



Educación XX1

ISSN: 1139-613X

ISSN: 2174-5374

educacionxx1@edu.uned.es

Universidad Nacional de Educación a Distancia
España

Fernández-Bustos, Juan-Gregorio; García López, Luis Miguel;
Gutiérrez, David; González-Martí, Irene; Abellán, Jorge
Impact of a service-learning and sport education program on social competence and learning
Educación XX1, vol. 27, núm. 2, 2024, Julio-Diciembre, pp. 299-337
Universidad Nacional de Educación a Distancia
Madrid, España

DOI: <https://doi.org/10.5944/educxx1.38229>

Disponible en: <https://www.redalyc.org/articulo.oa?id=70681678012>

- Cómo citar el artículo
- Número completo
- Más información del artículo
- Página de la revista en redalyc.org

redalyc.org

Sistema de Información Científica Redalyc
Red de revistas científicas de Acceso Abierto diamante
Infraestructura abierta no comercial propiedad de la academia

Impact of a service-learning and sport education programme on social competence and learning

Impacto de un programa de aprendizaje-servicio y educación deportiva sobre la competencia social y los aprendizajes

Juan-Gregorio Fernández-Bustos^{1*} 

Luis Miguel García López¹ 

David Gutiérrez¹ 

Irene González-Martí¹ 

Jorge Abellán¹ 

¹ Universidad de Castilla La Mancha, Spain

* Corresponding author. E-mail: juang.fernandez@uclm.es

Cómo referenciar este artículo/ How to reference this article:

Fernández-Bustos, J. G., García López, L. M., Gutiérrez, D., González-Martí, I., & Abellán, J. (2024). Impact of a service-learning and sport education program on social competence and learning. *Educación XX1*, 27(2), 301-339. <https://doi.org/10.5944/educxx1.38229>

Date received: 04/09/2023

Date accepted: 11/02/2024

Published online: 28/06/2024

ABSTRACT

The development of social competence (SC) has become a priority for policymakers, educators and researchers. The pedagogical models of sports education and service-learning are among the most noteworthy of various methodologies with a positive impact on SC. The aim of this study was to determine the impact on SC and learning of a programme that integrated a service-learning (SL) experience with the sport education model (SEM). The research design was quasi-experimental, with a control group and an experimental group (service recipients and providers). The programme consisted of two different phases

in terms of organisation and participation. Measurements were taken before starting the programme, and at the end of Phase 1 and Phase 2. Phase 1 was completed by 478 students (276 from the 6th year of primary education and service recipients; 202 from the 4th year of secondary education and service providers), while 337 completed both phases (142 from the 1st year of secondary education and service recipients; 195 from the 1st year of baccalaureate and service providers). In the first phase, we collected data on skill execution and decision making in the game of ringo, using a game performance assessment instrument. Knowledge of technique, tactics and rules was also assessed. In both phases, SC was measured using the Adolescent Multidimensional Social Competence Questionnaire (Gómez-Ortiz et al., 2017). The results evidenced the effectiveness of the programme in learning, primarily in the areas related to knowledge, both as regards the recipients and providers of the service. The second phase of the SEM-SL programme was also effective in developing social competence and many of its dimensions (cognitive reappraisal, social adjustment, social efficacy, normative adjustment) among the service providers. These results suggest that the combination of these two methodologies provides a teaching-learning ecosystem that is conducive to developing socio-emotional aspects and learning inherent to sport itself, creating a positive experience for all involved, especially for those volunteering their service.

Keywords: social competence, service learning, active learning, sport education, physical education

RESUMEN

El desarrollo de la competencia social (CS) se ha convertido en una prioridad para legisladores, educadores e investigadores. Entre las diferentes metodologías que han incidido positivamente sobre la CS destacan tanto el modelo pedagógico de Educación Deportiva (MED) como el Aprendizaje-Servicio (ApS). El objetivo de este estudio fue conocer el impacto de un programa (MED-ApS) que hibridó ApS con el MED sobre la CS y los aprendizajes del alumnado. El diseño de investigación fue cuasiexperimental con grupo control y grupo experimental (receptores y prestadores del servicio), diferenciándose dos fases en cuanto a organización y participación. Se tomaron medidas antes de comenzar el programa, al finalizar la fase 1, y al concluir la fase 2. La fase 1 la completaron 478 estudiantes (276 de 6º Educación Primaria y receptores del servicio; 202 de 4º ESO y prestadores del servicio), mientras que ambas fases las concluyeron 337 (142 de 1º ESO y receptores del servicio; 195 de 1º Bachillerato y emisores del servicio). En la fase 1 se recogieron datos de los aprendizajes en la ejecución y toma de decisiones en el juego del ringo, así como de los conocimientos teóricos sobre técnica, táctica y reglamento. Ambas fases evaluaron la CS a través del Cuestionario Multidimensional de CS para Adolescentes (Gómez-Ortiz et al., 2017). Los resultados evidenciaron aprendizajes más destacados entre los participantes en el programa. El MED-ApS también fue efectivo, en su fase 2, en el desarrollo de la CS y sus dimensiones (Reevaluación Cognitiva, Ajuste Social, Eficacia Social, Ajuste Normativo) entre los emisores del servicio. Estos resultados sugieren que la combinación de estas dos

metodologías ofrece un ecosistema de enseñanza-aprendizaje propicio para el desarrollo de aspectos socioemocionales y de aprendizajes inherentes al propio deporte, ofreciendo una experiencia positiva para todos, especialmente para los que prestan voluntariamente su servicio.

Palabras clave: competencia social, aprendizaje-servicio, aprendizaje activo, educación deportiva, educación física

INTRODUCTION

Since the OECD (2005) first considered social competence (SC) as a basic element in the development of individuals in the technological society, it has been promoted by both administrations and researchers in the field of education.

SC can be defined as the ability to achieve personal goals in social interactions by efficaciously maintaining positive relationships with others (Leduc & Bouffard, 2017). In recent years, SC has evolved towards a multidimensional concept that includes (Gómez-Ortiz et al., 2017) the following: a) social skills, such as prosocial behaviours, which are key in developing positive social interactions (Padilla-Walker et al., 2015); b) emotional skills, such as emotion regulation, which favour positive social development tailored to the environment, and cognitive reappraisal, which anticipates the emotional consequences of a particular situation; c) normative adjustment or the ability to adapt to the rules and conventions of the immediate social environment, which favours school coexistence; d) being and feeling accepted by peers (social adjustment) as an indicator of satisfactory interpersonal relationships (Zhang et al., 2014); and e) perceived efficacy in social interactions.

This competence plays a crucial role in the educational process, as it promotes positive, high- quality learning, being recognised as an aim of the curricula of various subjects, including physical education (PE) (Opstoel et al., 2020). Given its social character, school PE is a context with the potential to promote positive development by helping students acquire life skills that can transfer to other important domains (school, family, work) (Weiss, 2011). It thus presents an ideal setting for developing SC (Wang & Chen, 2021).

The review by Opstoel et al. (2020) highlighted the positive role of PE and sport in improving social skills, life skills, SC and psychosocial competence. Noteworthy PE programmes include the personal and social responsibility model (Monzonís & Capllonch, 2014), the use of cooperative learning (Grineski, 1996), and education and adventure programmes (Koszałka-Silska, et al., 2021). In addition, the sport education model (SEM) and service-learning (SL) can be highlighted due to their being grounded in active and participatory learning and offering a learning environment conducive to SC.

The SEM includes six essential characteristics of sport, namely, seasons, formal competition, affiliation, festivity, keeping records and a culminating event. In order for sport to have the potential to socialise, these features are combined with a number of pedagogical strategies, such as modifying sport content to the level of the students and the adoption of the dual role of player and person of responsibility within their team (coach, physical trainer, etc.) or organisation (referee, sport director, etc.) (Siedentop et al., 2020). As well as developing students' sporting skills, this methodology succeeds in promoting their autonomy and responsibility through roles, establishing a climate conducive to meaningful learning, positive values and ethical development (Evangelio et al., 2016).

Research has described many benefits of the use of the SEM in school settings. For example, in the sphere of learning, students following the model presented significant gains in content knowledge, competence and perceived learning, and a better understanding of the game compared to those that did not follow the model (Browne et al., 2004). It has also been shown to be useful in improving technical execution and correct decision-making during play at the technical level (Browne et al., 2004), as well as enhancing understanding and decision-making at the tactical level (Hastie et al., 2009).

The SEM has also been associated with increases in positive relationships, prosocial attitudes (Manninen & Campbell, 2022), assertiveness and empathy, and a reduction in negative attitudes, such as passivity and aggressiveness (García-López & Gutiérrez, 2015), primarily among students in the same team (Casado-Robles et al., 2022). Harvey et al. (2014) underlined that notions such as inclusiveness, responsibility, ownership, personal and social development, and social justice are part of the architecture of this pedagogical model.

Few studies have specifically examined the benefits of the SEM in terms of SC. Luna et al. (2020) reported significant improvements in certain indicators of social competence (social adjustment, prosocial behaviour and social efficacy) in adolescent students. Wang and Chen (2021) highlighted that the SEM has the potential to promote SC, as it provides students with meaningful opportunities for socialisation thanks to its inherent structures and characteristics. They identify two key factors through which the SEM may foster SC: accomplishing an optimal balance between competition and cooperation, and promoting inclusiveness.

However, despite the potential benefits of the SEM, the teaching of ethical behaviours, and thus of SC, needs to be intentionally and systematically designed (Harvey et al., 2014). In addition to a structured, intentional context, authors recommend a positive approach to development based on the strengths of the individual (e.g. prosocial behaviour, such as respecting others), rather than on the problems to be solved, that is, a negative approach (e.g. reducing antisocial behaviour such as bullying) (Holt, 2016). In this sense, by complementing the

SEM, SL methodology may provide an intentional learning framework that can facilitate this positive approach in developing SC (García-López et al., 2022). SL is an educational methodology that brings learning and community service together in a single project with a civic and academic grounding, boasting an eminently practical character and a close relationship with the system of personal, social and civic values (Varela et al., 2019). It has the potential to transform the teaching-learning process, helping students to acquire social values and critical thinking through the understanding of a social problem (Chiva-Bartoll et al., 2020a). One of the most important characteristics of SL in PE, in contrast to other fields, is that SL entails physical interaction and active participation (Capella-Peris et al., 2020). According to Chiva-Bartoll and Fernández-Río (2022), SL has all the elements required for it to be considered an activist, transformative and inter-contextual pedagogical model in PE, which focuses on developing students' social and affective domains, with its main theme being "learning by serving".

Although programmes using SL have evidenced substantial impacts on social and cognitive learning (Yoiro & Ye, 2012), in PE, they have also been shown to encourage prosocial behaviours (Chiva-Bartoll et al., 2020b), social well-being (Chiva-Bartoll et al., 2020c), leadership, social skills and social justice (Whitley et al., 2017), as well as promoting learning (Capella-Peris et al., 2020). Similarly, SL methodology has been reported to enhance the development of SC (Gil-Gómez et al., 2016), specifically in the dimensions of social responsibility, helping and collaboration, and adherence to social norms. Despite the benefits of this methodology, further work on its use, especially in stages of compulsory education, is required, given that as most of the research on SL in general, and in PE in particular, has been carried out in higher education settings (Chiva-Bartoll et al., 2020c).

Considering the virtues of both methodologies, their compatibility means that combining them in the same programme is not only feasible, but also offers key educational opportunities. Nonetheless, few works have experimented with the integrated use of the SEM and SL. García López et al. (2023) reported that SL enhances the benefits of the SEM, such as role-playing, the development of greater responsibility and autonomy, as well as enhanced feelings of belonging (García López et al., 2019). García López et al. (2023) and Gutiérrez et al. (2019) integrated the two methodologies as a strategy to facilitate the transition of students from primary to secondary school using a programme called SEM-SL. In these studies, secondary education students participated as service providers while their primary education counterparts were involved as recipients.

The results revealed that this hybridisation (SEM-SL) developed facilitators for transition, including becoming acquainted with friendly older students serving as mentors, developing feelings of belonging to the group and the school, and getting to know and becoming familiar with students and a school that were new to them

(García López et al., 2019). Additionally, the secondary students gained awareness of the service performed and found personal satisfaction in the outcomes, highlighting the social relationships forged with their younger peers, which encouraged them to repeat the experience. The recipients of the service reported feeling greater confidence about the school transition, having met, and established relationships with, their older peers, as well as developing feelings of belonging (Gutiérrez et al., 2019).

In light of the virtues of both methodologies and the results of previous studies, the aim of this study was to ascertain, in the context of compulsory education, the impact on SC and learning of the SEM-SL programme, in both the students providing the service and those receiving it. The evidence from previous research suggests as a hypothesis that the implementing these two approaches (SEM and LS) in conjunction will positively impact both learning and the development of the various dimensions of SC.

METHOD

Design and participants

We conducted a quasi-experimental study under a quantitative approach, divided into two phases. The study involved an experimental group (EG) (participants in the SEM-SL programme) and a control group (CG) (students from the same schools but who did not participate in the programme). We collected measures at pre-test (before the programme), post-test 1 (at the end of Phase 1 of the programme) and post-test 2 (end of Phase 2). The initial sample in Phase 1 comprised 782 students, 432 in the 6th year of primary education and 350 in the 4th year of compulsory secondary education, divided between the EG and the CG (see supplementary material). Data for the variables under study, however, were only collected on 478 participants (276 primary, 202 secondary). The participants were distributed in five networks, corresponding to five secondary schools and primary schools located in their catchment area (potential future students at these secondary schools). All the networks included one intact group of secondary students and between one and three intact groups of their primary counterparts. Two secondary education networks were established in the province of (omitted for anonymity) in an urban setting, and three in the province of (omitted for anonymity), two in an urban location and one in a rural area. The teaching staff had a minimum of two years' experience and had participated in a 20-hour SEM course. All the students had previously taken part in a season of the SEM (16 sessions). Of the initial participants in Phase 1, 337 successfully completed Phase 2 (Table 1), which was implemented entirely in the secondary schools.

Table 1*Distribution of the participants that completed the two phases of the SEM-SL programme*

Group	Experimental Group				Control Group			
	n	Male (%)	Female (%)	Mean age* (SD)	n	Male (%)	Female (%)	Mean age* (SD)
Service recipients (6 ^o prim. 1 ^o sec.) <i>n</i> = 142	76	37 (49%)	39 (51%)	11.23 (±0.24)	66	39 (59%)	27 (41%)	11.30 (±0.52)
Service providers (4 ^o sec.-1 ^o bacc.) <i>n</i> = 195	128	55 (43%)	73 (57%)	15.42 (±0.59)	67	36 (53%)	32 (48%)	15.40 (±0.63)
Total <i>N</i> = 337	204	92 (45%)	112 (55%)	13.88 (±2.11)	133	75 (56%)	59 (44%)	13.43 (±2.14)

Note. *Mean age before starting Phase 1 of the programme.

Programme

The study was divided into two phases.

The first phase was conducted across the third term of the 2018-2019 academic year (April-June). It involved the coordinated and simultaneous implementation of the SEM in primary and secondary schools using a teaching unit (season in SEM terminology) based on the game of ringo (18-21 PE sessions for the secondary students; 14-18 PE sessions for the primary students). The unit integrated SL actions by the secondary students (visits to primary schools by secondary students, visits to secondary schools by primary students, and organisation of culminating events at secondary schools), following the design proposed by García Lopez et al. (2023) to integrate SL into a SEM season (see schedule for Phase 1 in the supplementary material). To ensure the genuine hybridisation of these pedagogical models, we followed the recommendations of Hastie and Buchanan (2000), which entail verifying the compatibility of the objectives, theories and learning experiences of both models (for a more detailed description, see García-López et al., 2019). The game of ringo was chosen due to its low level of technical difficulty, which encouraged the students' enjoyment from the first sessions, and significantly reduced the differences between them in terms of their initial levels of competence and the previous experience the boys and girls might have had of the game. During

this phase, the CG participants (primary and secondary) followed a teaching unit based on ringo, using traditional methodology (assignment of tasks, direct command, guided discovery and problem-solving learning), following the aims established in the teaching programme, but without the use of pedagogical models or SL intervention.

In the primary schools, with only one 6th year class, this was chosen as the EG, while in schools with more than one group of 6th graders, these were randomly allocated to CG or EG. In the case of secondary education, only one EG and one CG were chosen per school, being randomly allocated across the 4th year groups. In each school, the same teacher was responsible for the CG and EG.

While implementing the SEM, we held weekly meetings to resolve problems, monitor progress and review the planning of the following week's sessions. These meetings, coordinated by the network supervisor, served to ensure the application of a SEM checklist, which drew on those proposed by Metzler (2017) and Sinelnikov (2009). The role of the network supervisor (experienced researcher) consisted of coordinating the implementation of the SEM-SL programme in the network of which they were in charge, conducting weekly meetings with teachers, monitoring the implementation of the SEM in their respective primary and secondary schools at least three times during the season, as well as collaborating in all the SL activities (introductory motivational task, service reflections and culminating events) (further information in Table 2 of the supplementary material). Those responsible for supervising the different networks held a weekly meeting to share their perceptions on the progress of the programme in each network and to solve any difficulties encountered. This organisation was maintained in Phase 2 of the programme.

The genuine need identified and which we intended to address by means of SL was the facilitation of the children's educational transition from primary to secondary school. The planning and implementation of the SL actions for the programme followed the five key stages (context analysis, project plan, action plan, action implementation and evaluation) established by Puig-Rovira et al. (2007) for SL projects in educational settings, contextualised in the SEM-SL programme, following the guidelines proposed by García-López et al. (2023) (for further information, see Table 2 in the supplementary material). For example, in the "action" stage, the secondary students had the opportunity to train their primary counterparts on three occasions: one training session at the primary school, one at the secondary school and one more during each network's culminating event. Complementary to these meetings, a time of dialogue was provided for the primary and secondary students to discuss the expectations of the former and the experiences of the latter with regard to secondary school. These training sessions were preceded by a preparatory session with the secondary students and a subsequent session to reflect on the development of the service.

The second phase was implemented in the first term of the 2019-20 academic year (September-November) and involved consolidating the service and greater mastery of the SEM. The primary students that had already gained experience of the SEM in the previous academic year and had then transferred to their 1st year at the secondary school of reference, formed part of the new EG, despite their not all being in the same class. Meanwhile, the 1st-year baccalaureate students, who had been in the 4th year of secondary the previous year, being part of the EG, were again in charge of implementing the service programme. The learning objectives, the need for service, as well as the stages for planning and implementing the SL were the same as in Phase 1 (see Tables 2 and 4 in the supplementary material for further information). This service programme was again integrated into the use of the SEM, but, in this case, it took place during break and participation was voluntary. It was thus not included in the PE curriculum and students' learning was not assessed. The number of participants varied between phases due to the voluntary nature of the monitoring of the project in Phase 2 by the students attached to the reference secondary school (service providers and recipients) and the experimental mortality of participants enrolled in the secondary schools in question. In addition, only 4 of the 5 initial networks participated in this second phase, as one of the schools was unable to continue the programme due to its PE teachers transferring to other educational centres.

The first stage of this phase was implemented in the PE classes, where, over six sessions (weeks two to four of the term) the older students learned the content to be taught. This was followed by the five-week programme (two breaks per week), which included a 10-session SEM season, distributed in five training sessions, four competition sessions (regular league) and a culminating event (more information in Tables 2 and 4 of the supplementary material). The content consisted of a progression of modified net and wall games, where the final game used for the competition and culminating event was a modified version of spikeball-roundnet. This game was chosen as it met the following criteria: encouraging participation and inclusion, novelty, a dynamic activity, low to moderate technical and tactical demand, and the use of small playing spaces that permit the simultaneous participation of a large number of students.

Instruments and variables

To measure SC, we used the Adolescent Multidimensional Social Competence Questionnaire (AMSC-Q) (Gómez-Ortiz et al., 2017) validated in 12- to 17-year-old students. This questionnaire consists of 26 items, scored on a 1- to 7-point Likert-type scale (1 = completely false; 7 = completely true). These items are distributed in five key domains of SC: 1) prosocial behaviour (offering different types of help

to peers); 2) cognitive reappraisal (ability to regulate emotion through cognitive modification of the situation linked to generating feelings); 3) social efficacy (an individual's perception of their efficacy in social relationships); 4) social adjustment (perception of social acceptance and friendship); and 5) normative adjustment (adherence to general and specific rules of coexistence in school settings). The questionnaire showed good reliability (α -pre = .89; α -post1 = .90; α -post2 = .88) and validity in this study. The AMSC-Q items were examined using via principal component analysis with Promax rotation, extracting five factors that explained 55.80% of the variance. The items of each factor scored in ranges from .40 to .75. The Kaiser-Meyer-Olkin index (KMO) was .92 and Bartlett's test of sphericity was significant ($p < .001$).

The learning of the PE content itself was divided into two types, for which two ad hoc instruments were designed:

Execution and decision-making in the game was assessed using a game performance assessment instrument (GPAI), which is a tool for assessing technical knowledge and the ability to solve tactical problems (Oslin et al., 1998). For this study, and in the context of the sport of ringo, a rubric-type GPAI was designed with two components to be measured: reception execution (the player receives the ringo in line with the rules) and throwing decision-making (the player throws the ringo into a space, to a player or with a trajectory that makes it difficult to receive). For each of these components, coding criteria were created according to the success of the actions: 5 = very high performance (success in almost all actions); 4 = high performance (success in most of the actions); 3 = medium performance (success in about half of the actions); 2 = low performance (success in less than half of the actions); 1 = very low performance (success in few actions).

A questionnaire to evaluate theoretical knowledge of ringo, which consisted of 10 questions for primary school participants and 15 for secondary school ones. The participants had to choose between three possible answers, with the questions being divided into four dimensions: technical knowledge (two questions for primary, three for secondary); tactical knowledge (two questions for primary, four for secondary); rules knowledge (three questions for primary, four for secondary); fair play and health (three questions for primary, four questions for secondary). Each correct answer scored 1 point on the primary school questionnaire and 0.66 on the secondary school questionnaire.

Procedure

Before initiating the study, we contacted the management teams of the schools and the PE teachers, as well as the Regional Ministry of Education, Culture and Sport of Castilla-La Mancha, informing them of the aims and commitment involved in the study, with only those that returned the interest and commitment document taking part. Subsequently, informed consent was obtained from the participating students and their legal representatives. The aims, risks, benefits and data processing involved were explained. Data protection was guaranteed through anonymity, in accordance with Organic Law 3/2018 on Personal Data Protection and Guarantee of Digital Rights. These documents and the entire study followed the ethical standards provided for in the Declaration of Helsinki, complying with the relevant ethical principles in the practice of research with human participants, such as respect for the participants, benefit for the community and justice.

To evaluate SC (AMSC-Q), we took pre- (before starting the programme), post-1 (at the end of Phase 1) and post-2 (after Phase 2) measurements in each group (EG and CG), for both service recipients and providers. This procedure was undertaken by trained research staff under similar conditions. The questionnaires were administered in small groups (maximum 20 students), in spacious rooms so as to favour concentration and privacy. The participants were given written guidelines on how to complete the questionnaires, with an additional verbal explanation by a researcher. In the case of the group receiving the service, the researchers read out each item of the questionnaire. The need to answer honestly was emphasised, highlighting that anonymity was guaranteed. To identify each questionnaire, a secret personal code was used to associate each student's pre-intervention data with their post-study data. The students were given 15 minutes to complete the questionnaire, which was found to be more than sufficient, with no participant needing the full time.

Learning was assessed before starting the programme and at the end of Phase 1. The pre-intervention measures of performance and decision-making were collected in the first session of the ringo teaching unit in real 2 x 2 game conditions, while the CG post measures were taken in the last session, and the EG measures were collected in the session prior to the culminating event. The written questionnaire on knowledge was administered in the classroom before the second session and following the last session. The questionnaire was administered in conditions similar to those used when evaluating SC.

Data analysis

Before embarking on the inferential statistical analysis, we performed the corresponding tests of normality (Kolmogorov-Smirnov) for all the dependent variables ($n > 50$), of homoscedasticity (Levene) in the analyses for independent samples, and sphericity (Mauchly) in the cases of repeated samples. None of the variables showed a normal distribution ($p < .05$), nor were the assumptions of homogeneity of variances and sphericity ($p < 0.05$) met (more information in the supplementary material). Therefore, we opted to use non-parametric tests for the inferential analysis. The Mann-Whitney test (two independent samples) was used to determine the existence of differences between the EG and CG in each of the variables studied, and thus to ascertain the homogeneity of the groups under study, both before starting the programme and at the end of each phase. Subsequently, the Friedman test was conducted (related samples at three different times) for two-factor rank variance analysis in order to see whether there were differences in SC and its dimensions before and after each of the two phases of the programme. In the latter analyses, to establish the differences between each of the three measures (pre-post1-post2), we used the Bonferroni correction, being the most conservative method. For the learning-related variables, the Wilcoxon signed-rank test for paired samples was applied since the data were only collected before and after Phase 1 (two different points in time). Our analyses were conducted using SPSS (v.28 for Windows). Significance was set at $p < .05$.

RESULTS

Social competence

The Mann-Whitney test confirmed the absence of inter-group differences (GE-GC) in the variables under study both before and after the first phase of the programme ($p > .05$). Only the normative adjustment variable presented higher scores in the EG in the primary school children, at pre and post-test 1 ($Z = -2.36$; $p = .17$). The same test at the end of the programme (post-test 2) revealed significant differences in the EG in social adjustment ($Z = -2.22$; $p = .26$), social efficacy ($Z = -3.75$; $p < .001$), normative adjustment ($Z = -4.34$; $p < .001$) and in the total SC score ($Z = -4.24$; $p < .001$) (see supplementary material)

Table 2 presents the descriptive statistics (M and SD) for the service recipients in SC and its dimensions, differentiating between the experimental and control groups. It also shows the values for bilateral asymptotic significance on the Friedman test and for the pairwise comparison with Bonferroni adjustment. As can be seen, the

programme was not effective in enhancing the service recipients' SC ($p > .05$). Only small improvements in prosocial behaviour and normative adjustment were found in the EG when comparing the measures at post-test 2 (end of Phase 2) and post-test1 (end of Phase 1), in the first case, and at post-test2 and pre-test, in the second case.

Table 2

Descriptive statistics for social competence in the service recipients according to the EG and CG

Friedman test						
		PRE M (DT) a	POST1 M (DT) b	POST2 M (DT) c	p	Pairwise comparision ¹ (D Cohen effect size)
CR	GE n=76	21.30 (± 3.52)	21.12 (± 3.96)	21.39 (± 4.30)	.420	
	GC n=66	21.16 (± 4.14)	21.12 (± 3.90)	20.88 (± 5.23)	.582	
SA	GE n=76	46.41 (± 8.31)	48.24 (±10.21)	48.07 (± 7.45)	.786	
	GC n=66	47.15 (± 5.96)	46.02 (± 6.37)	46.83 (± 7.52)	.692	
PB	GE n=76	30.29 (± 3.18)	29.41 (± 3.61)	30.34 (± 4.15)	.004**	c > b d=0.24
	GC n=66	30.97 (± 4.03)	29.68 (± 4.47)	30.34 (± 4.47)	.441	
SE	GE n=76	23.89 (± 2.90)	23.78 (± 3.05)	23.91 (± 3.28)	.570	
	GC n= 66	23.67 (± 3.06)	22.86 (± 3.45)	23.35 (± 3.15)	.175	
NA	GE n=76	29.81 (± 3.74)	30.00 (± 4.06)	30.82 (± 4.33)	.030*	c > a d=0.25
	GC n= 66	26.91 (± 6.28)	27.17 (± 5.90)	27.82 (± 5.47)	.018*	c > b d=0.11
TST	GE n=76	151.71 (± 15.18)	151.54 (±17.95)	154.53 (± 16.32)	.157	
	GC n=66	150.22 (± 17.79)	147.15 (±18.36)	149.54 (± 18.53)	.521	

Note. ¹adjustment with Bonferroni. CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

* $p < .05$; ** $p < .01$; *** $p < .001$.

The same analyses for the service provider group (Table 3) revealed statistically significant differences ($p < .01$) in the EG for all the variables under study, with the exception of prosocial behaviour. The pairwise comparisons (Bonferroni), however, showed that these differences were only found in values at the final measurement (Phase 2) when compared with both the pre-test measures and those performed at the end of phase 1. No significant differences were found in the scores collected for the CG between any of the three data collection points.

Table 3

Descriptive statistics for social competence in the service providers according to the EG and CG

Friedman test						
		PRE M (DT) a	POST1 M (DT) b	POST2 M (DT) c	p	Pairwise comparison1 (D Cohen effect size)
CR	GE n=128	20.21 (± 3.93)	20.45 (± 4.10)	22.02 (± 3.04)	.000***	c > a d=0.52 c > b d=0.44
	GC n=67	20.19 (± 4.08)	20.54 (± 5.57)	20.70 (± 4.40)	.268	
SA	GE n=128	45.90 (± 6.76)	46.50 (± 6.65)	48.84 (± 6.02)	.002**	c > a d=0.46 c > b d=0.37
	GC n=67	44.95 (± 7.47)	44.62 (± 9.25)	45.80 (± 8.57)	.299	
PB	GE n=128	28.50 (± 4.56)	28.75 (±4.81)	29.03 (± 3.73)	.426	
	GC n=67	27.70 (± 5.26)	27.78 (± 5.06)	28.43 (± 3.79)	.953	
SE	GE n=128	22.06 (± 3.35)	22.37 (± 3.41)	23.66 (± 3.13)	.000***	c > a d=0.49 c > b d=0.39
	GC n=67	21.43 (± 4.56)	21.69 (± 4.15)	21.79 (± 4.19)	.293	

Friedman test						
		PRE M (DT) a	POST1 M (DT) b	POST2 M (DT) c	p	Pairwise comparision1 (D Cohen effect size)
NA	GE n=128	28.83 (± 4.67)	28.75 (± 5.32)	31.25 (± 4.14)	.000***	c > a d=0.55 c > b d=0.52
	GC n=67	28.50 (± 4.50)	29.12 (± 4.06)	29.11 (± 4.06)	.103	
TST	GE n=128	145.5 (± 17.18)	146.75 (±17.98)	155.41 (± 12.52)	.000***	c > a d=0.66 c > b d=0.56
	GC n=67	143.03 (± 19.12)	143.71 (±19.34)	145.92 (± 17.52)	.260	

Note. ¹adjustment with Bonferroni. CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Learning

Learning was only assessed during Phase 1, given that it referred to content delivered during the PE classes, and which formed part of the curriculum. The results of the Wilcoxon test for game execution and decision-making showed significant improvements in both the EG and CG and in both service recipients and providers (Tables 4 and 5). These improvements were similar in both groups under study (EG and CG).

In knowledge-related learning, the service recipients in the EG showed improvements in all the variables under study, except for fair play and health, while the CG only improved in rules knowledge and total test scores (Table 4).

Table 4*Descriptive statistics for the learning variables in service recipients, according to EG and CG*

		<i>Wilcoxon test</i>				
		<i>PRE M (DT)</i>	<i>POST1 M (DT)</i>	<i>Z</i>	<i>p</i>	<i>D Cohen effect size</i>
EX	GE n=230	3.17 (± 0.94)	3.99 (± 0.86)	10.01	.000***	0.91
	GC n=46	2.87 (± 0.83)	4.29 (± 0.79)	7.36	.000***	1.75
DM	GE n=230	3.08 (± 1.08)	3.80 (± 0.96)	9.22	.000***	0.70
	GC n=46	2.98 (± 0.77)	4.11 (± 0.86)	4.88	.000***	1.38
TECK	GE n=204	0.71 (± 0.79)	1.18 (± 0.86)	4.840	.000***	0.57
	GC n=41	1.02 (± 0.83)	1.00 (± 0.80)	0.42	0.674	0.02
TACK	GE n=204	1.61 (± 0.77)	1.93 (± 0.79)	4.68	.000***	0.41
	GC n=41	1.81 (± 0.79)	1.78 (± 0.72)	0.35	.729	0.04
DECK	GE n=204	1.99 (± 0.70)	2.16 (± 0.70)	1.801	.072	0.24
	GC n=41	2.09 (± 0.72)	2.12 (± 0.75)	0.16	.873	0.04
RK	GE n=204	1.03 (± 0.84)	2.24 (± 0.85)	9.87	.000***	1.43
	GC n=41	1.05 (± 0.81)	2.07 (± 0.85)	3.88	.000***	1.23
TOTALK	GE n=204	4.45 (± 2.26)	6.15 (± 2.85)	9.11	.000***	0.66
	GC n=41	5.31 (± 2.05)	6.49 (± 1.96)	3.71	.000***	0.59

Note. EX: execution; DM: decision-making; TECK: technical knowledge; TACK: tactical knowledge; DECK: fair play and health knowledge; RK: rules knowledge; TOTALK: total knowledge score.

* $p < .05$; ** $p < .01$; *** $p < .001$

Meanwhile, the service providers showed improvements at the end of Phase 1 in both groups (EG, CG). The improvements were higher, however, in the EG in

terms of technical knowledge, rules knowledge, and fair play and health, as well as in the total ringo knowledge score (Table 5).

Table 5

Descriptive statistics for the learning variables in service providers, according to EG and CG

		<i>Wilcoxon test</i>				
		<i>PRE M (DT)</i>	<i>POST1 M (DT)</i>	<i>Z</i>	<i>p</i>	<i>D Cohen effect size</i>
EX	GE n=128	3.11 (± 0.89)	3.95 (± 0.84)	7.81	.000***	0.97
	GC n=73	2.88 (± 0.75)	4.03 (± 0.67)	7.35	.000***	1.61
DM	GE n=128	3.07 (± 1.08)	3.88 (± 0.95)	8.18	.000***	0.80
	GC n=73	3.03 (± 0.86)	3.85 (± 0.79)	6.07	.000***	0.99
TECK	GE n=129	0.76 (± 0.72)	1.54 (± 0.75)	6.77	.000***	1.06
	GC n=72	1.32 (± 0.85)	1.56 (± 0.91)	3.22	.000***	0.27
TACK	GE n=129	2.24 (± 1.13)	2.88 (± 1.10)	5.43	.006**	0.57
	GC n=72	2.58 (± 1.11)	2.79 (± 0.94)	2.73	.000***	0.20
DECK	GE n=129	2.33 (± 0.82)	2.74 (± 0.82)	4.38	.000***	0.50
	GC n=72	2.44 (± 0.77)	2.42 (± 0.82)	0.14	.141	0.03
RK	GE n=129	1.33 (± 1.33)	2.74 (± 0.83)	8.03	.000***	1.27
	GC n=72	1.82 (± 1.05)	2.40 (± 0.88)	3.93	.000***	0.60
TOTALK	GE n=129	4.76 (± 4.76)	6.50 (± 2.80)	6.79	.000***	0.45
	GC n=72	5.64 (± 2.00)	6.35 (± 2.68)	3.42	.000***	0.30

Note. EX: execution; DM: decision-making; TECK: technical knowledge; TACK: tactical knowledge; DECK: fair play and health knowledge; RK: rules knowledge; TOTALK: total knowledge score.

* $p < .05$; ** $p < .01$; *** $p < .001$

DISCUSSION AND CONCLUSIONS

The present study sought to determine whether a programme based on hybridising SEM and SL might have an impact on enhancing SC and the learning of service recipients and providers. In order to assess the achievement of the objectives set, it is necessary to analyse the results according to the group under study and the intervention phase.

Regarding the improvement of SC, the programme was not effective in the students receiving the service, with slight improvements only in prosocial behaviour being observed during the implementation of the second phase. Meanwhile, the students in the group providing the service showed significant improvements in both overall SC and its different dimensions (cognitive reappraisal, social adjustment, social efficacy, normative adjustment). However, like their younger counterparts, these improvements only emerged in the second phase of the programme.

The disparate impact of the SEM-SL programme should be analysed based on the characteristics of each of its phases and the role of the participating groups. The lack of improvements as a result of implementing the SEM-SL hybrid in Phase 1 runs counter to several studies in the context of PE that report the positive contributions of the SEM in developing SC (Luna et al., 2020; Wang & Chen, 2021) or aspects inherent to it, such as prosocial behaviours (Manninen & Campbell, 2022), empathy and friendship (García López & Gutiérrez, 2015). However, unlike the participants in the cited studies, the students in our research had previous experience in implementing the model. This experience was necessary to provide training for the participating teachers, to promote familiarity with the model in the case of the students and to ensure fidelity in applying the SEM before initiating the programme. This may have reduced the effect of the SEM on SC in both the first and second phases of the programme.

Additionally, the results of Phase 1 also contradict studies that have associated SL with improvements in prosocial behaviours (Chiva-Bartoll et al., 2020b), social skills and social justice (Whitley et al., 2017). However, the design of Phase 1 reduced the interaction between service providers and recipients to three separate isolated events, which limited the opportunities to create positive interactions that could encourage the development of SC.

However, Phase 2 of the SEM-SL programme was delivered entirely in the secondary schools, allowing for contact and interaction between the whole community participating in the programme, not only during the intervention, but also at different times during the school day (e.g. other breaks, leaving and arriving at school, class changeovers). In addition, in contrast to Phase 1, the members of the programme shared activities with children that, having changed educational stage, had transferred from other schools and were now part of the new school,

providing them with more opportunities for social development. Understanding the importance of the quality and number of social relationships in the participants' positive adaptation (Kingery & Erdley 2007), this second phase represented a quantitative and qualitative leap in these relationships, which allowed the effect on SC of the hybrid use of the two methodologies (SEM and SL) to be optimised. In fact, a large number of encounters occurred in a context of maximum interaction, with very little teacher intervention and where the service providers assumed almost all the responsibilities. According to García López et al. (2023), this new approach to the SEM has a multiplying effect on some of its already recognised benefits, such as improved role representation, the development of greater responsibility and autonomy, and the fostering of a sense of belonging, aspects that also encourage the friendly relationships (García López & Gutiérrez, 2015) associated with SC.

Moreover, and although, and although studies support the notion that SC development programmes are more effective in adolescents than in pre-adolescents (Schuller & Demetriou, 2018), and that the greatest benefits of SL are generated among those providing the service (Cañadas, 2021), the effect of the specific role of the service provider in the SEM-SL programme is different when assessing its impact on improving SC. Our secondary school students voluntarily took the decision to participate in the study to help younger students, which gave them the opportunity to empathise with them, with their problems and needs, and above all to take responsibility for their learning and well-being. This underscores two key aspects that the SEM-LS hybrid fosters in the service providers, that is, responsibility and autonomy. These qualities were intentionally promoted through the combined use of the two methodologies, but also through the design and implementation of Phase 2 being enriched with activities complementary to the programme (coaching, reflection on the service, the meeting conditions, organisation, etc.). These activities, considered from a relational perspective, played a crucial role in changing the attitudes, responsibility and autonomy of the student service providers (García López et al., 2023), which might have had an impact on the improvement of SC. That is why an intentionally, specifically tailored and systematic design is essential (Bailey et al., 2009) in programmes that use sport as a framework to provide experiences to develop psychosocial aspects, promoting self-discovery and life skills, particularly if implementing a positive approach based on the student's strengths (Holt, 2016), as in the case of SC development.

In addition to the social learning associated with SC, in the first phase of the programme, our study also sought to understand the impact of SEM-SL on the learning involved in the game of ringo. In this sense, both the EG and CG and both the service recipient and provider groups showed substantive progress in learning related to the execution of the game and decision-making. However, the participants (providers and recipients) showed more notable improvements in

knowledge-related learning (technical, tactical, rules, fair play and health) compared to the controls. These findings are consistent with those of other studies where students following the SEM showed greater gains in content knowledge and better understanding of the game (Browne et al., 2004). However, despite the SEM being effective in improving technical execution and decision-making in the game, there were scant differences with respect to those that did not follow the programme (CG), coinciding with studies such as that of Pritchard et al. (2008), but contrasting with others such as that by Hastie et al. (2009), who reported more substantial improvements in technical skills and decision-making in those following the SEM. It is precisely the characteristics inherent to the SEM (roles, autonomy, responsibility, affiliation and feelings of belonging) that create a climate more likely to provide greater possibilities for meaningful learning (Browne et al., 2004; Evangelio et al., 2016), as opposed to the role of the mere recipient of information in traditional teaching (García-López & Gutiérrez, 2017).

SL may also have served to foster learning, since, as well as contributing to the development of social and civic competence, this methodology has been shown to be effective in the acquisition of curricular learning (Santos-Pastor et al., 2020). While the SEM seeks to make students competent in the practice of the actual game, in addition to being literate, reflective players, SL aims to bolster such learning, by encouraging competence in service-related tasks (experiential learning), in our case, the teaching of a sport. It is our belief, then, that the service providers were able to improve their knowledge (technical, tactical, rules, fair play and health) by attempting to successfully teach these aspects to the group receiving the service. Meanwhile, the children's learning in the target group may also have benefited from the more individualised teaching provided by their older peers. Although most of the experiences in the literature have been implemented in higher education, the benefits of the use of SL in learning in the context of PE have been reported not only in the social aspects (Ruiz-Montero et al., 2022) but also in the academic realm (Capella-Perís et al., 2020).

Notwithstanding our findings, it is necessary to highlight certain limitations of the present study. Firstly, the use of non-parametric tests for inferential statistics limited the possibility of performing more complete and robust analyses such as, for example, controlling for the effect of variables (gender or school network) that might have an impact on the results. It is also worth noting the participant loss between the first and second phases due to students transferring to secondary schools not involved in the project, which may have increased the bias of the research and, therefore, affected the generalisability of the results. The voluntary nature of the service providers' participation conditioned the selection of participants, and may also have had an impact on the findings, as they were understood to be intrinsically

motivated to provide the service and predisposed to enhancing the efficacy of the programme.

Additionally, although the socioeconomic and cultural contexts were similar, and the design of the activities, the protocols and the organisation were the same in all the cases, we cannot ignore the biases inherent to the quasi-experimental nature of the study and its implementation by different researchers in the school networks.

Furthermore, since SC was measured according to students' self-perceptions, we do not know whether these improvements translated into the development of prosocial skills and behaviours. Therefore, for future research, it would be interesting to conduct multilevel assessments based not only on self-assessment, but also on behavioural assessment by peers, teachers and/or external observers. It is also necessary to redesign the programme, preserving its strengths, while mitigating the weaknesses detected, for example, by enriching Phase 1 with more activities and interactions between groups.

Moreover, given the flexibility of this SEM-SL programme, it can be easily transferred to a large number of school contexts where it could be highly effective in facilitating the transition from primary to secondary school, thus opening up new avenues of future research.

In conclusion, partially fulfilling the hypothesis proposed when beginning the research, only in Phase 2 did the SEM-SL programme prove to be effective in developing SC and most of its dimensions (cognitive reappraisal, social adjustment, social efficacy, normative adjustment), although this effect was primarily detected in the service provider group. Thus, it was necessary to maximise the quantity and quality of interactions through teaching-learning situations that encouraged emotional involvement between peers. The SEM-SL programme was also effective in learning, especially in the areas related to knowledge (technical, tactical, declaratory and rules), in the case of both service providers and recipients.

Given the above, we understand that combining the SEM and SL methodologies provides an ideal teaching-learning ecosystem, not only for the development of SC but also for the learning inherent to sport itself, exposing students to experiences in which they all individually and collectively contribute to create a positive collective experience. Moreover, the complementarity shown by both models adds weight to the idea of their integrated use, multiplying the recognised benefits in responsibility, positive and respectful relationships, autonomy, and a sense of belonging.

ACKNOWLEDGEMENTS

This study forms part of the project “ Impact of the Sport Education Model as Service-Learning on the social and civic competence ” (EDU2017-86928-R) funded by the Ministry of Economy, Industry and Competitiveness within the call for grants for R&D projects under the State Programme for Research, Development and Innovation oriented towards the Challenges of Society corresponding to call 2017. We would like to thank the management teams of the 17 participating schools for their help, as well as the work of all the PE teaching staff who were actively involved in this programme. Special thanks go to the students who provided services for their younger peers to help ease their transition from primary to secondary school.

REFERENCES

- Bailey, R., Armour, K., Kirk, D., Jess, M., Pickup, I., Sandford, R., & Education, B. P. (2009). The educational benefits claimed for physical education and school sport: an academic review. *Research Papers in Education*, 24(1), 1-27. <https://doi.org/10.1080/02671520701809817>
- Browne, T. B., Carlson, T. B., & Hastie, P. A. (2004). A comparison of rugby seasons presented in traditional and sport education formats. *European Physical Education Review*, 10(2), 199-214. <https://doi.org/10.1177/1356336X04044071>
- Cañadas, L. (2021). Aprendizaje-servicio universitario en contextos de actividad física, educación física y deporte: una revisión sistemática. *Educación e pesquisa*, 47, Artículo e237446. <https://doi.org/10.1590/S1678-4634202147237446>
- Capella-Peris, C., Gil-Gómez, J., & Chiva-Bartoll, Ò. (2020). Innovative analysis of service-learning effects in physical education: a mixed-methods approach. *Journal of Teaching in Physical Education*, 39(1), 102-110. <https://doi.org/10.1123/jtpe.2019-0030>
- Casado-Robles, C., Mayorga-Vega, D., Guijarro-Romero, S., & Viciania, J. (2022). Effect of a sport education-based teaching unit in physical education on high school students' social networks and quantitative sociometry scores: a cluster randomized control trial. *Revista de Psicodidáctica*, 27(1), 66-75. <https://doi.org/10.1016/j.psicoe.2021.10.001>
- Chiva-Bartoll, O., & Fernández-Rio, J. (2022). Advocating for service-learning as a pedagogical model in physical education: towards an activist and transformative approach. *Physical Education and Sport Pedagogy*, 27(5), 545-558. <https://doi.org/10.1080/17408989.2021.1911981>
- Chiva-Bartoll, Ò., Capella-Peris, C., & Salvador-García, C. (2020a). Service-learning in physical education teacher education: towards a critical and inclusive

- perspective. *Journal of Education for Teaching*, 46(3), 395-407. <https://doi.org/10.1080/02607476.2020.1733400>
- Chiva-Bartoll, O., Montero, P. J. R., Capella-Peris, C., & Salvador-García, C. (2020b). Effects of service learning on physical education teacher education students' subjective happiness, prosocial behavior, and professional learning. *Frontiers in Psychology*, 11, 331. <https://doi.org/10.3389/fpsyg.2020.00331>
- Chiva-Bartoll, O., Moliner, M. L., & Salvador-García, C. (2020c). Can service-learning promote social well-being in primary education students? A mixed method approach. *Children and Youth Services Review*, 111, Artículo 104841. <https://doi.org/10.1016/j.childyouth.2020.104841>
- Evangelio, C., González-Víllora, S., Serra-Olivares, J., & Pastor-Vicedo, J. C. (2016). El modelo de educación deportiva en España: una revisión del estado de la cuestión y prospectiva. *Cuadernos de Psicología del Deporte*, 16(1), 307-324. <https://bit.ly/3VCnZZG>
- García-López, L. M., & Gutiérrez, D. (2015). The effects of a sport education season on empathy and assertiveness. *Physical Education and Sport Pedagogy*, 20(1), 1-16. <https://doi.org/10.1080/17408989.2013.780592>
- García-López, L. M., & Gutiérrez, D. (2017). *Aprendiendo a enseñar deporte. Modelos de Enseñanza Comprensiva y Educación Deportiva* (2ª ed.). INDE.
- García-López, L. M., Gutiérrez, D., & Fernández-Bustos, J. G. (2019). Emprendimiento docente en la transición de educación primaria a educación secundaria: una propuesta desde la educación deportiva y el aprendizaje-servicio. *Contextos Educativos: Revista de Educación*, 24, 113-121. <https://doi.org/10.18172/con.3913>
- García-López, L. M., Gutiérrez, D., González-Martí, I., Segovia, Y., & MacPhail, A. (2023). Enhancing sport education experiences through service-learning. *European Physical Education Review*, 29(2), 215-232. <https://doi.org/10.1177/1356336X221132770>
- Gil-Gómez, J., Moliner-García, M. O., Chiva-Bartoll, Ó., & García-López, R. (2016). Una experiencia de aprendizaje-servicio en futuros docentes: desarrollo de la competencia social y ciudadana. *Revista Complutense de Educación*, 27(1), 53-73. http://dx.doi.org/10.5209/rev_RCED.2016.v27.n1.45071
- Gómez-Ortiz, O., Romera-Félix, E. M., & Ortega-Ruiz, R. (2017). Multidimensionalidad de la competencia social: medición del constructo y su relación con los roles del bullying. *Revista de Psicodidáctica*, 22(1), 37-44. [https://doi.org/10.1016/S1136-1034\(17\)30042-4](https://doi.org/10.1016/S1136-1034(17)30042-4)
- Grineski, S. (1996). *Cooperative learning in physical education*. Human Kinetics Publishers.
- Gutiérrez, D., Segovia, Y., García López, L. M., & Fernández-Bustos, J. G. (2019). Integración del aprendizaje-servicio en el modelo de educación deportiva como

- facilitador de la transición a la educación secundaria. *Publicaciones*, 49(4), 87–108. <https://doi.org/10.30827/publicaciones.v49i4.11730>
- Harvey, S., Kirk, D., & O'Donovan, T. M. (2014). Sport education as a pedagogical application for ethical development in physical education and youth sport. *Sport, Education and Society*, 19(1), 41-62. <https://doi.org/10.1080/13573322.2011.624594>
- Hastie, P. A., & Buchanan, A. M. (2000). Teaching responsibility through SE: prospects of a coalition. *Research Quarterly for Exercise and Sport*, 71(1), 25-35. <https://doi.org/10.1080/02701367.2000.10608877>
- Hastie, P. A., Sinelnikov, O. A., & Guarino, A. J. (2009). The development of skill and tactical competencies during a season of badminton. *European Journal of Sport Science*, 9(3), 133-140.
- Holt, N. L. (Ed.). (2016). *Positive youth development through sport*. Routledge. <https://doi.org/10.1080/17461390802542564>
- Kingery, J. N., & Erdley, C. A. (2007). Peer experiences as predictors of adjustment across the middle school transition. *Education and Treatment of Children*, 30(2), 73-88. <https://doi.org/10.1353/etc.2007.0007>
- Koszałka-Silska, A., Korcz, A., & Wiza, A. (2021). The impact of physical education based on the adventure education programme on self-esteem and social competences of adolescent boys. *International Journal of Environmental Research and Public Health*, 18(6), 3021. <https://doi.org/10.3390/ijerph18063021>
- Leduc, C., & Bouffard, T. (2017). The impact of biased self-evaluations of school and social competence on academic and social functioning. *Learning and Individual Differences*, 55, 193-201. <https://doi.org/10.1016/j.lindif.2017.04.006>
- Luna, P., Guerrero, J., Rodrigo-Ruiz, D., Losada, L., & Cejudo, J. (2020). Social competence and peer social acceptance: evaluating effects of an educational intervention in adolescents. *Frontiers in Psychology*, 11, 1305. <https://doi.org/10.3389/fpsyg.2020.01305>
- Manninen, M., & Campbell, S. (2022). The effect of the sport education model on basic needs, intrinsic motivation and prosocial attitudes: a systematic review and multilevel meta-analysis. *European Physical Education Review*, 28(1), 78-99. <https://doi.org/10.1177/1356336X211017938>
- Metzler, M. (2017). *Instructional models in physical education*. Routledge.
- Monzonís, M., & Capllonch, M. (2014). La educación física en la consecución de la competencia social y ciudadana. *Retos: Nuevas Tendencias en Educación Física, Deporte y Recreación*, 25, 180-185. <https://doi.org/10.47197/retos.v0i25.34509>
- Organization for Economic Co-operation and Development (2005). *The definition and selection of key competencies: executive summary*. <https://bit.ly/3TVLLhU>

- Oslin, J. I., Mitchell, S. A., & Griffin, L. I. (1998). The Game Performance Assessment Instrument (GPAI): development and preliminary validation. *Journal of Teaching in Physical Education*, 17(2), 231-243. <https://doi.org/10.1123/jtpe.17.2.231>
- Opstoel, K., Chapelle, L., Prins, F. J., De Meester, A., Haerens, L., van Tartwijk, J., & De Martelaer, K. (2020). Personal and social development in physical education and sports: a review study. *European Physical Education Review*, 26(4), 797-813. <https://doi.org/10.1177/1356336X19882054>
- Padilla-Walker, L. M., Fraser, A. M., Black, B. B., & Bean, R. A. (2015). Associations between friendship, sympathy, and prosocial behavior toward friends. *Journal of Research on Adolescence*, 25(1), 28-35. <https://doi.org/10.1111/jora.12108>
- Pritchard, T., Hawkins, A., Wiegand, R., & Metzler, J. N. (2008). Effects of two instructional approaches on skill development, knowledge, and game performance. *Measurement in Physical Education and Exercise Science*, 12(4), 219-236. <https://doi.org/10.1080/10913670802349774>
- Puig-Rovira, J. M., Batlle, R., Bosch, C., & Palos, J. (2007). *Aprendizaje servicio: educar para la ciudadanía*. Octaedro.
- Ruiz-Montero, P. J., Santos-Pastor, M. L., Martínez-Muñoz, L. F., & Chiva-Bartoll, O. (2022). Influencia del aprendizaje-servicio universitario sobre la competencia profesional en estudiantes de titulaciones de actividad física y deporte. *Educación XX1*, 25(1), 119-141. <https://doi.org/10.5944/educxx1.30533>
- Santos-Pastor, M. L., Cañadas, L., Martínez-Muñoz, L. F., & García-Rico, L. (2020). Design and validation scale to assess university service-learning in physical activity and sports. *Educación XX1*, 23(2), 67-93. <http://doi.org/10.5944/educXX1.25422>
- Schueller, I., & Demetriou, Y. (2018). Physical activity interventions promoting social competence at school: a systematic review. *Educational Research Review*, 25, 39-55. <https://doi.org/10.1016/j.edurev.2018.09.001>
- Siedentop, D., Hastie, P. A., & van der Mars, H. (2020). *Complete guide to sport education* (3rd ed.). Human Kinetics.
- Sinelnikov, O. A. (2009). Sport education for teachers: professional development when introducing a novel curriculum model. *European Physical Education Review*, 15(1), 91-114. <https://doi.org/10.1177/1356336X09105213>
- Varela, D. C., Losada, A. S., & Fernández, J. E. R. (2019). Aprendizaje-servicio e inclusión en educación primaria: una revisión sistemática desde la educación física. *Retos: Nuevas Tendencias en Educación Física, Deporte y Recreación*, 36, 611-617. <https://doi.org/10.47197/retos.v36i36.68972>
- Wang, B., & Chen, S. (2021). Sport education for social competence in K-12 physical education. *Quest*, 73(4), 391-409. <https://doi.org/10.1080/00336297.2021.1986410>

- Weiss, M. R. (2011). Teach the children well: a holistic approach to developing psychosocial and behavioral competencies through physical education. *Quest*, 63(1), 55-65. <https://doi.org/10.1080/00336297.2011.10483663>
- Whitley, M. A., Walsh, D., Hayden, L., & Gould, D. (2017). Narratives of experiential learning: students' engagement in a physical activity-based service-learning course. *Journal of Teaching in Physical Education*, 36(4), 419-429. <https://doi.org/10.1123/jtpe.2016-0141>
- Yorio, P. L., & Ye, F. (2012). A meta-analysis on the effects of service-learning on the social, personal, and cognitive outcomes of learning. *Academy of Management Learning & Education*, 11, 9-27. <https://doi.org/10.5465/amle.2010.0072>
- Zhang, F., You, Z., Fan, C., Gao, C., Cohen, R., Hsueh, Y., & Zhou, Z. (2014). Friendship quality, social preference, proximity prestige, and self-perceived social competence: interactive influences on children's loneliness. *Journal of School Psychology*, 52(5), 511-526. <https://doi.org/10.1016/j.jsp.2014.06.001>

ANNEX 1

Additional information on the distribution of participants, scheduling of study phases and inter-group differences for each of the variables at the beginning of the study and at the end of each of the phases.

Table A.1

Distribution of participants in phase 1 of the MED-ApS program

Net	PEd			HERSELF			Total net
	male	females	total	male	females	total	
1	17 (41%)	23 (59%)	40 (100%)	26 (49%)	27 (51%)	53 (100%)	93
2	73 (58.9%)	51 (41.1%)	124 (100%)	44 (44.9%)	54 (55.1%)	98 (100%)	222
3	45 (48.4 %)	48 (51.6%)	93 (100%)	53 (63.1 %)	31 (36.9 %)	84 (100%)	177
4	45 (41.7 %)	62 (58.3 %)	107 (100%)	14 (31.6 %)	28 (68.4 %)	42 (100%)	149
5	36 (54.5 %)	30 (45.5 %)	66 (100%)	34 (46.6%)	39 (53.4 %)	73 (100%)	139
Total	216	214	430	171	179	350	780

Table A.2

Key stages followed in the planning and execution of SL (Puig-Rovira et al. 2007) in each of the phases of the MED-ApS program (taken from García-López et al.. 2023)

Stage	Actions
1. Context analysis	Once schools and PE teachers expressed interest in participating in the MED-ApS (SE-SL) project prior to the start of each of the two phases, project leaders met with secondary school teachers to establish: (a) secondary school teachers' perceptions of secondary school students' participation through an SL programme aimed at the transition from primary to secondary school; (b) who would participate in the study in each school; (c) students' sporting interests and experiences; and (d) the specific context of each school in facilitating the transition from primary to secondary school. These meetings allowed teachers to be formally involved in the planning of the project, providing key information for the design and agreeing on the responsibility for teaching/supervising the classes. These meetings also helped teachers to connect the MED-ApS programme with the PE curriculum of groups participating in the project.
2. Project plan.	Following Hildenbrand and Schultz (2015), each network supervisor and the teachers included in that network completed a Memorandum of Understanding to determine desired outcomes, working methodology and communication methods, opportunities for teacher support, and a clear and realistic timeline for project implementation.
3. Action plan	The SL project was presented to all Secondary Education groups (4th ESO phase 1, 1st Bachillerato phase 2). This involved a motivational activity for the students, a presentation of the aims of the SL project and the activities in which they would participate (depending on their participation preferences). The SL aimed to promote a positive transition from primary to secondary school by introducing various elements that could facilitate the process for primary school students, such as having acquaintances from primary school, meeting older students, being aware of the help provided by the school, and participating in small group activities where they could interact closely with new classmates.

4. Action	The 4th ESO students during phase 1 and the 1st Baccalaureate students in phase 2 implemented the project under the supervision of the teachers and coordinated by the network supervisor. In phase 1, the 4th ESO students had the opportunity to train primary school students in the sport of ringo on three occasions: one training session at primary school, one at their secondary school and one during each final network event. In phase 2, the 1st Baccalaureate students coached and organised the spikeball-roundnet sport season to their younger peers during approximately 23 sessions that took place during breaks and two additional classes. The service providers took the time to talk to them about the expectations of the primary school students and their experiences at the school. Each of these sessions involved a preparatory activity from the previous session, and another activity to reflect on the development of the service. The student service providers' reflections revolved around: (a) coaching the sport (e.g. "What challenges arose in teaching ringo catching?"); and (b) the transition from primary school to secondary school (e.g. 'What is your perception of the expectations of your students? 'What is your perception of primary school students' expectations of what is involved in becoming a secondary school student?").
5. Assessment project	At the end of the respective culminating events, the student service providers analysed the results of the service activity, reflecting on their learning, celebrating their learning experiences and proposing possible future actions.

Table A.3*Phase 1 programming*

MED phase	Sessions	Sports Education	Service Learning
Organization	1-2	Introduction to SE. Equipment selection.	S. 1: Motivational task introductory to SL
Pre-season	3-6	Assignment of roles. Introduction of 2 trainers. Physical trainer. sports director. Teaching the specific game (ringo)	S. 4: Preparing for the First Teaching Session
			S. 5: First teaching session: training in PE schools
	7-11	Intra and inter-teams. Introduction of referee roles. annotator and publicist. Team jersey design and decoration	S. 6: Service Reflection
			S. 8: Preparing for the Second Teaching Session
			S. 9: Second teaching session: training in PE schools
Competition	12-17	Formal competition (all against all) and training sessions	S. 10: Service Reflection
			S. 11: Coaching at SS (school three)
			S. 12: Service Reflection
			S. 14: Organization of the network’s culminating event
Culminating event	18-19	Culminating event at the school, preparation and celebration	S. 15: Culminating event of the network
			S. 16: Service Reflection
			S. 19: SL Assessment and Celebration

Table A.4
Phase 2 Programming

MED phase	Sessions	Context	Sports Education	Service Learning
Organization	1	Recess		S. 1: Motivational task introductory to SL
	2-7	PE Class		S. 2-7: Training in the sports content of broadcasters
	8-9	Recess + 1h		S. 8: Motivation for participation in the recipient program S. 9: Service Reflection
Preseason	10-13	Recess	Team Practice	S. 10-12: Training of Service Recipients S. 13: Service Reflection
Competition	14-21	Recess	Formal competition (all against all) and training sessions	S. 14-20: Training of Service Recipients S. 21: Service Reflection
Culminating event	22-23	Recess + 1h	Culminating event at the institute. Preparation and celebration	S. 22: Training of Service Recipients S. 23: Service Reflection

Table A.5

Inter-group differences (Experimental Group/Control Group) in the variables under study before starting the program (pre-test). Mann-Whitney test

		Level	
		Primary	Secondary
CR	<i>Z</i>	-.13	-1.13
	<i>p</i>	.896	.256
SA	<i>Z</i>	-.82	-1.89
	<i>p</i>	.411	.058
PB	<i>Z</i>	-1.39	-1.33
	<i>p</i>	.164	.181
SE	<i>Z</i>	-1.64	-.830
	<i>p</i>	.100	.406
NA	<i>Z</i>	-2.07	-.575
	<i>p</i>	.038*	.566
TSC	<i>Z</i>	-.29	-2.18
	<i>p</i>	.770	.029*

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table A.6

Inter-group differences (Experimental Group/Control Group) in the variables under study after phase 1 (post-test 1). Mann-Whitney test

		Level	
		Primary	Secondary
CR	<i>Z</i>	-.21	-.82
	<i>p</i>	.828	.411
SA	<i>Z</i>	-1.66	-1.78
	<i>p</i>	.097	.075
PB	<i>Z</i>	-.28	-1.68
	<i>p</i>	.778	.092
SE	<i>Z</i>	-1.59	-1.10
	<i>p</i>	.111	.269
NA	<i>Z</i>	-2.38	-.06
	<i>p</i>	.017*	.951
TSC	<i>Z</i>	-1.58	-1.77
	<i>p</i>	.114	.076

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table A.7

Inter-group differences (Experimental Group/Control Group) in the variables under study after phase 2 (post-test 2). Mann-Whitney test

		Level	
		Primary	Secondary
CR	Z	-.38	-1.83
	p	.698	.066
SA	Z	-1.19	-2.22
	p	.232	.026*
PB	Z	-.36	-.87
	p	.714	.381
SE	Z	-1.21	-3.75
	p	.223	<.001***
NA	Z	-3.37	-4.34
	p	<.001***	<.001***
TSC	Z	-1.81	-4.21
	p	.070	<.001***

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table A.8*Normality test of the variables under study (Kolmogorov-Smirnov for a sample).**CR,SA,PB,SE,NA,TSC*

	K-S Statistic	p
CRpre	0.095	.000***
SAPre	0.125	.000***
PBpre	0.147	.000***
SEpre	0.110	.000***
NAPre	0.133	.000***
TSCpre	0.087	.000***
CRpost1	0.127	.000***
SAPost1	0.117	.000***
PBpost1	0.123	.000***
SEpost1	0.116	.000***
NAPost1	0.156	.000***
TSCpst1	0.135	.000***
CRpost2	0.112	.000***
SAPost2	0.154	.000***
PBpost2	0.228	.000***
SEpost2	0.233	.000***
NAPost2	0.286	.000***
TSCpst2	0.256	.000***
TEpre	0.123	.000***
DMpre	0.229	.000***
KTECpre	0.284	.000***
KTACpre	0.268	.000***
KDEspre	0.269	.000***
KREGpre	0.181	.000***
KTOTALpre	0.095	.000***
TEpost	0.125	.000***
DMpost	0.147	.000***

	K-S Statistic	<i>p</i>
KTECpost	0.110	.000***
KTACpost	0.133	.000***
KDESpst	0.087	.000***
KREGpost	0.127	.000***
KTOTALpost	0.117	.000***

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence; TE: technical execution; DM: decision-making; KTEC: technical knowledge; KTAC: tactical knowledge; KDEC: knowledge, sportsmanship and health; KREG: regulatory knowledge; KTOTAL: general knowledge. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table A.9
Mauchly sphericity test for related samples

	Mauchly	<i>p</i>
CR	0.903	.000***
AS	0.922	.000***
SA	0.826	.000***
IS	0.789	.000***
PB	0.829	.000***
CST	0.801	.000***

CR:cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table A.10

Homoscedasticity test for group-dependent variables (GE vs CG) (Levene's test). Results for student providers and recipients in the pre-test

	Primary School		Secondary school	
	Levene	<i>p</i>	Levene	<i>p</i>
CRpre	0.07	.784	0.00	.995
SAPre	3.65	.057	3.09	.079
PBpre	1.28	.258	0.64	.424
SEpre	6.30	.012*	2.09	.149
NAPre	9.50	.002**	0.10	.743
TSCpre	0.09	.761	2.03	.154
TEpre	0.14	.708	1.94	.165
DMpre	6.57	.011*	10.7	.001**
KTECpre	1.10	.294	5.45	.020
KTACpre	1.49	.223	0.01	.901
KDESPre	2.09	.149	0.11	.730
KREGpre	0.00	.956	0.02	.869
KTOTALpre	1.21	.272	0.05	.810

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence; TE: technical execution; DM: decision-making; KTEC: technical knowledge; KTAC: tactical knowledge; KDEC: knowledge, sportsmanship and health; KREG: regulatory knowledge; KTOTAL: general knowledge.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table A.11

Homoscedasticity test for group-dependent variables (GE vs CG) (Levene's test). Results for student providers and recipients in post-test 1

	Primary School		Secondary School	
	Levene statistician	<i>p</i>	Levene statistician	<i>p</i>
CRpost1	1.27	.260	0.07	.785
SApost1	4.35	.038*	4.91	.027*
PBpost1	2.01	.157	0.00	.996
SEpost1	1.34	.247	2.20	.138
NApost1	9.72	.002**	2.38	.124
TSCpst1	0.08	.772	0.40	.523
TEpost	0.79	.373	5.17	.024*
DMpost	0.84	.358	5.26	.023*
KTECpost	2.39	.123	3.05	.082
KTACpost	0.27	.603	1.70	.193
KDESpst	0.31	.577	0.00	.936
KREGpost	0.29	.588	0.05	.810
KTOTALpost	5.34	.021*	0.10	.743

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence; TE: technical execution; DM: decision-making; KTEC: technical knowledge; KTAC: tactical knowledge; KDE: knowledge, sportsmanship and health; KREG: regulatory knowledge; KTOTAL: general knowledge.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table A.12

Homoscedasticity test for group-dependent variables (GE vs CG) (Levene's test). Results for student providers and recipients in the posttest2

	Primary School		Secondary School	
	Levene	<i>p</i>	Levene	<i>p</i>
CRpost2	2.87	.092	8.28	.004**
SApost2	0.07	.778	3.64	.058
PBpost2	0.02	.880	0.00	.964
SEpost2	0.10	.741	2.23	.136
NApost2	7.12	.008**	0.18	.666
TSCpst2	1.53	.218	2.30	.131

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence

p* < 0.05; *p* < 0.01; ****p* < 0.001

