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Secondary school dropout prevention through service-learning: A pilot study

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ABSTRACT

This study investigates the impact of a service-learning program on secondary school dropout prevention in four European countries. The methodological design was a cluster randomized trial. The intervention involved a sample of secondary school students ($n = 204$), implementing an *ad hoc* intervention model. Regression results in Model 7 with all predictors and controls show a significant effect in the variable experimental group, with all predictors and controls explaining 27.9 % of the variance. Suggestive positive results are present for other variables like country (Austria) and Slovakia (Model 2), global trait emotional intelligence (Model 3), civic responsibility, civic efficacy (Model 4), civic skills (Model 5), and learning mindset (Model 6). Based on these promising results, some recommendations are made to improve the future impact of this type of comprehensive service-learning program.

1. Secondary school dropout prevention through service-learning in four European countries

The report published by Eurostat (2023) identified an average of 9.6 % of early leavers from education and training within the European Union (EU). The broad perception that early school leaving affects society and individuals has induced policymakers to design policies that address the problem. The EU, in 2021, set an EU-level target stipulating that the share of early leavers from education and training should be <9 % by 2030 (Council of the European Union, 2021). Designing and implementing adequate strategies to reach this goal is, however, a challenging task because early school leaving is often the result of many factors. One of the promising educational strategies addressing various academic challenges, including early school drop-out, which have expanded across EU educational systems is service-learning.

School-based service-learning is a teaching strategy that explicitly links community service to academic instruction (Filges et al., 2022). Service-learning can be defined as a teaching and learning approach that combines planned learning and community service. It focuses on both an activity that benefits the community and the educational benefits that result from it for the student. In

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service-learning, young people are involved in real-life settings where they can apply academic knowledge, skills, and previous experiences to meet real community needs as a regular part of the curriculum.

In Europe, service-learning has been mainly developed at universities (Aramburuzabala et al., 2019). However, in recent years, examples of service-learning have also been implemented in primary and secondary education (e.g., in Spain, Netherlands, Germany, Ireland, Bosnia and Herzegovina, Albania, Romania, and Slovakia). Scales et al. (2000) connect the relevance and value of service-learning pedagogy for secondary school students with two essential factors: (a) service-learning is considered to match well with the developmental needs of young adolescents, such as biological and social changes, as well as cognitive transformations that allow them to tackle intellectual tasks typical of an adult; and (b) for many young adolescents, the transition to middle school is problematic, with the potential for significant declines in self-esteem, positive attitudes toward school, and students' perceptions of their competencies. In this context, service-learning might fit well with the developmental needs of young adolescents and creates space for identity formation, offering them a potential means of maintaining or enhancing their engagement and confidence.

2. A literature review

Most of the service-learning research today comes from the United States (Filges et al., 2022) and has been geared toward higher education (Celio et al., 2011). Filges et al. (2022) concluded that the current research landscape on service-learning in primary and secondary education shows that service-learning has yet to be thoroughly evaluated. Furthermore, all the available evidence used in the data synthesis was United States-based, so the findings may not be generalizable to other settings and systems outside the United States. In the European context, there is a dearth of empirical testing that would assist in validating service-learning as a genuine and impactful pedagogical strategy at the secondary level of education. Our study is one step in addressing that need.

Active, authentic learning is the goal of service-learning, and it can be part of an effort to prevent students from dropping out of school. As stated by Furco (2007), while service-learning does not always have a strong, direct effect on student's academic achievement, it has strong potential for fostering student development in areas that mediate academic achievement and success in school and preventing school dropout. The growing research on service-learning is shifting from measuring direct effects, such as graduation, towards the study of indirect effects, such as personal and social outcomes, which can explain the connection between service-learning, students' success, and school drop-out.

For example, socioemotional competence is closely connected with student success. Bisquerra (2003) defines emotional competence as a set of knowledge, capacities, skills, and attitudes necessary to understand, express, and regulate emotional phenomena appropriately. In the model of emotional competences formulated by Bisquerra and Pérez (2007), one of its five components is social competence, understood as the capacity to maintain good relations with other people. Evidence shows that service-learning can provide real-life experience reinforcing social and emotional competencies learned in the classroom. Through service-learning projects, students can learn how to work effectively together to solve problems, improve their leadership skills, develop empathy and altruism, and understanding for others, and build critical socioemotional skills that will help them succeed in school and beyond (Chung & McBride, 2015; Farber & Bishop, 2018; Felten et al., 2006; Hegarty & Angelidis, 2015).

Another personal characteristic associated with student success is civic competence, defined as the knowledge, skills, and dispositions required for active citizenship, and participation in society (Brennan & Railey, 2017). Service-learning is designed to cultivate the civic attitudes, beliefs, knowledge, and skills that develop students' ability to be change agents in society (Billig et al., 2005). Indeed, the existing research has emphasized that middle school students who participate in service-learning demonstrate greater civic responsibility when compared to their peers who are not engaged in such activities (Billig, 2000; Johnson & Notah, 1999). Scales et al. (2000) in a study in middle schools found that over the school year, service-learning students maintained their concern for others' social welfare, and they significantly increased their belief in the efficacy of their helping behaviors, compared with control students. Hart and Wandeler's (2018) study indicated that service-learning programs may support the development of middle school students' civic commitment and competence. Specifically, direct interaction with community members had a positive impact on students' civic development. Service-learning has a strong potential to enhance civic efficacy, civic commitment, and civic engagement in general (Díaz et al., 2019; Hart et al., 2007).

Following this line of argument, another personal characteristic driving students' success is motivation and engagement. High levels of motivation and engagement are linked to positive academic outcomes, including higher achievement, reduced drop-out rates, and increased attainment in post-secondary education (Bridgeland et al., 2008; Chiva-Bartoll et al., 2020). Going beyond traditional classroom learning, service-learning is pivotal in providing students with a comprehensive educational experience. It equips them with vital skills and real-world experiences that contribute to their success in school and future endeavors (Jacoby, 2014). Service-learning is a primary example of engaging students in "shared inquiry", meaningful decision-making, and integrating classwork and community life (Zeldin, 2004). According to Bridgeland et al. (2008) and Kraft and Wheeler (2003) service-learning, by connecting education to real world issues and allowing students to address problems they identify, may be particularly efficacious as it increases engagement and motivates students, in particular students who might not respond well to more traditional teaching methods. Research regarding the effect of student participation in school-based service-learning programs indicates that service-learning is associated with increased engagement in school (Billig, 2000; Scales et al., 2000).

In sum, although research evidence on service-learning outcomes related to the development of social and civic competencies and engagement and motivation in schools exists, more evaluation studies are needed to examine the impact of these types of interventions at the secondary education level in the European context.

3. Objective

The general objective of the Service-Learning Upscaling Social Inclusion for Kids (SLUSIK) project has been to establish the effectiveness of the *ad hoc* theoretical *Prepare, Link, Action, Celebrate, Effect* (PLACE) model to deliver the promised service-learning educational impact on the student's school dropout intention, while controlling for potential predictors like demographic variables (i.e., age, gender, country, type of school), global trait emotional intelligence, civic attitudes, civic skills, and academic motivation and engagement. The research hypotheses were:

- Hypothesis 1 (H1): the experimental group will show statistically significant lower levels of school dropout intention compared to their counterparts in the control group.
- Hypothesis 2 (H2): the experimental group will show statistically significant higher levels of socioemotional competence compared to their counterparts in the control group.
- Hypothesis 3 (H3): the experimental group will show statistically significant higher levels of civic attitudes compared to their counterparts in the control group.
- Hypothesis 4 (H4): the experimental group will show statistically significantly higher levels of civic skills than their counterparts in the control group.
- Hypothesis 5 (H5): the experimental group will show statistically significant higher levels of academic motivation and engagement compared to their counterparts in the control group.

4. Method

4.1. Design

A Cluster-Randomized Trial (Moberg & Kramer, 2015) was adopted for the different hypotheses of this study, which was implemented in accordance with the Ethical Committee of the University of Granada (1974/CEIH/2021) and the Declaration of Helsinki (World Medical Association, 2013).

The classroom-group was the unit of random assignment to either intervention or control conditions in each country. A minimum size of 30 students per group was also recommended to maintain *t*-test robustness against potentially non-normally distributed variables (Bloom, 2003).

4.2. Participants

The four countries' sample consisted of 204 secondary education students (average age = 13.42 years, standard deviation [*SD*] = 0.88 years, 51.23 % males). The experimental group was $n = 110$ students (average age = 13.39, $SD = 0.98$, 45.45 % males) and the control group consisted of 94 students (average age = 13.46, $SD = 0.73$, 58.06 % males). By countries, we had Spain ($n = 57$, experimental group = 30, control group = 27), Austria ($n = 59$, experimental group = 38, control group = 21), Slovakia ($n = 59$, experimental group = 33, control group = 26), and Croatia ($n = 29$, experimental group = 19, control group = 10). Distribution by type of schools was public schools 72.55 %, private schools 14.71 % and religious schools 12.75 %.

The sample selection procedure was based on a non-probabilistic convenience sampling technique (Vehovar et al., 2016), and involved the following steps: (a) 7 secondary schools were invited to participate in the program (Spain = 2, Austria = 2, Slovakia = 2, Croatia = 1); (b) one two-hour information session was delivered to the teachers and school staff in the six secondary schools interested and eventually selected to participate in the program (Spain = 1, Austria = 2, Slovakia = 2, Croatia = 1); and (c) once the required institutional permissions were granted, two second-year classroom-groups from each school were selected to participate in the program, then, once the groups signed the participation agreements, one classroom-group within each school was randomly assigned to the intervention or control group condition.

4.3. Instruments

Age was measured in years. *Gender* was coded dichotomously, with 1 indicating male and 2 indicating female. *The country* was indicated by choosing one of the following four response options: Austria, Croatia, Slovakia, and Spain. *The type of school* was indicated by choosing one of the following three response options: public, private, and religious. All these variables were measured through an *ad hoc* questionnaire.

Socioemotional competence was defined as a constellation of emotion-related factors located at lower levels of personality hierarchies and is also referred to as a trait of emotional self-efficacy (Petrides et al., 2007). The short-form version of the trait emotional intelligence questionnaire (Petrides, 2009) was used to measure four trait emotional intelligence factors and a *global trait emotional intelligence* score. In this version, the questionnaire showed a Cronbach's alpha [α] of 0.85 and a McDonald's omega (ω) of 0.84, and a one-factor model with the four trait emotional intelligence factors loading onto global trait emotional intelligence using confirmatory factor analysis (CFA), with adequate fit indexes.

Civic competence was considered as civic readiness, which involves possessing the knowledge, skills, and disposition needed to be an informed and active member of one's community after graduation (Brennan & Railey, 2017). In this sense, *civic attitude* was measured using level 2 of the civic responsibility survey (Furco et al., 1998), and the civic efficacy, the social responsibility and personal beliefs,

and the social responsibility personal values subscales of the civic values and beliefs scale (Syvertsen et al., 2015), while *civic skills* was measured using the participation skills subscale of the civic values and beliefs scale (Syvertsen et al., 2015). In this study, these instruments yielded acceptable levels of internal consistency, and two CFAs were estimated with adequate fit indexes (α and ω between 0.80 and 0.88). The LR test after estimation yielded acceptable metric invariance: (a) civic attitude: $\chi 2(939) = 1918.88$, $p < 0.05$; and (b) civic skills: $\chi 2(84) = 138.69$, $p < 0.05$.

Academic motivation and engagement were defined as students' beliefs about themselves and their capacity to succeed in school (i.e., academic perseverance, learning mindset, school belonging). The student engagement, motivation, and beliefs survey (The Roadmap Project, 2015) was used to measure this variable. Indeed, in this study, the survey yielded acceptable levels of internal consistency (an α of 0.87 and an ω of 0.87), and a three-factor CFA was estimated, with adequate fit indexes.

School dropout intention was measured through a one-item indicator (i.e., I am thinking about leaving the school) with a Likert-type scale between one (*Completely disagree*) and five (*Completely agree*) points.

4.4. Procedure

The intervention in the Erasmus+ Project SLUSIK consisted of three stages: (1) designing the PLACE model; (2) implementing the PLACE model, and (3) evaluating the PLACE model. The process lasted from January 2021 to October 2022.

Stage 1 consisted of developing the PLACE model: (a) Prepare is all about preparing and designing the service-learning experience framework; this stage identifies the types of community needs or activities that best supports Students' learning goals within the desired curriculum content, and helps establish a common understanding of each participants' role; (b) Link connects young people with their community partners, role models, and one another and chooses the type of community needs or activities that best supports student learning goals within the desired curriculum content and establishes a common understanding of each participants' role; (c) Action is the stage for students to show they can link their learning to real life issues and opportunities, developing responsible outlooks and behaviors towards the community within and beyond the school; action is also about reflection of what was done and on what students learned from experience; (d) Celebrate is the stage where students have the opportunity to present their outcomes and impact at a public event open to the local community to acknowledge and celebrate their achievements; the students can show what they have learnt and accomplished throughout their partnership in the community; and (e) the Effect stage is when students' ideas are complete, they are able to apply their formal and non-formal learning and there is reciprocal benefit realized; the student has made a valued contribution to the community.

The PLACE model was developed following examples of best practices characterized by the use of non-formal education methodologies (e.g., simulation exercises, games, outdoor activities, expression, debriefing, reflection, etc.), role models defined as voluntary university students (undergraduate or postgraduate) with previous experience in service-learning programs who can support students in meaningful learning experiences set in a real-life context (e.g., cross-age peer mentoring), impact measurement (e.g., using Randomized Control Trial or Quasi-Experimental Design), and focused on building cross-sector partnerships at the local level (e.g., Arco et al., 2020). The outcome of this stage was the development of a "Teacher and role model training toolkit" that was prepared as a resource for schoolteachers and role models-university students.

Stage 2, piloting the PLACE model, began with training secondary school teachers to implement the service-learning and university students to act as role models. Then, field work explored non-profit organizations and institutions as potential partnerships. Finally, the service component was delivered to the local communities in collaboration with non-profit organizations from September 2021 until June 2022, involving constant monitoring to assess fidelity of the implementation.

Stage 3, evaluating the PLACE model included two types of evaluation: formative and summative. The formative evaluation during the piloting process pointed to country and school factors as conditioning factors although none of them significantly threatened the PLACE model implementation. The summative evaluation supported by the instruments described in the previous section intended to measure, analyze and prove potential changes in the target group or other stakeholders due to the intervention. All instruments were available in the four languages used in the study, once translated from the original English version.

4.5. Data analysis

The initial analysis consisted of calculating the descriptive statistics and checking the data distribution (i.e., skewness, kurtosis, Kolmogorov-Smirnov statistic, and Mardia's coefficients of multivariate skewness and kurtosis), linearity, and atypical, missing, and influential cases.

Subsequently, the structure of the measures was examined by means of CFA using Weighted Least Squares (WLS) estimation, because of the non-normal distribution of the scores resulting from the analyses. Summative scores were used for the analysis based on the recommendations of Robitzsch (2022) and McNeish (2023).

Measurement invariance (Mellenbergh, 1989) was tested for using the *sem* command's *group()* and *ginvariant()* options as well as the postestimation command *estat ginvariant* with groups (i.e., country) defined as an unordered categorical (i.e., nominal) covariate (Van de Schoot et al., 2015).

Furthermore, baseline equivalence was assessed using a logistic regression-based prediction model with the variable experimental/control group as a dummy variable, and with robust or sandwich cluster estimator of variance (i.e., country) for the data of the predictors and control variables.

Finally, following Pek et al. (2018) recommendations, a linear regression (ordinary least squares [OLS]) with robust estimation, was performed with experimental/control variable in Model 1 (M1); age, gender, country and type of school variables in Model 2 (M2),

global trait emotional intelligence in Model 3 (M3), civic attitudes in Model 4 (M4), civic skills in Model 5 (M5), and academic motivation and engagement in Model 6 (M6), and the same models were run including controls in Model 7 (M7).

Statistical analyses were carried out using Stata 18 (StataCorp, 2023).

5. Results

Results for data distribution (i.e., skewness, kurtosis, Kolmogorov-Smirnov statistic) show no significant differences for both groups at the pre-intervention condition (see Appendix 1 not included here for brevity reasons). Table 1 below shows, after running a logistic regression-based model with the variable experimental/control group as a dummy variable, and the data of the predictors and control variables clustered by country, no differences between the two groups at the start of the intervention on three key observed characteristics.

Regression coefficients are presented in Table 2. Overall, regression results in M7 with all predictors and controls show a significant effect in the variable experimental group = 0.511, $p < 0.01$, with all predictors and controls explaining 27.9 % of the variance. This variable effect proves to be consistent across the seven models presented. On the contrary, none of the rest of the variables included in the models fitted maintain their significance in M7. The effect size for this intervention program was 0.25. Suggestive positive results are present for country differences (i.e., Austria vs. Spain and Slovakia vs. Spain) (M2), and the rest of the variables measuring global trait emotional intelligence (M3), civic responsibility and civic efficacy (M4), civic skills (M5) and learning mindset (M6), although probably due to the relatively low sample size, none of them reach statistical significance in M7. Postestimation analyses yield favourable results for the Ramsey RESET test for omitted variables $F(3167) = 0.26$, $p > 0.05$, and the linktest for specification error $\_hatsq = 0.32$, $p = 0.746$. Furthermore, the Shapiro-Wilk test results showed that the distribution of the variable school dropout intention departed significantly from normality ($W = 4.150$, $p < 0.05$), probably due to this test sensitivity with large sample sizes. Although, the visual examination of the histogram (Fig. 1) and the Q-Q plot (Fig. 2) suggest that residuals are roughly normally distributed.

6. Discussion

With the aim of investigating the dissuasive impact of service-learning on the prevention of early school dropout among secondary school students, the study tested five hypotheses.

The result proved to be consistent across the seven models presented and supports our first hypothesis that participating in the program would reduce students' school dropout intention. Our results also align with those of Bridgeland et al. (2008); Trager (2011) and Moberg and Kramer (2015) suggesting that engagement in service-learning projects has the potential to prevent early school dropouts.

The results do not support our second hypothesis that participating in the program would increase students' socioemotional competence and do not align with similar studies by Chiva-Bartoll et al. (2020), Lapan et al. (2022) and Lee et al. (2021). Although this result could be interpreted as a serious drawback for the program's effectiveness or even an example of an iatrogenic effect, an alternative interpretation consists of attributing the experimental group's lower reported levels of socioemotional competence to the "ceiling effect" (Bringle & Velo, 1998). Indeed, this effect has also been acknowledged by Metz and Youniss (2005) in service-learning research affecting certain groups in terms of their sensibility after intervention, which can provide, as Reeb et al. (2010) suggest, a new perspective to look at our findings. In this vein, Gershenson-Gates (2012), when her original scale did not show significant differences, developed the scale by asking students to compare themselves to a person with more experience in community service. To do so,

Table 1
Baseline characteristics by treatment or control status.

Variables	Odds ratio	Robust standard error	z	P	[95 % confidence interval]
School dropout intention	0.958	0.1371	−0.30	0.763	0.723–1.269
Gender	1.836	0.587	1.90	0.058	0.980–3.436
Age	0.827	0.143	−1.10	0.272	0.589–1.161
Socioemotional competence					
Global trait emotional intelligence	1.164	0.326	0.54	0.589	0.672–2.015
Civic competence					
Civic attitude					
Civic responsibility	0.682	0.203	−1.29	0.199	0.380–1.223
Civic efficacy	1.250	0.326	0.86	0.392	0.750–2.084
Social responsibility and personal beliefs	1.233	0.266	0.97	0.332	0.808–1.881
Social responsibility personal values	0.9242	0.249	−0.29	0.768	0.545–1.566
Civic skills	0.905	0.247	−0.36	0.716	0.530–1.547
Academic motivation and engagement					
Academic perseverance	0.692	0.165	−1.54	0.122	0.434–1.104
Learning mindset	1.273	0.415	0.74	0.459	0.672–2.410
School belonging	1.229	0.347	0.73	0.466	0.706–2.138
Cons	5.831	16.863	0.61	0.542	0.020–1688.482

Note. Cons estimates baseline odds.

Table 2
OLS results. School dropout intention predicted by personal characteristics (and Controls) in four European countries.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Group	0.633***	0.623***	0.630***	0.552**	0.612***	0.553**	0.511**
	(0.171)	(0.172)	(0.178)	(0.177)	(0.173)	(0.171)	(0.193)
Age		−0.134					−0.196
		(0.150)					(0.156)
Gender		−0.013					−0.056
		(0.180)					(0.175)
Type of school (private)		−0.152					−0.162
		(0.318)					(0.284)
Type of school (religious)		0.591					0.719
		(0.322)					(0.365)
Country (Spain/Austria)		0.598*					0.239
		(0.289)					(0.284)
Country (Spain/Slovakia)		0.533*					0.534
		(0.265)					(0.315)
Country (Spain/Croatia)		0.815					0.526
		(0.472)					(0.476)
Global trait emotional intelligence			−0.377**				−0.297
			(0.142)				(0.181)
Civic responsibility				−0.057***			−0.036
				(0.016)			(0.021)
Civic efficacy				0.331*			0.313
				(0.159)			(0.186)
Social responsibility and personal beliefs				−0.165			−0.231
				(0.158)			(0.163)
Social responsibility personal values				−0.040			−0.107
				(0.165)			(0.183)
Civic Skills					−0.255*		0.178
					(0.121)		(0.178)
Academic perseverance						−0.069	0.125
						(0.117)	(0.120)
Learning mindset						−0.379*	−0.316
						(0.161)	(0.173)
School belonging						−0.067	0.082
						(0.146)	(0.155)
Cons	1.085***	2.431	2.829***	3.136***	2.021***	3.056***	6.401*
	(0.252)	(1.949)	(0.753)	(0.603)	(0.565)	(0.605)	(2.212)
N	204	204	204	204	204	204	204
R-Squared	0.065	0.134	0.123	0.177	0.087	0.142	0.279
Adjust R-Squared	0.060	0.098	0.114	0.156	0.078	0.125	0.204
RMSE	1.202	1.181	1.175	1.147	1.190	1.160	1.122

Note. Standard errors in parentheses.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

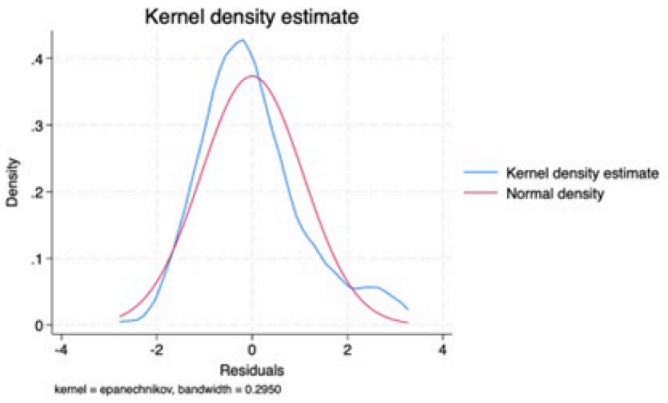

Fig. 1. Kernel density estimate versus normal density distribution for school dropout intention.

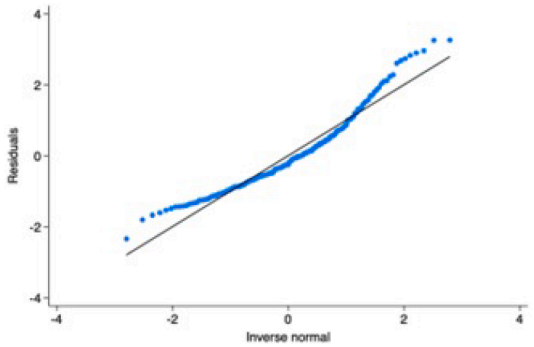

Fig. 2. Distribution of residuals in the regression for school dropout intention.

students were encouraged to relate their perceived competencies to the competencies expected from a person who already has these skills. Upon this comparison, the increased sensibility of the experimental group could be seen in the post test scores as students re-evaluated their own competencies.

In relation to the third hypothesis, regression results show a statistically significant association between participation in the program and the variables civic responsibility (negative) and civic efficacy, but not for the rest of variables in this model (i.e., social responsibility and personal beliefs and social responsibility personal values). This result partially supports our third hypothesis that participating in the program would increase students' levels of civic attitudes as discussed by Ryu and So (2020), Hart and Wandeler (2018), and Hart et al. (2007). Similarly, reported levels of civic responsibility by students in the experimental group were lower compared to those of the control group, which may suggest the presence of the "ceiling effect" on this variable too. One explanation can be the high sensibility developed during the engagement in the service-learning program and belief in the necessity of more civic responsibility, which may have resulted in the lack of trust in one's own civic competence (Gershenson-Gates, 2012).

The results yield a statistically significant negative association between participating in the program and reporting higher levels of civic skills in relation to hypothesis 4. This result does not support our fourth hypothesis that participating in the program would increase civic skills and does not align with those found by Aslanargun (2012) and Díaz et al. (2019). In the same vein as seen with other personal characteristics discussed above, the apparent non-desirable effect represented by the negative value of the coefficient can be interpreted as a positive outcome from the ceiling effect perspective, which means that students, after participating in the program, become much more aware of their civic skills or civic readiness limits.

In relation to the fifth hypothesis, the regression results yield a statistically significant association between participating in the program and the variable learning mindset but not for the rest of variables (i.e., academic perseverance and school belonging). This result does partially support our fifth hypothesis that participating in the program improves students' academic motivation and engagement. Several studies (Perkins-Gough, 2009; Rochford, 2013) showed that when service-learning projects are well integrated in the school curriculum, students' motivation and persistence to complete their coursework are likely to increase. Following this thought, Sze-Yeung and Chi-leung (2021) suggest that service-learning program providers must devote more attention to the relationship between intrinsic and extrinsic motivation as it has an effect on the students' own impressions of their engagement experiences.

The results above show that participating in the Service-Learning Upscaling Social Inclusion for Kids (SLUSIK) program yields a positive and statistically significant association with school dropout intention. However, specialized literature recommends testing the hypotheses not only considering the probability and statistical significance values, but also on the bases of the effect size (Cohen, 1988), which represents the magnitude or strength of the findings that occur in research studies. In this regard, the program shows an effect size of 0.25, which can be considered medium-low (Sawilowsky, 2009). In terms of educational impact this effect size means that a hypothetical member of the experimental group has 25 % less chances of dropping out of school than any hypothetical member of the control group. The importance of this moderate effect lies in the fact that effect sizes in educational research tend to be much smaller than in any other disciplines, and values around 0.30 are considered to have an important practical relevance (Fernández-Martín et al., 2020); Valentine & Cooper, 2003). In relation to gender differences, neither model 2 nor model 7 yield statistically significant differences, which do not align with results found by Bridgeland et al. (2008) were service-learning programs in secondary schools are associated with lower dropout intentions for both boys and girls, primarily by increasing school engagement, relevance, and a sense of belonging. However, regardless of statistical significance, which can be attributed to the sample size in our case, our results align with those found by Raykov and Taylor (2014), who found that, in secondary schools, the decrease in dropout intention post-service-learning was statistically significant for girls. In any case, it is quite evident the need for further research on this issue.

From this international service-learning project, we can draw several recommendations. One recommendation is related to the need to increase the planning efforts to reach the minimum sample size based on the *a priori* estimates, which would translate into more robust results and conclusions. In spite of our initial dissemination efforts to involve more schools per country (i.e., clusters) and probably because of the Covid-19 circumstances, the number of schools finally participating in the program was unfortunately insufficient due to the high cost (e.g., dedication, coordination, etc.) argued by those schools declining to participate. So, future programs should count *ex-ante* with the necessary resources (e.g., financial) to prevent potential fidelity problems that compromise the

objectives set. Another recommendation is to accompany the schools in the process of understanding the benefits of adopting evidence-based programs to increase their participation rate. In a European context of increasing mobility, it is highly recommended to escalate these programs involving several countries because of the potential cross-fertilisation stemming from the different teams bringing diverse and complementary academic, social, and cultural backgrounds to the planning, implementation, evaluation and reporting processes.

7. Limitations

The findings of this study have to be interpreted with caution due to the presence of some risk of bias. The Covid-19 Pandemic was probably the first source of bias due to the school closures, disruptions, and backlogs in education across all countries in the previous school year. To counteract these potential sources of bias a piloting of the PLACE model took place across the different countries and an intensive coordination and monitoring plan was implemented during the second stage. A second source of bias is the use of one intervention and one control cluster per country. The alignment of the units of randomization and the units of observation (i.e., classrooms), along with the use of robust estimation were used to control for these types of family error bias. A third potential source of bias is the non-probabilistic sampling technique adopted. Unfortunately, the resources, time, and/or schools' willingness or possibilities to participate were limited and, therefore, prevented us from adopting a more bias-free sampling approach. Fourth, although reliability coefficients for the original evaluation instruments show acceptable values, error measurement could be another potential source of bias due to the use of short versions of some of those instruments. Fifth, another potential difficulty in estimating the causal effects of service-learning on students' outcomes is the potential endogeneity of service-learning stemming from the decisions of schools, teachers, students, and parents to accept the invitation to adopt this particular teaching-learning methodology (Filges, et al., 2022), which are not usually available to researchers. And sixth, although baseline differences between intervention and control groups on observables (e.g., age, gender, country) were discarded (Table 1), potential baseline differences on unobservable (e.g., personality and ability) were controlled by randomization of clusters, and the pre-specification and inclusion of confounders identified by the available literature in the regression models as explanatory factors although to a limited extent.

8. Conclusions

Several conclusions can be drawn from this study. The first conclusion is that in spite of the harsh conditions due to COVID 19 and the pandemic that the Service-Learning Upscaling Social Inclusion for Kids (SLUSIK) program had to overcome, it has proven to be an effective program to reduce the intention to drop out of school.

A second conclusion is related to the characteristics of the PLACE theoretical model, which provides promising levels of testability, empirical accuracy, simplicity, coherence, fertility and effectiveness to the different education stakeholders.

And a third conclusion is that considering that early leavers from education and training is one of the core indicators of the European Commission to monitor countries progress against the risk of social exclusion by means of education, and considering that the Service-Learning Upscaling Social Inclusion for Kids (SLUSIK) program combines three core elements, that is, a theoretically sound service-learning theoretical model (i.e., PLACE), which has shown effectiveness in delivering these specific targeted educational outcomes, a high-quality quasi-experimental research design, and a robust and credible set of results, it could be concluded that the SLUSIK program can be considered as an example of a promising program based on evidence.

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CRediT authorship contribution statement

José Luis Arco-Tirado: Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Francisco D. Fernández-Martín:** Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Mirian Hervás Torres:** Visualization, Supervision, Investigation, Conceptualization. **Alžbeta Brozmanová Gregorová:** Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Zuzana Heinzová:** Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Seyda Subasi Singh:** Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors report there are no competing interests to declare

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Appendix

Appendix 1

Baseline characteristics by treatment or control status.

Variables	*N*	*M* (*SD*)	Sk (SE)	Ku (SE)	K-S
Socioemotional competence					
Global trait emotional intelligence					
Experimental	110	4.74 (0.64)	−0.46 (0.24)	0.06 (0.47)	0.05***
Control	94	4.78 (0.82)	−0.21 (0.27)	0.09 (0.53)	0.50***
Civic competence					
Civic attitude					
Civic responsibility					
Experimental	110	43.16 (7.30)	−0.47 (0.24)	0.52 (0.47)	0.10*
Control	94	43.47 (8.22)	−0.09 (0.27)	−0.80 (0.53)	0.09
Civic efficacy					
Experimental	110	3.51 (0.68)	0.25 (0.24)	−1.17 (0.47)	0.12***
Control	94	3.41 (0.97)	−0.28 (0.27)	−0.25 (0.53)	0.10*
Social responsibility and personal beliefs					
Experimental	110	3.51 (0.78)	−0.55 (0.24)	0.03 (0.47)	0.11***
Control	94	3.41 (0.86)	−0.06 (0.27)	−0.62 (0.53)	0.09
Social responsibility personal values					
Experimental	110	3.90 (0.68)	−0.31 (0.24)	−0.63 (0.47)	0.12***
Control	94	3.90 (0.78)	−0.41 (0.27)	−0.40 (0.53)	0.09
Civic skills					
Experimental	110	3.64 (0.66)	−0.06 (0.24)	−0.56 (0.47)	0.08***
Control	94	3.64 (0.82)	−0.74 (0.27)	0.53 (0.53)	0.10*
Academic motivation and engagement					
Academic perseverance					
Experimental	110	3.76 (0.91)	−0.66 (0.24)	0.13 (0.47)	0.09*
Control	94	3.80 (0.84)	−0.36 (0.27)	−0.83 (0.53)	0.10*
Learning mindset					
Experimental	110	3.99 (0.65)	−0.50 (0.24)	−0.08 (0.47)	0.10**
Control	94	3.91 (0.71)	−0.56 (0.27)	0.14 (0.53)	0.12**
School belonging					
Experimental	110	3.54 (0.72)	−0.26 (0.24)	−0.54 (0.47)	0.09*
Control	94	3.45 (0.79)	0.01 (0.27)	−0.39 (0.53)	0.08
School dropout intention					
Experimental	110	1.85 (1.22)	1.40 (0.24)	0.81 (0.47)	0.34***
Control	94	1.94 (1.29)	1.44 (0.27)	0.87 (0.53)	0.34***

Note. M: Mean, *SD*: Standard deviation, Sk: Skewness, SE: Standard error, Ku: Kurtosis, K-S: Kolmogorov-Smirnov statistic, *U* = Mann-Whitney tests.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

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