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University service-learning for the development of entrepreneurial competence in initial teacher training

Aprendizaje-servicio universitario para la configuración de la competencia emprendedora en la formación inicial docente

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Abstract

Against the backdrop of higher education's growing emphasis on active and socially engaged pedagogies, service-learning (SL) offers a means of integrating academic learning with efforts to address community needs. Within this context, this study examined the effects of a social entrepreneurship-based SL project on dimensions of effective personality among university students in education-related programmes. A quasi-experimental pretest-posttest study was conducted with 121 students assigned to either an experimental group, which actively participated in the SL project, or a control group, which received conventional instruction. Four dimensions of effective personality were assessed: self-strengths, self-demands, self-challenges, and self-relationships. Parametric or non-parametric statistical tests were applied, as appropriate, depending on whether the normality assumptions were met. The findings revealed statistically significant improvements in the experimental group in self-strengths, self-demands, and self-

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challenges. Improvements were also observed in self-relationships, although the changes in this dimension were more modest. By contrast, the control group showed no significant differences between the pretest and posttest assessments. These findings highlight the potential of social entrepreneurship-based SL to foster dimensions of effective personality in initial teacher education. They also support the integration of active, interdisciplinary, and socially engaged learning experiences into higher education, not only to promote knowledge acquisition but also to develop the personal and social competencies required for future professional practice.

Keywords: service-learning; social entrepreneurship; effective personality; initial teacher education.

Resumen

En el contexto de una educación superior orientada hacia metodologías activas y socialmente comprometidas, el aprendizaje-servicio (ApS) constituye una estrategia que permite integrar la formación académica con la respuesta a necesidades del entorno. En este marco, el estudio analiza el impacto de un proyecto de ApS basado en el emprendimiento social sobre las dimensiones de la personalidad eficaz en alumnado universitario del ámbito educativo. Se desarrolló un estudio cuasiexperimental con diseño pretest-postest en el que participaron 121 estudiantes, que se distribuyeron en un grupo experimental, implicado activamente en el proyecto de ApS, y un grupo control, que siguió una metodología tradicional. Se evaluaron las dimensiones de fortalezas, demandas, retos y relaciones del yo, aplicándose pruebas estadísticas paramétricas y no paramétricas en función del cumplimiento de los supuestos de normalidad. Los resultados mostraron mejoras estadísticamente significativas en el grupo experimental en las dimensiones de fortalezas, demandas y retos del yo, así como avances en las relaciones del yo, aunque en esta última dimensión los cambios fueron más limitados. Por el contrario, en el grupo control no se observaron modificaciones relevantes entre las evaluaciones pretest y postest. Estos resultados evidencian el potencial del ApS vinculado al emprendimiento social para favorecer dimensiones relacionadas con la personalidad eficaz en la formación inicial docente y respaldan el interés de incorporar experiencias de aprendizaje activo, interdisciplinar y socialmente comprometido en la formación universitaria, tanto para promover la adquisición de conocimientos como para favorecer competencias personales y sociales relevantes para el futuro ejercicio profesional.

Palabras clave: aprendizaje-servicio; emprendimiento social; personalidad eficaz; formación inicial del profesorado.

Introduction

Higher education is rising to the challenge of implementing methodological reform in line with the demands of the 21st century. Indeed, several supranational bodies, such as OREALC/UNESCO (2022), the OECD (2019) and the European Commission (2022), have played a decisive role in the process of reshaping higher education institutions by highlighting the need to strengthen the social dimension of the European Higher Education Area. Through their reports and recommendations, these bodies have called for a profound transformation of teaching and learning processes and pedagogical models, promoting student-centred approaches that are linked to the social environment, both locally and globally. This perspective demands increasing openness and flexibility in learning spaces and times, in line with contemporary demands (García-Gutiérrez and Ruiz-Corbella, 2022). Within this context of educational transformation, universities place students at the heart of the teaching and learning process through active and participatory pedagogical approaches, in which students take a leading role in the construction of knowledge, fostering learning and the development of skills, as well as their integration into dynamic social and professional environments (Chiva-Bartoll et al., 2018; Merma-Molina et al., 2018).

In this context, social entrepreneurship and effective personality are coherently interlinked, as they are two closely related phenomena. As Torres and Torres (2013) point out, it is impossible to envisage training in effective personality that disregards the fundamentals of entrepreneurship, nor a sound social entrepreneurship initiative that is not underpinned by the development of an effective personality. In the field of initial teacher training, this relationship takes on particular significance, making it essential to clarify the concept of an effective personality, understood as the set of personal characteristics or habitual ways in which people successfully navigate their environment. In this sense, an effective person is one who succeeds in achieving the goals they set themselves, which involves knowing how to manage the various processes involved appropriately, by drawing on knowledge, capacities, skills and abilities to a certain standard of quality and with a certain level of dedication. This entails allocating the necessary time and resources to each objective in order to achieve, within the established timeframes, the desired results (Dapelo et al., 2012). This construct is structured around four dimensions of the self (Martín et al., 2008; Martín et al., 2015) that are particularly relevant to understanding social entrepreneurship. Firstly, the strengths of the self include factors linked to realistic self-concept and self-esteem, and provide answers to the existential questions *'Who am I?'* and *'How do I value myself?'*, forming the basis of identity from which any entrepreneurial project begins. Secondly, the demands of the self encompass aspects related to achievement motivation, causal attributions, locus of control and expectations, addressing questions such as *'What do I want to achieve?'*, *'What are my expectations of achieving it?'* and *'On whom or what does its achievement depend?'*. Thirdly, the challenges of the self are linked to problem-solving and decision-making

processes, addressing key questions such as *'What difficulties do I encounter in achieving my goals?'* and *'How do I make decisions when faced with complex situations?'*. Finally, the 'self's' relationships encompass particularly relevant interpersonal factors, such as communication, empathy and assertiveness, which are fundamental to collaborative work, leadership and the building of networks characteristic of social entrepreneurship.

Effective professional performance is the result of an interplay between various behavioural factors, notably entrepreneurial habits, socio-emotional competence and work ethic. However, its development cannot be understood in isolation; rather, it requires a relational environment that facilitates cooperation, effective communication and the building of meaningful connections. Within this framework, it becomes essential to develop interpersonal sensitivity that enables one to identify and respond appropriately to the emotional and social demands of the context. Ultimately, an effective personality is expressed through the internalisation of values such as respect, tolerance, solidarity and integrity, which constitute fundamental pillars for harmonious, creative coexistence oriented towards the common good, in line with the ApS methodology (Barbachán et al., 2018). Future teachers have, and will continue to have, diverse groups of pupils in their classrooms; they must therefore be sensitive to cultural issues that promote tolerance and social cohesion, and consequently must promote innovative approaches that are integrated into initial teacher training programmes (Merma-Molina et al., 2018).

Consequently, this study aims to develop various competences among students on the Bachelor's degree programmes in Teacher Training and Pedagogy, with a particular emphasis on effective personality, through initial teacher training and using the ApS methodology. The design of this initiative stems from the need to incorporate entrepreneurial competence into initial teacher training, given its relevance as a cross-cutting competence in higher education and the need to strengthen its integration into the curriculum (Lambarri Villa et al., 2025), specifically from the perspective of social entrepreneurship, understood as a driver of innovation aimed at improving society and addressing its needs. In line with the OECD's (2019) recommendations, this approach addresses the major contemporary megatrends—globalisation, digitalisation, an ageing population and migration—and must be approached from the perspectives of sustainability and resilience, given that the value generated transcends the economic sphere to take on a social and cultural dimension (Rychen, 2016).

The integration of entrepreneurial competence into higher education finds one of its key European reference points in the EntreComp framework (Bacigalupo et al., 2016), which defines entrepreneurship as the ability to transform ideas and opportunities into actions that generate economic, social or cultural value. This framework organises entrepreneurial competence into three areas – Ideas and Opportunities, Resources, and Taking Action – and integrates skills such as creativity, initiative, motivation, problem-solving, collaboration and resource mobilisation. Its application is particularly relevant in initial teacher training, where these competences help to prepare professionals capable

of tackling complex educational contexts, innovating and responding to social needs, with EntreComp serving as a reference framework for the development of entrepreneurial competence in higher education (Bernadó and Bratzke, 2024). The need to strengthen entrepreneurial education in initial teacher training (Athiende and Johnston, 2026) takes on particular relevance from the perspective of social entrepreneurship, understood as a process aimed at creating value for society through change and innovation, thereby generating an impact on the community (Bravo Monge, 2016; Fernández-Laviada, 2015, 2016). In this context, the development of a social entrepreneurship project is justified; one which, through an active and participatory approach, contributes to the competence development of future teachers by applying innovative methodologies geared towards social transformation. In this regard, the study falls within the field of transformative methodologies, in which Action-Oriented Learning (ApS) is conceived as a strategy that enables the achievement of curricular objectives through educational action and a commitment to social reality (Dewey, 1950; Luis Rico et al., 2021; Zarzuela and García, 2021).

The ApS methodology enables students participating in the project to become actively involved in social improvement by applying the knowledge specific to their professional practice, whilst also gaining practical experience and developing skills such as communication, problem-solving, teamwork, leadership and critical thinking (Guanlao et al., 2025; Robles et al., 2025; Santos et al., 2021), whilst also mastering the curricular aspects specific to the field of knowledge being explored, thanks to the reciprocity established (Batlle, 2011; Chiva-Bartoll and Gil-Gómez, 2018; Martínez-Lozano et al., 2020; Zayas Latorre et al., 2019). In the field of initial teacher training, ApS has also demonstrated its potential to foster the development of entrepreneurial competence and to strengthen the social dimension of university education (Luis Rico et al., 2025).

Furthermore, carrying out activities aimed at improving the circumstances of other people or the wider environment enables students to acquire relevant skills and receive recognition from those who benefit. These experiences enrich personal development, strengthen self-confidence and interpersonal relationships, and have a positive impact on students' self-esteem (Mendia and Moreno, 2010).

Considering the conceptual framework outlined above—in which higher education is seen as a key setting for the holistic training of future teachers, and in which Service-Learning (ApS) and social entrepreneurship are viewed as methodologies capable of integrating academic learning, social commitment and personal development—there is a need to empirically investigate the educational potential of such experiences. In this regard, the present study poses the following research question: to what extent does participation in a Service-Learning (ApS) project based on social entrepreneurship influence the development of effective personality in university students? From this perspective, the study aims to analyse the impact of a Service-Learning (ApS) project based on social entrepreneurship on the development of effective personality in

university students. This aim is underpinned by the conception of effective personality as a multidimensional construct that integrates aspects of identity, motivation, cognition and relationships, all of which are particularly relevant to the professional practice of teaching in complex and diverse educational contexts. Based on the research question posed, the following hypotheses are formulated:

H1. Participation in a social entrepreneurship-based Service-Learning (ApS) project significantly increases the 'Ego Strengths' factor (self-concept and self-esteem).

H2. Participation in an ApS project based on social entrepreneurship significantly increases the 'Self-Demands' factor (motivation, attribution and expectations).

H3. Participation in an ApS project based on social entrepreneurship significantly increases the 'Self-Challenges' factor (problem-solving and decision-making).

H4. Participation in an ApS project based on social entrepreneurship significantly increases the 'Self-Relations' factor (communication, empathy and assertiveness).

H5. The working methodology significantly increases all factors of Effective Personality amongst the year groups participating in the project .

Method

A quasi-experimental study was carried out using a pre-test–post-test design with a non-equivalent control group, the aim of which was to analyse the effectiveness of participation in an ApS project on the acquisition and development of the competencies linked to the Effective Personality model. Two distinct groups took part in the research: an Experimental Group (EG), which actively participated in the Service-Learning (ApS) project integrated into their curriculum, and a Control Group (CG), which undertook the same academic training using a traditional teaching methodology, without any Service-Learning-based intervention. The independent variable of the study was the teaching methodology, operationalised through two conditions: participation in the Service-Learning project (experimental group) and traditional teaching methodology (control group). The dependent variables were the scores obtained in the dimensions of strengths, demands, challenges and self-relationships, assessed in both groups at two distinct time points: at the start and at the end of the intervention period (pre-test and post-test). This procedure made it possible, on the one hand, to verify the initial homogeneity of the groups and, on the other, to analyse the changes that occurred following the implementation of the programme, as well as to estimate the specific impact of the Service-Learning methodology on the development of effective personality in university students.

Participants

The sample was selected using non-probabilistic convenience sampling. The sample consisted of second-year university students from the Faculty of Education at the University of Burgos. The sample comprised a total of 121 students: 38 formed the Control

Group (CG), made up of students on the Primary School Teacher Training Degree (GMEP), whilst 83 students formed the Experimental Group (EG). The latter comprised 41 students on the Early Years Education Teacher Training Degree (GMEI) and 42 students on the Pedagogy Degree (GP). The experimental group consisted of students enrolled in the classroom where the educational project under evaluation was implemented. This choice was based on criteria of feasibility, accessibility and ecological validity, given that the intervention was integrated into routine teaching practice and had to be carried out in accordance with the academic organisation established by the Faculty. The control group, meanwhile, was selected from students within the same Faculty, belonging to a similar academic context in terms of institutional characteristics, training received and educational profile. This strategy aimed to minimise contextual differences that might influence the variables under study and to facilitate a more rigorous comparison of the intervention's effects. With regard to gender distribution, the sample comprised 15 men (12.4 per cent) and 106 women (87.6 per cent), with a mean age of 20.31 years (SD = 1.73). The gender composition of the participants by group and degree programme is presented in Figures 1, 2, 3 and 4.

Figure 1

Control group by sex: Bachelor's degree in Primary Education

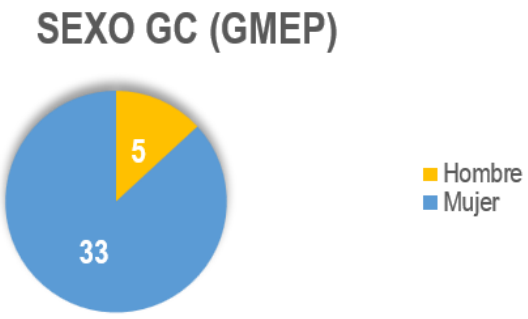


Figure 2

Experimental group by sex: Bachelor's Degree in Early Years Education and Bachelor's Degree in Pedagogy

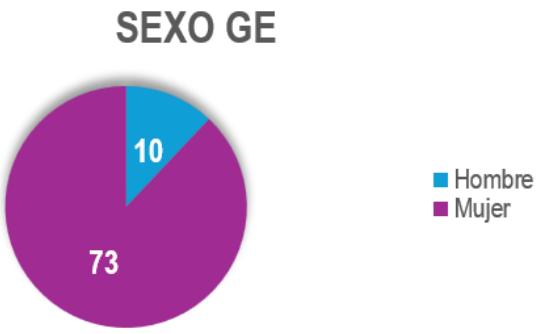


Figure 3

Experimental group by gender. Bachelor's Degree in Early Years Education

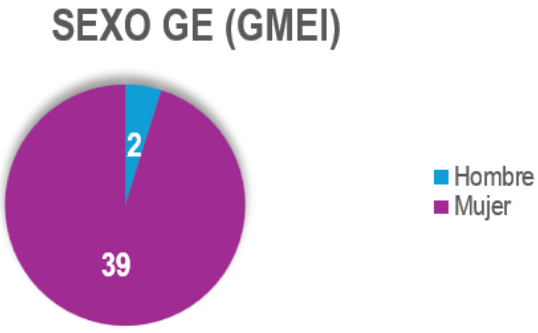
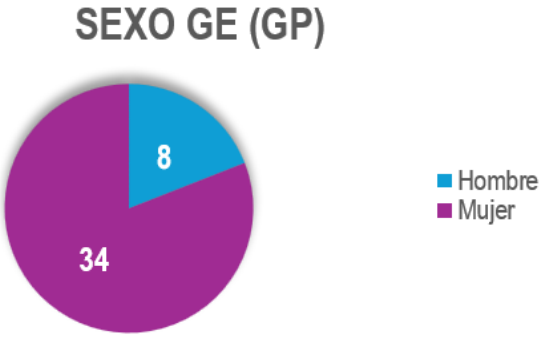


Figure 4

Experimental group by gender. Bachelor's Degree in Pedagogy



Instrument

The instrument used to assess Effective Personality was the Effective Personality Questionnaire for University Students (CPE-U) (Gómez Masera, 2012). It comprises 30 items and has a Cronbach's alpha of .877 in a Spanish university population. It assesses the four dimensions that make up the Effective Personality construct: 'Self-Strengths' and 'Self-Demands', with eight items each; 'Self-Challenges', with five items; and 'Self-Relationships', with nine items. The instrument also has evidence of internal, predictive and content validity. The items are rated on a five-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In the present study, the internal consistency coefficients were as follows: Self-Strengths, α = .870; Self-Demands, α = .733; Ego Challenges, α = .637; and Ego Relationships, α = .848. All of these are adequate, with the exception of Ego Challenges, which shows moderate internal consistency as it falls below the conventional criterion of .70 (Guilford, 1954; Nunnally, 1978).

Procedure

During the 2024/2025 academic year, the ApS initiative previously carried out in the 2019/2020, 2020/2021, 2021/2022 and 2022/2023 academic years is being continued. This initiative is implemented in second-year modules of the Bachelor's Degree in Early Years Education (GMEI), including 'Intercultural Education for Peace and Equality', 'Curriculum and Didactic Aspects of Early Years Education', 'Psychology of Learning in Educational Contexts', and Systematic Observation and Research in Educational Contexts, as well as in the module Basic Techniques of Educational Research in the second year of the Bachelor's Degree in Pedagogy (GP).

At the start of the academic year, the students were informed of the aim of the research, the procedures to be followed and the anonymised processing of the data. They were also told that participation was voluntary and that they could withdraw from the study at any time without this having any academic or personal consequences. During the first few days of term, the questionnaire was administered as a pre-test to pupils in both the Control Group and the Experimental Group. Subsequently, during the first semester, the participating students, as part of the teaching objectives of the 'Systematic Observation' module, developed an observation scale to assess the social interactions of Early Years Education pupils (aged 3–6), which was applied by observing the relationships formed during break times at the participating schools. They also designed a semi-structured interview, which was administered to the teachers of the Early Years classrooms involved in the study.

During the second semester, the students planned, managed and implemented an intervention project aimed at addressing the needs identified, in line with the teaching objectives of the modules 'Intercultural Education for Peace and Equality', 'Psychology of Learning in Educational Contexts' and 'Curriculum and Didactic Aspects of Early Years

Education'. The intervention centred on one of the themes linked to the educational principle of inclusion, specifically intercultural playgrounds or co-educational playgrounds. The topic was selected based on an analysis of the information obtained from the observation scale and from interviews conducted with the form tutors of the classes involved. Following the intervention, the Bachelor's degree students re-administered the observation scale and conducted further interviews in order to assess the impact of the programmes designed. During the first semester, students on the Bachelor's Degree in Pedagogy assessed the social relationships of third-year Early Years Education students at the participating schools using the SR-CASA sociogram, a tool that analyses social relationships in an educational setting across three dimensions: academic, social and emotional. The application of the instrument, the analysis of the data and the preparation of the results report were carried out by the Bachelor's degree students in Pedagogy themselves, providing a fundamental basis for the educational decision-making in the classroom by the teachers involved. The project culminated in an ApS Day held at the Faculty of Education, during which students on the Early Years Education degree programme presented their work to the wider university and educational community.

Finally, before the end of the academic term, the questionnaire was administered to all groups in a post-test format. All data collection was carried out on a voluntary basis, during teaching hours and on paper, with the confidentiality of the data guaranteed at all times and its use restricted exclusively to statistical purposes. The research was approved by the Bioethics Committee of the University of Burgos.

Data analysis

To test the hypotheses regarding the effectiveness of participation in a Service-Learning (SL) project on the various factors of Effective Personality, both parametric and non-parametric statistical analyses were carried out, as the necessary assumptions for applying an ANCOVA test were not met. Firstly, the initial homogeneity of the groups at the pre-test stage was examined. To this end, Student's *t-test* for independent samples was used where the assumptions of normality and homoscedasticity were met, and the Mann–Whitney *U* test was used where these assumptions were not met. Subsequently, in order to analyse the change in scores between the pre-test and post-test in each of the groups, the Wilcoxon signed-rank test was applied, as the assumption of normality in the distributions was not met. Next, the scores obtained in the post-test were compared between the Experimental Group and the Control Group, again using Student's *t-test* for independent samples or the Mann–Whitney *U* test, depending on whether the relevant statistical assumptions were met. Finally, to test the last hypothesis—concerning the existence of differences depending on the methodology used in the various participating year groups—an analysis of variance (ANOVA) was carried out, as the assumptions of normality were met. In cases where statistically significant differences were detected, *post*

hoc tests were applied using Tukey's HSD test or the Games–Howell test when the assumption of equal variances was not met. All statistical analyses were carried out using SPSS version 25.0.

Results

The first hypothesis (H1) posits that participation in a Service-Learning (ApS) project significantly increases self-strengths, specifically self-concept and self-esteem. Table 1 presents the descriptive statistics for both groups at the pre-test and post-test stages.

Table 1

Pre-test and post-test descriptive statistics for the 'Strengths' factor

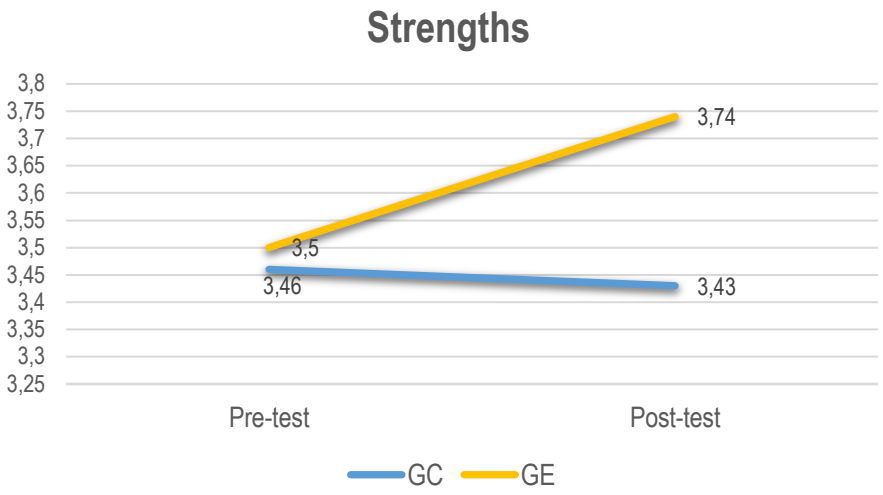
		CG			GE		
		N	**Mean**	**SD**	**N**	**Mean**	**SD**
Strengths	Pre-test	38	3.46	.74	83	3.50	.64
	Post-test	38	3.43	.67	83	3.74	.54

In order to assess the effectiveness of the project, the initial homogeneity of the groups was first analysed using the pre-test. The results of the Student's *t-test* for independent samples indicated that there were no statistically significant differences between the Experimental Group and the Control Group ($t = -0.324$, $df = 119$, $p = .746$, 95% CI = −0.304 to 0.218, $d = .06$), which ensures adequate equivalence between the two groups at the outset. Subsequently, the analysis of intra-group changes using the Wilcoxon signed-rank test revealed statistically significant differences in the Experimental Group ($z = -5.075$, $p < .001$, $r = .56$), whilst in the Control Group no significant changes were observed between the pre-test and post-test ($z = -1.016$, $p = .309$, $r = .16$). Furthermore, the inter-group comparison at the post-test stage revealed that the Experimental Group's score was statistically higher than that of the Control Group, according to Student's *t-test* ($t = -2.723$, $df = 119$, $p = .007$, 95% CI = −0.539 to −0.085, $d = .52$). These findings reveal that both groups started with similar scores on strengths, with similar self-concept and self-esteem at the pre-test, and that there was a significant improvement in the Experimental Group with a large effect size. Following the intervention, the strengths in this group were significantly higher than those in the Control Group, with a moderate effect size.

Figure 5 provides a graphical representation of the evolution of the strengths dimension in the CG and EG.

Figure 5

Strengths



Note: Compiled by the authors.

The second hypothesis (H2) posits that participation in a Service-Learning (SL) project significantly increases ego demands, specifically motivation, attribution and expectations. Table 2 presents the descriptive statistics for both groups at the pre-test and post-test stages.

Table 2

Pre-test and post-test descriptive statistics for the 'Self-Demands' factor

		CG			GE		
		N	**Mean**	**SD**	**N**	**Mean**	**SD**
Requirements	Pre-test	38	3.70	.51	83	3.73	.44
	Post-test	38	3.67	.47	83	3.98	.47

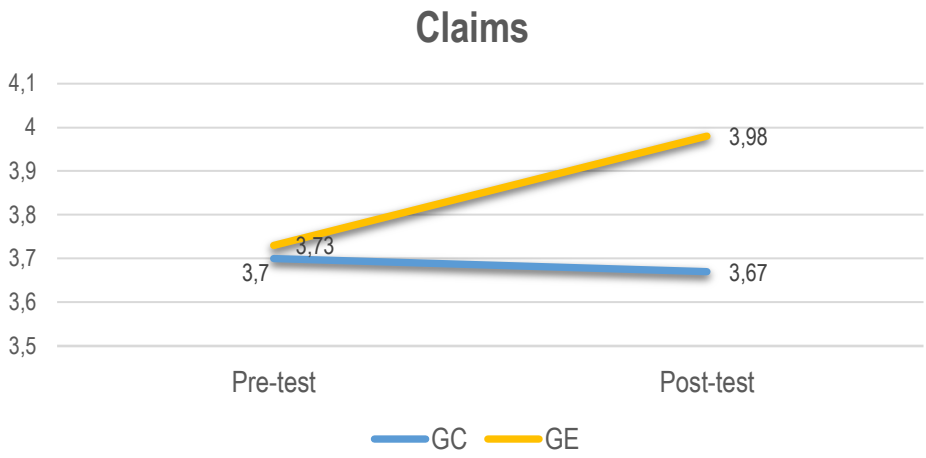
In order to assess the effectiveness of the project, the initial homogeneity of the groups at the pre-test stage was analysed first. The results of the Student's t- t test for independent samples indicated that there were no statistically significant differences between the Experimental Group and the Control Group ($t = -0.240$, $df = 119$, $p = .811$, 95% CI = −0.203 to 0.159, $d = .05$), which ensures adequate equivalence between the two groups at the outset. Subsequently, the analysis of intra-group changes using the Wilcoxon signed-rank test revealed statistically significant differences in the

Experimental Group (z = −4.806, p < .001, r = .53), whilst in the Control Group no significant changes were observed between the pre-test and post-test (z = −0.945, p = .345, r = .15). Furthermore, the inter-group comparison at the post-test stage revealed that the Experimental Group's score was statistically higher than that of the Control Group, according to Student's *t-test* for independent samples (t = −3.298, df = 119, p = .001, 95% CI = −0.488 to −1.2184, d = .62). These findings reveal that both groups started with similar scores on demands, with similar levels of motivation, attribution and expectations in the pre-test; there was a significant improvement in the Experimental Group with a large effect size. Following the intervention, the demands of this group were significantly higher than those of the Control Group, with a moderate effect size.

Figure 6 provides a graphical representation of the evolution of the 'Demands' dimension in the CG and the EG.

Figure 6

Demands



The third hypothesis (H3) posits that participation in a Service-Learning project significantly increases ego-related challenges, specifically problem-solving and decision-making.

Table 3 presents the descriptive statistics for both groups at the pre-test and post-test stages.

Table 3

Pre-test and post-test descriptive statistics for the 'Challenges' factor

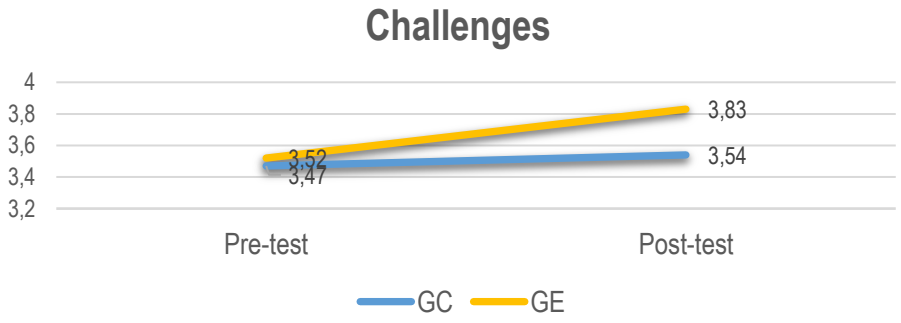
		N	Mean	SD	N	Mean	SD
Challenges	Pre-test	38	3.47	.65	83	3.52	.54
	Post-test	38	3.54	.58	83	3.83	.48

In order to assess the effectiveness of the project, the initial homogeneity of the groups at the pre-test stage was analysed first. The results of the Mann–Whitney *U* test indicated that there were no statistically significant differences between the Experimental Group and the Control Group (U = 1469.5, z = −0.604, p = .546, r = .05), which ensures adequate equivalence between the two groups at the outset. In order to assess the programme's effectiveness, the Wilcoxon signed-rank test showed that there were statistically significant differences in the EG (z = −5.375, $p < 0.001$, r = .59) but not in the CG (z = −1.363, $p = .173$, r = .22). Furthermore, it was found that in the post-test, the Experimental Group's score was statistically higher (U = 1,065.5, z = −2.875, $p = .004$, r = .26) than that of the Control Group. These findings reveal that both groups started with similar scores on challenges, with similar problem-solving and decision-making abilities in the pre-test, and that there was a significant improvement in the Experimental Group with a large effect size. Following the intervention, this group's performance on challenges was significantly higher than that of the control group, with a small to moderate effect size.

Figure 7 provides a graphical representation of the evolution of the 'Challenges' dimension in the CG and the EG.

Figure 7

Challenges



Hypothesis 4 (H4) posits that participation in an ApS project significantly increases self-relationships, specifically communication, empathy and assertiveness. Table 4 presents the descriptive statistics for both groups at the pre-test and post-test stages.

Table 4

Pre-test and post-test descriptive statistics for the 'Relationships' factor

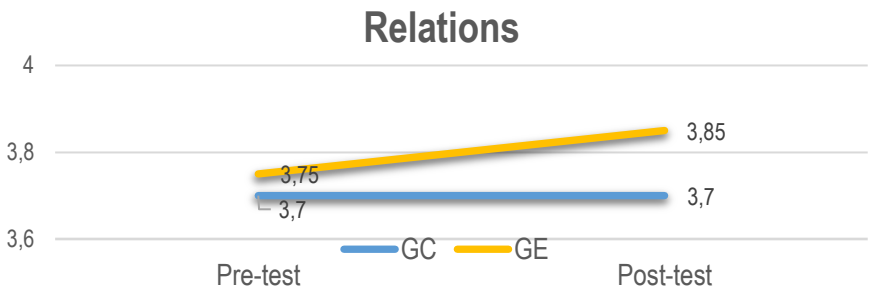
		CG			GE		
		N	**Mean**	**SD**	**N**	**Mean**	**SD**
Relationships	Pre-test	38	3.70	.83	83	3.75	.56
	Post-test	38	3.70	.74	83	3.85	.58

In order to assess the effectiveness of the project, the initial homogeneity of the groups at the pre-test stage was analysed first. The results of the Student's *t-test* for independent samples indicated that there were no statistically significant differences between the Experimental Group and the Control Group (t = −0.369, df = 52.882, p = .713, 95% CI = −0.353 to 0.243, d = .07), which ensures adequate equivalence between the two groups at the outset. Subsequently, the analysis of intra-group changes using the Wilcoxon signed-rank test revealed statistically significant differences in the Experimental Group (z = −2.657, p = .008, r = .29), whilst in the Control Group no significant changes were observed between the pre-test and post-test (z = −0.348, p = 0.727, r = 0.05). However, the inter-group comparison at the post-test stage, carried out using the Mann–Whitney *U* test, indicated that there were no statistically significant differences between the Experimental Group and the Control Group (U = 1439.5, z = −0.770, p = .442, r = .07). These findings reveal that both groups started with similar scores on relationships, with comparable levels of communication, empathy and assertiveness at the pre-test. There is a positive within-group trend in the Experimental Group, but it cannot be concluded that, following the intervention, this group achieved scores significantly higher than those of the Control Group.

Figure 8 graphically illustrates the development of the 'relationships with the self' dimension in the Control Group and the Experimental Group.

Figure 8

Relationships



The fifth hypothesis (H5) posits that the working methodology employed significantly increases the factors of Effective Personality depending on the degree and level of involvement in the project. Specifically, an improvement is expected in all factors—strengths, demands, challenges and ego-relationships—among students in the GMEI group, who participate in the ApS project during both semesters; a partial improvement, centred on the factors of strengths, demands and challenges, among students in the GP group, who carry out the project for a single semester; and the absence of significant improvements among students in the GMEP group, who follow a traditional teaching methodology. Table 5 presents the descriptive statistics for the three groups at the pre-test and post-test stages. In order to verify the effectiveness of the project, the initial homogeneity of the groups at the pre-test stage was analysed first. The results of the analysis of variance (ANOVA) indicated that there were no statistically significant differences between the groups ($p > .05$), which ensures adequate equivalence at the outset.

Table 3

Descriptive statistics by methodology for the Effective Personality Factors at the pre-test and post-test

		GC GMEP			**GE 1 GMEI**			**GE 2 GP**		
		N	**Mean**	**DT**	**N**	**Mean**	**DT**	**N**	**Mean**	**DT**
Strengths	Pre-test	38	3.46	.74	41	3.46	.56	42	3.54	.72
	Post-test	38	3.43	.67	41	3.74	.42	42	3.74	.64
Claims	Pre-test	38	3.70	.51	41	3.69	.46	42	3.76	.43
	Post-test	38	3.67	.47	41	3.95	.46	42	4.00	.49
Challenges	Pre-test	38	3.47	.65	41	3.44	.50	42	3.59	.58
	Post-test	38	3.54	.58	41	3.82	.45	42	3.84	.52
Ratios	Pre-test	38	3.70	.83	41	3.68	.55	42	3.82	.56
	Post-test	38	3.70	.74	41	3.81	.58	42	3.88	.58

In order to assess the programme's effectiveness, the Wilcoxon signed-rank test shows that there are statistically significant differences amongst GMEI pupils who follow the ApS methodology throughout the academic year across the four factors of Effective Personality: Strengths ($z = -4.118$, $p < 0.001$, $r = .64$), Demands ($z = –3.729$, $p < 0.001$, $r = 0.58$), Challenges ($z = –4.042$, $p < 0.001$, $r = 0.63$) and Relationships ($z = –2.361$, $p = 0.018$, $r = 0.37$). In the GP carrying out the project during the first semester, differences are found

in the factors Strengths (z = –3.064, p = 0.002, r = –0.47), Demands (z = -3.131, p = 0.002, r = .48) and Challenges (z = -3.626, p < 0.001, r = .56), but not in Relationships (z = -1.318, p = .187, r = .20). Whereas in the CG using a traditional methodology, there were no statistically significant differences between the pre-test and post-test for any of the factors (p > .05). Furthermore, an ANOVA test was conducted to determine whether there were differences between the groups in the post-test, revealing that such differences existed between the groups for all factors (p < .05), with the exception of Relationships, where no differences were found (p > .05). When analysing which groups exhibited these differences, the Games-Howell post hoc test for 'Strengths' revealed differences between the GMEI and GMEP groups, whilst the Tukey HSD post hoc test for 'Demands' and 'Challenges' indicated statistically significant differences between the GMEP group and the other two groups participating in the ApS programme.

Figure 9 provides a graphical representation of the progression of the three groups—GMEP, GMEI and GP—across the 'Strengths' dimension.

Figure 9

Strengths: GC-GMEP, GE-GMEI and GE-GP

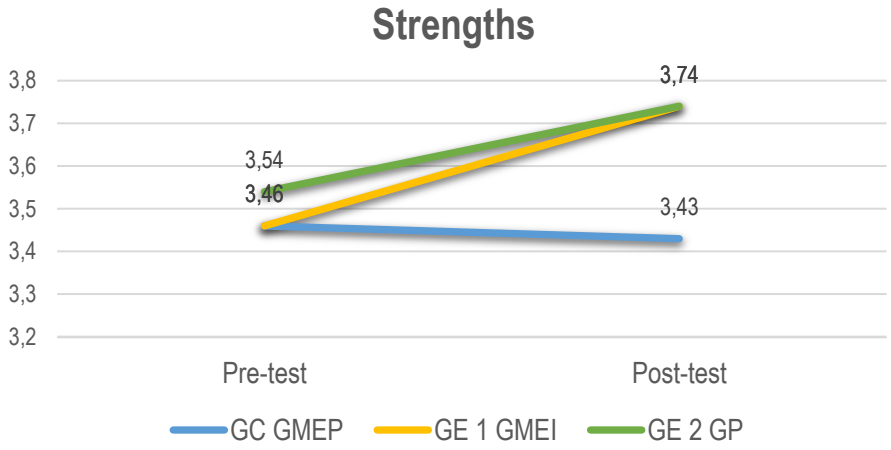


Figure 10 provides a graphical representation of the evolution of the three groups—GMEP, GMEI and GP—in the 'demands' dimension.

Figure 10

Demands: GC-GMEP, GE-GMEI and GE-GP

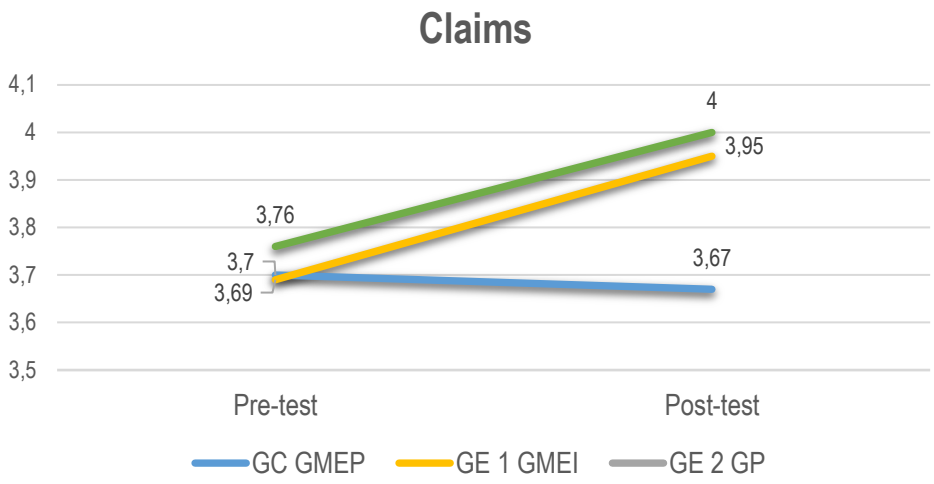


Figure 11 provides a graphical representation of the evolution of the three groups – GMEP, GMEI and GP – in terms of challenges.

Figure 11

Challenges: GC-GMEP, GE-GMEI and GE-GP

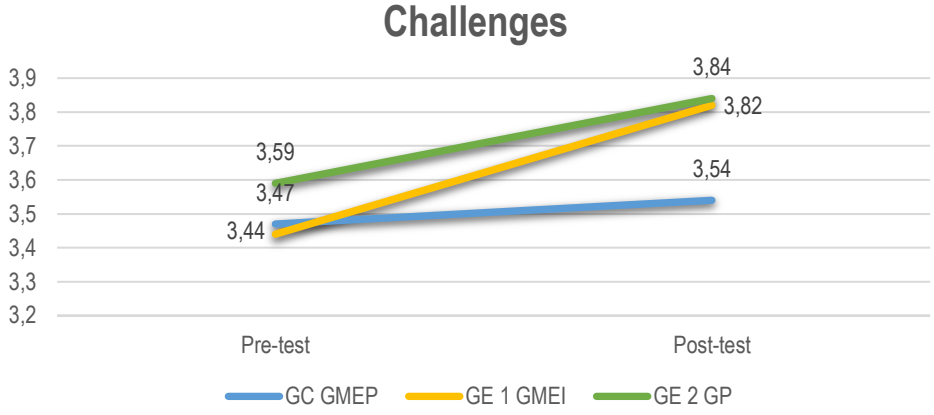
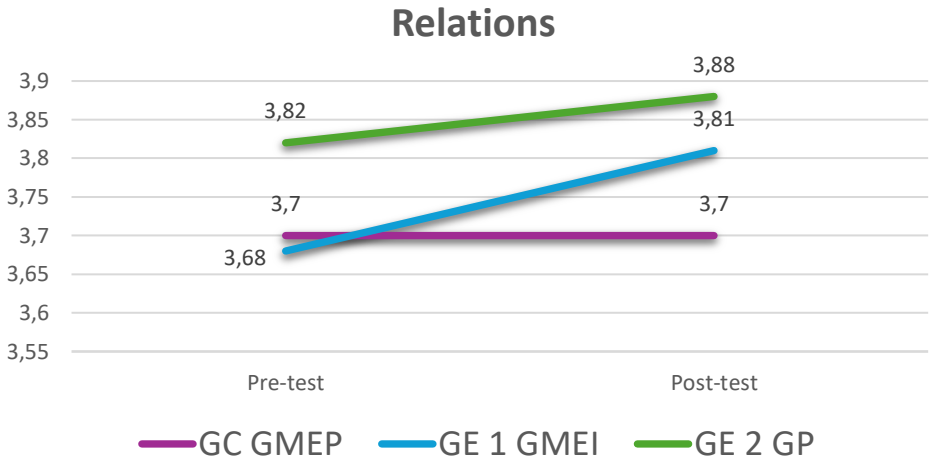


Figure 12 provides a graphical representation of the evolution of the three groups – GMEP, GMEI and GP – in the 'relationships' dimension.

Figure 12

Relationships: GC-GMEP, GE-GMEI and GE-GP



Discussion and conclusions

The annual, holistic and interdisciplinary nature of the social entrepreneurship project enables undergraduates to acquire not only the skills specific to the relevant subjects through practice and action, but also to engage in teaching that is committed to building an inclusive, innovative and resilient society (Bravo Monge, 2016; Fernández-Laviada, 2015, 2016; Rychen, 2016). These findings take on particular significance in the context of initial teacher training, where the need to integrate entrepreneurial education is emphasised in order to develop skills linked to creativity, problem-solving, adaptability and innovation (Athiende and Johnston, 2026). In line with the EntreComp framework, a recent review reaffirms the cross-cutting nature of entrepreneurial competences and their focus on transforming ideas and opportunities into value creation (Bernadó and Bratzke, 2024).

Following the analyses carried out, we have been able to confirm the decisive role played by participation in an ApS project based on social entrepreneurship in shaping an effective personality for initial teacher training ( ), in line with Torres and Torres (2013), who brings together entrepreneurial skills and an effective personality as two closely linked phenomena, conceiving them in such a way that training in one is inconceivable without the foundations of the other, and vice versa. The results obtained support hypotheses H1, H2 and H3, whilst H4 and H5 are partially supported. H1 is corroborated, given that there are statistically significant differences in the GE, meaning that participation in the project has become an experience that positively impacts students' self-esteem, in line with the research by Mendia and Moreno (2010). Furthermore, H2 is confirmed, as participation in the Service-Learning (ApS) project led to a significant improvement in the 'Self-Demands' dimension, which relates to motivation, attributions and expectations. This finding is consistent with studies highlighting the contribution of service-learning to the development

of entrepreneurship-related competences in initial teacher training (Luis Rico et al., 2025). Similarly, Hypothesis 3 is supported: through the ApS methodology, students participating in the project are enabled to become actively involved in social improvement by developing problem-solving skills (Robles et al., 2025). Furthermore, the consolidation of effective professional performance cannot be understood in isolation, but requires a relational environment that facilitates effective communication. Within this framework, the results suggest that H4 is partially supported, since, although the Experimental Group showed a significant improvement in the 'Self-Relationships' dimension, this did not translate into significant differences compared with the Control Group. These results point to a positive development in relational skills linked to communication, empathy and assertiveness, in line with the interpersonal dimension of effective personality identified by Barbachán et al. (2018). The absence of significant differences in the post-test between the two groups suggests that it would be worthwhile to explore whether the development of relational skills requires more intensive or prolonged interventions, as well as instruments that are particularly sensitive to interpersonal changes. Generally speaking, these results are consistent with recent meta-analytic evidence on community-engaged learning in higher education, which shows significant positive effects in the academic, social and civic domains, albeit with greater variability in the personal dimensions (Guanlao et al., 2025).

Finally, the results relating to H5 show that students in the GMEI group, who took part in the social entrepreneurship project during both semesters, demonstrated significant improvements in the four factors of Effective Personality, whilst in the GP group, whose participation took place over one semester, improvements were observed in Strengths, Demands and Challenges. In the GMEP group, which followed a traditional methodology, no significant improvements were observed; therefore, the hypothesis is partially supported. These latter results are consistent with the hypothesis that a longer-term, interdisciplinary intervention may yield greater effects; however, the study design does not allow for the duration of the intervention to be completely isolated from other possible differences associated with the degree programmes.

In light of the above, and returning to the research question posed, it can be argued that higher education constitutes a critical space for understanding and transforming the contemporary world. Through its mission to serve the public, it promotes innovative processes that encourage the construction of new meanings and professional profiles. Furthermore, it incorporates fundamental principles such as inclusion, resilience, equity and social justice into its educational framework, driving methodological renewal through Action-Oriented Learning (ApS) and, in a manner consistent with the demands of the 21st century. The finding that educational initiatives contribute to improving initial teacher training suggests, as a practical application for those responsible for educational policy——and *policy-makers*, the need to promote the development of training models and to ensure their widespread integration into the curriculum of initial teacher training (De la Torre et al., 2023; Luis et al., 2025). This need is particularly relevant given that, although university students recognise the importance of entrepreneurial competence, they continue to rate it

lower than other competences, which reinforces the case for moving towards its cross-curricular integration into university curricula (Lambarri Villa et al., 2025). The results obtained must be interpreted in light of the study's limitations, which open up various avenues for future research. Firstly, it would be advisable to replicate the study with larger and more representative samples, selected using probabilistic sampling procedures, in order to increase the external validity of the findings and facilitate their generalisation to different university and socio-cultural contexts. Secondly, further investigation should be carried out into the psychometric properties of the 'challenges' factor, which exhibits moderate levels of reliability. To this end, it is recommended to increase the number of items comprising these dimensions and to test their factor structure in larger samples, which would allow for more robust estimates of their internal consistency and validity. Furthermore, given that some effect sizes were between small and moderate, it is relevant to explore mediating and moderating variables that may explain greater efficacy of the intervention. It is also worth noting that the fact that students are enrolled on different degree programmes is associated with the different intervention conditions; therefore, it cannot be ruled out that certain differences between groups are partly related to characteristics specific to the degree programmes themselves and not solely to the methodology employed or its duration.

Similarly, it would be advisable to conduct longitudinal studies to analyse the stability and persistence of the observed effects in the medium and long term. Finally, future research could incorporate mixed-methods approaches combining quantitative and qualitative data. The inclusion of interviews, focus groups or narrative analysis would allow for a deeper understanding of the psychological and educational processes underlying the observed changes, providing evidence that complements that obtained through statistical analysis.

The evidence presented presents us with new challenges centred on initial teacher training, based on the need to continue rethinking training processes from a perspective that integrates transformative competences; it is by no means a bold proposition to propose Action Research (ApS) as a vehicle for stimulating these key capacities for pedagogical innovation, professional autonomy and social commitment (Hughson and Wood, 2022; OECD, 2019). In this way, we align ourselves with national and international strategic priorities in higher education, contributing to quality improvement by implementing holistic training models that foster a comprehensive approach to strengthening the transformative capacity of teaching staff within the education system. In short, a training model centred on the ApS methodology that empowers future teaching staff to lead innovative educational processes in changing contexts through social entrepreneurship (European Commission, 2022; García-Gutiérrez and Ruiz-Corbella, 2022; OREALC/UNESCO, 2022; Zayas Latorre et al., 2019).

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