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Service learning and academic commitment in higher education☆

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A R T I C L E   I N F O

A B S T R A C T

As a result of the university reform, the challenge for universities is to promote the quality of teaching, for which it is necessary to implement student-centered teaching methodologies. These methodologies require the commitment of students to their studies, which is not always present. To date, work on the relationship between service learning (SL) and academic commitment (AC) has been scarce. The aims of this paper are two-fold: to validate the Utrecht Work Engagement Scale for Students (UWES-S-9) and to evaluate the effect of the SL-based methodology on the AC of university students. A quasi-experimental design of repeated pretest-postest measurements with control group was carried out. The sample consists of 342 students, 168 experimental students who participate in SL practices and 174 control students who had not participated in SL. Both groups complete the UWES-S-9 in pretest and postest. The baseline hypothesis was that students who participated in ApS practices would achieve higher levels of AC with their studies. The results verify the existence of significant differences, in favor of the experimental group, in three of the factors that compose the AC: *vigor, dedication and absorption.* The discussion focuses on the potential value of the SL methodology for improving the AC of university students and paves the way for rethinking the implementation of active teaching methodologies as a key issue for optimising the quality of teaching at university.

Aprendizaje servicio y compromiso académico en educación superior

R E S U M E N

A raíz de la reforma universitaria, las universidades tienen como reto impulsar la calidad de la enseñanza para lo que se hace necesario la puesta en marcha de metodologías didácticas centradas en el alumnado. Dichas metodologías requieren del compromiso de los estudiantes con sus estudios con la que no siempre se cuenta. Hasta la fecha los trabajos que abordan la relación entre el Aprendizaje Servicio (ApS) y el compromiso académico (CA) han sido escasos. Este estudio tiene un doble objetivo: validar la estructura factorial del *Utrecht Work Engagement Scale for Students* (UWES-S-9) y evaluar el efecto de la metodología basada en ApS en el CA de los estudiantes universitarios. Se realiza un diseño cuasi-experimental de medidas repetidas pretest-postest con grupo control. La muestra está compuesta por 342 estudiantes, 168 experimentales que han participado en prácticas de ApS y 174 de control que no han participado en ApS. Ambos grupos completan el UWES-S-9 en el pretest y en el postest. La hipótesis de partida es que los estudiantes que participan en prácticas de ApS alcanzan niveles más altos de CA con sus estudios. Los resultados verifican la existencia de diferencias significativas, a favor del grupo experimental, en tres de los factores que componen el CA: *vigor, dedicación y absorción.* La discusión se centra en el valor potencial de la metodología ApS para la mejora del CA de los estudiantes universitarios y abre el camino para repensar la puesta en marcha de metodologías de enseñanza activas como una cuestión clave para la optimización de la calidad de la enseñanza universitaria.

Introduction

The European Higher Education Area has meant a transition towards active methodologies (McAleese, 2013, 2014). However, the lack of student's participation is a widespread problem (Chipchase et al., 2017). It is reasonable to think that academic commitment (hereafter CA) insofar as it can have a great influence on learning and performance is one of the most important challenges in Higher Education (Christenson et al., 2012; Dunne & Owen, 2013; Fitzgerald, Bruns, Sonka, Furco, & Swanson, 2016; Kahu & Nelson, 2018).

In this sense, universities should be concerned with offering quality teaching (Steinhardt, Schneijderberg, Götze, Baumann, & Krücken, 2017), considering all those elements derived from the psychological well-being of their students and the influence of methodologies in their commitment to studies. Thus, the AC emerges as an important element of psychological well-being. In this context, implementing methodologies that promote student involvement is fundamental to understanding what factors influence and shape the AC (Lewellyn & Kiser, 2014).

Service learning an active methodology

Although the scientific literature shows that there is no one methodology that is "better" than another in an absolute way, the various works offer evidence of the importance of active methodologies in making students feel more satisfied with their learning and more committed to their studies (Baeten, Kyndt, Struyven, & Dochy, 2010; Stover & Ziswiler, 2017). Research also associates such methodologies with greater motivation and critical thinking skills (Huda, Shukri, Hisyam, & Mohd, 2018; Levkoe, Brail, & Daniere, 2014). Consistent with these benefits, Service Learning (hereafter SL) could largely meet these needs. Specifically, Dienhart et al. (2016) indicate SL as one of the best methodologies within Higher Education and Batlle (2013) as "a silent revolution".

SL has been described in broad terms as a pedagogy, a philosophy, a programme and an experience (Deeley, 2016; Naudé, 2015). SL is conceived as an experiential methodology that combines in the same process curricular content with service to the community (Mayor & Rodríguez, 2016; Puig, Gijón, Martín, & Rubio, 2011; Santos Rego, Sotelino, & Lorenzo, 2015), providing an excellent training scenario that stimulates students to apply the skills acquired in real contexts (Conway, Amel, & Gerwien, 2009; Gil, Moliner, Chiva, & López, 2016; Rodríguez, 2014), and providing them with high satisfaction (Folgueiras, Luna, & Puig, 2013). Mayor and Rodríguez (2015) delimit three internationally agreed traits: service to the community with the intention of improving it, the active participation of the people involved, and the intentional planning of curricular objectives and the actions that make up the service.

Some studies have highlighted that SL facilitates self-knowledge, empathy, communication skills and cultural awareness (Gribble, Dender, Lawrence, Manning, & Falkmer, 2014). Chiva-Bartoll, Capella, and Pallarès (2018) also indicate that SL practices allow students to acquire social skills and attitudes that are put into practice in everyday life. Meta-analyses also show the effect of SL on the development of diverse competencies (Celio, Durlak, & Dymnicki, 2011; Dienhart et al., 2016; Warren, 2012; Yorio & Ye, 2012). Most papers present SL as a valid pedagogical strategy for acquiring knowledge, attitudes and promoting civic engagement (Aramburuzabala, 2015; Chiva-Bartoll & Gil-Gómez, 2018; Huda et al., 2018; Repáraz, Arbués, Naval, & Ugarte, 2015). In short, it is a question of "learning to be competent by being useful to others" (Batlle, 2016).

Participation and motivation towards the task have also been analyzed as improvement factors thanks to SL (Huda et al., 2018).

Students who participate in SL courses recognize that they promote more interpersonal, community, and academic engagement and are perceived as more challenging, which motivates them to continue their studies (Gallini & Moely, 2003). However, the results are not entirely consistent, as other studies have not reported any difference between the academic outcomes of students who participate in SL and those who do not.

Academic commitment

In its origin the engagement construct derives from its opposite burnout. The concept appears in the field of organizational psychology and has mainly been studied in the workplace. It has thus become in recent years a very fashionable term in the field of business. Even more recent and scarce are the studies that contemplate the engagement in the academic realm, especially if we consider the university field and the Spanish geographical context. In the United States, Canada and Australia research is much more extensive.

Since 2002, the literature begins to consider that students are also exposed to negative and positive emotions that make them more or less committed to their academic work. This is where the term academic engagement comes in. Schaufeli, Salanova, González-Romá, and Bakker (2002) define it as a state of psychological well-being related to studies that is positive and meaningful. Kahu and Nelson (2018) argue that it is an evolving concept that encompasses a variety of institutional practices and student behaviors related to student satisfaction and achievement, including homework time, adaptability, social and academic integration, and teaching practices. Thus, the concept of AC approaches the educational process from the perspective of positive psychology and refers to the students' sense of well-being in the face of a particular academic challenge.

For their part, Christenson et al. (2012) refer to AC as the participation and active involvement of an individual in a learning activity, considering it to be the most important theoretical model for understanding drop-out and promoting the completion of studies. Several papers highlight the importance of assessing its progression through the different educational stages, in order to capture the process through which certain students can disconnect from the academic environment (Appleton, Christenson, Kim, & Reschly, 2006).

Due to the novelty of the construct, there is no consensus on the variables that compose it, although research agrees that it is a multidimensional construction (Barnacle & Dall'Alba, 2017; Sinatra, Heddy, & Lombardi, 2015). On the one hand, Christenson et al. (2012) point out that the AC is composed of three dimensions: a behavioral commitment, referring to how students are involved in learning in aspects such as effort; an emotional commitment, allusive to the positive emotions that the student experiences during the learning process, such as euphoria; and finally, a cognitive commitment, related to the use of effective learning strategies.

On the other hand, Schaufeli, Martínez et al. (2002) find three dimensions: (a) *vigor*, defined as high levels of energy and mental endurance while studying, characterized by the desire to invest effort in the tasks performed even when difficulties appear in the process; (b) *dedication*, understood as a high level of involvement in the studies, manifests a feeling of significance, inspiration, enthusiasm, pride and feeling challenged by the task; and (c) *absorption*, denotes a high state of concentration and immersion that makes time pass quickly when tasks are performed, and difficulties are experienced when it comes to disconnecting, due to the enjoyment and concentration one has. It is this last model that has guided this study. Namely, in our case, the AC is understood as a construct that includes three factors: *vigor, dedication and absorption*, aimed at achieving objectives.

Much of the research points to the predictive character of AC in relation to academic success (Lutz & Culver, 2010; Svanum & Bigatti, 2009). However, little research has focused on analyzing the SL-AC relationship. In some studies, AC is measured by students' perceptions; in others, commitment is inferred from the grades they receive. For example, Fitzgerald et al. (2016) verify positive effects of AC on students' academic attitudes. Students who participate in SL report higher levels of learning in the acquisition and understanding of concepts (Hebert & Hauf, 2015; Levkoe et al., 2014). Also, Huda et al. (2018) find that students consider that they learn more with SL than in their other classes. This background leads us to a twofold objective: to validate the factorial structure of the *Utrecht Work Engagement Scale for Students* (UWES-S-9) and to evaluate the effect of the SL-based methodology on the AC of university students by comparing it with another group that does not perform SL which could contribute to shed light on this issue.

Method

Participants

This research involves 342 students from the Social Education Degree (183) and the joint Degree on Social Education and Social Work (159) from the Pablo de Olavide University (UPO). The selection of the participants is carried out by means of a random, stratified and multistage probabilistic sampling. The strata that are established according to their most notable characteristics are: sex, year, age and access route of admission to university studies. The 90.6% are women and 9.4% are men. The age ranges from 18 to 45 years old ($M = 22.04$, $SD = 4.40$). First-year students account for 36%, 20% second years, 23% third years and 21% fourth years. In terms of access to university, 70.4% come from baccalaureate, 26.6% from a Higher Vocational Training Degree, 2% from another degree and 1% from the access test for persons over 25 years of age.

Instrument

The *Utrecht Work Engagement Scale for Students* (UWES-9), Spanish version of UWES-S-9 (Benevides-Pereira, Fraiz de Camargo, & Porto-Martins, 2009) is used. The instrument is composed of nine items grouped into three dimensions: (a) *vigor*: energy level, persistence and effort in performing academic tasks (e.g.: My tasks as a student make me feel full of energy); (b) *dedication*: high degree of involvement in studies and with your career (e.g.: I am enthusiastic about my studies/career); and; (c) *absorption*: high level of concentration and immersion in what you do when you study (e.g.: I "get carried away" when I perform my tasks as a student). All these items are scored on a Likert scale of 7 points from 0 = none/never to 6 = everyday/always.

Design

A quasi-experimental design of repeated pretest-posttest measurements is implemented by comparing two groups. An experimental group (EG) consisting of 168 students who follow the SL program for one semester in two compulsory courses and a control group (CG) consisting of 174 students who do not receive the experimental condition. While the objectives of the two courses and the learning outcomes are the same in both groups, the teaching methodology is implemented in two different modalities. The EG and like the CG are asked to carry out a lesson planning for a specific target group devoting a total of 20 h to complete this task.

The differences between the EG and the CG lie in the fact that the EG performs the practical teaching and development (PTD) part of both subjects in a real context, in the form of service to the community, as the compulsory structure of the course. In particular, the SL practice lasts 10 weeks. The students provide the service in the Andalucía School located in the *Polígono Sur* (an area of social transformation in Seville, Spain), a conglomeration of neighborhoods recognized as an example of social inequality with high levels of social exclusion, unemployment, a high percentage of the population in the invisible market and of a submerged economy, and with a majority gypsy population. The school is a learning community, and because of its philosophy, it works with interactive groups in which university students provided support to children who, divided into heterogeneous groups, execute different learning activities. The EG implements the lesson planning designed and evaluates the intervention developed.

The CG, however, performs the practical part of the course at the university. The students develop the same activities with a methodology based on conventional classroom practices. Therefore, during the PTDs they design the lesson planning through seminars in collaborative groups of 4–5 students. This planning cannot be put into practice and the diagnosis of the needs of the recipients is made through the literature review.

Procedure

This study is implemented in the first semester in the Degree of Social Education and the joint Degree of Social Education and Social Work. The experimental and control groups are formed during the last week of September, when the pretest is also executed. Before the exams, during the last week of December, the posttest evaluation is completed. The completion of the scale is online through Google Form, including information about the anonymous, confidential and voluntary nature of their participation. In order to guarantee the protection of personal data, we add the box of acceptance of the privacy policy, as well as the legal text of the same incorporating both fields and using the plugin Ninja Forms. Students who agree to participate complete the informed consent form. The procedure follows national and international ethical considerations and is approved by the University Ethics Committee. During the process a reminder is sent in the pretest and posttest phases to increase the number of responses.

Data analysis

In order to corroborate the internal structure of the applied assessment instrument, an exploratory factorial analysis (EFA) and confirmatory factorial analysis (CFA) of the scale is performed. For this purpose, the original sample ($N = 342$) is divided into two randomly drawn subsamples. To determine the number of factors, with the first half of the sample ($n1 = 178$), an EFA is performed through the parallel analysis (PA) of Horn (Izquierdo, Olea, & Abad, 2014), using the software Factor 10.5.02 (Ferrando & Lorenzo-Seva, 2017b), using the extraction method *Minimum Rank factor Analysis* (MRFA) (Timmerman & Lorenzo-Seva, 2011), with a Promin rotation (Lorenzo-Seva, 1999).

In addition, two of the proximity indices are estimated to evaluate the possible unidimensionality of the scale: the explained common variance (ECV) and the mean of item residual absolute loadings (MIREAL) (Ferrando & Lorenzo-Seva, 2017a). ECV estimates the size of the dominant factor in relation to the common total variance; values between .70 and .85 are indicators of the one-dimensional structure of the data (Rodríguez, Reise, & Haviland, 2016). MIREAL is the mean of the absolute loads of a second potential residual MRFA factor, orthogonal to the main factor. Consequently, MIREAL is an estimator of the degree to which the data structure deviates from one-dimensionality. As a rule, a MIREAL less than 30 suggests the absence of a relevant residual factor (Ferrando & Lorenzo-Seva, 2017a).

With the second half of the sample ($n2 = 164$) a CFA is made. The robust maximum likelihood method is used, due to the lack

Table 1
Exploratory factorial analysis of UWES-9

M	SD	Comunalidades	Ítems	Factor 1	Factor 2	Factor 3
4.83	1.06	.66	1. My homework as a student makes me feel full of energy.	.80		
5.07	1.25	.74	2. I feel strong and vigorous when I study or go to class.	.56		
3.89	1.17	.75	5. When I wake up in the morning I feel like going to class or studying.	.86		
4.86	1.27	.60	3. I find my studies full of meaning and purpose.		.74	
4.55	1.35	.82	4. My studies inspire me.		.90	
5.16	1.77	.71	7. I am proud to be in this career.		.74	
4.78	1.36	.70	6. Time flies I am doing tasks related to my studies.			.68
5.21	1.40	.56	9. I "get carried away" when I do my homework.			.53
4.97	1.29	.69	8. When I am studying I forget everything that happens around me.			.73
	Factor 1	Factor 2	Factor 3			
Percentage of variance explained (total, 62.28%)				35.22%	12.26%	7.20%

of multivariate normality (Mardia coefficient = 13.09). The fit of the model is evaluated with the following indices: Chi-square (S-Bχ^2) of Satorra-Bentler -values greater than .01 indicate a good fit-, Comparative Fit Index (CFI), Non-normed Fit Index (NNFI) -values equal to or greater than .95 indicate a good fit, Standarized Root Mean Square Residual (SRMR) and Root Mean Square Error of Approximation (RMSEA) -values below .08 indicate a good fit- and Expected Cross-Validation Index (ECVI). This analysis is done with the Lisrel 9.1 program.

Regarding construct reliability, the values of Composite Reliability (FC), Maximum Reliability (FM) (H coefficient of Hancock and Mueller), Cronbach alpha and McDonald's Omega (Ω) are calculated. The cut-off point for these indices is .70 (Geldhof, Preacher, & Zyphur, 2014). In terms of discriminant validity, it is examined by comparing the mean of the Extracted Mean Variance (EMV) between pairs of latent variables with the shared variance (square of the correlation between pairs of variables). If the former is greater than the latter, the instrument will show good discriminant validity. All pairs of factors reveal a mean EMV greater than their shared variance; this indicates their adequate discriminant validity. Finally, to examine the temporal stability of the instrument, the intraclass correlation coefficient (ICC) (test-retest) is used.

Before proceeding with difference analysis, the Kolmogorov-Smirnov test is applied to analyze the normal distribution and determine the use of parametric or nonparametric tests in the comparison of related (pretest-posttest) and independent means (EG-CG). It is concluded that the assumptions of normality are fulfilled in all variables, so parametric tests are applied.

To evaluate the effect of the SL methodology on the AC, descriptive (means and standard deviations) and variance (ANOVAs) analyses are implemented with repeated measurements to determine possible differences between the GE and the GC in the pretest phase, where F represents the statistical value of the test and p-determines its significance.

The differences between the EG and the CG in variables such as age, course, sex and previous studies are also analyzed. The differences are not statistically significant, so these variables are not included as covariates in the successive analyses.

Finally, descriptive and covariance analyses of posttest scores (ANCOVAs posttest covariant pretest) are performed, which allows the effect of the SL methodology to be evidenced. Also, the effect size is calculated (Cohen *d*) (small < 0.50; moderate 0.50-0.79; large ≥ 0.80). SPSS v.23 has been used in this case.

Results

The sample adequacy measure KMO (Kaiser-Meyer-Olkin), with a value of .90 and Barlett's sphericity test, statistically significant χ^2 (322) = 8215.5, $p < .01$ confirm the relevance of performing the factorial analysis. In addition, the PA recommends retaining three factors, which together explain 62.28% of the total variance (Table 1). The first factor, called *vigor*, explains 35.22% of the

Table 2
Correlations matrix

	1	2	3
1	1.00	.72	.63
2	.76	1.00	.68
3	.78	.67	1.00

variance and is composed of three items that describe the level of energy, persistence and effort in carrying out academic tasks. The second factor, *dedication*, explains 12.26% of the variance and is made up of 3 items related to the high degree of involvement of the students in the studies and with their career. The third factor, *absorption*, explains 7.20% of the variance and is composed of 3 items that allude to the level of concentration and immersion in what they do when they study. All communalities are above the suggested .32 (Worthington & Whittaker, 2006) and range between .560 and .754. In addition, the items indicate high factorial loads with low measurement errors, with all standardized factorial weights greater than .45 and statistically significant (Tabachnick & Fidell, 2007).

The scale gets an ECV value of .88, suggesting the presence of a clearly dominant factor. The value is .23, suggesting that the presence of a relevant systematic variance beyond the main factor is not plausible.

In the correlations matrix between the different factors (Table 2) it can be seen that the linear association is high between factors 1–2 (correlation equal to .76), 1–3 (correlation equal to .78) and 2-1 (correlation equal to .72); while with respect to the others the linearity is average. These values of linear associations between the different factors also indicate the performance of factor analysis.

The CFA results confirm the factor structure suggested by the EFA and provide the following adjustment indices: S-Bχ^2 (279) = 770.81, $p = .000$, NNFI = .96, CFI = .94, SRMR = .05, RMSEA = .046 [90% confidence interval .044-.051], ECVI = 1.13. Also, all factor loads and correlations between factors are statistically significant. To confirm the goodness of the model fit, alternative models are tested and compared with the model. Specifically, this model is compared with another one-dimensional model, in which the fit is visibly inferior and inadequate S-Bχ^2 (289) = 599.37, $p = .000$, NNFI = .82, CFI = .84, SRMR = .12, RMSEA = .16 [90% confidence interval, .130-.015], ECVI = 5.98 and with a hierarchical model that reveals a worse fit compared to the first model S-Bχ^2 (279) = 797.00, $p = .000$, NNFI = 95, CFI = 94, SRMR = .05, RMSEA = 056. [90% confidence interval, .044–.051], ECVI = 1.24. These results corroborate that the three-factor correlated model is the most parsimonious and offers the best fit.

Finally, with respect to convergent validity, the values of McDonald's FC, FM, Cronbach alpha and Omega are equal to or greater than .87 in all factors. The CCI test-retest correlations show significant, positive values between .78 and .82. In relation to discriminant validity, all pairs of factors reveal an average VME greater

Table 3
Analysis of reliability and validity of the scale UWES-S-9

	VI	DE	AB	Total
FC	.87	.88	.94	–
FM (coeficiente H)	.85	.89	.92	–
Omega de McDonald	.87	.87	.89	.93
Alfa de Cronbach	.82	.91	.83	.92
Correlation test-retest	.81	.82	.78	.80
VME	.54	.64	.66	–
Discriminante Validity:	VI-DE (.27 in front of .62)	DE-AB (.29 in front of .64)	AB-VI (.52 in front of .63)	
Shared Variance (correlation square between 2 factors) and mean of the 2-factor VME	VI-AB (.45 in front of .58)	DE-VI (.26 in front of .66)	AB-DE (.43 in front of .63)	

VI: Vigor; DE: Dedication; ABS: Absorption.
$p < .001$.

than their shared variance; indicating the appropriate discriminant validity of these (Table 3).

As can be seen in Table 4, after performing the ANOVA pretest results, they do not show statistically significant differences between CG and EG before the intervention, the effect size being low. The results of the univariate variance analyses in the pretest phase indicate that before starting the intervention there are no statistically significant differences between the students of the experimental condition and control in any of the evaluated dimensions.

The effects of the SL program are described below. Firstly, in relation to the *vigor* variable, the MANCOVA results reflect significant differences between the CG and the EG ($F = 10.97$, $p = .001$, $d = 0.53$), indicating that the increase is greater in the EG. Similarly, for dedication, the results indicate statistically significant differences between both groups ($F = 13.17$, $p = .001$, $d = 0.52$), with the increase in the EG being greater. Finally, when analyzing the absorption variable, the results again show statistically significant differences between the CG and the EG ($F = 19.79$, $p = .001$, $d = 0.54$), producing, again, a greater increase in the EG. Finally, the effect size (Cohen d) is moderate in the variables *vigor* (0.63), *dedication* (0.72) and *absorption* (0.74). By way of synthesis, it can be stated that the results show statistically significant differences between the EG and the GC, indicating that the AC is higher in the EG.

Discussion

The purpose of this research is to evaluate the effect of the SL-based methodology on the AC of university students. The UWES-S-9 has very acceptable psychometric characteristics, good internal consistency and temporal reliability. The results show that the SL-based teaching methodology influences the AC of the students. Post-test ANCOVAS confirm that there are significant differences in favour of the EG in the three factors that make up the AC. Thus, those students who participate in SL show more positive attitudes towards studies and tasks, namely: (a) show a greater degree of energy and willingness to invest efforts; (b) are more easily involved and concentrated in academic tasks; and (c) persist to a greater extent in the face of difficulties that may arise during their development. In short, the EG's highest scores confirm the existence of a positive association between participation in SL and AC as opposed to more traditional methodologies in all the dimensions evaluated in this work. However, as in the various meta-analyses (Celio et al., 2011; Dienhart et al., 2016; Yorio & Ye, 2012) it is common to find a moderate size of effects.

These results are consistent with the work of Gallini and Moely (2003) on SL as a necessary approach to AC development. Different reasons can be given for these results. First, the connection of the SL to the AC may be related to the peculiarities of the methodology itself. In it, the connection with reality is transcendental. SL places students in real contexts of pre-professional practice where, through the service, they have the possibility of putting into practice the knowledge acquired, which stimulates greater involvement (Gallini & Moely, 2003) and understanding of the concepts studied (Chiva-Bartoll & Gil-Gómez, 2018; Hebert & Hauf, 2015; Levkoe et al., 2014). Involving students in complex realities and facing real problems activates not only their knowledge and skills but also their energy, dedication and commitment to tasks. It has long been recognized that involvement in real community service tasks improves student absorption in what they do (Dunne & Owen, 2013). Similarly, Huda et al. (2018) attribute to SL the ability to retain students in the career and keep them motivated during their studies.

Secondly, SL demands a great investment of energy demanding effort and high levels of resistance from the students, which leads them to feel pride and satisfaction for the result of their service to the community, a state of immersion in activities that strongly links them with the world of work and professional future.

These requirements of SL are those that, from the student's own perspective, feel more committed than with other methodologies in which there is not such a high level of *vigor, dedication and absorption* (Schaufeli, Martínez et al., 2002). Along the same lines, different studies indicate that the use of active methodologies has a positive effect on student motivation and involvement (Fitzgerald et al., 2016; Kahu & Nelson, 2018). Thus, those methodologies that represent more demand, among which SL is established as a key methodology, can achieve greater student involvement and the possibility of facing a greater desire to be actively involved with tasks, in line with Gallini and Moely (2003) when they propose to offer challenges to students as a way to reduce the risk of abandonment. The results obtained reveal the need to rethink the organization of university teaching from the SL perspective in order to respond to the necessary AC that university students need to assume (Christenson et al., 2012; Lewellyn & Kiser, 2014).

Hitherto, the debate on SL has focused especially on the development of citizenship (Chiva-Bartoll et al., 2018; Gelmon, Holland, & Spring, 2018; Gil et al., 2016; Puig et al., 2011), and not on how it can influence AC with studies. Active participation in studies is a major concern in universities (Chipchase et al., 2017); the findings of this study may be useful to support the implementation of active, student-centered teaching methodologies, such as SL, that are demanding, that require high dedication, *vigor and task absorption,* and in which teachers act as mediators of the teaching and learning process in interdisciplinary projects. This issue may hinder the application of SL and, consequently, its potential, if one considers that in the university, there is little culture of collaborative work in the teaching staff (Rodríguez-Izquierdo, 2013).

This paper has some limitations. The first is the procedure followed for the evaluation of the AC. The AC is an extremely complex

Table 4
Means and typical deviations of the pretest and posttest measures in the EG and CG and results of the pretest ANOVAS and posttest MANCOVAS

	Pretest				Postest				Anova			Mancova		
	Experimental		Control		Experimental		Control		Pretest			Postest		
	n = 168		n = 174		n = 168		n = 168							
	M	SD	M	SD	M	SD	M	SD	F	p	d	F	p	d
Vigor	3.03	.91	2.97	.69	3.29	.69	2.99	.77	.86	>.05	0.14	10.97	.001	0.63
Dedication	5.16	.85	3.86	1.17	5.78	1.28	4.04	1.52	.82	>.05	0.15	13.17	>.05	0.72
Absorption	4.55	1.27	3.16	1.16	4.47	1.04	3.31	1.37	.92	>.05	0.16	19.79	>.05	0.74

d = Cohen effect (small < 0.50; moderate 0.50–0.79; large ≥ 0.80).

process so an evaluation that focuses only on student self-reports does not provide all the necessary evidence on the effects of the SL methodology on its development. As a prospective it would be interesting to contrast these findings with others of a more objective nature of real performance such as performance. The second limitation derives from the quasi-experimental character of the design. The effects of the initial AC level have been controlled statistically, but we could not isolate other variables such as certain attitudes, personality traits or other factors, which does not allow pronouncements on possible causality relationships. In addition, the research has been carried out within a specific area of knowledge. Therefore, it should be stressed that the results obtained are limited to these students or others with similar characteristics.

Despite this, it should not be denied that, given that the studies that have dealt with the relationship between SL and AC to date have been scarce, this study constitutes a source of information of great importance for understanding and improving the complexity of quality teaching processes in university institutions. Therefore, there is a need to further deepen the influence of SL on the AC of university students.

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