How, where, when and by whom is Service-Learning assessed? A systematic review

¿Quién, cómo, dónde y cuándo se evalúa el aprendizaje-servicio? Una revisión sistemática

Ariane DÍAZ-ISO, PhD. Faculty member in the Department of Education. University of Deusto *(ariane.dias.iso@deusto.es).*

Dra. Luana FERREIRA-LOPES, PhD. Faculty member in the Department of Education. University of Deusto *(luana.ferreira@deusto.es).*

Dra. Marian ALAEZ, PhD. Associate Professor in the Department of Private Law. University of Deusto *(marian.alaez@deusto.es).*

Dra. Maria José BEZANILLA, PhD. Associate Professor in the Department of Education. University of Deusto *(marijose.bezanilla@deusto.es).*

Abstract:

This research was prompted by the need to develop sounder, more consistent assessment systems to effectively assess Service-Learning (SL hereinafter) interventions at higher education institutions, with a view to training professionals committed to the transformation and well-being of society. To address this need, the study presents a systematic review of the assessment systems used to assess learning outcomes in SL interventions in university settings. A total of 56 papers are analysed, selected from the WoS, Scopus and ERIC databases according to the criteria set out in the PRISMA statement. Our findings provide insight for the educational community as to how SL interventions are being assessed in a university context. They also serve to orient future teaching actions by highlighting elements that refer to the learning outcomes, criteria, techniques, actors and types of assessment used in such interventions. Different learning outcomes are assessed through SL interventions and a variety of instruments are used for that purpose. Some assessment systems are found to be incomplete and some contain inconsistencies, so it is concluded that in spite of the efforts observed in most of the papers reviewed, there is still considerable room for improvement in assessment SL systems.

Keywords: Service-Learning; evaluation; assessment; higher education; university; systematic review.

Resumen:

Este trabajo de investigación surge de la necesidad de desarrollar sistemas de evaluación más sólidos y coherentes, que faciliten una evaluación efectiva de las experiencias de aprendizaje-servicio (ApS) en el ámbito universitario, con el propósito de fomentar la formación

de profesionales comprometidos con la transformación y el bienestar de la sociedad. Para colaborar a cubrir esa necesidad, este estudio presenta una revisión sistemática de los sistemas de evaluación utilizados para medir los resultados de aprendizaje en experiencias de ApS en entornos universitarios. Se analizaron un total de 56 artículos seleccionados siguiendo los criterios elaborados por la declaración PRISMA y utilizando las bases de datos de WoS, Scopus y Eric. Los resultados obtenidos en este trabajo arrojan luz a la comunidad educativa sobre cómo se están evaluando las experiencias de ApS en el contexto universitario. Asimismo, permiten orientar la futura acción docente señalando aquellos elementos referidos a los resultados de aprendizaje, criterios, técnicas, agentes y tipos de evaluación empleados en estas experiencias. Se detectan algunos sistemas evaluativos incompletos y también algunas incoherencias, por lo que se concluye que, a pesar de los esfuerzos observados en la mayoría de los artículos revisados, existen importantes áreas de mejora en los sistemas de evaluación.

Palabras clave: aprendizaje-servicio; evaluación; educación superior; universidad; revisión sistemática.

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1. Introduction

In recent decades, universities are called on to respond to social, environmental and financial challenges and to technological advances, particularly in data science and artificial intelligence (AI), in the context of their higher education mission. More specifically, universities must take on the responsibility of preparing and educating future generations by giving them the skills that they will need to act as active, responsible citizens (Marco-Gardoqui, et al., 2020). In this context, Service-Learning (hereinafter called SL) has emerged as a suitable methodology for tackling this challenge.

As a methodology, SL seeks to provide a practical learning experience that blends academic learning and community service (Bringle & Hatcher, 1995). It thus stands out as an experience-based learning method that addresses certain needs of the community by fostering a sense of civic responsibility among students. At the same time, it enriches participants' understanding of certain subjects and matters by providing a holistic view of the relevant disciplines (Alaez et al., 2022).

SL interventions go beyond the confines of conventional classrooms and apply academic content to real-life contexts with a view to responding to specific challenges facing the community (Hart, 2015). As a result, more and more research (Díaz-Iso et al., 2023; Mota Ribeiro et al., 2023) is highlighting this methodology as a learning strategy in which students can develop practical skills along with knowledge and ethical values with a view to becoming active citizens who help build fairer communities where people can live in greater harmony. But one of the main uncertainties faced by teaching staff when they implement SL interventions lies in how best to assess them (Gibson et al., 2011; Samino García, 2023).

This is a worrying shortcoming, because assessment plays a crucial role in guiding learning and in understanding and improving the processes and outcomes of SL interventions. The right assessment not only confirms the effectiveness, functionality and impact of educational interventions but also provides information for optimising them. So to ensure that an SL intervention is effective it is essential first to define the precise goals of the intervention and the outcomes expected, linking the service to be provided with the curriculum for the relevant subject. Students thus give academic meaning to the service experience, which becomes the focal point of their learning. Secondly, suitable assessment must be designed and planned. This means drawing up an assessment methodology that fits in with the nature of the goals assessed and provides guidelines for moving forward and consolidating the envisaged learning (Aramburuzabala et al., 2019).

Scientific literature includes a number of studies that address the assessment of SL interventions. Some of them (Nickman, 1998) are based on envisaged learning outcomes,

while others (Griffin et al., 2011) make no mention of such outcomes; some detail the type of assessment used in the intervention (Casile et al., 2011), some consider the need for different actors to be involved in assessing interventions (Nikolova & Andersen, 2017), and others describe the various assessment tools used (Gómez & Bartoll, 2014). However, to date there has been no exhaustive, systematic review of this matter. Therefore, there is a lack of knowledge on this topic to support teachers' assessment practices. Such a review would have many benefits, such as showing teaching staff involved in SL interventions how others assess them and what they themselves can learn from those assessments.

This study sets out to fill that gap, which is a necessary task given the systematic, multifaceted nature of the assessment process. More specifically, the goal of this research study is to deepen knowledge on the assessment systems used to measure the learning outcomes envisaged in SL interventions at universities, through a systematic review of the related literature. The aim is to identify what learning outcomes are assessed, what assessment techniques and tools are used, what actors are involved and what type of assessment is used (formative or summative; continuous or final).

2. Method

This systematic review was conducted in compliance with the criteria set in the PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Page et al., 2021). The research question, the search strategy and the inclusion and exclusion criteria were all designed according to the principles set out in that statement. The reference point taken in compiling and interpreting the results of the studies included is the paper by Lockwood et al. (2015), which provides methodological guidance for qualitative evidence synthesis. In particular, we adopted their meta-aggregative approach, emphasizing the faithful representation of study findings and avoiding reinterpretation, thus ensuring transparency and applicability to practice.

2.1. Research question

Following the PICO strategy (Population, Intervention, Comparison and Outcomes) (Santos et al., 2007), the research question that served to guide this study is the following: How are the learning outcomes (outcomes) of university students (participants) assessed in service-learning (intervention)?

2.2. Search strategy

The search for papers related to the topic addressed here was conducted in November 2022 using the Scopus and ERIC databases and the main collection of the Web of Science (WoS) as its sources. Books, book chapters, reports and minutes of scientific congresses were excluded from the search. Papers were identified on the basis of a systematic search for keywords in English designed according to the PICO strategy (See Table 1).

TABLE 1. Key words formulated with the PICO strategy.

	Participants [1]	Intervention [2]	Outcomes [3]
Keywords	"higher education" OR universit* OR college*	"service learning" OR "service-learning"	Assess* OR evaluat*
Searches	In Scopus: TITLE/ABS/KEY [1] AND TITLE/ABS/KEY [2] AND TITLE/ABS/KEY [3] In WoS: TOPIC [1] AND TOPIC [2] AND TOPIC [3] In ERIC: ABSTRACT [1] AND ABSTRACT [2] AND ABSTRACT [3]		

Source: Own work

2.3. Inclusion & exclusion criteria according to the content of the articles

This review focuses on research papers that provide information on the process of assessing the learning outcomes of Service-Learning interventions. With that initial premise, the inclusion and exclusion criteria were also designed taking into account the PICO strategy (see Table 2).

TABLE 2. Inclusion & exclusion criteria formulated with the PICO strategy.

	Population	Intervention	Outcomes
Inclusion criteria	Higher education students	Curricular & extracurricular Service-Learning	Provision of information on the assessment system for rating the learning outcomes of the intervention.
Exclusion criteria	Infant, primary, lower secondary, upper secondary, vocational training and non-formal education students.	Volunteering; community experiences with no academic component Work experience and other methods	Information on SL interventions but no mention of the assessment of learning outcomes Provision of information on tools for rating the perception of the various actors concerning the intervention Provision of information on the impact of the intervention on the community

Source: Own work

2.4. Selection process

The process of selecting studies comprised several steps, and was conducted by all four researchers responsible for the study (Figure 1). In step one, 1726 studies were identified in the Scopus, WoS and ERIC databases. The bibliographical references were exported to Excel, and duplicate documents were eliminated (n=1110). This left a total of 616 studies to be reviewed. In line with the inclusion and exclusion criteria set (see Table 2), the titles and abstracts of all 616 papers were reviewed at the screening stage and 468 of them were excluded on the grounds that they did not meet the inclusion criteria. This left 148 papers, the full texts of which were then analysed. Finally, 56 of those papers were selected for inclusion in this systematic review.

FIGURE 1. Flow diagram of the selection process of studies as per PRISMA.
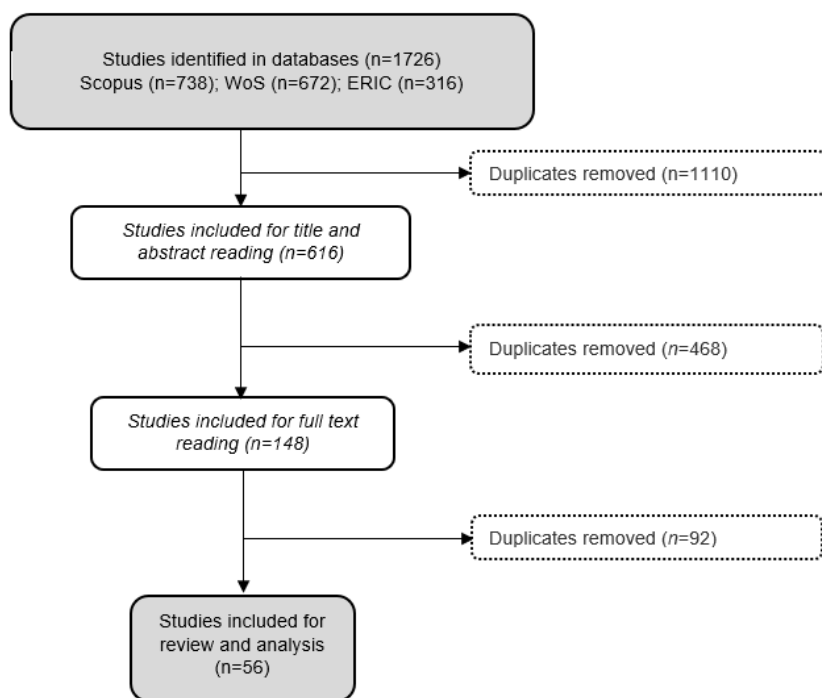
Source: Own work.

2.5. Data extraction process

Relevant information from the studies selected was collected systematically via a number of variables grouped under these headings: context variables (year and country of publication), methodological variables (purpose and methodology), sample variables (sample size), intervention variables (learning outcomes, actors, tools, criteria and types of assessment) and extrinsic variables (publication of studies).

3. Results

3.1. Descriptive analysis of the publications studied

The research papers selected cover a number of areas. In all, 14 different areas were identified: Natural science (15 papers), health (10), education (9), engineering (4), communication (3), psychology (3), economics (3), management (2) and urban studies (2). Areas identified in fewer cases were history (1 paper), fine arts (1), political science (1) and languages (1). A further 3 studies were classed as interdisciplinary.

The earliest publication identified as dealing with the assessment of learning outcomes in SL interventions dates from 1998 (Figure 2). Some relevant papers on the topic were found dating from then to 2007. But from 2007 onwards a trend is observed of at least one paper per annum, marking continuous, systematic interest in the topic. It is also worth noting that the year from which most publications were identified is 2013, and the years with the fewest are 1998, 2001, 2006 and 2022. As a caveat, it must be noted that our search took place in November 2022, which limits our ability to conclude whether the trend persisted or decreased in that year.

FIGURE 2. Nº of publications per year.
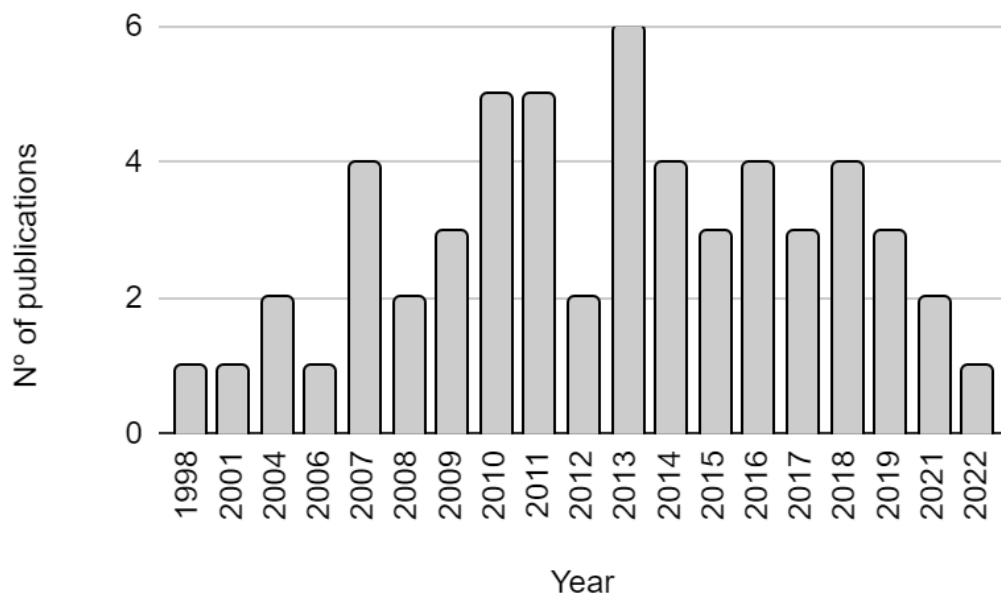
Source: Own work.

The studies selected came from several countries and continents: 40 were from the Americas (32 from the USA, 7 from Canada and 1 from Columbia), 5 from Europe (3 from Spain, 1 from Ireland and 1 from the UK), 3 from Africa (all 3 from South Africa), 2 from Asia (both from China) and 1 from Oceania (Australia). 5 papers did not indicate where the research examined was carried out.

3.2. Content results

3.2.1. Learning outcomes assessed in SL interventions.

Of the 56 papers studied that report on SL interventions in which students are awarded grades in the relevant subject, 5 fail to mention what learning outcomes were worked on. Of the remaining 51, 8 deal solely with specific competencies within the knowledge area of the subject, 4 solely with general competencies and 39 with both specific and general competencies.

The main general competencies covered are the following: a sense of civic duty, community, justice and cooperation (27 interventions); oral and/or written communication (16); critical thinking (11); teamwork (11); social and interpersonal skills (7); problem solving (5); self-awareness and personal growth (5). The following competencies were covered in 3 interventions or fewer: learning orientation and life-long learning (3); research skills (3); presentation skills (3); quality orientation (2); adaptability (2); use of ICT (2); diversity and interculturality (1); achievement orientation (1); planning (1); assessment (1); analytical thinking (1); creativity (1); and finally "professional skills" (2) and "practical skills" (1) without further specification.

FIGURE 3. Nº of publications per generic competency.
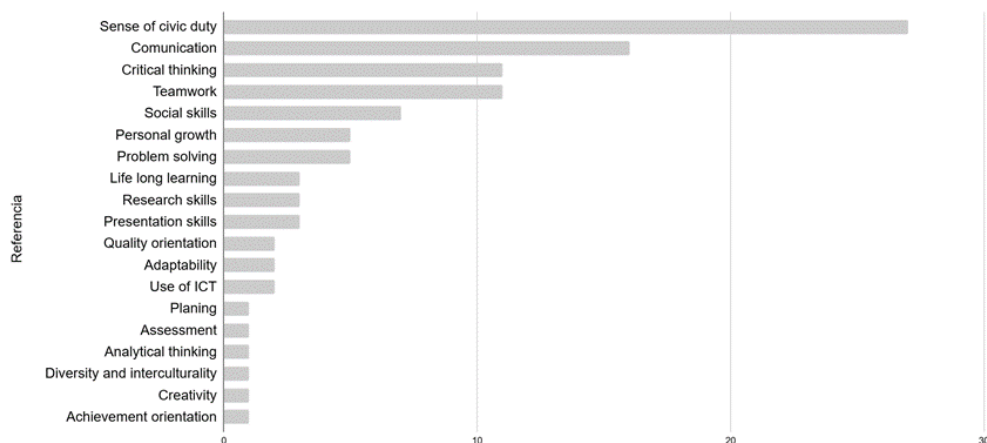
Source: Own work

3.2.2. Assessment tools and criteria used to assess learning outcomes.

The literature review carried out reveals that students on SL projects are assessed via a wide range of assessment tools and techniques. The graphic below (see Figure 4) shows the various assessment techniques found in the literature, as named in each of the studies analysed.

FIGURE 4. Nº of publications per assessment instrument used.
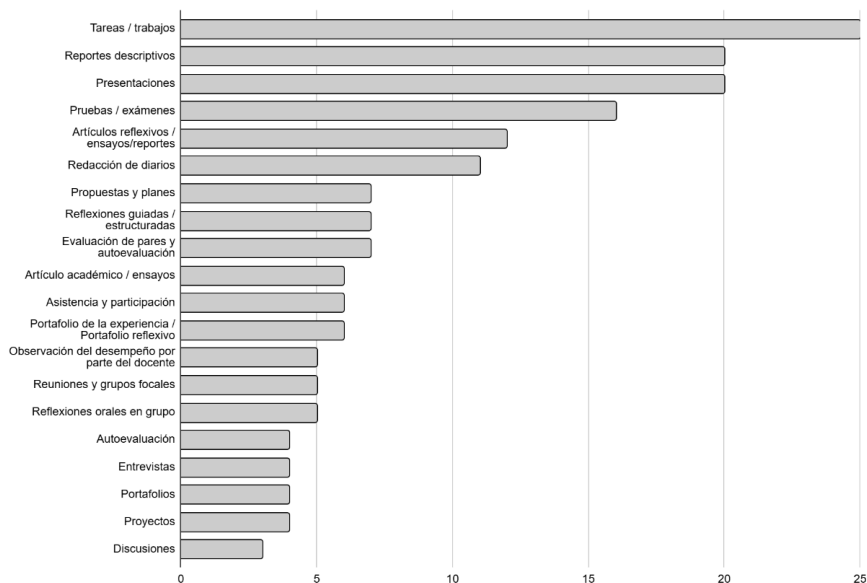
Source: Own work.

However, a detailed look reveals synergies between many of them so they can be grouped into broader categories. Thus, 6 main categories of assessment tools can be identified, as shown in Table 3:

TABLE 3. Nº of publications per type of assessment activity.

Type of activity	Description	Number of papers
Reflection activities	Activities and tasks in which the emphasis is on reflection. They include reflective papers, reflective essays and reports, guided/structured reflection, journalling and diaries, reflective journals, reflective writings in blogs, portfolios, oral/group reflections, etc	36
Tasks/ assignments	Activities and tasks of all kinds, such as lesson planning, writing letters, microteaching, analysis tasks, academic papers, preparing materials, etc	31
Project reports / projects	Service-learning projects and assignments that students normally hand in at the end of the intervention and which detail, analyse and assess the activities carried out. They may include descriptive reports, project proposals and plans, technical and research reports, service-learning projects, etc	31
Presentations, oral presentations via slides, posters, etc	Includes feedback & subsequent discussion	20
Exams and tests	Open-form exams, multiple-choice tests, quizzes, etc.	16
Others	Attendance & participation, observation, interviews and focus groups, etc.	19

Source: Own work

Reflection activities are the most commonly mentioned method for assessing learning outcomes linked to SL interventions. 36 of the 56 papers reviewed include student assessment activities of this type. The second most commonly mentioned method is that of specific tasks and assignments, which is mentioned in 31 papers. Oral presentations (20 papers) and exams (16) are also quite widely mentioned. Interviews, direct observation and other techniques appear less frequently.

All 56 papers analysed specify in greater or lesser detail what assessment tools are used, but only 26 set out the criteria and/or indicators for assessment applied. The assessment criteria and/or indicators refer to the learning outcomes set in each case but are frequently linked to assessment tools, so the results found when taking both points into account are presented below.

13 of the 26 papers include criteria for assessing reflection activities. The most commonly mentioned of these criteria are the following: evidence of learning achieved (specific, generic and concerning SL) and of personal and occupational growth achieved (self-awareness) (12 papers); in-depth analysis (reflection) (7); writing skills (5); level of detail in describing contributions, tasks and activities carried out (and those deferred or not completed) (5); criticism or critical thinking (5); evidence of having read the relevant theory, and knowledge of and connection with that theory (5). Other criteria featured include commitment to the project and the team (2); adaptation to the structure proposed (1) and to length (1), accuracy (1), importance (1), ability to summarise (1), correct use of APA standards (1) and satisfaction with the results obtained (1).

6 of the 26 papers set out criteria for assessing projects. The criteria mentioned are the following: learning achieved (2); soundness, significance and implementability of recommendations and proposals for improvement (2); use of content seen in class & links with theory (2); effectiveness of teamwork (2); quality of the data collection and analysis process (1); interpretation of data (1); structure and logical sequence (1); professional presentation (1); ability to assess impact and limitations (1); task & time management (1); details of observations on professional conduct and ethical aspects (1); standard of technical writing: analysis & synthesis, defence of a position and clear communication (1); acquisition of basic concepts (specifying the key concepts that must be analysed in the project) (1).

8 of the 26 papers that give assessment criteria mention criteria for assessing final oral presentations (presentation skills). The main criteria mentioned are the following: content (quality and accuracy of information presented, completeness of content and whether it responds to requirements and includes quality references) (5); organisation (presentation of content in a clear, logical fashion, ensuring that listeners can follow the message) (5); oral expression skills and suitability for public events, i.e. whether the speaker speaks clearly and securely, captures the attention of listeners and awakens their interest, speed of exposition, volume, rhythm, not resorting to crotch-words, appropriate language and grammatical correctness, non-verbal communication such as body language and eye contact (5); visual aids (quality of signs, posters, presentations), technical level of the presentation, structure and organisation of the sequence of slides, appearance (4); adjustment to the time available (2); participation (the level of engagement elicited from listeners via questions, interactive activities, etc.), i.e. the degree to which the presentation sparks participation and interaction in its audience (2); general impact and effectiveness in conferring the importance and relevance of the SL. Students are expected to evidence their passion, commitment and understanding of the needs (for health) of the community (1); suitability of answers to questions (2); attitude towards criticism (1).

2 papers mention criteria for assessing exams. Specifically, they focus on understanding of concepts (1) and the ability to define, analyse and link ideas concerning the content of the subject (1).

3.2.3. Types of assessment used to assess learning outcomes.

In the 56 papers reviewed, differences can be seen in the ways in which students' learning outcomes in SL projects are assessed. 33 papers clearly indicate that SL projects are graded, highlighting the importance attributed to quantitative assessment in the context of education. 8 papers state that participants are not graded, and 15 give no information as to whether they are graded or not.

FIGURE 5. Percentage of studies for which SL interventions are graded and not graded.

No se especifica 26,8%

No 14,3%

Sí 58,9%
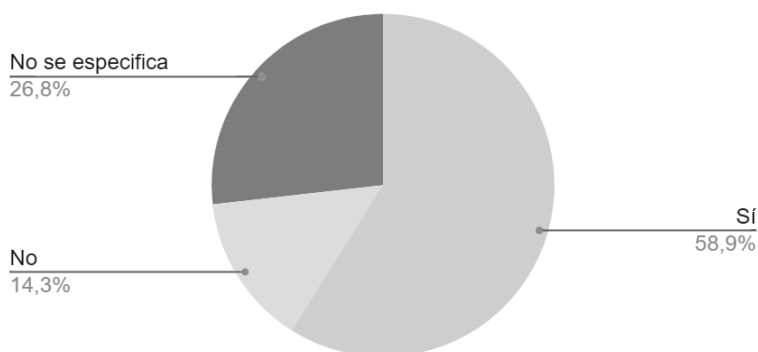
Source: Own work.

As for the nature of assessments, 13 of the papers reviewed mention entirely formative assessment, in the form of formative continuous assessment of the progress of students throughout the project. 12 papers refer to entirely summative assessment, carried out at the end of the project and providing an overall assessment of students' performance. Interestingly, 23 papers mention hybrid approaches blending formative and summative assessments to provide an integrated understanding of students' performance. This highlights the importance attributed to both the continuous development of skills and the overall assessment of progress achieved. It is worth noting that 8 papers fail to specify the type of assessment used in their SL projects, which suggests a lack of clarity in communicating assessment practices.

FIGURE 6. Percentage of studies in which the assessment used is exclusively formative, exclusively summative and both.

No se especifica 14,3%

Formativa 23,2%

Formativa y sumativa 41,1%

Sumativa 21,4%
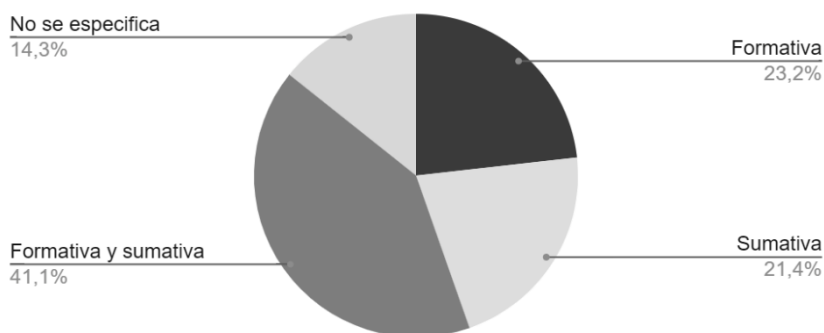
Source: Own work.

3.2.4. .Actors involved in assessing interventions.

Only 3 of the 56 papers reviewed fail to specify who assesses Service-Learning projects.
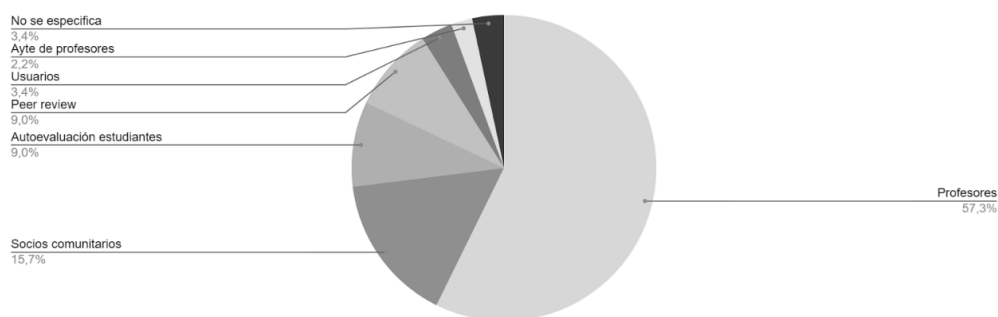
In 34 papers teachers are the only assessors, while in 20 multiple assessors are identified. In all but two of the papers that indicate multiple assessors, the teacher or instructor in charge of the university project assesses students' learning outcomes, but there are also clear indications of other assessment actors being involved.

In some studies, a colleague on the faculty with experience in community service is asked to cooperate with the teacher of the relevant subject in carrying out the assessment (Shapiro, 2012). Several papers also indicate that teachers are supported by specialist instructors and facilitators in the relevant matter to provide guidance in both the teaching of students and the assessment process (Bheekie et al., 2007; Nickman 1998; Staton & Tomlinson, 2001).

14 papers indicate that community partners are charged with assessing students' performance in the SL intervention, thus providing feedback on their progress. One study also states that community partners also draw up written assessments of students' work (Ebacher, 2013). Three papers indicate that the service recipients in the SL projects play an active part in assessing students' performance.

16 papers observe that students themselves play a significant role in the assessment process, via self-assessment or peer assessment. In 8 of these papers, students carry out an independent assessment of their own experience and performance, focusing mainly on their strengths and on areas for improvement (Kemper et al., 2004). A further 8 indicate that students' performance in the SL intervention or in the assignments submitted is assessed by their peers.

FIGURE 7. Percentage of studies as per the types of assessor involved.

No se especifica
3,4%
Ayte de profesores
2,2%
Usuarios
3,4%
Peer review
9,0%
Autoevaluación estudiantes
9,0%
Socios comunitarios
15,7%
Profesores
57,3%

Source: Own work.

4. Discussion & conclusions

The goal of this study is to carry out a systematic review of the assessment systems used to rate the learning outcomes envisaged in SL interventions at universities. Our findings, based on a search by keywords, show that most of the papers detected assess the process of the intervention via the perceived satisfaction levels of the stakeholders (students, teachers, the community), rather than the learning outcomes of students. This is the main reason why the 1110 papers initially identified were reduced to 56 in the systematic review conducted.

Studying the assessment systems used has led us to identify the knowledge areas in which SL has been assessed, the intended learning outcomes for each intervention, the assessment techniques and tools used, the actors involved, the indicators or criteria used (and their weighting) and the forms of assessment (formative, summative, continuous, final).

To begin with, it is important to note that most interventions analysed focus on the training of health professionals, while the methodology remains less present in teacher education—an area where one would expect the development of learning experiences aimed at strengthening future educators' social and community engagement.

A second point that stands out in an overall look at general learning outcomes (rather than specific outcomes for a specific subject) addressed in interventions is how many there are. 102 general competencies were found to be addressed in a total of 51 papers that specified this information. This gives the reasonable average of two competencies addressed in each case. However, a more detailed analysis reveals 13 cases in which three or more generic

competencies are mentioned, which makes it difficult to believe that systematic, explicit work is carried out to achieve them, especially since 2 of the 13 cases mention 7 competencies: Flannery & Pragman (2010) and Sewry & Paphitis (2028). 5 papers mention 5 competencies: Drab et al. (2006), Gómez & Bartoll (2014), Kemper et al. (2004), Sharif et al. (2009) and Wiese et al. (2011). Finally, 2 cases indicate 4 competencies: Hellwege (2019) and Ming et al. (2009).

It is evident that Service-Learning fosters the development of various general competencies, going beyond the scope of responsible citizenship (what many would expect to be the main focus of SL projects). This diversity of outcomes suggests that SL has significant potential to enrich teaching and learning across disciplines, encouraging other educators to adopt the methodology. However, it may also reflect challenges educators face in integrating global citizenship as a clearly defined and targeted competency within their projects.

It is also noteworthy that 8 of the interventions presented address only specifics and do not touch on any general competency for which SL may serve: Casile et al. (2011), Staton & Tomlinson (2001), Littlefield et al. (2016), Bheekie et al. (2007), Dewoolkar et al (2009), Moulton & Moulton (2013), Bheekie et al. (2011), Chrispeels et al. (2014); and 3 more interventions refer to specific knowledge areas: chemistry in the case of Mcgowin & Teed (2019) and Najmr et al. (2018), and pharmacy in the case of Drab et al. (2006), working to obtain general learning outcomes and not focusing on any specific aspect of the knowledge area of the subject.

As expected, the general competency that is most often approached is a sense of civic duty, which is consistent with the contribution of SL to forming responsible citizens (Alaez et al., 2022; Díaz-Iso et al., 2023); along similar lines we find the development of critical thinking (11 cases), the personal growth of students (5) and adaptability (1). As observed, in the papers studied SL facilitates the development of many other general professional competencies including teamwork (11), interpersonal skills (7) and problem solving (5). It is striking that in 21 of the 51 interventions for which the intended learning outcomes are specified, those outcomes are limited exclusively to competencies (specific and/or general) which are not directly aligned with the formation of responsible citizens, which, as stated above, is seen as an intrinsic basic goal of the Service-Learning methodology. This objective may also be implicit in many of the interventions studied, e.g. in the case described by Brand, Brascia & Sass (2019), who do not specifically set it out as a learning outcome but show teaching and learning strategies clearly intended to achieve it. However, if it is not seen as an explicit goal then it is not assessed. This decreases the potential of projects, reducing them to something similar to volunteering or work experience rather than SL per se.

It is also striking that only 22 of the 30 cases in which learning outcomes aligned with the civic development of students and the formation of critical thinking are established specify the use of reflection by students as an assessment tool. The tools specified in the remaining 8 cases are not consistent with the assessment of these points. These last cases include Hellwege (2019), who rates achievement via forms, Hébert & Hauf (2015), who use multiple-choice exams, and Nikolova & Andersen (2017), who use a project report and a final presentation.

14 of the 16 cases that mention communication in some form (oral or written) as a competency to be developed mention consistent tools for assessing it (oral presentations, written reports, etc.). The 2 cases which do not are Kemper et al. (2004), who use forms as their only assessment tool, and the case analysed by Sewry & Paphitis (2018), in which communication is addressed in the field of chemistry, interpersonal relationships and teamwork, using reflection as the only assessment tool.

Most of the cases that seek to develop teamwork (11 papers) and/or interpersonal skills (7) mention consistent assessment tools, mostly direct observation by instructors, community partners or peers. However, four of them do not mention tools consistent with assessing teamwork: Wiese & Sherman (2011) use individual written reports, class discussions and direct observation at an event; Evans et al. (2010) use a reflection test; Sewry & Paphitis (2018) use a reflective diary; and Ebacher (2013) uses oral and written reflections and translations. 3 cases do not use tools consistent with assessing interpersonal skills: Braunsberger & Flamm (2013) use a final research project report and a self-perception survey; Sewry & Paphitis (2018) use

a reflective diary; and Hébert & Hauf (2015) use multiple-choice tests. All these cases cast doubt on whether they are actually addressing learning outcomes and on whether their assessments are based on criteria set to achieve such outcomes. Developing teamwork and/or interpersonal skills seems rather to be considered as a by-product of the intervention, so that there is no planning for these points as goals.

The preparation of a research proposal is a consistent way of rating research skills (in Wiese & Sherman, 2011 and in Ming et al., 2009). The case described by Kemper et al. (2004) stands out in the opposite sense: it measures this competency using forms completed based on direct observation by the teacher and self-assessment by students. Nor can these tools be considered suitable for measuring planning and assessment skills as also sought in Kemper et al. (2004).

The goal of developing analytical thinking pursued in Wiese & Sherman (2011) may be correctly rated via the tools proposed (written reports, discussions & oral presentations, among others). The same goes for assessing diversity and interculturality (Sewry & Paphitis, 2018) via reflective diaries and a rubric for the relevant criteria; for creativity (Ming et al., 2009) assessed via research proposals; for assessing presentation skills via a presentation based on a rubric in the case reported by Muñoz-Medina et al. (2021); for the case reported by Gorman (2010) via the preparation of a poster also based on a rubric; and for that of Sharifi et al. (2009) using various presentation activities. Similarly, ICT use can be seen as assessed consistently via presentations and written assignments (Flannery & Pragman, 2010) and via posters based on a rubric in Gorman (2010). The same goes for assessing quality orientation (LaRiviere et al., 2007 and Cadieux et al., 2016) via suitable planning of teaching units in the first case and via the materials prepared by the teacher in the second. Finally, written essays, diaries and written reports can be seen as a consistent form of assessing lifelong learning in the interventions reported by Santanello & Wolff (2007) and Drab et al. (2006).

Although ApS is conceptually grounded in a participatory and reflective pedagogy — implying the need for continuous and shared assessment processes— only 41.1% of the interventions described use both continuous and final assessment. Furthermore, in 34 (64.2%) of the 53 papers that specify who the assessor is, the teacher is the sole assessor. This indicates that the potential contributions of other actors—such as community partners, service recipients, and peers—to the assessment of learning impacts are largely absent. All these actors are mentioned in only one intervention: Flannery (2010).

The systematic review conducted provides a detailed vision of the academic literature on the systems used to assess Service-Learning interventions. This analysis not only provides an in-depth understanding of scientific publications in this area but also sheds light on some pedagogical implications associated with it. It identifies crucial elements for future action by teachers, highlighting actors, types of assessment, learning outcomes and the assessment techniques and criteria used in assessing these interventions in recent decades.

Our findings provide the educational community with a view of how these interventions are being assessed and invites the various actors involved in assessment to strengthen the weak points identified and persevere with those points which are shown to be most effective. They also make valuable contribution in terms of enriching the SL methodology by facilitating interventions that enable students to become active citizens committed to their communities.

It can be concluded that much of the effort in terms of academic assessment observed in most of the papers analysed is incomplete, at least to judge from the cases reported here that mention assessment but do not assess the learning outcomes to be measured, from the inconsistencies detected between intended learning outcomes and the tools used, from over-reliance on teachers as the only assessors and from insufficient use of formative, summative, continuous and final assessment together in each intervention.

This study includes novel elements, but it has its limitations. To mention some, only papers published in Spanish and English are considered. In future studies it would be helpful to extend the review to include other languages. A further limitation comes from the use of only three databases in searches. It would be of interest in the future to include further national

and international databases. Finally, due to limited access to book chapters, this systematic review does not include this type of publication. Future studies could address this limitation by also examining valuable practices documented in books. Even so, we hope that this review will serve to help teachers and institutions interested in the SL methodology to review and strengthen their assessment systems, with a view to helping to form committed, responsible citizens.

Author contributions

Ariane Díaz-Iso: Conceptualization, data curation, formal analysis, methodology, supervision, validation, visualization, writing – original draft, writing – review & editing.

Luana Ferreira Lopes Silva: Conceptualization, data curation, formal analysis, methodology, validation, visualization, writing – original draft, writing – review & editing.

Marian Alaez: Conceptualization, data curation, formal analysis, methodology, validation, visualization, writing – original draft, writing – review & editing.

María José Bezanilla: Conceptualization, data curation, formal analysis, methodology, validation, visualization, writing – original draft, writing – review & editing.

AI Statement

The authors declare that they have not used any artificial intelligence (AI) tools in the preparation process of this manuscript.

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References

Alaez, M., Díaz-Iso, A., Eizaguirre, A., & García-Feijoo, M. (2022). Bridging generation gaps through service-learning in higher education: A systematic review. *Frontiers in Education, 7*, 841482. https://doi.org/10.3389/feduc.2022.841482

Al-Khasawneh, A., & Hammad, B. K. (2015). Implementation of service learning and civic engagement for students of computer information systems through a course project at the Hashemite University. *Education for Information*, *31*(4), 181-193. https://doi.org/10.3233/EFI-150951

Aramburuzabala, P., Gezuraga, N., & López de Arana, E. (2019). Cómo abordar la evaluación en los proyectos de aprendizaje-servicio. In M. Ruiz-Corbella & J. García-Gutiérrez (Eds.), *Aprendizaje-Servicio: los retos de la evaluación*. Narcea Ediciones.

Arroyo, O., Barreto-Tovar, C. H., & Feliciano, D. (2022). Service Learning as a teaching strategy of seismic vulnerability during the COVID-19 Pandemic. *International Journal of Engineering Education*, *38*(5), 1484-1494.

Begley, G. S. (2013). Making Connections: Service-Learning in introductory cell and molecular biology. *Journal of Microbiology & Biology Education*, *14*(2), 213-220. http://dx.doi.org/10.1128/jmbe.v14i2.596

Bheekie, A., Adonis, T. A., & Daniels, P. (2007). Contextualising undergraduate pharmacy training in service-learning at the University of the Western Cape. *Education as Change*, *11*(3), 157-167. https://doi.org/10.1080/16823200709487186

Bheekie, A., Obikeze, K., Bapoo, R., & Ebrahim, N. (2011). Service learning in pharmacy: opportunities for student learning and service delivery. *African Journal of Pharmacy and Pharmacology* ,*5*(23), 2546-2557. https://doi.org/10.5897/AJPP11.375

Bill, D., & Casola, A. (2016). Developing, implementing, and evaluating a Latino service learning project in an accelerated MPH community health course for health education students. *Pedagogy in Health Promotion*, *2*(3), 184-192. https://doi.org/10.1177/2373379916633716

Brail, S. (2013). Experiencing the city: Urban studies students and service learning. *Journal of Geography in Higher Education*, *37*(2), 241-256. https://doi.org/10.1080/03098265.2012.763115

Brail, S. (2016). Quantifying the value of service-learning: A comparison of grade achievement between service-learning and non-service-learning students. *International Journal of Teaching and Learning in Higher Education*, *28*(2), 148-157.

Brand, B. D., Brascia, K., & Sass, M. (2019). Active learning through community outreach: A case study of active learning and service-learning in a natural hazards, vulnerability, and risk class. *Higher Learning Research Communications*, *9* (2). https://doi.org/10.18870/hlrc.v9i2.452

Braunsberger, K., & Flamm, R.O. (2013). A mission of civic engagement: Undergraduate students working with nonprofit organizations and public sector agencies to enhance societal wellbeing. *Voluntas*, *24*, 1–31. https://doi.org/10.1007/s11266-012-9289-6

Bringle, R. G., & Hatcher, J. A. (1996). Implementing service learning in higher education. *The Journal of Higher Education*, *67*(2), 221-239. https://doi.org/10.1080/00221546.1996.11780257

Cadieux, C., Medlin, C., & McCombs, G. (2016). Community college and university interprofessional collaboration: Student centered partnership between nutrition and dental hygiene faculty. Inquiry: *The Journal of the Virginia Community Colleges*, *20*(1).

Casile, M., Hoover, K. F., & O'Neil, D. A. (2011). Both and, not either or: knowledge and service learning. *Education + Training*, *53*(2/3), 129-139. https://doi.org/10.1108/00400911111115672

Chrispeels, H. E., Klosterman, M. L., Martin, J. B., Lundy, S. R., Watkins, J. M., Gibso, C. L., & Muday, G. K. (2014). Undergraduates achieve learning gains in plant genetics through peer teaching of secondary students. *CBE—Life Sciences Education*, *13*(4), 573-738. https://doi.org/10.1187/cbe.14-01-0007

Collazo Expósito, L. M., & Geli de Ciurana, A. M. (2017). Avanzar en la educación para la sostenibilidad. Combinación de metodologías para trabajar el pensamiento crítico y autónomo, la reflexión y la capacidad de transformación del sistema. *Revista Iberoamericana de Educación*, *73*, 131-154. https://doi.org/10.35362/rie730295

Dewoolkar, M. M., George, L., Hayden, N. J., & Neumann, M. (2009). Hands-on undergraduate geotechnical engineering modules in the context of effective learning pedagogies, ABET Outcomes, and Our Curricular Reform. *Journal of Professional Issues in Engineering Education and Practice*, *135*(4). https://doi.org/10.1061/(ASCE)1052-3928(2009)135:4(161)

Díaz-Iso, A., Gutiérrez-Fernández, N. & Barrenetxea-Mínguez, L. (2023). Conectando teoría y práctica: la metodología de Aprendizaje-Servicio en la didáctica de las lenguas en Educación Superior. *Aula Abierta*, *52*(4), 343–350. https://doi.org/10.17811/rifie.52.4.2023.343-350

Drab, S., Lamsam, G., Connor, S., DeYoung, M., Steinmetz, K., Herbert, M., & Benore Parsons, M. (2006). A course designed for undergraduate biochemistry students to learn about cultural diversity issues. *Biochemistry and Molecular Biology Education*, *34*(5), 326-331. https://doi.org/10.1002/bmb.2006.494034052631

Ebacher, C. (2013). Taking Spanish into the community: A novice's guide to Service-Learning. *Hispania*, *96*(2), 397-348. https://doi.org/10.1353/hpn.2013.0064

Evans, C. A., Bolden, A. J., Hryhorczuk, C., & Noorullah, K. (2010). Management of experiences in community-based Dental Education. *Journal of dental education*, *74*(10), 525-532. https://doi.org/10.1002/j.0022-0337.2010.74.10_suppl.tb04978.x

Felzien, L., & Salem, L. (2008). Development and assessment of service learning projects in general biology. Bioscene: *Journal of College Biology Teaching*, *34*(1), 6-12.

Flannery, B. L., & Pragman, C. H. (2010). Service-Learning and Integrated Course Redesign Principles of Management and the Campus Kitchen Metaproject. *Journal of management education*, *34*(1), 11-38. https://doi.org/10.1177/1052562909337907

Gibson, M., Hauf, P., Long, B. S., & Sampson, G. (2011). Reflective practice in service learning: Possibilities and limitations. *Education+ Training*, *53*(4), 284-296. http://dx.doi.org/10.1108/00400911111138451

Gómez, J. G. & Bartoll, Ó. C. (2014). Una experiencia de aprendizaje-servicio en la asignatura «Bases anatómicas y fisiológicas del movimiento» del Área de Didáctica de la Expresión Corporal. Retos. *Nuevas tendencias en Educación Física, Deporte y Recreación*, *26*, 122-127. https://doi.org/10.47197/retos.v0i26.34413

Gorman, W. L. (2010). Stream water quality and Service Learning in an Introductory Biology class. *Journal of Microbiology & Biology education*, *11*, 21-27 https://doi.org/10.1128/jmbe.v11.i1.140

Griffin, S. F., Williams, J. E., Hickman, P., Kirchner, A., & Spitler, H. (2011). A university, community coalition, and town partnership to promote walking. *Journal of Public Health Management and Practice*, *17*(4), 358-362. https://doi.org/10.1097/phh.0b013e318221471c

Hart, S. (2015). Engaging the learner. The ABC's of service-learning. *Teaching and Learning in Nursing*, *10*(2), 76-79. https://doi.org/10.1016/j.teln.2015.01.001

Hébert, A., & Hauf, P. (2015). Student learning through service learning: Effects on academic development, civic responsibility, interpersonal skills and practical skills. *Active Learning in Higher Education*, *16*(1), 37-49. https://doi.org/10.1177/1469787415573357

Hellwege, J. M. (2019). Left to their own devices: A student-centered approach to civic engagement. *Journal of Political Science Education*, *15*(4), 474-497. https://doi.org/10.1080/15512169.2018.1500917

Ho, K., Smith, S. R., Venter, C., & Clark, D. B. (2021). Case study analysis of reflective essays by chemistry post-secondary students within a lab-based community service learning water project. *Chemistry Education Research and Practice*, *22*(4), 973-984. https://doi.org/10.1039/D1RP00123J

Kemper, K. A., Rainey Dye, C., Sherrill, W. W., Mayo, R. M. (2004). Guidelines for public health practitioners serving as student preceptors. *Health promotion practice*, *5*(2), 160-173. https://doi.org/10.1177/1524839903258164

LaRiviere, F. J., Miller, L. M., & Millard, J. T. (2007). Showing the true face of chemistry in a Service-Learning outreach course. *Journal of Chemical Education*, *84*(10), 1636. https://doi.org/10.1021/ed084p1636

Levkoe, C. Z., Brail, S., & Daniere, A. (2014). Engaged pedagogy and transformative learning in graduate education: A Service-Learning case study. *Canadian Journal of Higher Education*, *44*(3), 68-85. https://doi.org/10.47678/cjhe.v44i3.186039

Linker, J. M., Ford, K. M., Knutson, J. M., Goplen, H.A. (2018). The adopt-a-school Service-learning Program: Igniting comprehensive school Physical Activity Programs through school and university partnerships. *Journal of Physical Education, Recreation & Dance*, *89*(2), 9-18. https://doi.org/10.1080/07303084.2017.1404507

Littlefield, R. S., Rick, J. M., & Currie-Mueller, J. L. (2016). Connecting intercultural communication service learning with general education: Issues, outcomes, and assessment. *The Journal of General Education*, *65*(1), 66-84. https://doi.org/10.5325/jgeneeduc.65.1.0066

Lockwood, C., Munn, Z., & Porritt, K. (2015). Qualitative research synthesis: methodological guidance for systematic reviewers utilizing meta-aggregation. *International Journal of Evidence-Based Healthcare*, *13*(3), 179–187. https://doi.org/10.1097/XEB.0000000000000062

MacPhail, A., & Sohun, R. (2019). Interrogating the enactment of a service-learning course in a physical education teacher education programme: Less is more? *European Physical Education Review*, *25*(3), 876-892. https://doi.org/10.1177/1356336X18783922

Marco-Gardoqui M, Eizaguirre A &, García-Feijoo M (2020) The impact of service-learning methodology on business schools' students worldwide: A systematic literature review. *PLoS ONE, 15*(12): e0244389. https://doi.org/10.1371/journal.pone.0244389

McGowin, A. E., & Teed, R. (2019). Increasing expression of civic-engagement values by students in a Service-Learning Chemistry Course. *Journal of Chemical Education*, *96*(10), 2158–2166. https://doi.org/10.1021/acs.jchemed.9b00221

Menendez-Varela, J. L., & Grigori-Giralt, E. (2017). The construction of the professional identity in university arts students via service-learning projects. *Arte, Individuo y Sociedad*, *29*(3), 417-443. https://doi.org/10.5209/ARIS.55249

Ming, A. C. C., Lee, W. K. M.,& Ka, C. M. H. (2009). Service-learning model at Lingnan University: Development strategies and outcome assessment. *New Horizons in Education*, *57*(3), 57-73.

Molee, L. M., Henry, M. E., Sessa, V. I., & McKinney-Prupis, E. R. (2011). Assessing learning in service-learning courses through critical reflection. *Journal of Experiential Education*, *33*(3), 239-257.

Mota Ribeiro, L., Miranda, F., Themudo, C., Gonçalves, H., Bringle, R. G., Rosário, P., & Aramburuzabala, P. (2023). Educating for the sustainable development goals through service-learning: University students' perspectives about the competences developed. *Frontiers in Education*, *8*, 1144134. https://doi.org/10.3389/feduc.2023.1144134

Moulton, M. A., & Moulton, P. (2013). How are we doing? Making Service-Learning assessment simple. *Journal of Service-learning in higher education, 2*, 37-46.

Muñoz-Medina, B., Blanco, S., & Alberti, M. G. (2021). Impact of Service-Learning on the motivation of Engineering and High School students. *International Journal of Engineering Education*, *37*(4), 1060–1070.

Najmr, S., Chae, J., Greenberg, M. L., Bowman, C., Harkavy, I., & Maeyer, J. R. (2018). A service-learning chemistry course as a model to improve undergraduate scientific communication skills. *Journal of Chemical Education*, *95*(4), 528-534.

Nickman, N. A. (1998). (Re)learning to care: Use of service-learning as an early professionalization experience. *American Journal of Pharmaceutical Education*, *62*(4), 380.

Nikolova, N., & Andersen, L. (2017). Creating shared value through service-learning in management education. *Journal of Management Education*, *41*(5), 750-780.

Owens, K., & Foos, A. (2007). A course to meet the nature of science and inquiry standards within an authentic service learning experience. *Journal of geoscience education*, *55*(3), 211-217. https://doi.org/10.5408/1089-9995-55.3.211

Page M., Moher D., Bossuyt P., Boutron I., Hoffmann T., Mulrow C. et al. (2021). PRISMA 2020 explanation and elaboration: updated guidance and exemplars for reporting systematic reviews. *TheBMJ*, *160*(372). https://doi.org/10.1136/bmj.n160

Paradise, A. M. (2011). Bridging service-learning with media literacy: Creating contexts for communication students to educate youth on media content, consumption, and effects. *Communication Teacher*, *25*(4), 234-239. https://doi.org/10.1080/17404622.2011.601721

Polin, D. K., & Keene, A. S. (2010). Bringing an ethnographic sensibility to Service-Learning assessment. *Michigan Journal of Community Service Learning*, *16*(2), 22-37.

Santanello, C., & Wolff, L. (2007). Designing assessment into a study abroad course. *Frontiers: The Interdisciplinary Journal of Study Abroad*, *15*(1), 189-196. https://doi.org/10.36366/frontiers.v15i1.226

Samino García, R. (2023). A service-learning program assessment: Strengths, weaknesses and impacts on students. *Intangible Capital*, *19*(1), 4-24. https://doi.org/10.3926/ic.2093

Santos, C. M. da C., Pimenta, C. A. de M., y Nobre, M. R. C. (2007). The PICO strategy for the research question construction and evidence search. *Revista Latino-Americana de Enfermagem*, *15*, 508-511. https://doi.org/10.1590/S0104-11692007000300023

Sewry, J. D., & Paphitis, S. A. (2018). Meeting important educational goals for chemistry through service-learning. *Chemistry Education Research and Practice*, *19,* 973-982. https://doi.org/10.1039/C8RP00103K

Shapiro, D. F. (2012). Collaborative faculty assessment of service-learning student work to improve student and faculty learning and course design. *Michigan Journal of Community Service Learning*, *19*(1), 44-57.

Sharifi, M., McCombs, G. B., Fraser, L. L., & McCabe, R. K. (2009). Structuring a competency-based accounting communication course at the graduate level. *Business and professional qualification quarterly*, *72*(2), 177-199. https://doi.org/10.1177/1080569909334052

Staton, A. Q., & Tomlinson, S. D. (2001). Communication education outreach in elementary school classrooms. *Southern Journal of Communication*, *66*(3), 211-223. https://doi.org/10.1080/10417940109373200

Tam, M. (2014). Intergenerational Service Learning between the old and young: What, why and how. *Educational Gerontology*, *40*(6), 401-413. https://doi.org/10.1080/03601277.2013.822201

Van Rensburg, W. (2007). CSL, multiliteracies, and multimodalities. *Education as change*, *11*(3), 183-189. https://doi.org/10.1080/16823200709487187

Wadsworth, L. A., Johnson, C., Cameron, C., & Gaudet, M. (2012). (Re) Focus on local food systems through Service Learning. *Food, Culture & Society*, *15*(2), 315-334. https://doi.org/10.1080/15528014.2012.11422641

Wei, K., Siow, J., & Burley, D. L. (2007). Implementing Service-Learning to the Information Systems and Technology Management Program: A Study of an Undergraduate Capstone Course. *Journal of information Systems Education*, *18*(1), 125-136

Wiese, N. M., & Sherman, D. J. (2011). Integrating marketing and environmental studies through an interdisciplinary, experiential, Service-Learning approach. *Journal of Marketing Education*, *33*(1), 41-56.

Wild, M. (2015). Incorporating Service Learning into a General Education History course: An analogical model. *The History Teacher*, *48*(4), 641-666.

Authors' biographies

Ariane Díaz Iso holds a PhD in Education from the University of Deusto and a Master's degree in Advanced Studies in Language, Communication and its Pathologies from the University of Salamanca. She is currently a lecturer in the Department of Education at the Faculty of Education and Sport at the University of Deusto, where she teaches undergraduate courses in Primary Education and Physical Activity and Sports Sciences. She is also a member of the university's Educational Innovation Unit. Her research focuses on teaching innovation, the development and assessment of competences in higher education, and teaching and learning methods related to humanism and sustainability. Phone: 944 13 90 00 – extension 2005.

iD https://orcid.org/0000-0003-0271-1394

Luana Ferreira-Lopes is a member of the Faculty of Education and Sport and the Teaching Innovation Unit at the University of Deusto in Bilbao, Spain. Her research interests include innovative teaching-learning methodologies, the development of intercultural competence, COIL/virtual exchange, and competence-based learning. She holds a PhD in Education from the University of Deusto, a Master's degree in Lifelong Learning from Aarhus University and the University of Deusto, a postgraduate diploma in Business Management from the São

Paulo School of Business Administration (EAESP), and a bachelor's and licentiate degree in Pedagogy from the University of São Paulo. Phone: 944 13 90 00 – extension 3127.

iD https://orcid.org/0000-0001-6999-0231

Marian Alaez is an Associate Professor at the University of Deusto. She holds a PhD in Economics and Business Sciences. She teaches at the Faculty of Law, where she delivers courses such as Introduction to Economics in the Law degree and Strategic Management in the Economics major. She has served as Vice-Dean for Students and Identity and Mission, and as Head of Quality Assurance in the same Faculty. She has been a member of the University's Quality Committee and the Identity and Mission Committee, as well as part of the Teaching Innovation Unit. She currently serves as Deputy to the Vice-Rector for Research and International Relations, overseeing the area of International Relations. Her research focuses on innovation in education. Phone: 944 13 90 00 – extension 2849.

iD https://orcid.org/0000-0002-5753-4658

María José Bezanilla holds a PhD in Education from the Institute of Education at the University of London and is a Senior Lecturer in the Department of Education at the University of Deusto. She is currently the coordinator of the PhD in Education programme at the Faculty of Education and Sport. As a member of the eDucaR research team, she participates in research projects and has numerous publications on critical thinking, the use of ICT in higher education, and the development and assessment of competences. She combines her teaching and research work with management responsibilities in the University's Teaching Innovation Unit, with a special focus on publications and the development of transversal competences. Phone: 944 13 90 00 – extension 2967.

iD http://orcid.org/0000-0001-6023-3859