

## TITLE

SIGNIFICANT SOCIO-EMOTIONAL LEARNING AND IMPROVEMENT OF  
EMPHATY IN PHYSIOTHERAPY STUDENTS THROUGH SERVICE  
LEARNING METHODOLOGY: A MIXED METHODS RESEARCH

## **ABSTRACT**

**Background:** Research into service learning (SL) in education has increased since the 1990s. In higher education physiotherapy programmes, this technique is used to achieve real practical learning and to grasp how to recognize and manage emotions, to be concerned for others and to take decisions in clinical contexts.

**Objectives:** To create a community experience through SL methodology for physiotherapy university students and to analyse their perceptions of the learning experience and changes in empathy

**Design:** A mixed research method, a quasi-experimental quantitative approach with pre- and post-measurements of a single group and a qualitative approach through reflective diaries subjected to a contents analysis

**Participants:** 29 students of the Faculty of Health Sciences (Department of Nursing and Physiotherapy) designed and put into practice a workshop for promoting physical activity in 277 children from the first and the sixth year of compulsory primary education.

**Methods:** The project was divided into three phases: planning, performing and reflecting on the service. At the start, participants completed a questionnaire to determine their scale of empathy on the Interpersonal Reactive Index (IRI). One week after performing the service they handed over reflective diaries and completed a second IRI scale survey. An analysis was carried out of the contents of the reflective diaries

**Results:** Twenty-nine students agreed to participate. These learners consolidated their skills in the subject, indicating their satisfaction with the significant learning they achieved. The IRI scale showed a significant improvement in the Personal Distress dimension ( $p=0.002$ ).

**Conclusions:** Active learning in the context of processes of a participatory and reflective type implies greater understanding of the phenomenon studied. It allows an enhance awareness of the importance of inclusivity and involvement of users in the context of clinical practice. It also provides socio-emotional learning, improving interpersonal abilities and the capacity to face up to stressful situations.

**KEYWORDS:** Service Learning, Physical Therapist, Education, Physical Activity

## INTRODUCTION

Interest in, and research into, service learning (SL) in higher education have been growing since the 1990s. Eyler and Giles (Eyler, Giles, Stenson, & Gray, 2001) and Simons (Simons & Cleary, 2006) define the SL methodology as a balance between service to the community and academic learning, in which service and learning objectives have been incorporated together. It is a type of learning in which students apply theoretical knowledge to the real world. It constitutes an educational philosophy that stresses and combines active learning committed to social responsibility (Mandich, Erickson, & Nardella, 2016).

In the area of physiotherapy education, this methodology is beginning to be used (Jiménez-Sánchez et al., 2018) as an effective method of ensuring that students gain real world practical training, cultural awareness and independent learning (Romani & Holbert, 2007). The SL model would appear to offer a greater ability for physiotherapy students to develop and demonstrate the skills they require than does the conventional model of clinical training in health sciences, based fundamentally on the demonstration and imitation of techniques and methods (Reynolds, 2005; Warren, 2012).

Barr and Tagg (Barr & Tagg, 1995) state that the purpose of a university is not so much to transfer knowledge as to create environments and experiences leading students to discover and construct knowledge for themselves. SL is an approach to instruction with the potential to aid in achieving such a change (Wilson, 2011). SL incorporates this reflective component in such a way to have an impact on learning about social problems and the need to address

them(Pechak & Thompson, 2009). By establishing relationships with the users of services, students can reflect on their preconceived ideas and develop tolerant attitudes, which contributes to socio-emotional learning (Zins, 2004). Any cognitive dissonance can be resolved as they adjust their beliefs about the consumers to whom they are offering the service. Such a process may give them new perspectives and improve their empathy and self-knowledge (Felten & Clayton, 2011; Rockquemore & Schaffer, 2000).

An empathetic response is the ability to comprehend somebody else and to put oneself in that individual's place(Eisenberg, 2000). Various studies have demonstrated the importance of empathy in the health context, whether in patients outcomes (Hojat et al., 2011), in adhering to courses of treatment(Vermeire & Hearnshaw, 2001), in the establishing of a relationship between physiotherapist and patient(Morera-Balaguer, Botella-Rico, Martínez González, Medina-Mirapeix, & Rodríguez Nogueira, 2018; O'Keeffe et al., 2016) or even in repercussions in modulating sensations in patients in persistent pain(Fuentes et al., 2014). It would appear that the SL methodology can trigger a change in the levels of empathy of students. (Wilson, 2011).

The principal purpose of the project being reported here was to provide fourth-year physiotherapy students with a community clinical experience using a SL methodology. The specific objectives of the study were to analyse students' perceptions of the learning experience and changes in empathy and personal stress situations that might occur.

## **METHODS**

### **Design**

To meet the objectives of the study, it was decided to use mixed methods of a sequential and transformational type (Teddlie & Tashakkori, 2012). On the one hand, there was a quantitative approach with a quasi-experimental design involving before and after measurements of a single group. On the other, there was a qualitative approach involving groups and reflective diaries, the latter explored using a contents analysis.

### **Participants**

Students in the fourth and final year of the Faculty of Health Sciences at the University of Leon in Spain. These students had enrolled for the course entitled "Sports Physiotherapy" offered during the second semester of the academic year 2017-2018 and had completed clinical placements during the second semester of the third year and the first semester of the fourth year.

### **Recruitment and Ethics**

The study was approved by the ethics committee of the University of León. Recruitment of participants took place in March 2018. Two researchers explained the aims and objectives of the study and the trainees who then volunteered to take part in it signed an informed consent document. Data were analysed and stored in an anonymous format that respected the stipulations of

Spanish Basic Law 3/2018 of 5 December 2018, on the Protection of Personal Data and the Guaranteeing of Digital Rights and the study complies with the Declaration of Helsinki.

## **Procedure**

The intention was to allow students to work at encouraging physical activity in a healthy population (Sheedy et al., 2000) as one of the learning outcomes included within the subject of sports physiotherapy. As physiotherapists are in an ideal position for promoting the health and well-being of their clients (Bezner, 2015), it would seem crucial to give future physiotherapists a grounding in the important labour of educating and promoting health in the population of children (Kearns, Ponichtera, Rucker, & Ford, 2014; Shirley, van der Ploeg, & Bauman, 2010). Potential participants were informed that the service would be undertaken outside the normal timetabled hours for the subject and would not count towards their assessment. This was intended to make the option of taking part completely voluntary. Those students who agreed to participate were divided into six heterogeneous groups, formed by men and women and this enriched the contributions. Three groups were tasked with designing and putting into practice a workshop for promoting physical activity for children aged six. The other three planned and implemented a workshop for encouraging physical activity for children twelve years old. Because SL is a structured learning experience, the project was split into three phases:

Phase I, *Planning the Service*. In order to prepare, think about and seek a design for the workshops three reflective meetings each of two hours in duration were held at weekly intervals. These were chaired by two researchers whose function was to propose the topics for each group, moderate interventions and pool the results that were being put forward.

Phase II, *Performing the Service*. The workshops took place two weeks after the last of the reflective meetings. The population for which the workshops were organized consisted of 134 children six year old and 143 children 11 year old, coming from five different schools in the city of Ponferrada and its immediate environs. There were five workshops for each of the two years, one workshop for first formers and one for sixth formers being held in every one of the five schools and lasting twenty minutes.

Phase III, *Reflecting on and Evaluating the Service*. The six groups of students were all asked to draw up a reflective diary during the week following provision of the service.

### **Data Collection**

Quantitative pre-test data were gathered at the start of the first reflexion meeting in the first phase of the project. Post-test data, by contrast, were collected a week after the SL action had been performed. At these two points in time, the participants completed a socio-demographic questionnaire and also answered questions for the "Interpersonal Reactivity Index" (IRI) empathy scale. The IRI scale was developed by Davis (1980)(Davis, 1980) and validated in a Spanish version by Mestre, Frías and Samper(Escrivá, Navarro, & García,



2004). It is made up of two cognitive factors (Perspective Taking, PT, and Fantasy, FS) and two emotional (Empathic Concern, EC, and Personal Distress, PD), with a total of 28 items each having five response options (a Likert-type scale from 1 to 5, where 1 is “Does not describe me well” and 5 is “Describes me very well”).

To allow qualitative data to be collected, the students were invited to submit their reflective diaries one week after the service had been performed. In these diaries students were asked to describe the results obtained in the reflexive group regarding the objectives, the workshop design and possible barriers that they found during its realization: 1) Thoughts about the operation of the service; 2) Perceptions of the personal learning experience obtained. Table I shows the stages in the project.

### **Data Analysis**

For the quantitative data, a descriptive analysis of the frequencies observed was undertaken, with a confidence interval of 95%, and averages and standard deviations calculated for the continuous variables. To confirm the normality of the distributions, Shapiro-Wilk and Shapiro-Francia tests were performed. To check for any difference in averages between males and females, Student's T-test for independent samples was used. In comparing the IRI results before and after the SL activity, Student's T-test for related samples was employed. The significance level was fixed at  $p < 0.05$ .

For the qualitative data, a contents analysis was carried out on the reflective diaries of the six groups of university students who took part in the study. Three researchers reviewed the reflective diaries independently extracting and coding phrases with a significant content. These expressions were grouped together in categories at a higher conceptual level. These three researchers reviewed and compared their findings so as to reach an agreement about codes and categories. A coding and discussion round then took place. To verify the consistency of the final categories, a researcher checked their agreement on the basis of a blind review utilizing codes assigned to the same passages (Escolar-Reina et al., 2010). At each step in the process, an independent researcher played the role of reviewer so as to check whether the analysis was systematically supported by the data, thus improving reliability (Corbin J, 2008).

## **RESULTS**

### **Characteristics of the Sample**

Of the thirty-four students enrolled in the course in sports physiotherapy in the academic year 2017-18, twenty-nine agree to participate voluntarily in the research. These were divided into six groups, three putting on workshops for first-year pupils, and the other three for sixth-year pupils in compulsory primary education (Figure1). The socio-demographic characteristics of the physiotherapy student participants are shown in Table II.

## **Outcomes of the Reflective Meetings Process**

During the *first reflective meeting*, students engaged in describing and considering problems in society, so as to set an overall objective and various partial objectives. The general aim established by the university students was the promotion of physical activity and healthy life habits. The specific aims were to encourage teamwork, collaboration and social integration among those taking part in workshops through physical activity, to eliminate competitiveness and to foster inclusivity, equality and diversity, to disseminate information about benefits of physical exercise, and to enhance publicity in favour of physical exercise among parents through their children.

The *second reflective meeting* was devoted to planning the workshops. The trainees planned each workshop on the basis of a division into stages. The first was *welcome and introduction*, during which the children would be greeted and distributed into three groups distinguished by armbands of different colours, and then given an explanation in the form of a computer presentation of the importance, necessity and benefits of performing physical exercise. Next came *warm-up*, which took the form of dancing to a song, with the trainee physiotherapy students acting as monitors whose instructions the children had to follow. The following stage was a *medley of exercises*, the main part of the workshop, with exercises designed so that the children would enjoy themselves and would carry out physical exercise working in a team, while promoting inclusion and equality. The last part of the workshop was to consist of a *farewell*, during which the skills acquired by the children would be recalled and reinforced, and a medal would be given to each child as a record of

participation. Both the presentation given to the children and the exercises in the medley would be suited to the population of youngsters at which they were directed (six-year-olds or twelve-year-olds).

In the *third reflective meeting* the trainees came to a consensus about the obstacles that they might encounter while holding the workshops and solutions that might be found for them. One was the possibility of injuries, for which a first-aid kit would be made available. Another was a potential lack of motivation or interest, or timidity on the part of the children, to solve which the leaders would have to participate actively in the activity, enhancing relationships, inclusion and confidence, besides giving positive reinforcement to pro-active behaviours. A third was the risk of poor organization of the timings for each exercise, against which there would be a person assigned to control and adjust the duration of the exercises.

### **Results of Contents Analysis of the Reflective Diaries**

The students' reflections were related to one of these two following major themes: Thoughts about Organizing Workshops Promoting Physical Activity and Perceptions of the Personal Learning Experience Obtained. These are presented according to the resulting subthemes, accompanied by quotes extracted from reflective diaries.

#### Thoughts about Organizing Workshops Promoting Physical Activity

Undertaking physical activity in an enjoyable way makes it easier for children to collaborate and become involved. The students perceived that workshops

encouraging physical activity in children had to be organized around “fun” activities, since these facilitated collaboration and involvement among the children.

*G2. The conclusion was that carrying out enjoyable activities requiring physical activity to be performed was motivating and brought greater involvement on that account.*

Teamwork encourages inclusivity and equality. To attain the objectives of inclusion and equality, trainees saw it as important to design exercises in which the children had to work as a team with a shared objective.

*G5. It is crucial to promote teamwork in these age cohorts, so that they will encourage one another and reinforce the group spirit. If they all have a shared aim and are not competing one against another, this is a good route towards the inclusion of all of the pupils.*

It is vital for physical activity to be promoted from an early age. Trainees felt it was important to introduce the habit of undertaking physical activity at a young age.

*G1. The proposal to hold workshops promoting physical activity among school-age children seemed to us to be right on the ball. It is very important to start introducing healthy lifestyles from an early age.*

Social and family surroundings have a strong impact when encouraging the practice of physical activity among children. Trainees noted the importance of promoting physical activity at school, as well as the need to ensure it had continuity including people from the family and social environment.

*G2. We believe a healthy lifestyle begins at home. It is of great importance for children to see examples of healthy living in people in their surroundings.*

*G1. It is easier for children to want to practise physical activities if the people around them do this too.*

### Perceptions of the Personal Learning Experience Obtained

There was satisfaction and a feeling of personal reward when the results of their significant work were seen. Trainees felt great satisfaction on noting the repercussions of their work.

*G2. It turned out to be a very satisfactory activity for us, because we saw our work rewarded by the results of the activity and the children's behaviour.*

Organizing the activity facilitated teamwork. Trainees saw that they were aided in learning how to work as a team. This arose from designing the workshops in reflective meetings, agreeing with other groups what form they should take, and putting them into practice through joint effort.

*G3. The atmosphere of teamwork, health, physical activity and inclusion that was created was a more than positive reinforcement both for the pupils and for all those who participated in carrying out this activity.*

*G4. It helped us to grow both as individuals and as a group.*

Outcomes enhancing learning of the subject were achieved. Carrying out the SL activity permitted the achievement of objectives in respect of learning the

subject, by designing and putting into practice an intervention plan for promoting physical activity.

*G4. It was useful in learning how to design and carry out a plan for intervention and promotion of health in a collaborative way. We think this is a fundamental feature in our profession.*

It was of interest to put the designed plan into practice, yielding a clinical experience. Trainees saw the activity as very interesting and enriching. This was because they were able to make the plans for workshops into a reality, with active learning, not just restricted to the theoretical side of their training.

*G2. This was an enriching experience, because it allowed us to carry out in a concrete form an activity intended to promote health, which was highly satisfying.*

Trainees learnt to handle children. The students felt that through putting the workshops into practice they learnt ways of interacting with children.

*G5. It was a different and very pleasant experience and we learnt a good deal about working with children and the possible risks that might bring.*

*G1. It helped us learn how to work with children and find ways of attracting their attention.*

There were improvements in interpersonal abilities and the handling of stressful situations. Trainees believed that putting the workshops into practice meant establishing relationships with other people and facing up to stressful situations.

G4. *We had never before performed any activity of this type, so it gave us the opportunity to expand capacities like empathy, assertiveness, self-reliance, group spirit and the capacity to confront a stressful situation.*

### **IRI Scale Results**

With regard to the quantitative results from the IRI scale in the sample under study, at the initial pre-test start-point females showed slightly greater empathy than males on all dimensions, though without significant differences ( $p>0.05$ ). The exception was the EC dimension, where females had a significantly higher average score than males ( $p=0.006$ ). Table III shows the IRI scale results.

As for analysis of the differences before and after the SL activity, the sole dimension on which a significant change was noted was PD, where there was a drop in scores after the activity both in the sample as a whole ( $p=0.002$ ) and in the group of females ( $p=0.009$ ). On the dimensions PT and EC it was possible to observe an increased score for both sexes, but with no significant differences ( $p>0.05$ ). The FS dimension had a decrease for both sexes, but the differences were not significant here either ( $p>0.05$ ). The ES (95% CI) was 0.28 (-0.24-0.79) for PT, 0.10 (-0.42-0.61) for FS, 0.04 (-0.48-0.55) for EC and 0.55 (0.01-1.08) for PD, values that represent a small effect in all dimensions except for the case of PT, with a medium effect size.



## **DISCUSSION**

The chief purpose of this project was to provide a clinical experience through SL methodology for university physiotherapy students, investigating their perceptions of the learning experience and any changes that might occur in their levels of empathy and stress. From a qualitative perspective, the results showed that through a SL methodology students acquired and consolidated their learning outcomes specific to the subject. In addition, they were able to work and implement strategies for inclusivity, collaboration and involvement on the part of users in the context of clinical practice. From the quantitative perspective, at the level of student empathy significant changes were observed in the dimension that evaluates personal distress: students significantly reduced their personal distress after the activity.

This factor is fundamental for decision-making since empirical results show how the development of higher levels of stress and personal discomfort in response to a patient's situation, conditions a faster and less reflective decision making by the professional (Haas, Anderson, & Filkowski, 2015; Lamothe, McDuff, Pastore, Duval, & Sultan, 2018).

There can be no doubt that learning in a context of participatory and reflective processes develops greater understanding and awareness of the phenomenon being studied (Mandich et al., 2016; Wilson, 2011). The students proved capable of designing workshops to promote physical activity and healthy

lifestyles while building up their knowledge in an active way (Mandich et al., 2016), adapting them to the needs of users and putting people at the heart of care. Through the reflective meetings the students identified the need to value and include those for whom the service was provided and their surroundings, both in the design process and while putting the workshops into practice. In this way, during the realization of the reflexive groups, the physiotherapy students designed similar objectives to those specified in other studies that promote physical activity (Shirley et al., 2010) (Sheedy et al., 2000), but adapted to the population to which the workshop was intended. These objectives included education in the benefits of health, which was sought through fun and enjoyment, or exploring perceived obstacles to physical activity. They also comprised enhancing self-efficacy, which were worked which were worked through the design of exercises that took into account equality, inclusivity and teamwork, since it is known that low self-efficacy and reduced capacity for autonomous action are predictors for poor assiduity in activities for children (Myer et al., 2013).

The SL methodology permitted students to put into practice, with interest and involvement, the skills that they had acquired from the process (Warren, 2012), since their learning did not end with the theoretical phase. Trainees confirmed from their own viewpoint their consolidation of skills and satisfaction with the significant learning they achieved. As in other studies, the results here indicated that students also underwent learning of a socio-emotional variety, improving their interpersonal abilities and their capacity to face up to stressful situations, feeling themselves more satisfied and rewarded (Federicks, 2003).

In relation to the quantitative results evaluating the level of empathy, it should be pointed out that the characteristics of the sample were similar to those in others studies with university students in respect of average age, but that in this instance the percentage of male participants was higher (Imran, Aftab, Haider, & Farhat, 2013; van Vliet, Jong, & Jong, 2017). This fact must be kept in mind, because, as in other studies, the females showed higher scores than the males on all the dimensions of the IRI questionnaire (Escrivá et al., 2004; Imran et al., 2013; Quince et al., 2016). There is other research in which attempts have been made to work on empathy in students through various different interventions, such as mindfulness as the central axis of an activity(Lamothe et al., 2018; van Vliet et al., 2017; Zazulak et al., 2017), cinema(Zeppegno, Gramaglia, Feggi, Lombardi, & Torre, 2015) or even a year of reflective experience(Webster, 2010). However, there would appear to be no reference in the literature in which SL has been used to evaluate changes in empathy before and after a service. In relation to the changes found, as in other research there was no significant improvement in the levels of PT, F and EC(Avasarala, Whitehouse, & Drake, 2015; Imran et al., 2013; Webster, 2010; Zeppegno et al., 2015). Both the qualitative results finding expression in the reflective diaries and the quantitative figures indicate an enhancement on the PD dimension, which coincides with the findings in work by Lamothe (Lamothe et al., 2018) and Zeppegno (Zeppegno et al., 2015). It would appear that the fact of facing up to stressful situations in the shape of putting into practice workshops that the students themselves have put together involves significant learning and enhancement in the capacity to control emotions and take decisions involving

interpersonal relationships. This is of relevance when it comes to establishing high-quality therapeutic relationships (Morera-Balaguer et al., 2018).

In respect of the limitations of this work, it must be accepted that its results cannot be generalized. The results are limited by the type of sampling, since the fact that the students participated voluntarily, which indicates an intrinsic motivation, biasing the results. Furthermore, the sample size in terms of numbers of participants with regard to the quantitative portion of the study was such as to prevent it from having sufficient power to detect greater changes. In relation to the tools and data collection techniques, it should be mentioned that the questionnaire has been extensively used with similar populations. However, it is possible that in the qualitative portion of the work the fact that diaries were written as a group product may have prevented students from going into depth in the most reflective personal aspects of their experiences.

## **CONCLUSIONS**

The results of the study showed that through a the use of SL methodology trainees consolidated their skills in the subject and expressed their satisfaction with the learning that it provided. Learning within a framework of participatory and reflective implied a better grasp of the phenomenon under study. It permitted the learners to enhance their awareness of the importance of inclusivity, collaboration and user involvement in the context of clinical practice.

The students achieved learning of a socio-emotional kind, improving their interpersonal skills and capacity to face up to stressful situations. Changes of a

statistically significant nature were triggered on the dimension evaluating personal stress.

### CONFLICT OF INTEREST

None declared.

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