the search for information, nor in the briefings or drafting of the report, in which the majority of students participated with great interest.

Moreover, based on the data obtained through the Motivation and Commitment questionnaire, we carried out analyses of variance inter-groups (having or not having participated in the experiment) for the different variables measured for each discipline and found no statistical significant difference.

Subjective Perception of the acquisition of competencies

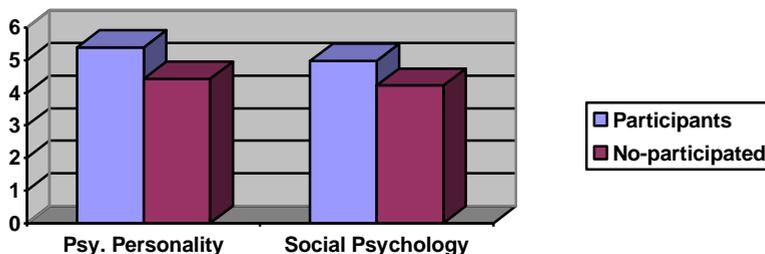
A descriptive analysis (with means) was performed about the subjective perception of improvement, by the student, in different competencies. The results show that students who have participated in this experiment declare that such participation has helped them to understand better experimental methods as applied in Psychology (mean of 7.2 out of 10 points) and that they have increased their interest, attitude and skills in both courses (an overall mean of 6.3 out of 10).

Effects of the participation in the experiment on the performance of the students.

Several analyses of variance among students who participated in the experience (G1) and non-participants (G2) were carried out. We took as dependent variables their marks in both courses and semesters.

1. We found no differences (G1 vs. G2) in the marks that students obtained in the first semester, neither in Social Psychology nor in Psychology of Personality.

Graphic 1. Means of the marks obtained by the students



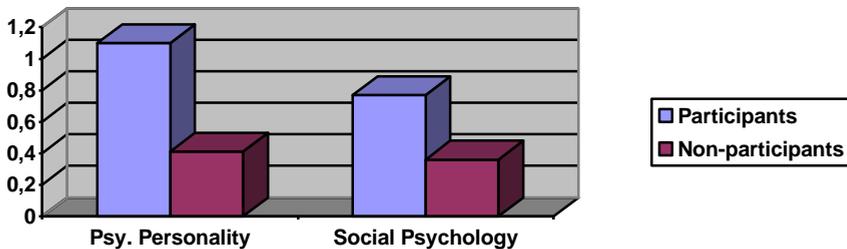
2. Students participating in the experiment obtained better final marks in Psychology of Personality than those who did not participate ($F_{1,173} = 5.075$, $p < 0.026$; $M = 5.39$, $SD = 2.48$ vs. $M = 4.42$, $SD = 2.41$ respectively) (see graphic 1).

3. Students participating in the experiment obtained better final marks in Social Psychology than those who did not participate, ($F_{1,198} = 7.579$, $p < 0.007$, $M = 4.98$, $SD = 1.51$ vs. $M = 4.22$, $SD = 1.79$, respectively) (see graphic 1).

4. Students participating in the experiment improved their final grade in Psychology of the Personality, compared with the mark they obtained the previous semester, much more than the students who did not participate. ($F_{1,161} = 4.97$, $p < 0.027$, $M = 1.1$, $SD = 1.89$ vs. $M = 0.41$, $SD = 1.54$, respectively) (see graphic 2).

5. Students participating in the experiment improved their final grade in Social Psychology, compared with the mark they obtained the previous semester, much more than the students who did not participate ($F_{1,122} = 23.471$, $p < 0.001$, $M = 0.77$, $SD = 1.31$ vs. $M = 0.36$, $SD = 1.27$, respectively) (see graphic 2).

Graphic 2. Mean of the difference between the first and second semester grades of the students



DISCUSSION

The fact that the marks of both subjects correlate with each other both in the first part (which evaluates only theoretical knowledge) and the final score (which also includes procedural and attitudinal competencies), and that there are no differences in the final grades between the two courses, can be interpreted in that the two disciplines have the same level of difficulty and that students who have problems in one of them will also have problems in the other. This supports the choice of both disciplines for this study because they show the same level of difficulty and the same final grades.

Moreover, the observations made by the students in their daily research report indicate that they were involved in the task (making recommendations on, for example, the exposure times of stimuli, deciding on several issues of the research or respecting their decisions) and there was no negative comment on the task itself.

All these arguments made us expect higher motivation in these students than in those who did not perform the task. But this did not happen. The fact that there are no differences in the level of motivation in both disciplines among those who have participated or not in the experience may be interpreted in two ways: either simply, this

task does not increase the levels of motivation and commitment to the courses although there may be an increase in the acquisition of skills, which would not be entirely new in the literature (López-Llanos & Mamani, 2004) (we have to take into account that students may chose a discipline due to several reasons and increase their skills); or the task does increase their levels of motivation and commitment but this increase may be masked by other variables, such as the increase in the level of knowledge of the disciplines (a result that we did find).

This seems somewhat contradictory but could be explained as follows: from the perspective of the student, their skills are useful, coherent and effective in responding to their usual daily demands (Pozo & Gómez-Crespo, 1998). In other words, the student who starts a university degree (as is the case with the subjects of this study) usually expect to conclude successfully. However, when the students compares their knowledge with the academic content that they have been submitted to in this experiment (too broad) and the task to be carried out (too independent, too much responsibility), they may perceive that their skills were still far from those required to achieve the maximum level of performance in these two disciplines. Such confrontations could produce in the students some incoherence, confusion and fragmentation among their cognitive content (Marín, Benarroch & Jiménez-Gómez, 2000; Oliva, 1996). In this sense, Montico (2004), while acknowledging that generally greater motivation means more effort and better performance, also states that if, despite having high motivation, goals are not subjectively achievable, the effort needed can be considered impracticable, generating a negative and demotivational effect.

This “collateral effect” is a methodological deficiency of the design of this experiment. Possibly, if the students in their second cycle (third and final years of the degree course) (with a more appropriate level of skills, knowledge and knowledge of their own skills) or if the first-year students had been involved only in some phases of the experiment or the teacher’s presence had been greater, there would not have been this feeling and maybe the motivation would have been greater. However, the fact that there were no differences between the motivation and commitment of the students who participated in this experiment and those who did not means that although this variable does not increase, it does not decrease either.

In terms of the increase in their skills, the subjective perception of the students is positive, but not excessive (7.2 and 6.3 out of 10 in cognitive and attitudinal skills). Following the same reasoning as above, when students realise the large amount of content they still have to learn, they may not appreciate the sense of a breakthrough. It is also possible that the students did not consider particularly relevant learning these disciplines in comparison with other aspects of their lives, or that they do not like to have to work so actively in order to become more competent.

However, the analyses of the data (ratings of the subjects) show statistically significant improvements in academic performance. These differences cannot be explained by possible initial inequalities among the students who participated or not, as no differences were found in the ratings of the first semester between them in any of the two disciplines. This fact supports the homogeneity of the group prior to the experience.

Moreover, the students who participated in this activity have not only achieved better final grades than their non-participant peers (in both disciplines), but also improved their own performance, enhancing their grades in comparison with the ones they obtained in the first semester.

While some authors (Valero *et al.*, 2005) indicate that the majority of college students prefer to maintain the system of lectures (despite their positive attitude to the introduction of new teaching methodologies), and that a voluntary introduction of these new methodologies is recommendable owing to the adverse reaction that they often arouse (Valero *et al.*, 2005), our results show that there is an increase in performance with these methodologies, even when the subjective assessment of students about their motivation is not so positive.

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Appendix 1. Evaluation Questionnaire and self-assessment about the experience.

1. In general, score the satisfaction level you have had participating on this experience:

1	2	3	4	5	6	7	8	9	10
Very High									Very Low

2. Indicate the extent in which the participation in this study has helped you to better understand the experimental method as applied in Psychology:

1	2	3	4	5	6	7	8	9	10
Nothing at all									Completely

3. Indicate the extent in which you think your participation in this study has increased your level of interest in Social Psychology:

1	2	3	4	5	6	7	8	9	10
Nothing at all									Completely

4. Indicate the extent in which you think your participation in this study has increased your level of interest in Psychology of Personality:

1	2	3	4	5	6	7	8	9	10
Nothing at all									Completely

5. Score the extent you consider that your participation in this study has help you to increase the following competencies:

a) the comprehension about the relationship in common contents for Social Psychology and Psychology of the Personality

1	2	3	4	5	6	7	8	9	10
Nothing at all									Completely

b) My theoretical knowledgement about Social Psychology

	2	3	4	5	6	7	8	9	10
Nothing at all									Completely

c) Practical skills necessary for research in Social Psychology

1	2	3	4	5	6	7	8	9	10
Nothing at all									Completely

d) My theoretical knowledgement about Psychology of the Personality

1	2	3	4	5	6	7	8	9	10
Nothing at all									Completely

e) Practical skills necessary for research in Psychology of the Personality

1	2	3	4	5	6	7	8	9	10
Nothing at all									Completely