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Service-Learning in the Context of Pre-Professional Training in Health Sciences: Perceived Professional Usefulness of the Service Dimension

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Abstract

Background

Service-Learning (SL) integrates academic learning with the provision of a real service that addresses community needs. In health sciences education, SL is particularly relevant because it can strengthen the connection between theoretical training and pre-professional practice.

Objective

To analyse the perceived professional usefulness of Service-Learning among health sciences students, focusing on the “Service” dimension of a validated SL assessment instrument in the context of pre-professional training.

Methods

Quantitative, descriptive, cross-sectional study conducted as the first wave of a multi-wave protocol approved by an ethics committee (CEISH-PI-017). A simple random sample of 343 health sciences students in Quito (Ecuador) completed a validated questionnaire assessing SL across three dimensions (service, competence, and participation). The present analysis focused on perceived usefulness for professional life, measured on a five-point Likert scale (1 = not useful at all; 5 = very useful) and operationalised through 13 subcomponents within the “professional life” block.

Results

High ratings (4–5) predominated across all subcomponents (range: 78.6%–88.7%). The highest proportions of high usefulness were observed for “Knowing the professional field of your studies” (88.7%) and “Acting more consciously” (88.4%). “Understanding social needs” (85.8%) and “Applying professional competencies” (85.5%) showed highly favourable distributions and a moderate-to-high ordinal association (Spearman’s $\rho = 0.639$). No statistically significant differences were found by service modality (direct vs indirect; Wilcoxon $W = 12231$, $p = 0.2989$; Cliff’s $\delta = 0.066$). Differences by sex (Wilcoxon $W = 12388$; $p = 0.3504$) and semester group (Kruskal–Wallis $\chi^2(2) = 1.903$; $p = 0.386$) were also non-significant.

Conclusions

Service-Learning was perceived as highly useful for professional life across multiple dimensions, highlighting theory–practice integration and ethical-reflective learning in pre-professional health sciences training.

Introduction

Service-Learning (SL) has been documented in Latin America since the late 19th and early 20th centuries, emerging in connection with university extension movements in Mexico and initially framed as social engagement by higher education students. Over time, SL has evolved and adapted to different educational contexts. In health sciences, SL projects have been increasingly promoted as innovative approaches that strengthen links between academia and public health.[1]

A widely accepted definition describes Service-Learning as learning while providing a service; it supports responses to societal needs and fosters a pedagogical process in which both instructors and students go beyond one-directional knowledge transmission. SL can enhance communication and consolidate learning through experience and practice. In Latin America, multiple SL initiatives have been developed, such as projects coordinated through networks promoted by CLAYSS (Centro Latinoamericano de Aprendizaje y Servicio Solidario) in Argentina, in this project, health sciences students conduct blood pressure monitoring, nutrition workshops, and community education; another project is carried out by nursing students, who conduct chronic disease prevention workshops in Uruguay. [2, 3]

In Ecuador, several publications report SL initiatives across different areas (e.g., economics, marketing, and health). In health-related programs, universities have implemented SL projects with communities to identify risk factors and improve population health outcomes.[4, 5]

Multiple instruments exist for assessing SL across contexts. For analysing SL in Ecuadorian health sciences settings, the present study used a questionnaire developed and validated by Escofet et al. (2016), with reported content validity and reliability (Cronbach's alpha 0.87–0.90). The instrument assesses three dimensions: service, competence, and participation. [6, 7]

Participation is often conceptualised multidimensionally (e.g., simple participation vs consultative vs projective participation), depending on the extent to which students engage in needs assessment, activity planning, and evaluation.Simple participation refers to performing a service without having previously conducted a needs assessment, activity selection, or project evaluation; consultive participation involves the student being consulted regarding the needs assessment, activity selection, and project evaluation; and in projective participation, the student is involved in all phases of the project. The "service" dimension refers to activities/actions conducted to address community needs, whereas the "competence" dimension captures students' perceptions regarding the development of transversal skills.[8, 9]

Materials and Methods

This study is part of a protocol approved for repeated measurements (two assessments per year over three years) and holds CEISH approval (CEISH-PI-017). The design for the present report is quantitative, descriptive, and cross-sectional (first wave). Sample size was estimated using the number of newly graduated health professionals in Quito, Pichincha, Ecuador (~ 4000), applying a finite population

formula and adjustment for response rate, resulting in a minimum estimated sample of 294 participants. In this first measurement, a simple random sample of 343 health sciences students (a list of eligible classroom groups was compiled, and several classrooms were randomly selected. Researchers attended the selected classrooms and invited students to complete the questionnaire voluntarily and anonymously) was recruited and completed the validated open-access instrument by Escofet et al. [6]

The primary outcome for this analysis was the perceived usefulness of Service-Learning for professional life, measured on a five-point Likert scale (1 = not useful at all; 5 = very useful) within the service dimension of the questionnaire. Comparative variables included service modality (direct vs indirect), semester group, and student characteristics (e.g., sex). Nonparametric methods were used for ordinal comparisons (Wilcoxon rank-sum test for two groups; Kruskal–Wallis for three groups), and effect sizes were quantified using Cliff's delta where appropriate.[10]

Results

Focusing on the service dimension, which refers to activities and actions aimed at meeting the needs of the community, the data generated from the 'professional usefulness' section (See cuplementary material, Table 1) have been analyzed in depth.

Figure 1 displays a diverging Likert plot (1–5) for the 13 subcomponents of the item "To what extent have the service activities helped you for professional life." Categories 1–2 (low usefulness) appear to the left, category 3 (Neutral) around the centre, and categories 4–5 (high usefulness) to the right. Subcomponents are ordered by the percentage of high usefulness (4–5), shown on the right side of the figure.

Overall, high usefulness ratings (4–5) predominated in all subcomponents (range: 78.6%–88.7%). This suggests a consistently positive view of how Service-Learning contributes to various professional fields. The highest levels were observed for "Knowing the professional field of your studies" (88.7%), "Acting more consciously" (88.4%), "Acquiring values" (87.5%), and "Relating theory and practice" (86.9%). Mid-to-high values were found for "Understanding social needs" (85.8%) and "Applying professional competencies" (85.5%). Lower (but still high) proportions were observed for "Collaborating in an organization or association" (78.6%) and "Becoming encouraged to participate in faculty/neighbourhood/community" (79.2%), along with "Reflecting on university content" (81.8%). Item-level sample sizes were stable (n = 335–337), with minor variation due to missing values.

For subcomponent "Understanding social needs," responses were predominantly high. With N = 337 valid responses (6 missing), 47.8% selected "Very useful" (n = 161) and 38.0% selected "Useful" (n = 128), yielding 85.8% in categories 4–5. Neutral responses accounted for 13.6% (n = 46), and low-usefulness responses were marginal (0.3% "Not useful at all" and 0.3% "Slightly useful," n = 1 each). The median was 4 with IQR 4–5.This evidences a central tendency toward favorable perceptions regarding professional learning related to understanding social needs

Similarly, “Applying professional competencies” showed high perceived usefulness (N = 337). “Very useful” was most frequent (49.9%; n = 168), followed by “Useful” (35.6%; n = 120), yielding 85.5% in categories 4–5. Neutral responses were 13.6% (n = 46); low categories were rare (0.3% “Not useful at all” [n = 1] and 0.6% “Slightly useful” [n = 2]). The median was 4 with IQR 4–5. Compared with “Understanding social needs,” this item showed a slightly greater concentration in the top category (5), suggesting stronger perceived direct transfer to professional performance.[11]

The two sub-items were moderately-to-highly associated (Spearman’s ρ = 0.639), indicating related but non-equivalent facets of perceived professional usefulness.

Direct service showed a median of 5 (Q1 = 4; Q3 = 5) and 86.6% in categories 4–5, whereas indirect service showed a median of 4 (Q1 = 4; Q3 = 5) and 82.3% in categories 4–5. The difference was not statistically significant (Wilcoxon W = 12231, p = 0.2989), and the effect size was negligible (Cliff’s δ = 0.066; 95% CI: −0.061 to 0.191).

After cleaning and recoding sex, no statistically significant differences were observed between female and male students (Wilcoxon W = 12388; p = 0.3504). Both groups showed high usefulness (female median = 5; male median = 4) and high proportions in categories 4–5 (87.2% vs 82.0%).

Perceived professional usefulness remained high across semester groups (Initial: 1st–4th; Intermediate: 5th–6th; Advanced: ≥7th). Medians ranged from 4 to 5 with IQR 4–5 and high-usefulness proportions between 84.0% and 87.3%. No statistically significant differences were observed (Kruskal–Wallis $\chi^2(2) = 1.903$; p = 0.386)

Discussion

This study shows consistently high perceived professional usefulness of Service-Learning among health sciences students, focusing on the Service dimension of a validated instrument. Across 13 subcomponents, high ratings (4–5) ranged from 78.6% to 88.7%, indicating a broadly favourable perception of SL for professional life and supporting its relevance in pre-professional training contexts where theory–practice integration is central.

The highest-rated subcomponents concentrated on professional identity/role and ethical-reflective learning (e.g., knowing the professional field, acting more consciously, acquiring values) as well as theory–practice integration. This pattern aligns with the view of SL as a situated methodology that provides authentic contexts for applying knowledge, exercising judgement, and consolidating professional values.[12]

Two illustrative sub-items—understanding social needs and applying professional competencies—showed similarly high levels of perceived usefulness, yet modest differences in the concentration of “very useful” responses. The moderate-to-high correlation between them (ρ = 0.639) suggests that

perceived professional usefulness is multifaceted: projects may simultaneously promote competence application and social-context understanding, but these facets can vary by design and implementation.

Lower (though still high) ratings for collaboration within organizations and community participation may reflect the fact that sustained engagement and organizational belonging often require continuity, structured roles, and longer-term partnerships. Even though service-learning strengthens the understanding of the professional field and the integration of theory and practice, it does not always translate into a sufficiently intense experience of associative belonging or participatory continuity beyond the project." This points to improvement opportunities such as strengthening follow-up and continuity pathways, enhancing student agency across project phases, and deepening institutional collaboration with community organizations.[13,14]

Regarding service modality, the absence of significant differences between direct and indirect service ($p = 0.2989$; $\delta = 0.066$) suggests that perceived usefulness may depend less on modality per se and more on pedagogical quality: curricular alignment, explicit competency targets, supervision, feedback, and guided reflection. Importantly, indirect activities (e.g., campaigns and material development) may be perceived as professionally meaningful when clearly connected to competency development.[14]

No significant differences by sex or semester were detected, reinforcing the interpretation that SL's perceived professional usefulness is relatively stable across student subgroups and stages of training. These findings support the implementation of SL as a broadly applicable strategy across the health sciences curriculum

Conclusions

In this first measurement, Service-Learning was perceived as highly useful for professional life among health sciences students, with consistently high ratings across 13 professional-life subcomponents (78.6%–88.7%). The strongest perceived benefits were linked to professional identity, theory–practice integration, and ethical-reflective learning. "Understanding social needs" and "Applying professional competencies" were strongly endorsed and moderately-to-highly related ($\rho = 0.639$), supporting a multidimensional interpretation of perceived usefulness. No meaningful differences were observed by service modality, sex, or semester group, suggesting that perceived impact might depend more on pedagogical quality (e.g curricular alignment, support, and reflection) than on the intervention modality itself

Study Limitations

The study is cross-sectional and based on self-report; therefore, findings reflect perceptions and cannot establish causality. The focus on health sciences programs may limit generalisability to other fields. Although the subcomponent matrix provides a rich descriptive assessment, future research could apply multivariable ordinal (or hierarchical) models to identify adjusted predictors of high perceived usefulness (e.g., project type, curricular integration, faculty supervision, coordination with community partners, and

semester), and complement quantitative findings with qualitative data to better understand lower-rated dimensions such as organizational collaboration.[15]

Declarations

Ethics approval and consent to participate

The study protocol was approved by the Ethics Committee for Research Involving Human Subjects (CEISH-PI-017). The study was conducted in accordance with the Declaration of Helsinki and the Ecuadorian regulatory framework for research involving human participants, including the Ministry of Public Health Regulation for the approval, development, oversight and control of observational research and intervention studies in human beings (Ministerial Agreement No. 00015-2021 and its reform No. 00038-2021). All participants provided written informed consent prior to participation.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare no conflicts of interest

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Author Contributions (CRediT taxonomy)

Kevin Geovanny Sidel Almache: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Visualization, Writing – original draft, Project administration, Supervision.
Karen Estefania Cruz-Tamayo: Investigation, Data curation, Writing – review & editing.
Marco Orlando Fuel Herrera: Methodology, Supervision, Writing – review & editing.
Andy Joel Sidel Almache: Software, Data curation, Visualization, Writing – review & editing.
Alex Fabian Robalino Moya: Investigation, Validation, Writing – review & editing.

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Figures

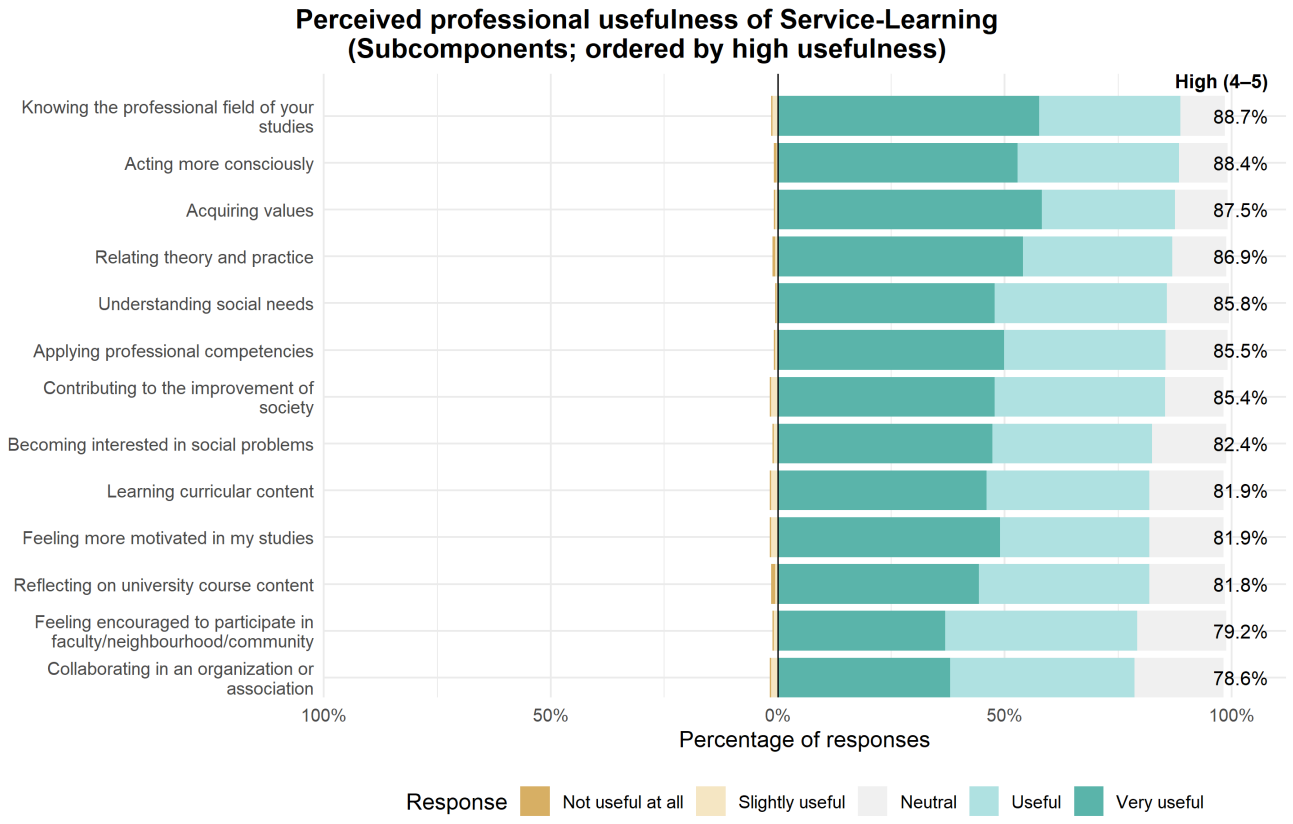


Figure 1

Diverging Likert distribution (1–5) across 13 subcomponents of professional-life usefulness in Service-Learning, ordered by high usefulness.

Note. Categories 1–2 (low usefulness) are shown to the left, 3 (neutral) in the centre, and 4–5 (high usefulness) to the right. The "High (4–5)" column indicates the percentage of responses in categories 4–5 for each subcomponent. Item-level n = 335–337.

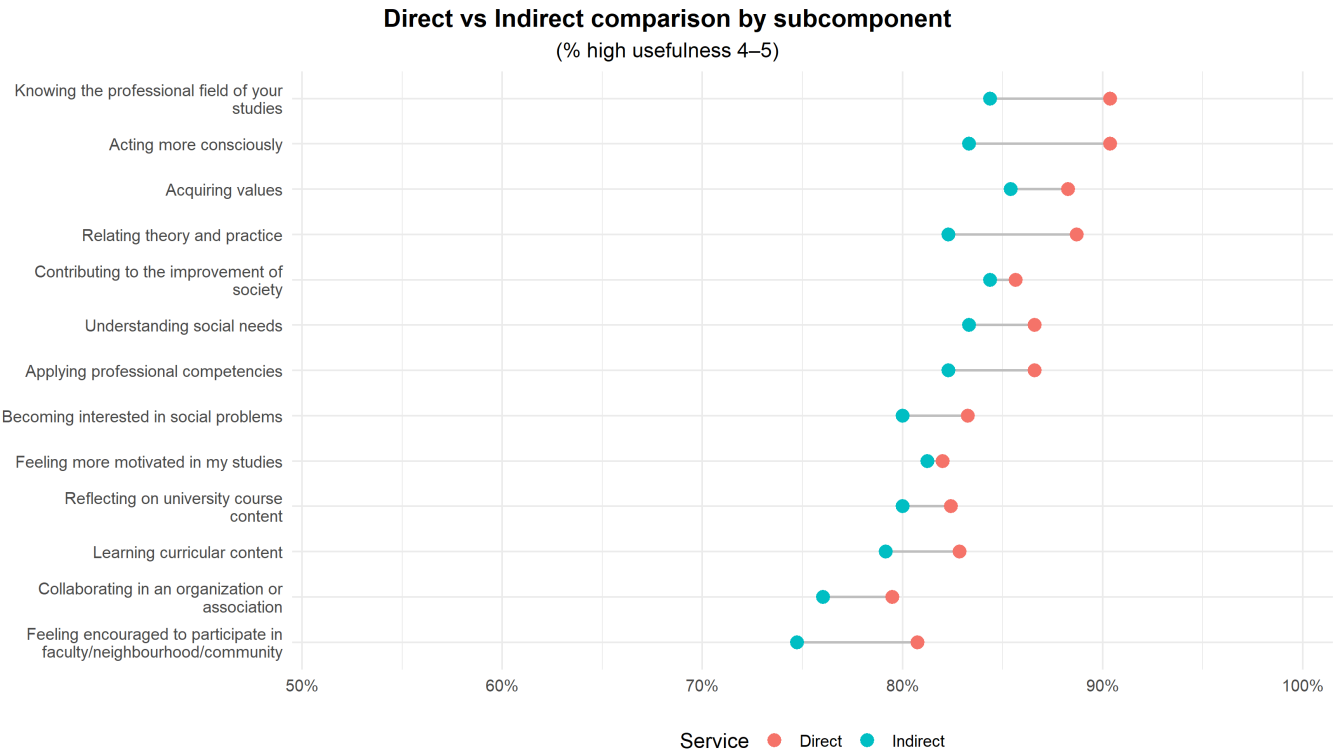


Figure 2

Direct vs indirect service by subcomponent: percentage of high professional usefulness (4–5).

Note. Each point represents the percentage of responses in categories 4–5 for each professional-life subcomponent; lines connect direct and indirect values within subcomponents. Direct = face-to-face intervention with persons/groups/environment; indirect = sensitization/campaigns/material development, etc.

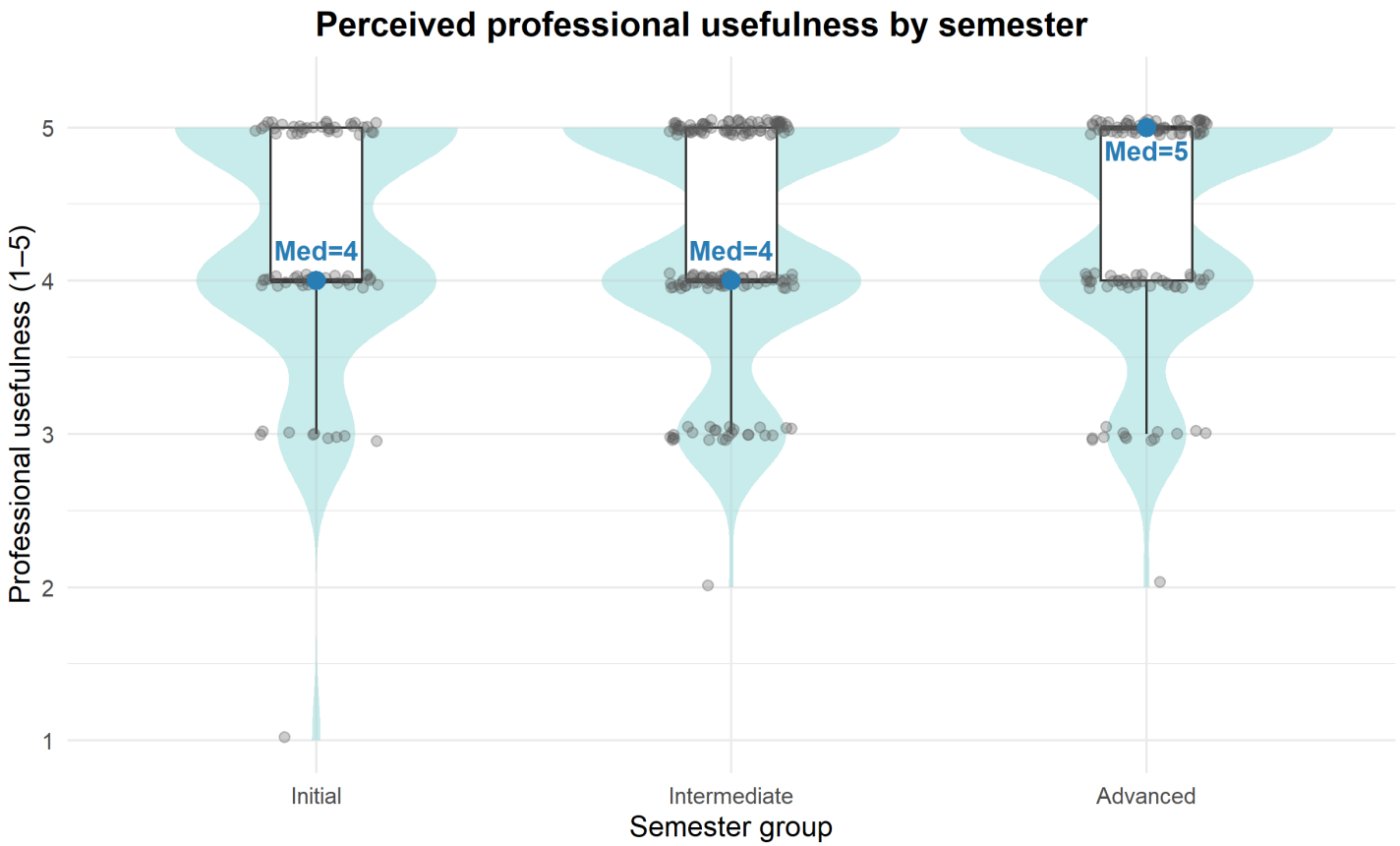


Figure 3

Perceived professional usefulness by semester group.

Note. Violin plots show response distributions; boxplots summarise median and interquartile range (Q1–Q3); jittered points show individual observations. “Med=” labels indicate group medians. Scale: 1 = not useful at all; 5 = very useful.

Supplementary Files

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