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The perception of transversal skills among students of business administration: Gender gap. Service-learning, gender and skills in higher education

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ABSTRACT

Higher education is increasingly oriented towards educating in values, based on the acquisition of practical skills. This has led to the development of active methodologies which complement theory-based learning and classroom lectures. Service-learning integrates ethical and social commitment by applying previously acquired skills and knowledge in real-life situations. This study aims to analyse the self-perception of transversals skills among students of business administration through a service-learning and the possible influence of gender. A questionnaire comprising 57 variables using a Likert scale was administered to a sample of 210 students, the data were analysed, and statistic significance tests were carried out. The results suggest there is a positive relationship between participation in the service-learning activity and the level of skill, especially for ethical and social skills, with significant differences by gender. This work aims to contribute to the consolidation of service-learning as a tool for the acquisition of ethical and social skills at universities, which is so important for future managers of companies and organisations.

1. Introduction

In recent decades, universities and institutions of higher education have increasingly focussed, in addition to theoretical knowledge, on the acquisition of skills, values and attitudes that are essential in real-life contexts (Clemente-Ricolfe & Escribá-Pérez, 2013). The key is to have the ability to apply knowledge in analysis, decision-making and problem solving within complex environments and working in diverse teams (OECD, 2009). Along these lines, the European Higher Education Area (EHEA) introduced skill-based training, which must be oriented towards meeting social and labour demands (Michavila et al., 2016; Martínez & González, 2018). The acquisition of practical skills enables students to apply their knowledge to other fields and boosting their abilities and autonomy in the face of real-life challenges (Clemente-Ricolfe & Escribá-Pérez, 2013).

The EHEA has addressed the social role of universities. The Bologna Declaration states that higher education institutions must train socially responsible, critical and participative citizens who can contribute to the improvement of society (López-de-Arana et al., 2020). This social commitment includes volunteering, increasingly promoted by universities (Easterling & Rudell, 1997). In these cases, we are referring to activities that form a part of the university's social responsibility, contributing directly to the comprehensive education

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of students (Sarmiento-Peralta et al., 2021).

Volunteering refers to the actions carried out by individuals with the purpose of helping other people. As in any process, this activity also becomes a source of knowledge and experience. With the proper orientation and linkage to academic programmes, volunteering can serve as a vehicle for skills development. In fact, studies such as those by Sandoval et al. (2022) and Sarmiento-Peralta et al. (2021) show that volunteering has a positive influence on the personal and academic development of university students. It is a means by which students can put specialised knowledge into practice, thus enabling them to face a changing world full of new challenges with open and flexible minds (Plataforma del Voluntariado de España, 2019).

Over the last two decades, volunteering has become widespread in Spanish universities in response to social needs, serving as a complementary activity that brings students closer to social realities. The Ley 45/2015, de Voluntariado (2015), recognises the importance of universities in encouraging volunteering and these institutions have been implementing various programmes of their own, service-learning activities, etc. (Plataforma del Voluntariado de España, 2019). However, the link between these activities and university curricula has not become generalised, nor have the benefits of volunteering on skills development been measured.

The aim of this paper is to analyse the perception of skills of students of the Degree in Business Administration and Management at the University of Malaga after carrying out a service-learning activity as volunteers at the Food Bank of Malaga. Specifically, we want to know whether gender and participation in the volunteering activity have a significant influence on the perceived skills. To date, many studies have explored the relationship between service-learning and skills acquisition (Bach & Weinzimmer, 2011; Richard et al., 2016; Bedir, 2019; McNatt, 2020; Ramia & Díaz, 2019; Afzal & Hussain, 2020; Ortiz-Fernández & Tarifa-Fernández, 2022 or Kwesiga et al., 2023, among others) and some have found a relation between the acquisition of specific skills and gender (Stewart & Alrutz, 2014; Shukla & Shukla, 2014; Vázquez-Cano et al., 2017; Carlsson, 2020; Carvalho & Valentini, 2019; Álamo-Vera et al., 2020; McNatt, 2020 or Capella-Peris et al., 2021, among others). However, no studies have been published showing the possible relationship between gender, participation in a service-learning activity and skills acquisition. Our study explores this relationship and provides empirical evidence on the relationship between students' gender, participation in the service-learning activity and skills acquisition and development.

2. Theoretical background

Within the framework of the EHEA, skills-based education has become an important part of general education, especially in the field of management (Berdrow & Evers, 2011). Skill is basically the combination of cognitive ability and behavioural characteristics that result in a certain quality of performance (Pop & Khampirat, 2019). González et al. (2004) define it as a combination of knowledge (*knowing*), ability (*knowing how to do*), attitudes and values (*knowing how to be*). In Spain, according to Leví-Orta and Ramos-Méndez (2013), in the documents formulating skills for new Spanish university studies, the skills are composed by 33.4% knowledge, 56.9% abilities and 9.7% attitudes. Furthermore, the EHEA framework includes skills referring to valuing and respecting diversity and multiculturalism, ethical action and social responsibility (Hernández-López et al., 2020).

Service-learning is one of the active methodologies that contribute to skills acquisition by fostering social commitment, integrating education in values with ethical learning and active citizenship (Tejada, 2013). Practical activities, focused on real cases, allow for the application of previously acquired knowledge, giving the student a greater perception of their own skill (Human et al., 2005; Meusen-Beekman et al., 2016). It is also a methodology that directly connects learning to community service (Kwesiga et al., 2023). Students apply and develop their knowledge and skills in a practical way by providing a service to the community, along with prior planning in accordance with the curricular content to optimise learning (Tejada, 2013).

Many studies have linked service-learning and volunteering to improved employability (Souto-Otero & Shields, 2016; Zambrano et al., 2019), with the acquisition of specific knowledge regarding social issues (Bach & Weinzimmer, 2011), diversity and critical awareness of social realities (Meyers, 2009; Ortiz-Fernández & Tarifa-Fernández, 2022; Ramia & Díaz, 2019) or regarding social responsibility and gender equality (Afzal & Hussain, 2020). Moreover, participation in university service-learning experiences is related to civic engagement in later life (Kwesiga et al., 2023; Ortiz-Fernández & Tarifa-Fernández, 2022; Richard et al., 2016) and to the self-perception of being more a socially responsible citizen (Afzal & Hussain, 2020; Tyran, 2017).

In addition, service-learning has a positive impact on other skills such as general social skills (Afzal & Hussain, 2020), problem solving (Ramia & Díaz, 2019; Fernández et al., 2020), diversity management and respect (Ramia & Díaz, 2019; Simons, 2021), oral communication skills (McNatt, 2020), professional skills (Fernández et al., 2020; Ortiz-Fernández & Tarifa-Fernández, 2022), team-working (de Prada et al., 2021), interpersonal competences (Ramia & Díaz, 2019), leadership (Ramia & Díaz, 2019), motivation (Ortiz-Fernández & Tarifa-Fernández, 2022) and lifelong learning (Bedir, 2019).

Now, the main objective of this study is to determine whether there are significant differences in the perception of skills according to gender. The results of previous studies are not clear in this respect and point to several trends. On the one hand, there is a body of research that looks at motivation to participate in volunteering or service-learning activities. It seems clear that not all students have the same motivations (Bussell & Forbes, 2002; Saz-Gil et al., 2021; Spitsyna & Koval, 2022). Specifically, Shukla and Shukla (2014) found that the gender of respondents is significantly related to volunteering, with women being the most involved group. This is also corroborated by Wilson (2000), Planty and Regnier (2003), Lopez et al. (2006) and Matusovich et al. (2006, pp. 7–8). Other studies have found no differences between men and women (Van Emmerik et al., 2004; Meyers, 2009) or a relatively weak difference (Burns et al., 2008).

Hypothesis 1. Women are more motivation than men to participate in service-learning activities.

Another possible influence of gender is on the perception of skill. In this regard, studies suggest that men are more likely to express a

higher level of skill than women, even overestimating their abilities (González-Betancor et al., 2019; Herbst, 2020; McDonald, 2004; Stewart & Alrutz, 2014; Tejeiro et al., 2012; Torres-Guijarro & Bengoechea, 2017; Wynn & Correll, 2017), while women tend to underestimate their skill levels (Strebler et al., 1997) or to be more demanding of themselves (Jagacinski, 2013). This overestimation also occurs in some cases prior to activities or training programs (Baartman & Ruijs, 2011; McDonald, 2004), a consequence of the difficulty of adequately judging real skill before putting it into practice (Holden et al., 1999).

Other studies emphasise differences in specific skills between men and women. For example, Horrell et al. (1990), Ünsal (2021) or Papyrina et al. (2021) attribute a higher level of personal and social skills to women, while men report higher levels of technical skills, such as computer skills or specialised knowledge for skilled jobs. Finally, a third body of authors report having found no significant differences between genders (Mattheos et al., 2004; Kakkonen, 2011; Hosein & Harle, 2018; Ain et al., 2019; McNatt, 2020; Capella-Peris et al., 2021; Herrera et al., 2023).

Hypothesis 2. Students participating in the service-learning activity have different levels of skills according to their gender.

In summary, and after analysing the theoretical framework, we consider that the service-learning activity has a positive influence on the perception of skills related to ethics and social commitment. It also has a positive influence on other skills. Furthermore, students' gender also appears to be related to participation in service-learning activities and to the perception of skills. These hypotheses will be analysed through the empirical study presented below.

3. Methodology

The study population is made up of 2047 students of the Degree in Business Administration and Management of the Faculty of Economics and Business Administration of the University of Malaga during the 2018/2019 academic year. A convenience sample of 210 students has been selected from the following subjects in business organisation: Production and Operations Management, and Competitive Intelligence. As this is a voluntary activity, we were able to compare the results of students who took part in the service-learning activity with those who did not. The 210 students in the sample could decide whether to participate in the service-learning activity: 96 students participated as volunteers, while 114 did not.

A service-learning activity was implemented in these subjects and although long-term service-learning activities show superior results, Holmes et al. (2022) claim that even a single intervention service-learning activity has a positive impact on students' perceptions. This activity respected the characteristics put forward in the literature (Martínez, 2009; Tejada, 2013); that is, it was an activity that addresses social issues where interpersonal relationships between students and the community are present, based on collaborative practice and fostering critical awareness.

Specifically, the volunteering activity is framed as a service-learning activity and non-compulsory social contribution. The students who take part collaborate with the Malaga Food Bank in the Great Food Collection campaign. The activity is carried out in two phases: the collection of food and its classification. In the collection phase, they take part in a training day where they are shown how to carry out this task. The Food Bank then assigns participants to collection points (supermarkets and collaborating shopping centres), and it is the students who organise their work teams to collect food during the week of the campaign. In the second phase, the food is sorted in the Food Bank's warehouses, where the students organise the sorting process according to the criteria assigned by the organisation. The last phase of the process, which is the distribution of food to people who need it, is not addressed in the activity since normally this phase is carried out through other organisations and social groups and not directly through the Food Bank. The students were present when the food was delivered to these associations. The activity allowed students to put into practice the knowledge acquired in the course, such as the organisation of work teams, warehouse management and line balancing, while developing transversal skills.

Data was collected using the questionnaire validated by Martínez and González (2018). This is a skill self-assessment instrument using a Likert scale made up of 57 variables, grouped into three scales and fifteen subscales of skills (see Table 2), following the criteria of the National Agency for Quality Assessment and Accreditation (ANECA, 2005). This questionnaire allows measuring the transversal skills that are considered present in the Spanish professional context and that are considered when developing the contents of the university degrees supervised by ANECA. This tool makes it possible to analyse the adequacy of training and the requirements of the activity by means of transversal skills analysed in three dimensions: development, mastery and relevance (Table 1).

For the purposes of our study, three questions related to respondent characteristics were added which do not alter the structure of the questionnaire in terms of skill assessment. These are gender, course and participation in volunteering placements.

A pilot test was carried out with students of the Degree in Marketing and Market Research who are not part of the population of this study so that they could not interfere with the results in the final survey. This pilot test helped us to verify the students' understanding of the questionnaire.

To facilitate the collection of information, the questionnaire was previously transcribed in digital format. The questionnaires were given to the students during class time and at the end of the course once the service-learning activity and the subject had been

Table 1
Dimension of analysis of perceived skills.

Development	Presence of the skills in the training received or activity.
Mastery	Degree of acquisition of skills achieved.
Relevance	Importance of skills for professional performance.

Source: adapted from Martínez and González (2018).

Table 2
Skills included in the questionnaire.

Scale	Subscale	Skills
Instrumental Skills	1. Organisation and planning	Ability to order and structure ideas; manage and administer time; anticipatory attitude; discern what is important and what is a priority
	2. Oral and written communication in one's own language	Ability to prepare oral speeches; express ideas in written form; communicate to expert and non-expert audiences.
	3. Use of ICT	Basic computer skills; use of information management software; information management using ICTs.
	4. Communication in foreign languages	Ability to produce oral discourse in another language; to read and understand; to express ideas in written form; to communicate and interact with people in another language.
	5. Development of a professional and life project, and decision making.	Ability to define a personal/professional project and set goals; to know how to make decisions; to learn from the past and present and project actions into the future; self-awareness of strengths and weaknesses, threats and opportunities.
	6. Information and knowledge management	Ability to search for and process information; to analyse and synthesise information; to position oneself critically in relation to information
Personal Skills	7. Teamwork	Ability to work collaboratively and with interdisciplinary teams; to commit to and identify with projects; to respect and tolerate the ideas of others; to solve problems through dialogue and negotiation; ability to lead, dynamise and motivate groups.
	8. Social interaction	Ability to establish relationships and contacts; to interact actively, active listening; to empathise; to express one's own ideas assertively.
	9. Ethical and social commitment	Ethical and social responsibility and commitment; valuing and respecting diversity and multiculturalism; commitment to the environment; social and civic responsibility.
	10. Emotional control	Ability to perform under pressure; stress management; tolerance of frustration and adversity.
Systematic Skills	11. Self-employment	Ability to learn autonomously; to be self-critical; to know how to access available and necessary resources; active involvement in continuous learning and continuous updating.
	12. Entrepreneurial attitude	Ability to detect new opportunities; to be creative and innovative; to have initiative to generate new projects; commitment to one's own identity and professional development; self-confidence.
	13. Adaptation to new situations	Ability to tolerate change and uncertainty; transfer information and flexible use of knowledge, applying content to practice; work and study in another context, national or international, geographical mobility.
	14. Motivation	A desire to excel, motivation for individual development or achievement; positive attitude towards work; involvement in work; commitment to quality, to doing things well, with precision.
	15. Investigative powers	Ability to detect needs and identify problems; collect information, design and use data collection techniques; examine and interpret information; prepare a research report, phases and basic concepts.

Source: adapted from [Martínez and González \(2018\)](#).

completed. Before answering the questionnaires, the purpose of the questionnaire, the different skills covered, and the meaning of the dimensions were explained to them. These clarifications were also provided in writing within the questionnaire itself.

The data obtained was analysed using IBM SPSS Statistics software, version 25. To analyse the differences between genders in the responses, during the analysis the file was segmented according to gender to be able to compare the results in each of the groups. In addition, different Anova analyses and Chi Square test have been carried out to determine whether the mean differences are statistically significant. These analyses are presented in the results section below.

4. Findings

The segmented statistical analysis of the data has allowed us to compare the results obtained by men and women cross-sectionally for all variables. This allows us to obtain in all cases an image of the perception of each of the skills for each of the dimensions based on gender and participation in the service-learning activity.

Table 3
Chi-Square Test: Participation in service-learning activity-Gender.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-side)
Pearson Chi-Square	2.835 ^a	1	0.092		
Continuity Correction ^b	2.378	1	0.123		
Likelihood Ratio	2.851	1	0.091		
Fisher's Exact Test				0.119	0.061
Linear-by-Linear Association	2.822	1	0.093		
N of Valid Cases	210				

^a 0 cells (0,0%) have expected count less than 5. The minimum expected count is 37,94.

^b Computed only for a 2x2 table.

Source: the authors

In relation to the first hypothesis, only 38.6% of total men of the sample have participated in the service-learning activity, while the participation of female students amounts to 50.4% of total women of sample. It can be stated that women have a greater propensity to participate as volunteers, in this case, in a service-learning activity. However, the first hypothesis cannot be confirmed because the Chi-square test (Table 3) indicates that the variables gender and volunteering are not statistically significant. That is, the difference in the participation of men and women cannot be explained statistically by gender but may be due to chance or other variables not included in the study.

The results of hypotheses 2 are presented in Tables 4–6. Table 5 shows a comparison of the mean perception per skill scale and dimension according to gender and participation in the service-learning activity. Men show a lower perception of skills than women in all dimensions, irrespective of whether they have taken part in the service-learning activity. The only exception is found in the mastery of personal and systematic skills by men who have not taken part in the activity. In other words, men who have not taken part in the activity show higher performance in personal and systematic skills. This is not the case elsewhere, since, as can be seen, women who took part in the learning and service activity show higher levels for all the skills, from the presence (Development) of the skills in the activity, through their control or adequate implementation (Mastery) to the importance of these skills (Relevance).

As can be seen in Table 4, the standard deviation is similar in men and women in all skills, except in the Development level for Personal Skills. This table shows the difference between the mean perception shown by men and women depending on whether they have taken part in the service-learning activity. This information is complemented by Table 5, which shows the difference in the mean skills of men and women. The perception of skill between the two when they have not taken part in the activity is very similar. However, for those who have taken part in the activity, the difference between scores is significant, with females always showing a higher perception of skills.

On the other hand, in the Development dimension, non-volunteer men perceive a higher level of all skills than men volunteers. This is not the case for women, who have a higher level of skills among the female participants in the activity. In the Mastery and Relevance dimensions, men and women volunteers have a higher level of skills, except in the case of men for the Systematic skills.

Finally, both male and female participants in the activity show a higher level of perception of the skills with respect to the Relevance dimension. In other words, they perceive the importance of these skills independently of their own acquisition or mastery of them. It seems, therefore, that in general there is a volunteering effect that leads to higher skills among volunteers.

Table 5 shows that women have a higher perception of skills than men, being higher in the case of women volunteers. Only in the case of non-volunteers is this not the case for the systematic and personal skills in the Mastery dimension. Consequently, and in addition to what has already been mentioned in previous paragraphs, there seems to be a clear gender effect that makes women show a higher degree of skills.

The Anova test (Table 6) shows no statistical significance in all cases, except for the case of women for the personal and systematic skills within the Mastery dimension and for all the skills in the Relevance dimension. Consequently, we can state that, in the case of women, the perception of the relevance of the skills needed to carry out the activity adequately is related to participation in the practical service-learning activity. Women who have been volunteers have a greater perception of the importance of the skills that are necessary for professional performance.

Consequently, we can affirm that hypothesis 2 are supported, but with nuances with respect to their statistical significance. Women who participated in the activity show a higher mean level of skills in all scales and dimensions, these results being significant in the Relevance dimension for all skills and in the systematic and personal skills in the Mastery dimension.

On the other hand, it has been found that, as previous studies mentioned in the theoretical framework suggested, service-learning improves the perception of ethical and social commitment skills. As shown in Table 7, women present higher skill levels than men in all dimensions for the ethical and social commitment skills, with the difference being greater among those who have participated in the activity and minimal among those who have not participated in the activity. In other words, women who have participated in the activity identify a greater level of skills (Development), higher performance (Mastery) and attach greater importance to these skills (Relevance). Meanwhile, among men, the results show that service-learning activity has a positive influence only in the case of the

Table 4
Skills (mean perception).

			Development		Mastery		Relevance	
			Men	Women	Men	Women	Men	Women
Instrumental Skills	Volunteer	Mean	3.2016	3.6254	3.4393	3.4790	4.0241	4.3546
		S. D.	0.6639	0.7373	0.6008	0.6905	0.6041	0.5488
	Non-volunteer	Mean	3.3993	3.4381	3.3114	3.3470	3.9638	3.9716
		S. D.	0.8280	0.7674	0.7014	0.7886	0.7924	0.7794
Personal Skills	Volunteer	Mean	3.1704	3.5419	3.5342	3.7126	4.1578	4.4062
		S. D.	0.7321	1.0750	0.6288	0.7877	0.5606	0.6088
	Non-volunteer	Mean	3.2169	3.3057	3.4648	3.3953	3.9702	4.1120
		S. D.	0.9682	0.8194	0.8321	0.8701	0.8432	0.7448
Systematic Skills	Volunteer	Mean	3.3055	3.7054	3.3794	3.7008	4.1072	4.4453
		S. D.	0.7901	0.8926	0.6258	0.7523	0.6073	0.5431
	Non-volunteer	Mean	3.4008	3.4281	3.4565	3.4113	4.1120	4.1231
		S. D.	0.9393	0.7935	0.7861	0.8100	0.6710	0.7355

Source: the authors

Table 5
Difference in the mean skills of men and women.

		Development	Mastery	Relevance
Instrumentals S.	Volunteer	-0.424	-0.040	-0.331
	Non-volunteer	-0.039	-0.036	-0.008
Personal S.	Volunteer	-0.371	-0.178	-0.248
	Non-volunteer	-0.089	0.069	-0.142
Systematic S.	Volunteer	-0.400	-0.321	-0.338
	Non-volunteer	-0.027	0.045	-0.011

Source: the authors

Table 6
Anova: Skills-Participation in the service-learning activity by gender.

		Development		Mastery		Relevance	
		Man	Woman	Man	Woman	Man	Woman
Instrumentals S.	F	1.300	1.968	0.728	1.008	0.136	10.279
	Sig.	0.258	0.163	0.396	0.317	0.714	0.002
Personal S.	F	0.054	1.934	0.164	4.645	1.238	5.949
	Sig.	0.817	0.167	0.687	0.033	0.269	0.016
Systematic S.	F	0.228	3.420	0.220	4.357	0.001	7.907
	Sig.	0.634	0.067	0.640	0.039	0.974	0.006

Note: Dependent variable: skills. Independent variable: participation in the service-learning.

Source: the authors

Table 7
Ethical and social commitment skills (mean perception and Anova).

		Development		Mastery		Relevance	
		Men	Women	Men	Women	Men	Women
Volunteer	Mean	3.1042	3.6771	3.6719	3.9922	4.1406	4.5625
	S. D.	1.0923	1.2258	0.9012	0.9183	0.8399	0.5993
Non-volunteer	Mean	3.5098	3.5556	3.7010	3.6349	3.9902	4.2698
	S. D.	1.0880	1.0000	0.9487	1.0490	0.9380	0.7807
Anova ^a	F	2.725	0.374	0.019	4.174	0.547	5.626
	Sig.	0.103	0.542	0.890	0.043	0.462	0.019

^a Note: Dependent variable: ethical and social commitment skills. Independent variable: participation in the service-learning activity.

Source: the authors

Relevance dimension.

Now, we cannot affirm that in all these cases the differences in perception shown by the means in absolute terms are a consequence of the variables studied, that is, of participation or not in the activity as a volunteer. Table 7 shows an Anova analysis that shows us whether there is statistical significance in the differences observed between volunteers and non-volunteers, both in men and women. If this statistical significance exists, the difference in the means is explained by participation or not in the service-learning activity. Otherwise, when there is no significance, the difference regardless of the absolute value cannot be explained by the variables studied but rather the result of chance.

Therefore, based on the Anova analysis, in the case of men there is no statistical significance in any of the dimensions with a p value always greater than 0.05. On the other hand, for women there is statistical significance in the Mastery dimension ($p = 0.043$) and Relevance ($p = 0.019$). Therefore, we can say that service-learning shows a positive relationship with the skills associated with ethics and social commitment in the case of women and in the Mastery and Relevance dimensions. Thus, a gender difference is observed with respect to these skills that may be related to hypothesis 2.

5. Discussion

The findings show that participation in service-learning activities through volunteering allows students to apply their skills and learn by doing, making them more aware of their level of skill (Human et al., 2005; Meusen-Beekman et al., 2016). Furthermore, as a volunteering activity students connect their learning with a benefit to the community (Kwesiga et al., 2023), leading to greater feelings of civic engagement and social responsibility (Afzal & Hussain, 2020; Richard et al., 2016; Tyran, 2017), while also equipping them with the skills necessary for future employability (Souto-Otero & Shields, 2016; Zambrano et al., 2019) and enabling them to acquire new skills and practice other underutilised abilities (Burns et al., 2008).

In general terms, the results show that the students of the Degree in Business Administration and Management at the University of

Malaga perceive themselves to have a high level of skill, with means above 3 (on a scale of 5) for all dimensions. We can also affirm that participation in the service-learning activity is positive, a result in line with findings of studies by Burns et al. (2008), Kwesiga et al. (2023), Souto-Otero and Shields (2016) or Zambrano et al., (2019).

On the other hand, even though the results do not demonstrate that gender is related to participation in service-learning activities, they do suggest that women are more likely to participate than men. This supports previous studies (Wilson, 2000; Planty & Regnier, 2003; Lopez et al., 2006; Matusovich et al., 2006; Shukla & Shukla, 2014), and contrasts with studies that did not observe this disparity (Van Emmerik et al., 2004; Burns et al., 2008; Meyers, 2009).

The results also suggest that service-learning has a positive influence on skills development. Students who have not participated in the volunteering activity show a lower level of skills, except in the case of men for certain skills and levels, who show less perception in those who have participated as volunteers. These results may be due to what was pointed out by Holden et al. (1999), Baartman and Ruijs (2011) or McDonald (2004), who point to the decrease in the perception of skill after finishing the activity because of the difficulty of adequately judging real skill before putting it into practice. These results are in line with previous works where higher skill levels are found among students who participate in service-learning activities (Afzal & Hussain, 2020; Bedir, 2019; de Prada et al., 2021; Fernández et al., 2020; McNatt, 2020; Ortiz-Fernández & Tarifa-Fernández, 2022; Ramia & Díaz, 2019; Simons, 2021).

Although, in these cases, there were no skill differences between men and women who did not participate in the volunteering activity. In the case of our study, it is evident that the gender of those participating in the service-learning activity is related to the level of skill acquired. That is, women who participated as volunteers show a higher mean level of skills in all scales and dimensions, these results being significant, and contrasts with studies that found no significant differences (Mattheos et al., 2004; Kakkonen, 2011; Hosein & Harle, 2018; Ain et al., 2019; McNatt, 2020; Capella-Peris et al., 2021; Herrera et al., 2023).

Furthermore, these findings contradict the general findings of a significant body of literature (González-Betancor et al., 2019; Herbst, 2020; McDonald, 2004; Stewart & Alrutz, 2014; Tejeiro et al., 2012; Torres-Guijarro & Bengoechea, 2017; Wynn & Correll, 2017) that indicate that it is men who show higher levels of skill. Although some studies have found that women show higher levels of skill than men (Horrell et al., 1990; Papyrina et al., 2021; Ünsal, 2021) these strictly refer to a specific group of skills such as interpersonal and social skills.

Finally, the analysis suggest that service-learning is positively related to ethical and social commitment, as previous studies have shown (Afzal & Hussain, 2020; Bach & Weinzimmer, 2011; Meyers, 2009; Ortiz-Fernández & Tarifa-Fernández, 2022; Ramia & Díaz, 2019). Although, in our case, this statement is only valid for women. This study found greater gender differences with respect to ethical and social commitment skills related to volunteering activities.

6. Conclusions

Service-learning facilitates the acquisition and development of skills while fostering ethical and social commitment. Thus, through service-learning students can enhance their level of skill, putting their knowledge into practice in line with the principles of social responsibility and commitment, which are so important for future managers of companies and organisations.

This study has shown that the skills level of those taking part in the service-learning activity is higher, with women having a higher perception of skill. No difference was found between men and women students who did not take part in the service-learning activity. Moreover, women are more likely to participate in the service-learning activity as volunteers. In other words, service-learning contributes to the improvement of skills linked to social commitment and other skills analysed and does so to a greater extent among women.

On the other hand, it is necessary to recognize certain limitations. Firstly, the fact that not all skills are present in equal intensity in the service-learning activity can be considered a limitation of this type of studies. But it is a limitation that is relatively controlled when working with transversal skills agreed upon for a specific context. In principle we could think that in these skills with less presence the differences between volunteers and non-volunteers should not be important, but it is an assumption that we cannot prove. We must always keep in mind that this is a study of self-perception and, furthermore, of transversal skills. A second limitation is the duration of the activity, which in this case has been very specific and brief in time. A future line of research would be to verify the effect over time of this type of activities. That is, the effect on the students who participated and those who did not participate could be measured two or three months after the service-learning activity, observing if there are significant differences. Likewise, research could be improved by combining the measurement of real skills and perceived skills.

However, we believe it would not be appropriate to establish compulsory activities, since a real commitment to the activity on the part of the participants is necessary, as their actions have a direct impact on the well-being of the community. For this reason, it would be necessary to work previously on the social awareness and solidarity of students while also exploring why men are less inclined to participate.

It should be noted that, as this is a convenience study at a university, the results cannot be extrapolated to the rest of the community. A larger study involving other universities and additional subjects would help reinforce the conclusions of the study, offering statistically more solid results and possible answers to some questions such as the significant positive impact of volunteering on the relevance dimension. Another line of future research may be to compare the current results with those obtained in a new collection of information sometime after the activity to verify the real impact of the service-learning activity on the skills. There is also the possibility of promoting future research that complements the self-perception of skills with the measurement of real skills by performing practical assignments and thus combining both methods.

Finally, we consider that the questionnaire is an effective tool for universities to determine students' perception of their skills acquisition at three different levels: their acquisition, mastery and relevance, thus enabling proposals for improvements to be made. In

this way students judge their own level of skill when these are put into practice in real situations. Service-learning takes on special significance as a service to the community, as a contribution by the university and students to social welfare, while offering students a real framework for learning and skills acquisition. This symbiosis represents an ideal opportunity for collaboration, ensuring the integration and commitment of the university and its students to their surrounding social environment.

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CRedit authorship contribution statement

Juan José Plaza-Angulo: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Alberto A. López-Toro:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijme.2024.100970>.

Annex I:

Perception of skills by subscale and scale (mean)

		Development		Mastery		Relevance	
		Men	Women	Men	Women	Men	Women
1. Organisation and planning	Volunteer	3.4583	3.7656	3.5313	3.4766	3.9922	4.2773
	Not volunteer	3.6209	3.5979	3.4314	3.4246	4.0833	4.0198
2. Oral and written communication in one's own language	Volunteer	3.0000	3.4609	3.3906	3.3438	3.9063	4.3516
	Not volunteer	3.2941	3.3651	3.0784	3.2302	3.8529	3.8730
3. Use of ICT	Volunteer	3.3749	3.8258	3.3154	3.5877	3.8623	4.2767
	Not volunteer	3.7416	3.5391	3.6244	3.3138	4.2341	4.0225
4. Communication in foreign languages	Volunteer	2.9694	3.5749	3.0044	3.4413	3.6552	4.2598
	Not volunteer	3.3920	3.2519	3.3932	3.1335	4.0917	3.9686
5. Development of a professional and life project, and decision making.	Volunteer	3.2438	3.7281	3.5438	3.5125	4.2188	4.3781
	Not volunteer	3.1922	3.1968	3.2392	3.1619	3.9843	3.9460
6. Information and knowledge management	Volunteer	3.1042	3.5469	3.2917	3.5833	3.9792	4.4115
	Not volunteer	3.4902	3.5926	3.4967	3.5714	3.9346	4.0476
Instrumental Skills	Volunteer	3.2016	3.6254	3.4393	3.4790	4.0241	4.3546
	Not volunteer	3.3993	3.4381	3.3114	3.3470	3.9638	3.9716
7. Teamwork	Volunteer	3.4188	3.6688	3.6188	3.8063	4.0375	4.4594
	Not volunteer	3.4510	3.4159	3.6157	3.5270	4.0784	4.1079
8. Social interaction	Volunteer	3.2422	3.5195	3.4609	3.6563	4.1406	4.3633
	Not volunteer	3.1814	3.3571	3.3333	3.4405	4.0147	4.1071
9. Ethical and social commitment	Volunteer	3.1042	3.6771	3.6719	3.9922	4.1406	4.5625
	Not volunteer	3.5098	3.5556	3.7010	3.6349	3.9902	4.2698
10. Emotional control	Volunteer	2.9167	3.3021	3.3854	3.3958	4.3125	4.2396
	Not volunteer	2.7255	2.8942	3.2092	2.9788	3.7974	3.9630
Personal Skills	Volunteer	3.1704	3.5419	3.5342	3.7126	4.1578	4.4062
	Not volunteer	3.2169	3.3057	3.4648	3.3953	3.9702	4.1120
11. Self-employment	Volunteer	3.3750	3.7813	3.4688	3.8125	4.1484	4.4063
	Not volunteer	3.4804	3.5159	3.4951	3.5357	4.0588	4.1349
12. Entrepreneurial attitude	Volunteer	3.1500	3.6156	3.3188	3.5938	4.2938	4.5000

(continued on next page)

(continued)

		Development		Mastery		Relevance	
		Men	Women	Men	Women	Men	Women
13. Adaptation to new situations	Not volunteer	3.2784	3.1841	3.3412	3.1556	4.2706	4.1206
	Volunteer	3.0729	3.5521	3.0938	3.5313	3.8750	4.4219
14. Motivation	Not volunteer	3.3725	3.3016	3.3922	3.2222	4.0000	3.9947
	Volunteer	3.6563	4.0039	3.7109	4.1172	4.2188	4.5938
15. Investigative powers	Not volunteer	3.5294	3.7063	3.7157	3.7500	4.2255	4.3770
	Volunteer	3.2734	3.5742	3.3047	3.4492	4.0000	4.3047
Systematic Skills	Not volunteer	3.3431	3.4325	3.3382	3.3929	4.0049	3.9881
	Volunteer	3.3055	3.7054	3.3794	3.7008	4.1072	4.4453
	Not volunteer	3.4008	3.4281	3.4565	3.4113	4.1120	4.1231

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