

Educational and social implications of Service-Learning using mixed methods: a meta-analysis

Implicaciones educativas y sociales del Aprendizaje-Servicio con métodos mixtos a través de un meta-análisis

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Abstract:

Service-Learning (SL) aims to improve students' academic knowledge and performance, as well as their civic and social competencies. This study uses the meta-analysis technique to summarise up-to-date research findings on SL in scientific papers that used mixed methods research. The findings indicate that SL leads to significant improvements in students, especially in terms of knowledge acquisition ($d=1.07$), with a similar effect size for the few studies using a control group ($d=0.89$), although

this effect size is smaller in terms of attitude toward service ($d=0.45$). There are no significant effects when these variables are compared with dependent variables such as programme duration, gender, or sample size. Moreover, there is high heterogeneity in the evaluation methods and measurement instruments used in the articles. Although research on SL is increasing significantly, the methodological quality of most of the studies reviewed is quite low. It can be concluded that SL is beneficial to the students involved in the service, however, in order

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to properly appreciate the different scenarios of the findings, more rigorous research designs are required. We would recommend creating uniform research protocols and extending SL using mixed methodology across every discipline, including the arts, and at every level of education.

Keywords: Service-Learning education, mixed methods, meta-analysis, higher education, knowledge, social competency.

Resumen:

El Aprendizaje-Servicio (ApS) se presenta como un modelo capaz de mejorar la calidad educativa, el rendimiento académico y las competencias cívicas y sociales de los estudiantes. Este estudio pretende, a través de un meta-análisis, sintetizar los resultados de investigación publicados hasta la fecha sobre ApS en artículos científicos que han empleado un enfoque mixto de investigación. Los resultados indican que el ApS parece producir mejoras importantes en los estudiantes, principalmente en la adquisición de conocimiento ($d=1.07$), con un tamaño del efecto

igualmente grande en los escasos estudios con grupo control ($d=0.89$), aunque menor en la actitud hacia el servicio ($d=0.45$), no encontrándose efectos significativos cuando se comparan estas variables con variables dependientes, como duración del programa, género y tamaño de la muestra. Además, hay una gran heterogeneidad en los modos de evaluación y en los instrumentos de medida. La mayoría de los estudios tienen una calidad metodológica baja, a pesar de que la investigación sobre el tema se va incrementado notablemente. Se concluye que el ApS produce beneficios en los estudiantes que llevan a cabo el servicio, pero para poder apreciar la casuística de los resultados, los diseños de investigación tendrían todavía cierta capacidad de mejora. Se sugiere elaborar protocolos de investigación homogéneos y se aconseja que el ApS con metodología mixta se extienda a las diferentes disciplinas, entre ellas las artísticas, y a todos los niveles educativos.

Descriptores: aprendizaje servicio, métodos mixtos, meta-análisis, educación superior, conocimientos, competencia social.

1. Introduction

In the current educational context that places great emphasis on information and technology, traditional teaching methodologies are questioned and it is advisable to look for alternatives that take into account academic training, students' personal growth and their participation in the community (Dolgon et al., 2017; Hébert & Hauf, 2015). The social dimension of educa-

tion is important as it takes place in a given social setting, marked by its own cultural, political and economic characteristics. Education that considers the social reality should contemplate objectives relating to beneficial actions for the community from a critical approach (Deeley, 2015).

One of the emerging alternatives that combines both individual and social

dimensions is Service-Learning (SL), “a method for combining educational success with social commitment: learning to be competent while being useful to others” (Batlle, 2011, p. 51). This methodology involves first detecting the problems in society, studying and planning strategies to improve them and implementing actions, within the framework of a continuous critical reflective exercise by students (Lewellyn & Kiser, 2014).

One of the fundamental principles of this methodology is meaningful and experiential learning which improves the acquisition of content and activates cognitive processes by enabling a direct relationship between academic content and the reality of the environment (Rodríguez-Izquierdo, 2020). Knowledge in SL is fostered when students become aware and in control of their own learning and propose personal self-efficacy and self-motivation strategies (Ciesielkiewicz & Nocito, 2018). Unlike other experiential methodologies, SL prioritises systematic learning and service and integrates the latter into the academic curriculum (Zimmerman, 2020). It also promotes citizen participation and social responsibility (Wang et al., 2019). Moreover, it brings benefits to all players involved in education and increases satisfaction and social cohesion (Celio et al., 2011).

Mixed methods research (MM) is a growing approach that combines quantitative and qualitative methodologies (Frels & Onwuegbuzie, 2013), presenting them together as a means of

addressing their potential limitations so as to achieve increased validity of the findings (Hamui-Sutton, 2013). Thus, according to Johnson, Onwuegbuzie and Turner (2007) it is the type of study in which a researcher or team of researchers combine and integrate elements of qualitative and quantitative approaches (e.g., data collection, analysis and inference techniques) in order to further understand and corroborate the phenomenon studied. It is this integration that characterises and differentiates MMs from multi-methods, which include the use of more than one data collection method in a study or group of related studies (Hesse-Biber, 2016).

The integration of MM approaches goes beyond combining the two methods and helps to create a new whole and a holistic understanding of the phenomenon studied (Johnson et al., 2007). It results in a wide variety of designs, whereby the main ones and their variants are sequential-explanatory, sequential-exploratory, sequential-transformative, concurrent triangulation, concurrent nested and concurrent transformative.

Specifically, in SL a large number of studies have taken into account MMs to evaluate their research procedures and findings (Cumberland et al., 2019) in different disciplines such as Social Sciences (Shostak et al., 2019), among others. Tashakkori and Teddlie (2010) highlight the challenge of bringing together mixed research based on a theoretical-conceptual framework and invite the scientific community to work on the quality of

quantitative-qualitative methodological complementarity of studies using this approach (Wartenweiler, 2018).

In educational practice, this type of research (Schmid et al., 2020) is increasingly promoted in social areas. Systematic reviews and meta-analyses are the most appropriate methodologies, as they summarise “the scientific information available, increase the validity of the conclusions of individual studies and identify any areas of uncertainty which...” must be further examined (Barrera-Algarín et al., 2017, p. 261).

Nevertheless, only a few meta-analyses have studied SL, although their effects are promising. White (2001) found a moderate relationship between participation in SL and the academic achievement ($d=0.86$), self-concept ($d=0.51$), and social and personal development ($d=0.58$) of secondary school students, with similarly positive effects in university. Conway et al. (2009) went one step further with programmes that included structured reflection, longer service time and inclusion of the service in the curriculum.

Stressing the factors associated with the effectiveness of SL, Celio et al. (2011) found significant differences in attitudes towards oneself, school and learning, civic engagement, social skills and academic performance in students at different educational stages. Yoiro and Ye (2012) also found positive effects on social ($d=0.34$), personal ($d=0.28$) and cognitive ($d=0.52$) development and moderate effects depending on the research design, type of reflection and measurement or when the service experience is optional or mandatory. In addition, Warren (2012) shows the increase in student learning outcomes ($d=0.32$) regardless of the instruments used to measure them.

In this theoretical-methodological context, this research paper is justified since:

a) The increase in research on SL demonstrates its dissemination, especially in Europe and Latin America (Hayward & Li, 2017).

b) This growth encourages the use of quantitative systematic reviews.

c) There are few meta-analyses on SL, the last two being the studies by Warren and Yoiro and Ye, from 2012, almost a decade ago; and finally.

d) None of the known meta-analyses on SL have focused on research that has employed MMs, the value of which in educational research is increasingly discussed (Ponce & Pagan, 2015). Most of the literature on MMs could be considered generic (Creswell & Plano, 2017) and, therefore, its use in developing the rationale in the context of a particular discipline will help to strengthen the findings and the mixed research itself.

Therefore, the aim of this paper is to synthesise, mainly quantitatively, the research findings published to date on SL methodology in studies that used MMs.

2. Method

A meta-analysis was performed by integrating quantitative primary studies that give us a pooled estimate of effect size (Bottella & Sánchez-Meca, 2015). Contextual and methodological variables were also qualitatively analysed.

2.1. Search strategy

The review of literature related to SL was conducted using the databases of the Education Resources Information Center (ERIC), Dialnet, SCOPUS and Web of Science (WoS), as they include an extensive scope of research journals that provide a representative sample. The descriptors used, both in English and Spanish, were '*Mixed Methods Research*' and '*Service-Learning*' in the title, keywords or abstract according to the requirements of each platform.

2.2. Inclusion criteria

The inclusion criteria established for selecting the primary studies were:

- a) Use of MMs, where there is evidence of quantitative and qualitative research phases with integration and/or complementarity of the findings.
- b) Published under a peer-review system.
- c) With abstract and access to the full text.
- d) Languages English or Spanish, with no time range established.
- e) Focusing on the analysis of SL in any discipline, field or context.

f) With intervention process and data that allow for pre-post comparison in order to be able to estimate a standardised effect size (hereafter ES). A randomised design with a control group was recommended, but initially we also included studies with at least a quantitative pre-post evaluation.

g) With qualitative data systematically analysed using authors' own strategies or techniques.

2.3. Review process: phases and flow chart

The review process was carried out during the last quarter of 2019. Graph 1 summarises the review process, thus fulfilling the PRISMA criteria (Hutton et al., 2016).

We found 261 articles, 69 of which were excluded, in the first round, as the full text was not available. All 192 were re-analysed (second round) but only 103 met the inclusion criteria (inter-rater reliability 87.2%). Any discrepancies were resolved among the four researchers and the assessment of the studies was dichotomous and qualitative.

These 103 documents (third round) were then carefully read, which led to the elimination of another 10 documents since they were not related to SL. The few discrepancies that arose were discussed by the researchers.

Next, in a fourth round, we looked more closely at the quantitative data collected in the 93 documents: the

intervention had to include pre-post evaluation measurements, the measurement had to be quantitative, and the results section had to include the sample size, mean and standard deviation (SD) for the pre-post evaluation, and where only partial information was available, it had to be sufficient to reliably obtain the ES. Regarding the qualitative part, the papers had to include strategies or qualitative techniques evidencing that patterns of similar ideas, concepts or themes had been identified.

Only 23 documents fulfilled the criteria in the end.

2.4. Coding system

Although initially a more detailed categorisation was proposed, due to the

number of articles found and, especially, their broad heterogeneity, the results were grouped into two wide-ranging categories that measure the effectiveness of SL in relation to:

- 1) *Knowledge*: the acquisition of knowledge in different subjects or the perception of improved knowledge, motivation, self-efficacy, personal skills and competencies or improved behavioural habits.
- 2) *Social development*: improved empathy in terms of dealing with people linked to the experience and also fulfilment of the needs of special groups through the development of civic competencies, social responsibility, critical citizenship and perception of social justice.

GRAPH 1. Flow chart.

INITIAL DOCUMENTS=261

ROUNDS		EXCLUDED
First round	Documents obtained: 261	<ul style="list-style-type: none"> 69 text not complete Total excluded= 69
Second round	Documents obtained: 192 (Inter-rater reliability= 87.2%)	<ul style="list-style-type: none"> 31 duplicates 18 in languages other than Spanish and English 9 not related to MM 2 without an abstract 15 theoretical studies 7 not related to SL 7 studies about volunteering Total excluded= 89
Third round	Documents obtained: 103	<ul style="list-style-type: none"> 10 documents not related to SL Total excluded= 10
Fourth round	Documents obtained 93	<ul style="list-style-type: none"> 18 without quantitative data or only descriptive data 14 did not include a pre-post evaluation or only had a cross-sectional design 9 only provided data about proportions 7 did not provide the SD or exact <i>p</i> value 5 only presented the results in graphs 5 provided the result of the pre-post comparison statistical test but not the raw data. 4 used a design that does not allow the ES to be calculated 3 only used multivariate analyses, such as linear regression or MANOVA 2 only provided the <i>p</i> value 2 evaluated an irrelevant variable (for the purposes of this study) 1 excluded because of duplicate data Total excluded= 70

FINAL DOCUMENTS=23

Source: Own elaboration.

2.5. Statistical analysis

The results of each study were summarised in pooled effect sizes and weighted to account for the different weights of the studies according to their sample size. These are standardised mean differences, in this case Cohen’s *d*. For Cohen (1988), *d*>0.80 is considered a large effect, between 0.50 and 0.80 medium, between 0.30 and 0.50 small and <0.30 irrelevant. The value of *d* was estimated for each individual study, as was a mean value for the study total for each category.

In addition, the I2 value was obtained as an estimate of the percentage of heterogeneity. Given that the studies included vary considerably in the areas they focus on, the type of subjects, the type of activities and the duration of the community action they involve, we assume that this value will be high and, therefore, we have

sought to explain this heterogeneity by means of a meta-regression analysis using the variables that could determine this heterogeneity. Given the general paucity of information available, only the percentage of men and women, the duration of the SL activity and the sample size could be included as IVs.

Analyses were performed using the "metan" and "metareg" commands in the statistical software Stata, version 13.1 for Windows.

3. Results

3.1. Overview of the studies

The studies, identified with a number to aid reading (Table 1), have been analysed quantitatively and qualitatively according to contextual and methodological variables.

TABLE 1. Descriptive results of the selected documents.

No.	Authors	N*	Gender (% women)	Average age (SD)
<i>Knowledge</i>				
1	Cumberland et al. (2019)	35	51.42	25
2	Shostak et al. (2019)	18	ND**	ND
3	Knight-McKenna et al. (2019)	9	100	20 (1.2)
5	Howlett et al. (2019)	22	95.5	20-23
7	Schneider-Cline (2018)	46	97	ND
8	Wartenweiler (2018)	16	60	15-16
9	Gerholz et al. (2017)	86	70	24
11	Gomez-Lanier (2016)	14	ND	ND
14	Stevahn et al. (2016)	47	68.1	20-60, aprox.
15	Peralta et al. (2015)	50	68	21.9 (8.3)
22	Cone (2009)	81	91.3	67 % entre 18-21

<i>Social development</i>				
3	Knight-McKenna et al. (2019)	9	100	20 (1.2)
4	Brizee et al. (2019) CG	33	81.8	ND
6	Li et al. (2019) CG	40/20	53.3	19.8 (1.01)
8	Wartenweiler (2018)	16	60	15-16
9	Gerholz et al. (2017)	36	70	24
10	Sterk Barret (2016)	272	64	ND
12	Schvaneveldt & Spencer (2016)	68	98.5	19.80 (1.41)
13	Ocal & Altinok (2016) GC	78	43.75	12-14
16	Hwang et al. (2014)	210	ND	18 (0.27)
17	Seider (2012)	362	61.33	ND
18	Seider et al. (2012) CG	359/37	61.3	ND
19	Seider et al. (2011) CG	362/37	67.6	18-21
20	Lowe & Medina (2010)	17	ND	22.1 (4.2)
21	Hirschinger-Blank et al. (2009)	32	62.5	21
23	Simons & Cleary (2005)	59	85	20 (8.03)

CG=with Control Group.

N*= the N of each research study; for CG, the N is added second.

No.= corresponding to the descriptive analyses of the text.

NA**= not available.

Source: Own elaboration.

Thus, the following aspects were brought to our attention:

Years of publication: They range from 2005-2019, with the most productive five-year period being 2015-2019 with 65.22% of the total, followed by 2010-2014 with 21.74% and 2005-2009 with 13.04%.

Objectives: The research aims to discover the impact of the experience on students' acquisition of knowledge (1, 2, 3, 5, 7, 9, 10, 11, 13, 14, 15, 20, 21, 22, 23), behavioural habits (8), attitudes towards learning or the social context (1, 3, 6, 14, 20, 21), civic competencies and social responsibility (3, 9, 11, 12, 13, 14, 16, 18, 20, 21, 23), critical citizenship (4) spiri-

tuality (10) and perception of social justice (6, 18, 19).

Context: In Education, culturally and linguistically diverse school environments stand out with interventions in early childhood care (3), Australian Aboriginal population (15) or initiatives for the use of technologies in second language teaching (5). Social justice (6, 18), critical citizenship (4), spiritual development (10) and volunteering in orphanages (12) are all advocated. Only one single study addresses how family beliefs on service influence their children (17). In Health Sciences, the focus is on the care of the elderly (16) and Parkinson's patients (1). In Economics, the needs of the beneficiaries of the ser-

vice are investigated with statistical projections (9).

Disciplines: The majority belong to Humanities and Social Sciences: 74.99% relate to Higher Education, with experiences for the most part aimed at social justice (6, 8, 14, 17, 19, 21) and, to a lesser extent, 16.66% to Secondary Education. Studies in Health Sciences and Sociology also stood out (12).

Sample: 66.6% have a sample equal to or less than 100 participants and 33.33% greater than 100, with a predominance of Higher Education students (39.1%). A few studies randomly assign subjects to the control group (12,18,19). In all studies, the sampling is incidental, although most do not give the mean age of participants or only report an age range.

Limitations and methodological recommendations: The most frequent limitation is the size of the sample since it is small (1, 2, 4, 5, 7, 9, 11, 14, 20, 23), homogeneous (1, 2, 5, 6, 12, 19, 23) and, for the most part, from disciplines that are sensitive to social problems (36). The allocation of subjects to groups is unequal and without triple-blind randomisation (4, 9, 12, 16, 21, 22), which hinders generalisation of results (1, 4, 6, 8, 10, 16, 17) and poses a threat to internal validity (8, 22). Some studies highlight the lack of follow-up evaluation (9), added to the fact that it is not possible to demonstrate causal relationships (17, 20), with weak pilot and intrasubject studies (9, 23) and few correlational (17) and longitudinal studies (5, 6, 12), leading to conclusive findings which could, however, be more comprehensive (8, 23).

In contrast, the studies recommend the expansion and diversity of the sample (3, 7, 8, 21). Longitudinal designs would allow evaluation of long-term programme effects (6, 8, 12, 14, 16), and therefore multiple projects in different semesters and academic years are suggested (3, 4, 7, 14, 23). A holistic evaluation (6, 14) with triangulation of participants (3, 17) and techniques for greater contrast of results (1, 3, 21, 23) are also proposed. The systematic analysis of qualitative data completes the quantitative results regarding SL (14, 17, 21), since biographical accounts (23) and daily narratives enhance the evaluation of the experience (2). The reflective process allows us to understand changes in social competence in students with lower levels of self-esteem and self-efficacy (12) and the inclusion of audiovisual recordings of interactions between students and beneficiaries is a resource for self-evaluation that strengthens the findings (3).

3.2. Outcome of the meta-analysis

The evaluations include a wide variety of variables and ways of measuring them, and in several cases standardised and validated instruments are not used (2, 4, 5, 7, 8, 9, 11, 12). Therefore, a total quantitative measurement for each variable is established in cases where information is only given for each item on the questionnaire (items could be combined into one total measurement using the relevant formulas to combine means and standard deviations of specific questions evaluating the same construct). In this way, it was possible to provide sufficient information to estimate a standardised ES that can be compared in all studies.

TABLE 2. Descriptive results (means and standard deviation of effect size d) from pre-post evaluations of intervention with SL and studies that included a control group.

Condition	No. of studies	N	Mean d (95% CI)	Z	p	I ²
<i>Pre-post comparisons</i>						
Knowledge	11	341	1.069 (0.912, 1.226)	13.32	<.001	85.1 %
Social development	13	1201	0.448 (0.386, 0.511)	14.03	<.001	69.6 %
<i>Control Group</i>						
Social development	5	1093	0.887 (0.684, 1.089)	8.58	<.001	82.4 %

CI: Confidence interval; I²: percentage of heterogeneity, all statistically significant ($p < .001$).

Source: Own elaboration.

Moreover, only a minority of studies present the relevant data on the control group (see Graph 4) and, therefore, we decided to gather only those that included the pre and post results separately. The five studies with a control group, focusing on social development, were analysed separately, since the estimates of the effects are not comparable in both types of designs (experimental and quasi-experimental). Additionally, only two studies provided information on the effect of SL activity on service recipients in the community (1, 16). The data show very small effects, and information is generally scarce.

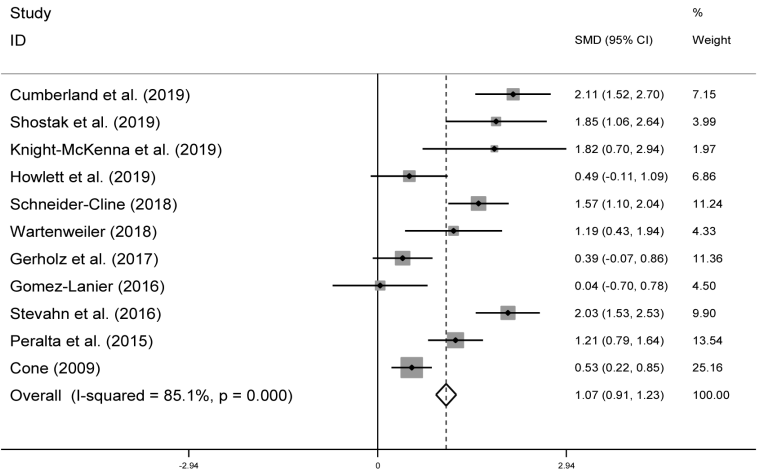
Table 1 presents the 23 studies selected with 29 items of data collected, as some studies investigate several non-combinable variables from the same or different categories. Table 2 shows the results grouped by category with the mean ES and its 95% confidence interval. In the *knowledge* category the effect was large ($d=1.07$), however, in the *social develop-*

ment category it was small ($d=0.45$). For the five studies that used a control group, an effect that can be considered large ($d=0.89$) was found.

Graphs 2-4 show the forest plot for each of the three conditions listed, including the studies with control group. The forest plots give information on the ES of each study, with a 95% confidence interval and the relative weight of each study (which depends upon its sample size and the inter-subject variability in the results). Regarding the studies evaluating *knowledge* (Graph 2) only one clearly crosses the 0 line (the solid vertical line) in its confidence interval, which reinforces the idea that the intervention using SL on this condition had a positive effect. This can be seen in the dashed vertical line that marks the mean of all the studies. In these graphs, the shaded area of the effects represents the weight of each study and the diamond at the bottom shows the size of the heterogeneity. However, regarding the

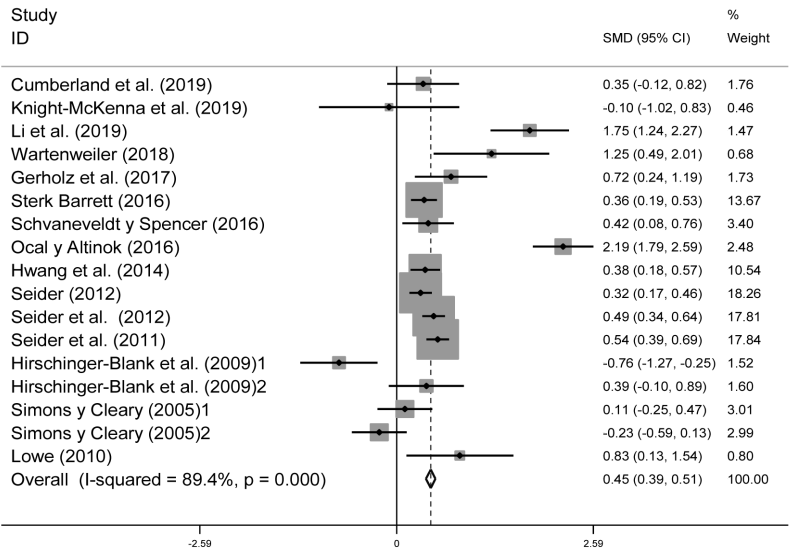
social development category (Graph 3), 4 studies cross the 0-effect line and 2 even show a clearly negative result. In the control group studies (Graph 4), 4 out of the 5 show a clearly positive effect of change due to SL activity.

GRAPH 2. Effect sizes for each study with *knowledge* as the DV.



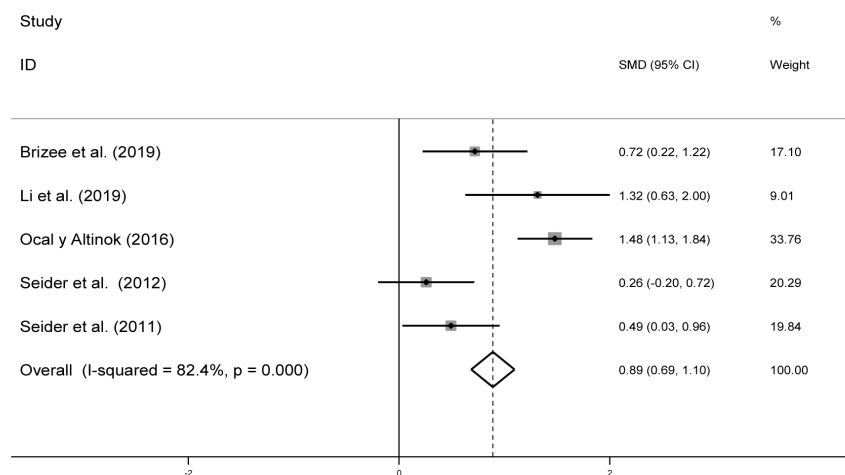
CI: confidence interval. ES: effect size. Overall: total effect. I-squared: percentage of heterogeneity. Source: Own elaboration.

GRAPH 3. Effect sizes for each study with *social development* as the DV.



CI: confidence interval. ES: effect size. Overall: total effect. I-squared: percentage of heterogeneity. "1,2": indicates measurements of different constructs within the same study. Source: Own elaboration

GRAPH 4. Effect sizes for each study with social development as the DV (studies with control group).



CI: confidence interval. ES: effect size. Overall: total effect. I-squared: percentage of heterogeneity.

Source: Own elaboration.

In the meta-regression analyses, no statistically significant effect was found for programme duration, gender, or sample size in any of the category-specific comparisons. Thus, with respect to DV *knowledge*, the coefficients of the meta-regression were: -0.01 for sample size ($p=.670$), -0.07 for duration of activity ($p=.877$) and -0.01 for distribution by gender ($p=.496$). The values are similar for the other DV and for the studies with control group. Given the heterogeneity among the studies with respect to the method of evaluating their specific DV, the type of sample, type of students and the scarce information offered by many of them, it was not possible to make valid groupings to analyse other factors that could be causing the high I2 values. Age was not included, as most studies consider this variable to be of little relevance in SL, which could be

the very reason why it is not specifically included in many studies.

4. Discussion

SL is based on two major theoretical models that influence its measurement. The first focuses on the effects of the programmes, with quasi-experimental designs that seek to overcome their own methodological limitations due to the nature of the service (Eyler, 2011), and the second on the qualitative understanding of the service and its implications, with flaws in its ontology and epistemology. Such shortcomings, explicit in many studies for measuring SL, have led to the proposal of holistic designs such as MMs, which pose a greater methodological challenge due to the requirement to integrate quantitative and qualitative approaches (Bringle et al.,

2011). In this search for methodologies, the findings of the studies analysed confirm that SL promotes its fundamental principles, i.e., the improvement of academic knowledge and citizenship skills. At the same time, it is evident that, although research on the subject is increasing, there is enormous heterogeneity in the application of SL, its contexts and evaluation.

In the present review, we have taken into account relevant studies using MMs and reviewed what they evaluate, how they evaluate it and the type and size of the sample. It should be noted that most of the papers that met the minimum criteria for the review have a methodological quality with room for improvement. With only a few exceptions, it was observed that they do not use standardised and previously validated instruments. Furthermore, 47.8% of the studies provide descriptive data on the items, but not on the total scales. The sample size of many of the papers is very small, nevertheless it was considered important to include them in order to reflect the current state of MMs research on SL, its potential usefulness and the shortcomings that future studies should address and try to solve. However, the studies with a methodological design including a control group offer significant results. In this respect, Bringle et al. (2011) along with the consensus of a wide range of authors (Lewellyn & Kiser, 2014; Waterman & Billig, 2003) highlight that SL research must, among other aspects: control or explain the differences between the groups forming part of the research; employ psychometrically correct, multiple-indicator measures that include, in

addition to participant self-reports, assessments from external observers to counteract expected response bias in the social context; systematically analyse qualitative data that enrich quantitative data (Selmo, 2015); use multiple research methods converging the results to increase the understanding, reliability and generalisability of the results; and use designs that support the conclusions reached so that they are not arbitrary.

The findings are consistent with other meta-analyses that also found moderate effect sizes in variables related to acquired knowledge and self-efficacy, such as academic achievement (Celio et al., 2011; White, 2001), cognitive development (Yoiro & Ye, 2012) and learning (Warren, 2012). At the same time, the variables associated with personal and social development obtained much smaller effect sizes, information that is in line with that of other previous quantitative reviews (Conway et al., 2009).

In addition, the high percentage of studies carried out at university is a reflection of the many initiatives recently undertaken in this context over recent decades to build a socially responsible learning environment that promotes students' integral development. The management of this methodology in Higher Education requires the development of students' critical thinking, based on logical and moral reasoning, in order to understand the connections between the socio-cultural and economic-political contexts (Deeley, 2015). SL promotes cognitive processes in students through the challenge of solving

problematic and unstructured situations in the service where they use the different perspectives and knowledge acquired in the classroom, guided by continuous critical reflection (Fitch et al., 2013).

The disciplines that have used SL are mainly related to the Social Sciences, especially in Higher Education teacher training. It is less common in areas such as Teaching of the Arts, which have shown so many socio-cultural and academic benefits (Chiva-Bartoll et al., 2019). This methodology should also be considered at other educational levels, such as Primary and Secondary Education in order to socially involve as many students as possible (Dolgon et al., 2017).

Moreover, the small number of studies finally selected and their high heterogeneity explain the high I2 values. The meta-regression analyses indicate, in any case, that neither sample size, gender nor activity duration have a statistically significant effect on mean effect sizes. Furthermore, it was not possible to establish categories on the evaluation instrument, the students' areas of specialisation or other aspects that may be relevant, given that the studies differ in these aspects. It stands to reason that this may be the best explanation for the heterogeneity.

With a couple of exceptions, the selected studies do not provide sufficient quantitative data on the effect of the service on recipients, and this is a recurring need that is emerging in literature (Camilli et al., 2018; Rubio et al., 2015). The social impact of the activity itself is considered

to be of great importance and so it seems pertinent to study this aspect in greater depth.

5. Conclusions

In studies using MMs, SL shows positive effects on acquired knowledge, perceptions of self-efficacy and skills, and moderately positive effects on students' social attitude, motivation and empathy, finding no significant effects when comparing these variables with dependent variables such as programme duration, gender and sample size.

Taking into account the limitations of the studies chosen, especially the high heterogeneity of the studies in terms of geographical location, linguistic and cultural aspects, type of community service and target population, among other aspects, we believe that there are aspects that can be extracted in order to boost research:

- a) SL appears to lead to improvements that, generally, have a moderate effect and may be significant. Therefore, it would be fitting to extend it to a wider range of disciplines and educational levels.
- b) It would be necessary to carry out more rigorous studies on SL using common, validated and comparable measurement instruments, in order to specify in the results the aspects related to improvement, in addition to studies with uniform protocols on design aspects, in particular with control groups and randomisation.

Finally, it should be noted that, although MMs require thorough knowledge of research methodologies, it seems that they are not yet sufficiently consolidated in SL. The conceptual and methodological integration of quantitative and qualitative methods can produce high-quality primary research that fosters evidence-based practice, with rigorous data analysis continuing to be necessary for a comprehensive understanding of SL. Due to the academic and social benefits obtained by applying SL, and the research benefit provided by the results of using MMs (Tashakkori & Teddlie, 2010), we believe it is necessary to continue to effectively further examine this fruitful field of work.

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