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Cross-Cultural Validation of the Service-Learning Outcomes Measurement Scale–Short Version (S-LOMS-SV): Evidence from Undergraduate Students in the Philippines

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Abstract

This study examined the construct validity, reliability, and sensitivity of the Service-Learning Outcomes Measurement Scale–Short Version (S-LOMS-SV) in a non-East Asian context. Using responses from undergraduate students at a Catholic university in the Philippines, a confirmatory factor analysis supported the hypothesized four-factor model, encompassing knowledge application, personal and professional skills, civic orientation and engagement, and self-awareness. All items loaded significantly onto their respective factors, with moderate to strong inter-factor correlations. The reliability analysis showed acceptable-to-excellent internal consistency across the overall scale and its subscales. Group comparisons revealed significant differences in outcomes based on age, gender, discipline, and participation, demonstrating the scale's discriminative ability. While several items warrant further review due to their lower factor loadings, the findings affirm that the S-LOMS-SV is a valid and reliable tool for assessing service-learning outcomes outside East Asia, such as the Philippines. This study recommends further validation across diverse institutions using longitudinal designs to better capture developmental changes over time.

Keywords: *educational measurement and evaluation, higher education, service-learning, student development*

Validación cultural de la versión corta de la Escala de Medición de Resultados del aprendizaje-servicio, versión corta (S-LOMS-SV): Evidencia de estudiantes universitarios en Filipinas

Genejane M. Adarlo, Mark Anthony D. Abenir, Sabrina Kate D. Paner-Montiel, Syra Marie Norin A. Petalio, Rose Clarence C. Co, Eduardo Victor J. Valdez, Ma. Lourdes Oliveros y Maria Criselda T. Torcuator

Resumen

En base a las respuestas de estudiantes de pregrado en una universidad católica en Filipinas, el análisis factorial confirmatorio respaldó el modelo hipotético de cuatro factores, que incluye: aplicación del conocimiento, habilidades personales y profesionales, orientación y participación cívica, y autoconciencia. Todos los ítems mostraron cargas significativas en sus factores correspondientes, con correlaciones entre-factores de moderadas a fuertes. El análisis de confiabilidad indicó una consistencia interna aceptable a excelente tanto en la escala general como en sus subescalas. Las comparaciones entre grupos revelaron diferencias significativas en los resultados según edad, género, disciplina y nivel de participación, lo que evidencia la capacidad discriminativa de la escala. Aunque algunos ítems requieren revisión adicional debido a sus cargas factoriales más bajas, los hallazgos confirman que la S-LOMS-SV (por sus siglas en inglés) es una herramienta válida y confiable para evaluar resultados de aprendizaje y servicio fuera de Asia Oriental, como en Filipinas. Se recomienda continuar el proceso de validación en diversas instituciones utilizando diseños longitudinales para entender mejor los cambios en el desarrollo a lo largo del tiempo.

Palabras clave: *Aprendizaje y servicio, educación superior, desarrollo estudiantil, medición y evaluación educativa*

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Community engagement allows universities to fulfill their civic responsibilities and meaningfully contribute to society (Amutuhaire, 2023). It involves universities integrating research, teaching, and public service to address pressing social issues and global challenges (Furco, 2010). Such university–community engagement entails sharing knowledge and resources between universities and their broader communities within the framework of collaboration and reciprocity (Amutuhaire, 2023). This helps universities maintain their relevance by connecting academic pursuits with civil, social, economic, and moral issues, thus retrieving the traditional civic role of universities and creating new approaches for responding to the demands and challenges of the 21st century (Chile & Black, 2015; O’Connor et al., 2011).

Community engagement can equip students with attributes that would prepare them for employability and active citizenship (O’Connor et al., 2011). Specifically, community engagement exposes students to complex interdisciplinary problems that require innovative solutions, mirroring the challenges they face in their future careers and society. Students learn to navigate diverse perspectives, manage resources, and adapt to changing circumstances, which are important in today’s rapidly evolving world (Nokes et al., 2005). They also gain a deeper understanding of social issues, develop empathy for marginalized communities, and express a lifelong commitment to community service, among others (Knapp et al., 2010).

Universities have implemented several strategies to integrate community engagement into their curricula effectively. One strategy to refocus community engagement from the margins to mainstream academic activities is to use service-learning as a pedagogical approach (Furco, 2010). Service-learning is a form of experiential learning that integrates coursework with community service to enrich students’ learning experiences while meaningfully contributing to society (Bassi, 2011).

Originating in the United States, service-learning has evolved into a distinctive pedagogical approach that takes student learning beyond traditional classroom settings (Thomson et al., 2010). It has deep roots in the history of American democracy and higher education, with universities recognizing the role of education in developing citizens (Zieren & Stoddard, 2004). Although universities have increasingly embraced it, there are notable differences in how service-learning is understood and implemented in non-Western contexts (Annette, 2002; Thomson et al., 2010).

Service-learning has been widely adopted in non-Western contexts, particularly in Asia, during the late 20th century and the first two decades of the 21st century (Lau et al., 2024a). The implementation of service-learning in these contexts often reflects local cultural, institutional, and philosophical influences, leading to distinct characteristics compared to its origins in the United States (Lau & Snell, 2020a, 2021; Lau et al., 2021, 2024a, 2024b). While service-learning in the West was primarily influenced by John Dewey’s ideas of social action to promote democratic values and human rights, service-learning in East Asia, such as Hong Kong, Singapore, Japan, Korea, Taiwan, and China, has been considerably shaped by the Chinese educational philosophy underpinned by Confucianism (Lau & Snell, 2020a, 2021; Lau et al., 2021, 2024a, 2024b; Snell & Lau, 2020). Service-learning in Hong Kong, for instance, emphasizes the instrumental purpose of education through the development of professional skills and the Confucian values of self-reflection and self-improvement (Lau & Snell, 2020a; Lau et al., 2021, 2024a). Its approach to civic engagement is depoliticized, focusing on civic duties and moral development rather than upholding democracy and social justice, as often seen in the West (Lau & Snell, 2021; Lau et al., 2021, 2024a). This is also observed in Singapore, where service-learning is framed within social cohesion and civic responsibility over challenging institutions for social change (Lau & Snell, 2021).

Recognizing these differences, there is a growing need for locally relevant assessment tools that can provide meaningful evaluations of student developmental outcomes specifically aligned with the cultural, institutional, and educational uniqueness of a particular region (Lau & Snell, 2020b; Lau et al., 2024a, 2024b). These locally relevant tools offer a standardized instrument that compares service-learning outcomes across different courses, programs, and institutions within the same region (Lau & Snell, 2020a, 2020b; Lau & Snell, 2021; Lau et al., 2021, 2024a, 2024b). Standardized instruments allow universities to understand how they fare in relation to others in similar contexts and identify areas for improvement (Lau & Snell, 2020a; Lau et al., 2024a, 2024b).

In response to this growing need, Lau and Snell (2020a, 2020b) developed a Service-Learning Outcomes Measurement Scale (S-LOMS) that can be used as an alternative to Western-centric instruments,

which may be applicable in assessing student developmental outcomes arising from service-learning within Asian settings. While the 56-item S-LOMS is a well-validated and reliable tool, its length can be time-consuming and can induce survey fatigue, especially when administered alongside other instruments (Lau et al., 2024a, 2024b). With the Service-Learning Outcomes Measurement Scale–Short Version (S-LOMS-SV), the goal of Lau et al. (2024a, 2024b) was to create a more concise tool that still retained coverage of the full scope of desired student developmental outcomes measured by the original S-LOMS. This 21-item scale aims to provide a manageable, evidence-based evaluation of service-learning programs for quality assurance and research purposes (Lau et al., 2024a).

Several universities in the Asian region, such as the Philippines, have used S-LOMS for their teaching needs and research endeavors (Lau et al., 2024a). While the Philippines is geographically a part of Southeast Asia and has historical ties to East Asian culture, it is not primarily a Confucian society. The Philippines has a unique cultural blend influenced by various factors, including Spanish colonization and American occupation, which may have resulted in a different cultural landscape compared to predominantly Confucian societies. Spanish colonization embedded Catholic traditions that continue to influence Philippine higher education's emphasis on moral formation, compassion, and service to the poor, while American occupation introduced liberal democratic education oriented toward civic participation and social justice. Its colonial past and democratic aspirations influence how service-learning is not only an academic requirement but also a moral and civic imperative (Adarlo, 2016). While the original and short versions of the S-LOMS provide valuable tools for measuring service-learning outcomes in Confucian societies, their appropriateness and applicability outside of East Asia remain unclear.

Hence, this study investigated whether the factor structure of the S-LOMS-SV intended for Confucian societies remains relevant to a non-East Asian context, such as the Philippines. It examined the internal consistency of the scale items within this specific cultural context. It also explored whether the scale could differentiate by age, gender, academic discipline, year level, and current or prior participation in a service-learning program. The literature suggests that older students tend to draw from prior experiences when reflecting on community engagement (Parker et al., 2009). Studies also reveal differences by gender, discipline, year of study, and experience in students' level of engagement with academic tasks (Kessels et al., 2014; Pike et al., 2010, 2011).

This preliminary validation can shed light on whether the scale effectively captured the intended outcomes in settings where service-learning is shaped not by Confucianism but by other guiding principles, such as those rooted in Catholic social teaching and Western democratic traditions. It can offer insights into whether the scale is sensitive to the nuances of service-learning in regions where historical, cultural, and educational factors differ from those in East Asia.

Conceptual Framework of Service-Learning Outcomes in Students

The development of the S-LOMS was specifically undertaken to address the limitations of relying on Western-developed scales for assessing student developmental outcomes of service-learning in non-Western settings, such as Hong Kong (Lau et al., 2024a). Scale development began with an extensive review of the related literature on student developmental outcomes arising from service-learning and existing scales that measure such outcomes (Snell & Lau, 2020). This review informed the development of a conceptual framework of student developmental outcomes that are considered salient within the cultural and educational context of Hong Kong (Lau & Snell, 2020a, 2020b). While Western literature identified academic enhancement, personal growth, and civic learning as common service-learning outcomes, they were adapted for the Hong Kong setting (Lau & Snell, 2020a; Lau et al., 2021; Snell & Lau, 2020).

Feedback from subject matter experts and psychometric evaluation conducted by Lau and Snell (2020a, 2020b, 2020c) resulted in a conceptual framework that included four overarching categories of student developmental outcomes with their corresponding domains: knowledge application; personal and professional skills (creative problem-solving skills, relationship and team skills, self-reflection skills, and critical thinking skills); civic orientation and engagement (community commitment and involvement, caring and respect, and sense of social responsibility); and self-awareness (self-efficacy, self-understanding, and commitment to self-

improvement). This conceptual framework reflects the pragmatic orientation toward education in Hong Kong and the cultural influence of Confucianism, which heavily emphasizes the importance of spirituality, personal development, harmonious relationships, and social order (Lau et al., 2021, 2024a).

Knowledge application refers to students' ability to apply their understanding of a subject to real-world contexts and challenges (Lau & Snell, 2020a, 2021). This signifies the extent to which academic learning is applied in practical scenarios as opposed to academic performance, which is usually evaluated through graded coursework (Lau & Snell, 2020a, 2020c, 2021; Lau et al., 2021, 2024a; Snell & Lau, 2020).

Cited as a service-learning outcome in Western literature, personal growth was expanded to include professional skills to represent the purpose of education in East Asia to prepare students for better careers and the development of vocational skills (Lau & Snell, 2020a, 2021; Lau et al., 2024a). Personal and professional skills in S-LOMS refer to the ability of students to practice creative problem-solving, work in groups, reflect on their experiences, and analyze complex situations (Lau et al., 2024a).

Civic orientation and engagement pertain to how much a student is concerned about the welfare of the larger community and actively strives to participate positively in community matters (Lau & Snell, 2020a). They focus more on civic duties and moral development rather than on participatory democracy and social change (Lau & Snell, 2020a; Lau et al., 2024b).

A notable aspect of S-LOMS is the categorization of self-awareness as a separate entity from personal and professional skills, as it aligns well with the Confucian tradition of self-cultivation (Lau et al., 2024b). Its inclusion as a student developmental outcome arising from service-learning sets S-LOMS apart from specific Western models (Snell & Lau, 2020). Self-awareness refers to students' recognition of their own strengths and weaknesses regarding their skills and personal attributes (Lau & Snell, 2020a).

Method

This study used a cross-sectional design to understand the psychometric properties of the S-LOMS-SV in a non-East Asian context. Cross-sectional studies are well suited for this as they can provide a snapshot of the data at a single point in time, allowing researchers to analyze the relationships among constructs, assess their internal consistency, and compare group differences.

Setting and Participants

Ateneo de Manila University, an institution of Catholic higher education in the capital of the Philippines, was the research setting of this study. The University is dedicated to educating the whole person for the greater good by striving to transform students into professionals with conscience, competence, compassion, and commitment. Community engagement is at the core of its formation program, with service-learning deliberately designed in the undergraduate curriculum to instill the University's values of social justice and transformation.

After obtaining ethics approval from the University Research Ethics Review Committee (AdMUREC_24_044), this study recruited participants from undergraduate programs that integrated service-learning into the curricula. Convenience sampling was used to target undergraduate students who were either currently enrolled or had completed service-learning coursework.

This study included 358 undergraduate students. Their mean age was 20.14 years ($SD = 1.31$), ranging from 17 to 24 years. The sample comprised 231 female (65%) and 127 male (35%) participants. There were 179 participants (50%) from health-related disciplines, 140 (39%) from management, and 39 (11%) from the social sciences. A total of 167 participants (47%) were in their second year, 93 (26%) in their third year, and 98 (27%) in their fourth year. A total of 212 participants (59%) stated that they had prior participation in service-learning, whereas 146 (41%) reported current participation.

Data Gathering

The S-LOMS-SV was developed and initially validated by Lau et al. (2024a, 2024b) to assess developmental gains from service-learning across four categories or domains: knowledge application,

personal and professional skills, civic orientation and engagement, and self-awareness. The instrument consists of 21 items rated on a 10-point Likert scale (1 = *strongly disagree*, 10 = *strongly agree*). It was administered in October 2024 as an online questionnaire through a quick response (QR) code distributed in class, students' university emails, and through the official university learning management system. Demographic variables, such as age, gender, academic discipline, year level, and current or prior participation in service-learning, were also collected in the questionnaire to enable group comparisons.

Data Analysis

Confirmatory factor analysis using robust estimation suitable for ordinal data was conducted to evaluate the hypothesized four-factor structure of the S-LOMS-SV against item responses from the participants. Model fit was assessed using multiple indices, such as chi-square (χ^2), comparative fit index (CFI), Tucker–Lewis index (TLI), and root mean square error of approximation (RMSEA). Although a nonsignificant χ^2 suggests a good fit, it is often significant for large samples. CFI and TLI values ≥ 0.90 indicate an acceptable fit (≥ 0.95 a good fit), and RMSEA values ≤ 0.08 suggest an adequate fit (≤ 0.05 a close fit). A 90% RMSEA confidence interval with an upper bound ≤ 0.10 is also considered acceptable. These thresholds follow the guidelines of Hu and Bentler (1999).

Factor covariances from confirmatory factor analysis were then used to calculate inter-factor correlations, reflecting how latent constructs relate to one another while accounting for measurement errors. Correlations below .30 indicate weak relationships, while those ranging from .30 to .50 suggest moderate relationships. Values between .50 and .70 reflect strong relationships. Correlations exceeding .70 may point to substantial conceptual overlap, and those above .85 can imply potential redundancy or issues with discriminant validity (Brown, 2015; Kline, 2023).

Cronbach's alpha (α) was used to assess the scale's internal consistency and subscales. The values of $\alpha \geq .70$ are generally considered acceptable, with .80–.89 indicating good reliability and .90 and above demonstrating excellent reliability. Values between .60 and .69 may be regarded as questionable, while those below .60 suggest poor to unacceptable reliability (DeVellis, 2012).

Item-total correlations above .30 are generally considered acceptable. Values above .50 are preferred, indicating stronger consistency with the overall construct. Items with correlations below .30 may need to be reviewed or revised (DeVellis, 2012).

Multiple statistical tests were conducted to examine the sensitivity of the scale for group differences. Pearson's correlation coefficient was used to assess the relationship between age and service-learning outcomes. Independent sample *t* tests were performed to assess differences by gender and student participation. One-way analysis of variance (ANOVA) was performed to detect differences in student developmental outcomes according to discipline and year level. Analysis of covariance (ANCOVA) was then run to determine if differences by year level persisted after controlling for age.

All quantitative analyses were conducted using the Jamovi software. A significance level of $p < .05$ was set for all statistical tests.

Results

This study sought to validate the S-LOMS-SV in a non-East Asian context using confirmatory factor analysis, reliability analysis, and group comparisons. The results revealed promising support for the scale's construct validity, reliability, and sensitivity.

Confirmatory Factor Analysis

Confirmatory factor analysis revealed that the overall model demonstrated a nearly acceptable fit to the data, $\chi^2 = 726.24$, degrees of freedom (df) = 183, $p < .001$. Although the χ^2 statistic was significant, which is typical in large samples, the results from the additional fit indices provided more insights. With a CFI of 0.85 and a TLI of 0.83, both indices almost met the conventional cutoffs for an acceptable model fit. An RMSEA of 0.09, with a 90% confidence interval of 0.08–0.10, suggested a moderate fit.

All factor loadings were statistically significant at $p < .001$, supporting convergent validity (Table 1). Standardized factor loadings ranged from 0.75 to 0.90 for the knowledge application subscale, indicating that the items were strong indicators of this construct. Items under the personal and professional skills subscale yielded factor loadings of 0.52–0.75, which showed a moderate to strong representation of the construct. Civic orientation and engagement subscale items loaded between 0.59 and 0.75, whereas self-awareness subscale items demonstrated loadings between 0.56 and 0.77. These results indicate that most items meaningfully contributed to the measurement of their respective latent constructs.

Table 1.

Confirmatory Factor Analysis of S-LOMS-SV Items

Scale items and their categories or domains	F1	F2	F3	F4
Inter-factor correlations				
F1: Knowledge application	1			
F2: Personal and professional skills	.68	1		
F3: Civic orientation and engagement	.47	.72	1	
F4: Self-awareness	.50	.78	.47	1
Factor loadings				
Knowledge application 1	0.88			
Knowledge application 2	0.90			
Knowledge application 3	0.75			
Personal and professional skills 1		0.59		
Personal and professional skills 2		0.70		
Personal and professional skills 3		0.67		
Personal and professional skills 4		0.64		
Personal and professional skills 5		0.69		
Personal and professional skills 6		0.75		
Personal and professional skills 7		0.52		
Personal and professional skills 8		0.70		
Civic orientation and engagement 1			0.75	
Civic orientation and engagement 2			0.59	
Civic orientation and engagement 3			0.72	
Civic orientation and engagement 4			0.72	
Civic orientation and engagement 5			0.74	
Civic orientation and engagement 6			0.60	
Self-awareness 1				0.62
Self-awareness 2				0.77
Self-awareness 3				0.71
Self-awareness 4				0.56

Confirmatory factor analysis highlighted several items that may warrant revision because of their relatively low standardized factor loadings. While all items loaded significantly on their intended factors ($p < .001$), some displayed weaker relationships with their latent constructs, suggesting that they may not represent their respective dimensions as strongly as the other items.

Within the personal and professional skills subscale, the item “*I reflect on myself regularly*” showed a standardized factor loading of 0.52, and “*I am able to generate original ideas*” loaded at 0.59. Both fell below the commonly accepted threshold of 0.60 for strong item-factor alignment. Similarly, in the civic orientation and engagement subscale, the item “*I can identify issues that are important for a disadvantaged community*” demonstrated a loading of 0.59. In the self-awareness subscale, the item “*I am always motivated to learn*” had a standardized loading of 0.56. These results were slightly lower than the recommended threshold. Lower loadings suggest that these items may not fully capture the underlying construct or may have been interpreted

differently by respondents. Although still within the acceptable range, their relatively lower loadings compared to other items in the same construct may indicate a weaker conceptual or empirical fit.

The correlations among the four latent constructs were moderate to strong and all were statistically significant at $p < .001$ (Table 1). These results showed related but distinct categories of student developmental outcomes arising from service-learning. The strongest inter-factor correlation was observed between personal and professional skills and self-awareness subscales ($r = .78$), followed by the inter-factor correlation between personal and professional skills and civic orientation and engagement subscales ($r = .72$). The lowest inter-factor correlation was seen between knowledge application and civic orientation and engagement subscales ($r = .47$).

Reliability Analysis

A reliability analysis was conducted to examine the internal consistency of the S-LOMS-SV and its four subscales using Cronbach's α . The overall scale demonstrated excellent internal consistency, with a Cronbach's α of .92. The item-total correlations ranged from .44 to .70, suggesting that the items were strongly related to the overall construct.

Each of the four subscales exhibited acceptable-to-high reliability. The knowledge application subscale, composed of three items, showed high internal consistency with a Cronbach's α of .88. Item-total correlations for this subscale ranged from .70 to .81. The personal and professional skills subscale, which included eight items, yielded a Cronbach's α of .85, with item-total correlations of .45–.72. The civic orientation and engagement subscale demonstrated a Cronbach's α of .83 across its six items, and item-total correlations ranged from .49 to .70. Finally, the self-awareness subscale, comprising four items, garnered a Cronbach's α of .74, with item-total correlations of .46–.64.

Group Comparisons

Age. Pearson's correlation analysis revealed positive, yet weak, relationships between age and all subscales of the S-LOMS-SV. Age was positively correlated with knowledge application ($r = .27, p < .001$), personal and professional skills ($r = .18, p = .002$), civic orientation and engagement ($r = .28, p < .001$), self-awareness ($r = .11, p = .045$), and overall scores ($r = .25, p < .001$), suggesting that older students tended to report greater developmental gains from service-learning.

Gender. Independent sample t tests showed that female students scored significantly higher than male students on civic orientation and engagement ($p < .001, d = 0.53$). No significant gender differences emerged for knowledge application ($p = .275$), personal and professional skills ($p = .408$), self-awareness ($p = .745$), or the overall score ($p = .084$). The results are summarized in Table 2.

Table 2.

Comparison of S-LOMS-SV Subscale Scores by Gender

Subscale	Female <i>M (SD)</i>	Male <i>M (SD)</i>	<i>p</i> value
Knowledge application	7.99 (1.13)	7.84 (1.23)	.275
Personal and professional skills	7.88 (1.04)	7.77 (1.22)	.408
Civic orientation and engagement	9.02 (0.82)	8.52 (1.05)	<.001
Self-awareness	7.94 (1.17)	7.98 (1.25)	.745
Overall	8.21 (0.84)	8.03 (0.97)	.084

Academic discipline. A one-way ANOVA revealed significant differences in scores by discipline for knowledge application ($p = .030, \eta^2 = 0.02$) and civic orientation and engagement ($p < .001, \eta^2 = 0.06$). Post hoc comparisons using Games–Howell tests showed that students in health-related disciplines scored significantly higher in knowledge application than those in management ($p = .020$). Games–Howell tests

also revealed that social sciences students scored significantly higher than management students in civic orientation and engagement ($p < .001$), and students in health-related disciplines scored significantly higher than management students ($p = .002$). However, no significant difference in scores for this subscale was observed between students in the fields of social sciences and health ($p = .413$). The results are presented in Table 3.

Table 3.

Comparison of S-LOMS-SV Subscale Scores by Academic Discipline

Subscale	Health <i>M (SD)</i>	Management <i>M (SD)</i>	Social sciences <i>M (SD)</i>	<i>p</i> value
Knowledge application	8.09 (1.12)	7.74 (1.18)	7.94 (1.25)	.030
Personal and professional skills	7.85 (1.10)	7.76 (1.12)	7.92 (1.08)	.612
Civic orientation and engagement	8.97 (0.93)	8.61 (0.99)	9.12 (0.57)	<.001
Self-awareness	7.93 (1.21)	7.89 (1.23)	7.95 (1.20)	.875
Overall	8.20 (0.93)	8.05 (0.95)	8.25 (0.91)	.095

Year level. A one-way ANOVA showed that the S-LOMS-SV could differentiate the likely scores by year level regarding knowledge application ($p < .001$, $\eta^2 = 0.08$), personal and professional skills ($p = .011$, $\eta^2 = 0.03$), civic orientation and engagement ($p < .001$, $\eta^2 = 0.05$), self-awareness ($p = .039$, $\eta^2 = 0.02$), and overall ($p < .001$, $\eta^2 = 0.06$). Table 4 presents the results.

Table 4.

Comparison of S-LOMS-SV Subscale Scores by Year Level

Subscale	Second year <i>M (SD)</i>	Third year <i>M (SD)</i>	Fourth year <i>M (SD)</i>	<i>p</i> value
Knowledge application	7.68 (1.20)	7.90 (1.09)	8.40 (1.03)	<.001
Personal and professional skills	7.65 (1.17)	7.91 (0.84)	8.09 (1.17)	.011
Civic orientation and engagement	8.63 (0.97)	8.95 (0.79)	9.11 (0.93)	<.001
Self-awareness	7.84 (1.17)	7.88 (1.22)	8.21 (1.18)	.039
Overall	7.95 (0.92)	8.16 (0.74)	8.45 (0.90)	<.001

However, ANCOVA revealed no significant differences by year level for knowledge application ($p = .276$), personal and professional skills ($p = .688$), civic orientation and engagement ($p = .692$), self-awareness ($p = .301$), and overall score ($p = .646$) after controlling for age. These findings suggest that the earlier ANOVA results showing year-level differences may not hold once age is considered as a covariance.

Participation in service-learning. Students with prior service-learning participation scored significantly higher than those currently enrolled in service-learning in terms of knowledge application ($p = .023$, $d = 0.25$), personal and professional skills ($p < .001$, $d = 0.42$), and self-awareness ($p < .001$, $d = 0.37$). A marginal difference was observed in civic orientation and engagement ($p = .053$, $d = 0.21$). Overall, students with prior participation reported stronger outcomes ($p < .001$, $d = 0.40$). Table 5 presents the results.

Table 5.*Comparison of S-LOMS-SV Subscale Scores by Service-Learning Participation*

Subscale	Prior participation	Current participation	<i>p</i> value
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	
Knowledge application	8.05 (1.16)	7.77 (1.16)	.023
Personal and professional skills	8.03 (1.07)	7.57 (1.10)	<.001
Civic orientation and engagement	8.93 (0.91)	8.73 (0.96)	.053
Self-awareness	8.13 (1.16)	7.69 (1.20)	<.001
Overall	8.28 (0.89)	8.03 (0.97)	<.001

Discussion

Confirmatory factor analysis showed that the hypothesized four-factor structure of the S-LOMS-SV generally captures the latent constructs of student developmental outcomes arising from service-learning. Although the model demonstrated only a nearly acceptable fit (CFI = 0.85, TLI = 0.83, and RMSEA = 0.09), this result may reflect contextual and cultural differences between the Philippine setting and the Confucian societies where the S-LOMS-SV was originally validated. Model fit indices are influenced not only by data characteristics but also by the cultural and institutional interpretation of latent constructs (Brewczynski & MacDonald, 2006; Rutkowski et al., 2019). In Confucian contexts, constructs, such as civic orientation, personal development, and reflection, are deeply integrated through shared moral philosophies of self-cultivation and social harmony (Lau & Snell, 2020a, 2021; Lau et al., 2021, 2024a, 2024b; Snell & Lau, 2020). In contrast, Philippine higher education draws on Catholic social teaching and American democratic traditions, which emphasize distinct yet interrelated domains of intellectual, civic, and spiritual development (Adarlo, 2016). Consequently, Filipino students may perceive the four domains of the S-LOMS-SV as more differentiated, which can attenuate inter-factor associations and lead to a slightly weaker overall model fit. While the validation of the S-LOMS-SV in the Philippines suggests its appropriateness and applicability, the results point to the need to consider local culture and history, as civic engagement has long been woven into the Filipino imagination through collective struggles, from the anti-colonial movements to the People's Power Revolution (Adarlo, 2016). Rather than signaling a flaw in the model, this slight divergence underscores the importance of cultural nuance in assessing service-learning outcomes. Future research can refine the scale by testing culturally adapted versions of items that better reflect Filipino values of faith, solidarity, and communal responsibility.

The strongest loadings for items under knowledge application reflect the long-standing emphasis in Philippine higher education on bridging classroom knowledge with social realities (Commission on Higher Education, 2013). Higher education in the Philippines is deeply influenced by its historical roots in Catholic moral formation and American democratic ideals, which together underscore the importance of educating students on community service, social justice, and participatory citizenship alongside career readiness (Adarlo, 2016).

Items tied to leadership and collective responsibility, such as “*I am confident in leading others toward common goals*” and “*I will contribute my abilities to make the community a better place*,” also exhibited strong loadings, demonstrating the Philippines’ long tradition of civic activism and nation-building through community action (Adarlo, 2016). Such an understanding of one’s responsibility and contribution to society echoes Filipino values that are deeply influenced by Catholic social teaching on service and solidarity (Quimbo et al., 2018).

However, replication studies may yield a slightly weaker fit when applied to new cultural contexts. This observation explains why the four subscale items based on their factor loadings could benefit from further review. These items may need revision, such as rewording for clarity or considering their cultural and contextual relevance. Notably, the weak loading of the item “*I reflect on myself regularly*” under the personal and professional skills subscale can be attributed to cultural traditions of faith and collectivism

that shape the way self-reflection is understood as a communal practice rather than an individual trait (Reyes, 2015). Students may also encounter difficulties in expressing creativity in the context of service-learning with the item “*I am able to generate original ideas*” under the same subscale because of collectivist orientation and deference to authority in Filipino culture. This may discourage students from identifying their contributions as original, even when they adapt solutions innovatively or from proposing novel ideas that could be seen as stepping outside expected roles or disrupting group consensus (Alampay, 2013). Furthermore, students may perceive the item “*I can identify issues that are important for a disadvantaged community*” from the civic orientation and engagement subscale as more abstract or less relatable due to unfamiliarity and limited exposure (Butcher et al., 2003). Lastly, the item “*I am always motivated to learn*” may not fully portray the dimension of self-awareness within the Philippine setting, which often refers to *pakikipagkapwa* or shared identity and interconnectedness with others (Pe-Pua & Protacio-Marcelino, 2000).

However, these items are not necessarily problematic. Nonetheless, they merit further investigation in future research through qualitative feedback, cognitive interviews, or pilot testing. Retaining the items in the current scale remains justifiable because of the statistical significance observed in this study and the theoretical grounding from previous research by Lau et al. (2024a, 2024b). However, addressing these concerns in subsequent iterations may further strengthen the construct validity of the S-LOMS-SV, particularly in diverse cultural and educational contexts.

Inter-factor correlations were moderate to strong and statistically significant, affirming the convergent and divergent validity of the subscales. These results are consistent with those reported in the validation study by Lau et al. (2024a), who observed the strongest association between personal and professional skills and self-awareness ($r = .92$) and the lowest association between knowledge application and civic orientation and engagement ($r = .86$). Given that personal and professional skills inherently involve self-awareness, students with strong personal and professional skills are likely to be self-aware of their strengths, weaknesses, and interactions with others. However, knowledge application is less related to civic orientation and engagement, as the former focuses on the ability to apply learning, while the latter refers to a student's inclination to contribute to the community.

Notably, this study showed slightly lower inter-factor correlations than previous research (Lau et al., 2024a, 2024b), suggesting that students in this Philippine sample perceived the interrelatedness of the four domains to be less apparent. These differences may be due to cultural-, institutional-, or sample-specific variations. Civic orientation and engagement may be viewed as a moral duty and self-awareness as a faith-driven identity, whereas knowledge application and personal and professional skills are likely to be framed as competencies for career readiness.

This study found that the S-LOMS-SV demonstrated good-to-excellent internal consistency across the overall scale and four subscales based on Cronbach's α . The item-total correlations for the subscales also showed that the individual items were moderately to strongly related to their respective constructs. However, the values obtained in this study were slightly lower than those reported in previous studies (Lau et al., 2024a, 2024b). These differences may be attributed to several factors, including sample composition, contextual variations in service-learning design, and differing levels of student engagement. Nevertheless, all subscales in this study met or exceeded the commonly accepted threshold of .70 (DeVellis, 2012). These results confirm that the S-LOMS-SV is a reliable tool for assessing service-learning outcomes across multiple categories or domains and can be used outside the East Asian context, particularly in a Philippine setting.

Additionally, Pearson's correlation showed a positive relationship between age and student developmental outcomes in service-learning. Studies have identified that those at the age of 21 and above are more intrinsically driven by their learning than their younger counterparts, which can explain why developmental gains in service-learning are more likely observed with them (Qureshi et al., 2024; Yaban & Gaschler, 2024). In contrast, Lau and Snell (2020c) reported no significant correlations between age and service-learning outcomes across any of the categories or domains of the original 56-item S-LOMS. This discrepancy may be attributed to the greater age variability in the current sample or differences in cultural, institutional, or programmatic contexts. In the Philippines, greater responsibilities in the family and

community are associated with age (Alampay, 2013). As students mature, they are further socialized in the broader narratives of social justice and solidarity that frame nation-building (Shriberg et al., 2008). While not directly compared with the full 56-item S-LOMS in this study, the short version may have also demonstrated better sensitivity by including items with the strongest psychometric properties, based on previous research by Lau et al. (2024a, 2024b).

In this study, significant gender differences existed in terms of civic orientation and engagement, with females faring better than males in the relational and affective components of community engagement. In their analysis of the 56-item S-LOMS, Lau and Snell (2020c) found that female students had a greater sense of social responsibility than their male counterparts. This may stem from gender socialization, in which empathy, shared responsibility, and care-oriented values are emphasized more heavily for females. Gender roles in the Philippines shaped by historical patterns of women in grassroots organizations can be contributory as well (Roces, 2012; Silliman, 1998). However, one notable contrast is that Lau and Snell (2020c) found a significant gender difference in self-awareness. Such discrepancies may reflect differences in sample characteristics or how self-awareness in Filipino culture is often relational, regardless of gender (Pe-Pua & Protacio-Marcelino, 2000).

While previous research supported the general applicability of S-LOMS across disciplines, the results from this study indicate that differences can emerge, particularly when discipline-specific learning goals align closely with the aims of service-learning (Lau & Snell, 2020c). The present study suggests that students in fields with a stronger orientation toward community interaction or applied services, such as social sciences and health, may perceive greater developmental gains from service-learning, especially in knowledge application and civic orientation and engagement. These results are likely reflective of disciplinary values and curricular emphasis on social responsibility and community engagement. Although no comparison was made with the original 56-item S-LOMS in this study, the short version may have also detected differences by discipline because of its focused structure and refined item selection as a result of the research done by Lau et al. (2024a, 2024b).

While ANOVA initially implied that year level contributed to developmental gains in service-learning, ANCOVA revealed that these effects ebbed after controlling for age. These results suggest that developmental stages, rather than curricular progression, can better explain student outcomes from service-learning.

Lastly, students with prior service-learning experience demonstrated significantly higher scores in knowledge application, personal and professional skills, and self-awareness than those currently involved in service-learning. These results suggest that developmental gains from service-learning may accumulate over time or be more fully appreciated. No significant differences emerged in civic orientation and engagement, although this trend favored those with prior experience. In a study by Lau et al. (2020b), students who had just completed service-learning scored the highest, followed by students with previous experience and those without experience. The discrepancy in results likely stems from classifying the current participants in this study as those presently enrolled in a service-learning course, who have not yet completed their experience. Students may also have internalized and reported stronger developmental outcomes after sufficient time has passed to reflect on and connect their service-learning experiences to academic, personal, and professional growth. However, the absence of a significant difference in civic orientation and engagement suggests that direct community interaction may immediately influence civic learning.

Implications

This study supports the theoretical relevance of S-LOMS-SV as a multidimensional framework for understanding student developmental outcomes from service-learning. Confirmatory factor analysis reinforced the hypothesized four-factor model, aligning with established service-learning and student development theories. However, this instrument, originally validated in Confucian societies, may require contextual adaptation to align with the Philippines' democratic and justice-oriented traditions.

The results showed that certain items from S-LOMS-SV may resonate differently in Philippine society, where collective struggle, faith-based values, and social transformation are central. The identification of four items with relatively lower factor loadings suggests that, although the theoretical structure is sound, certain measurement indicators may be context-sensitive. These nuances invite further theoretical work to refine the conceptual definitions and dimensions of developmental outcomes arising from service-learning in non-Confucian societies and diverse learning environments.

From a practical perspective, the results offer clear guidance for improving the instructional design and program evaluation of service-learning. By paying closer attention to the justice-oriented and faith-driven dimensions of service-learning, program designers can ensure that service-learning is aligned with Filipino values and traditions of solidarity. This alignment between service-learning and local cultural norms could enhance student engagement and the overall effectiveness of such programs in the Philippines. Furthermore, the ability of the S-LOMS-SV to detect differences by age, gender, discipline, and participation strengthens its use as a diagnostic and evaluative tool. Data from S-LOMS-SV can inform program designers on how to structure service-learning to meet the educational needs of diverse students.

The results showed that older students may be more prepared to meaningfully engage in service-learning and derive deeper academic and personal insights. Therefore, program designers should consider tailoring curricula to different age-groups. More guided reflection or structured orientation can be incorporated for younger students. In comparison, greater autonomy and complexity can be provided to older students to match their increasing cognitive, academic, and emotional maturity. Recognizing students' developmental stages can help them benefit more from service-learning and better prepare them for the responsibilities of citizenship and professional life. Exploring the interplay among intrinsic motivation, age, and service-learning outcomes could offer valuable perspectives for enhancing program design and implementation.

The observed gender differences, particularly the higher scores of female students in civic orientation and engagement, suggest the influence of socialization on developmental outcomes. Service-learning practitioners may consider paying closer attention to male students through scaffolding so that they may fully benefit from community engagement.

This study also suggests that students' academic discipline plays a meaningful role in shaping their perceived learning outcomes from service-learning. Program designers may consider aligning service-learning tasks directly with the disciplinary competencies and values. They can intentionally integrate more opportunities for students to engage with marginalized communities to raise their civic awareness and challenge them to apply their learning in response to the needs of these communities.

Finally, this study suggests that students may internalize and report stronger developmental outcomes after sufficient time has passed to reflect on and connect their experiences in service-learning to academic, personal, and professional growth. Hence, evaluations conducted immediately after course completion or during course participation may underestimate the full impact of service-learning. Longitudinal tracking may provide more accurate insights into the developmental outcomes of service-learning. Supporting students in making sense of their experiences in service-learning after course completion may be necessary for them to fully benefit from community engagement.

Limitations and Further Research

This study offers promising evidence for the validity, reliability, and sensitivity of the S-LOMS-SV in non-East Asian contexts, such as the Philippine setting. However, this study had several limitations that future research could address.

First, the use of a convenience sample drawn from a single university limits the generalizability of the findings. Future studies should involve institutions across regions, sectors, and cultural settings in order to test the scale's cross-institutional applicability and robustness in non-Confucian contexts.

Second, this study adopted a cross-sectional design, providing only a snapshot of student developmental outcomes at a single time. As developmental gains from service-learning may emerge or deepen over time, longitudinal research designs are recommended to monitor changes in student outcomes.

Third, while confirmatory factor analysis confirmed the hypothesized four-factor structure, several items with relatively low factor loadings suggested potential conceptual ambiguity or context sensitivity. Further validation could incorporate qualitative methods, such as cognitive interviews or focus group discussions, to explore how students interpret these items and whether certain constructs require rewording or contextual adaptation.

Fourth, a direct comparison with the original 56-item S-LOMS was not performed in this study. While the S-LOMS-SV demonstrated adequate psychometric properties and cultural relevance in the Philippine context, drawing conclusions about its relative sensitivity or comprehensiveness can be difficult without direct comparison between the original and short versions. Future research should, therefore, conduct comparative validation studies to examine whether the original and short versions capture outcomes similarly across cultural contexts or whether one provides advantages in terms of applicability and practicality in program evaluation.

Fifth, this study relied solely on self-reported measures, which may have been influenced by a social desirability bias. While this limitation cannot be fully resolved, triangulation with qualitative or observational data can complement and strengthen the self-reported findings.

Finally, while group comparisons by age, gender, discipline, and participation status yielded meaningful differences, this study did not fully explore the interactions among these variables or how different program designs and community contexts may moderate the outcomes. Future research could employ moderation or mediation analyses to examine more complex relationships and contextual factors that facilitate student learning through service-learning.

Conclusion

This study provides preliminary evidence supporting the validity and reliability of the S-LOMS-SV, affirming its usefulness as a multidimensional measure of service-learning outcomes among students from outside East Asia, such as the Philippines. The S-LOMS-SV is also sensitive in detecting meaningful differences in developmental gains from community engagement in service-learning according to age, gender, disciplinary background, and participation. These findings contribute to the growing body of knowledge on service-learning assessments and offer valuable insights for enhancing the design and evaluation of service-learning programs in diverse cultural and educational settings.

Declaration of Competing Interests

The authors declare that they have no conflict of interest.

Declaration of Use of Generative Artificial Intelligence

Paperpal was used in literature search and language editing.

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