Service-Learning Outcomes Measurement Scale

— Short Version (S-LOMS-SV)

The User Manual

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Service-Learning Outcomes Measurement Scale – Short Version (S-LOMS-SV): The User Manual

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FOREWORD

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Our world today is confronted with a multitude of critical challenges such as climate change, widening rift of inequality and escalating geopolitical tensions. These challenges are of an unprecedented complexity and require cross-sector collaboration and transdisciplinary solutions. More than ever, our leaders of tomorrow must develop an understanding of the trends that are continuously reshaping the contours of our world and the catalysts needed for transformative changes.

In this context, Hong Kong Baptist University (HKBU) is committed to providing best student experience and cultivating well-rounded graduates who can help shape a better future. We envision our students as harbingers of change, equipped with a broad knowledge base, diverse competencies, and essential attributes that will enable them to drive societal advancement. One cornerstone of our educational framework is academic service-learning, a pedagogy that underscores our commitment to nurturing empathetic individuals who are attuned to their social responsibilities and possess the problem-solving skills necessary to navigate and tackle the complexities of our era. Through service-learning, we strive to merge rigorous academic study with contextualised learning, preparing our students to address the unmet needs of our communities.

As with all pedagogies, service-learning requires reliable and valid measurement instruments to gauge its effectiveness and inform future planning. The launch of the validated Service-Learning Outcomes Measurement Scale (S-LOMS) in 2019 allowed educators to evaluate their curricula and approaches. Building on this, HKBU took the lead in 2023 to enhance its portability and applicability by developing a revised version, namely the S-LOMS-Short Version (S-LOMS-SV).

The goal is to enhance the evaluation of service-learning impacts and foster its integration into evidence-based practices in actual educational settings. We are confident that the S-LOMS-SV will benefit all service-learning communities by providing a more effective and accessible evaluation tool.

I would like to commend the Research Team for their valuable contribution in this project: Prof Robin Snell from The Hang Seng University of Hong Kong, Prof Carol Ma from The Singapore University of Social Sciences, Dr Lisa Lam and Mr Calvin Lau from Hong Kong Baptist University, as well as the researchers and practitioners who have contributed to the development of the S-LOMS-SV. I am also deeply grateful for the unwavering support and devotion of our instructors and students, donors, community partners, supporters and friends.

PREFACE

Dr Lisa LAM, SFHEA

Director, Centre for Innovative Service-Learning
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On behalf of the Centre for Innovative Service-Learning (CISL) at Hong Kong Baptist University (HKBU), I am pleased to present the Service-Learning Outcomes Measurement Scale – Short Version (S-LOMS-SV) to the service-learning communities in Hong Kong and beyond. This project represents our commitment to enhancing the best practices in academic service-learning both locally and globally.

Since its inception in December 2017, CISL has been focusing on integrating academic service-learning into the formal curriculum. A key mission for us has been the development of robust methods to review, evaluate and benchmark not only our students' learning processes and outcomes, but also the pedagogical efficacy of service-learning. In 2019, a cross-institutional project funded by the University Grants Committee (UGC) of the HKSAR government, which HKBU participated in, produced the measurement tool S-LOMS for the Hong Kong and Asian contexts. By 2021, HKBU had transitioned to using S-LOMS in place of the Common Outcome Measurement (COM) Survey to gauge the student learning outcomes in service-learning.

Building on our experience, CISL spearheaded a collaborative project to refine S-LOMS for greater portability and usability. The result is the S-LOMS-SV, comprising 21 items that retains the integrity and psychometric soundness of the original to capture the three fundamental educational outcomes of service-learning: academic achievement, civic engagement and personal growth. This endeavour was underpinned by a rigorous validation process that drew on both historical and new datasets, with contributions from 14 seasoned service-learning scholars, practitioners and experts from Hong Kong, Singapore and the

United States. The S-LOMS-SV is designed to promote broader adoption, simplify evidence collection and enable benchmarking across institutions, thereby fostering the ongoing development of service-learning — a pedagogy that has demonstrably enhanced student development.

I would like to extend my heartfelt appreciation to my Research Team fellows, Prof Robin Snell, Prof Carol Ma and Mr Calvin Lau, as well as the community of service-learning professionals whose expertise has been instrumental in the creation of the S-LOMS-SV. I am also grateful for the support and commitment of the HKBU senior management and all service-learning instructors and students, our cherished community partners and donors, and my dedicated CISL team, whose concerted efforts have been essential in advancing the reach and influence of service-learning at HKBU.

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OVERVIEW

The higher education system of Hong Kong began to adopt service-learning at the dawn of the 21st century. Initially, this was a kind of supplement to its regular curriculum but then it gradually developed into a credit-bearing programme, which serves as an integral part of the undergraduate education (Lau & Snell, 2021; Ma, 2018). Through service-learning, students are able to acquire unique experience, knowledge and skills distinct from their regular major studies, especially regarding personal, professional, and civic learning. As of today, service-learning has been employed by all public and various private universities in Hong Kong. Among them, some have made service-learning a graduation requirement for their undergraduate students, indicating its indispensable role in higher education nowadays.
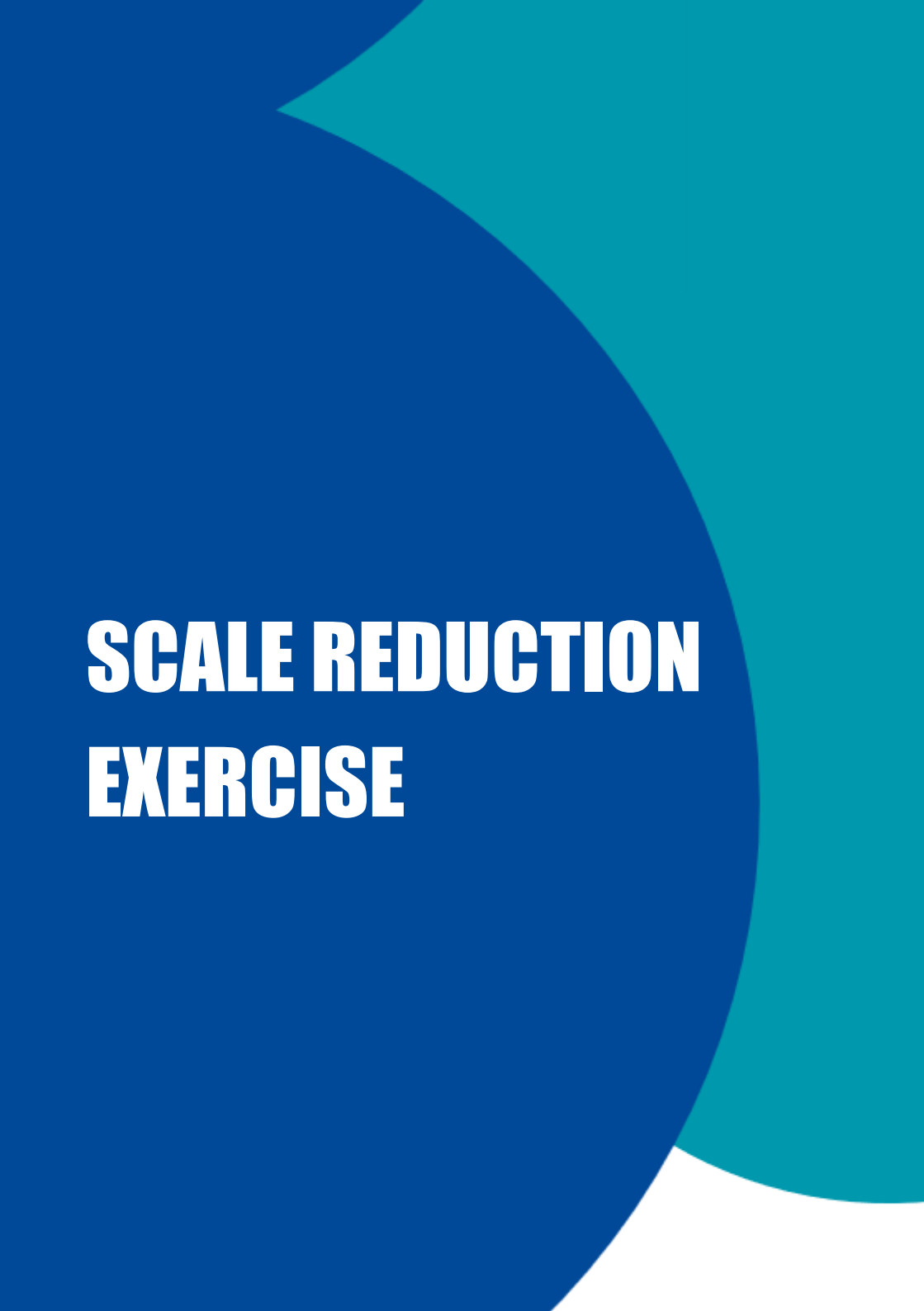
Despite being well received and widely adopted, the development of service-learning in Hong Kong has been hindered by several obstacles. One of them has been the lack of a comprehensive, standardised, and validated assessment tool to measure student developmental outcomes arising from service-learning. To address this need, the Service-Learning Outcomes Measurement Scale (S-LOMS) was developed since 2018, through a cross-institutional service-learning development project funded by the University Grants Committees of the HKSAR government (Lau & Snell, 2020a). Systematically developed and well-validated, S-LOMS has been used by various local universities and overseas institutions across Asia. In addition to its original English version, a Chinese version was also developed to facilitate adoption in Chinese speaking populations (Lau et al., 2022). With various service-learning programmes and research studies using the same assessment tool, a centralised database can be developed, and results can be compared, facilitating the further development of service-learning in Asia.

S-LOMS was designed and developed as a research tool, able to provide comprehensive and reliable data through its 56 items, encompassing 11 developmental domains under four overarching categories. Besides, researchers and practitioners can select the developmental domains at their discretion to fulfil their purposes, directly relieving survey burden. Nevertheless, some service-learning teachers and school administrators consider S-LOMS too lengthy, especially if used alongside other measures, which is a common design in

evaluation exercises. This obstacle, therefore, constrains S-LOMS from being more widely used for course evaluation and quality assurance purposes, impeding its role in further advancing service-learning in Hong Kong and beyond.

In light of this issue, the Centre for Innovative Service-Learning of Hong Kong Baptist University decided to fund the project of developing a shortened version of S-LOMS. This project aimed to shorten S-LOMS for easy adoption in course evaluation and quality assurance, without compromising the psychometric properties of the original full version.

This manual explains the process and report the results of this project, with the short version of S-LOMS, named S-LOMS-SV, in English and Chinese provided for the service-learning community to adopt. Moreover, the validation results with psychometric properties are reported and administration guidelines are offered.

SCALE REDUCTION EXERCISE

The scale reduction exercise employed both a qualitative and quantitative approach, based on recommendations from past literature that sole reliance on a quantitative approach by only considering item-total correlations would undesirably reduce the content coverage of the resultant shortened scale. We considered that it would be much better if the reduction exercise also takes into account content analysis with an expert-based approach (Coste et al., 2013; Smith et al., 2000). Accordingly, the original S-LOMS was first reviewed by an expert committee, comprising 14 seasoned service-learning researchers and practitioners from Asia and North America. They were from various disciplines, including humanities, science, social sciences, and business, and many of them occupied university senior management roles, overseeing service-learning and/ or student development. We believe that the expertise of this committee was a credible foundation for conducting content analysis of S-LOMS and for advising on which items should be retained for the short version.

The content analysis involved each committee member answering a content validity survey. In the survey, members were presented with each item of S-LOMS in turn, along with the definitions of the developmental domain to which that item belongs, and of the overarching category to which that domain belongs. On a 4-point Likert scale (1="strongly disagree", 2="slightly disagree", 3="slightly agree", and 4=strongly agree") they were asked to rate the following two statements: (A) "this item is core to the domain that it represents" and (B) "I would prioritise retaining this item in preference to other items within the same domain". Those members, who selected 1 (strongly disagree) in response to statement B, thereby indicating a strong preference of dropping an item, were asked to answer follow-up open-ended questions that prompted them to provide reasons.

Based on members' responses to statement A, a relevancy index was calculated by dividing the number of the members who selected 3 (slightly agree) or 4 (strongly agree) by the total number of members. A similar calculation was undertaken to obtain a retention index, based on members' responses to statement B. These two indices are both akin to a Content Validity Index (CVI) (see Lynn, 1986).

The research team for the scale reduction exercise, consisting of this manual's authors, reviewed and discussed the survey results, item by item, to determine which items should be retained for the draft S-LOMS-SV. In arriving at their decisions, the team referred to the following criteria: (1) the baselines for the relevancy and retention indices; (2) the item's psychometric properties in previous studies of S-LOMS; (3) the content coverage of the shortlisted items; (4) conciseness in length for the shortened scale; and (5) discarding those items carrying meaning applicable to multiple learning domains.

Through this procedure, 21 items from the original 56-item S-LOMS were selected to form the S-LOMS-SV. Please refer to Table 1 for the content validity survey results, in terms of the relevancy and retention indices of the S-LOMS-SV's items. Because of the need for conciseness in scale length, some developmental domains only contain one or two items and hence validation and analysis cannot be performed at the developmental domain level. Notwithstanding this limitation, as far as possible the factor structure of the overarching category level was preserved to align with that of the original S-LOMS. In the S-LOMS-SV, the components of the four overarching categories are: a) knowledge application (3 items); b) personal and professional skills (8 items); civic orientation and engagement (6 items); and self-awareness (4 items). The following section reports the validation procedures and results of the S-LOMS-SV with historical data and a new sample. For the details of the content analysis study, please refer to the paper by Lau et al. (in press).

Item	Overarching Category/Item	Relevancy Index	Retention Index
	Knowledge Application	***88%***	***90%***
01	I know how to apply what I learn in class to solve real-life problems.	86%	86%
02	I am able to apply/integrate classroom knowledge to deal with complex issues.	93%	93%
03	I know how to transfer knowledge and skills from one setting to another.	86%	93%
	Personal & Professional Skills	***96%***	***94%***
04	I am able to generate original ideas.	100%	86%
05	I feel confident in identifying the core of a problem.	86%	93%
06	I often modify my strategies to solve a problem when the situation changes.	100%	100%
07	I am good at building relationships between people.	100%	100%
08	I am good at resolving conflicts.	93%	86%
09	I am confident in leading others toward common goals.	100%	93%
10	I reflect on myself regularly.	93%	93%
11	I often look at complex issues from different angles.	100%	100%
	Civic Orientation & Engagement	***100%***	***96%***
12	I will contribute my abilities to make the community a better place.	100%	100%
13	I can identify issues that are important for a disadvantaged community.	100%	100%
14	I respect the needs of people from different backgrounds.	100%	93%
15	I care about others.	100%	93%
16	I observe others' feelings and emotions.	100%	93%
17	I believe that taking care of people who are in need is everyone's responsibility.	100%	100%

Item	Overarching Category/Item	Relevancy Index	Retention Index
	Self-awareness	*100%*	*95%*
18	I am positive about myself.	100%	93%
19	I know my strengths and weaknesses.	100%	93%
20	I have a clear understanding of my own values and principles.	100%	100%
21	I am always motivated to learn.	100%	93%
	S-LOMS-SV	**97%**	**94%**

Table 1. The Content Validity Survey Results

Source: Lau et al. (in press)

SCALE VALIDATION

VALIDATION WITH HISTORICAL DATA

After the above survey by the expert committee members established content validity for the S-LOMS-SV, the latter was then subjected to validation tests with historical data, as reported in detail by Lau et al. (in press), and summarised below. The validation with historical data aimed at establishing preliminary confirmation for various types of psychometric properties, before going on to conduct validation through new samples. The associated tests comprised: establishing construct validity through confirmatory factor analysis (CFA); test-retest reliability based on the intra-class correlation coefficient; criterion validity through pretest-posttest comparisons; and internal consistency based on Cronbach's alpha values.

CONSTRUCT VALIDITY

Construct validity was established through the CFA using data from a sample of 655 students from various local universities in Hong Kong collected in a previous study (Lau & Snell, 2021). The sample comprised 69% females, and 31% males, with mean age 20.7 years. The CFA employed EQS 6.4 software, under which the model specification was to load the 21 items onto their four respective overarching categories, which were then set to inter-correlate with each other. The CFA results were satisfactory. Despite significant chi-square (425.24, df=183, p<.01), other goodness of fit indices achieved satisfactory levels, including CFI (.96), NNFI (.96), and RMSEA (.05, confidence interval: .04, .05). The standardised factor loadings of items onto their corresponding overarching categories ranged between .78 and .90; whereas the inter-factor correlations among the four overarching categories scored between .79 and .92. See Table 2 for the results summary.

Overarching Category/Item	F1	F2	F3	F4	α
S-LOMS-SV					.97
Inter-factor Correlation					
F1: Knowledge Application	1				.92
F2: Personal & Professional Skills	.90	1			.95
F3: Civic Orientation & Engagement	.79	.86	1		.93
F4: Self-awareness	.84	.92	.87	1	.92
Item	**Item Factor Loading**				
01	.88				
02	.90				
03	.89				
04		.81			
05		.85			
06		.86			
07		.83			
08		.82			
09		.85			
10		.78			
11		.85			
12			.83		
13			.82		
14			.82		
15			.87		
16			.84		
17			.83		
18				.83	
19				.87	
20				.87	
21				.85	

Table 2. Confirmatory Factor Analysis Results and Reliability
Source: Lau et al. (in press)

TEST-RETEST RELIABILITY

Since the S-LOMS-SV was designed as an instrument for use in conjunction with the pretest-posttest approach, accordingly the scales have to be sensitive enough to detect the magnitude of the impact of any service-learning intervention, and stable enough in the absence of any such intervention. To this end, test-retest reliability validation was performed to test the scale's stability over the period of two weeks during which there was no service-learning exposure for respondents. Data from a sample of 122 Hong Kong based university students, comprising 75% females, 25% males, with mean age 20.4 years, from the study by Lau and Snell (2020b) were employed for this test with software SPSS 29.0. Intra-class correlation coefficients (ICCs) were obtained for the S-LOMS-SV scale and for the four overarching categories, showing moderate towards good levels of test-retest reliability between .66 and .79 (Koo & Li, 2016). Table 3 illustrated the results in detail.

Overarching Category	Test-retest ICC (95% confidence interval)
Knowledge Application	.66 (.55, .75)
Personal & Professional Skills	.71 (.61, .79)
Civic Orientation & Engagement	.79 (.72, .85)
Self-awareness	.71 (.61, .79)
S-LOMS-SV	**.76 (.68, .83)**

Table 3. Test-retest Reliability Results.
Source: Lau et al. (in press)

CRITERION VALIDITY: PRETEST-POSTTEST COMPARISONS

With the S-LOMS-SV scale's stability confirmed, the next step was to test the scale's sensitivity to fulfil criterion validity. Specifically, if the scale works, it should be able to demonstrate service-learning effectiveness through pretest-posttest differences. To this end, the above-mentioned sample of 655 students that was used for the CFA was employed again. As reported by Lau & Snell (2021), the students had provided pretest data (collected before their service-learning programmes and courses had commenced), and they had been asked to complete the same items after the programmes and courses had finished as the posttest data. Paired t-tests performed by SPSS 29.0 indicated significant differences for each of the four overarching categories as well as for the entire scale, with close to and above moderate effect sizes revealed by the Cohen's d-value (Cohen, 1988). Table 4 below reports the results.

Overarching Category	Mean		d-value
	Pretest	Posttest	
Knowledge Application	6.75	7.50	.61**
Personal & Professional Skills	6.92	7.65	.64**
Civic Orientation & Engagement	7.29	7.88	.52**
Self-awareness	7.10	7.69	.49**
S-LOMS-SV	**7.04**	**7.70**	**.66****

Table 4. Pretest-posttest Comparison Results.
d-value denotes the Cohen's d-value which indicates the pretest-posttest comparison effect size. The d-value reaching .20, .50 and .80 indicates the small, moderate, and large effect size respectively.
The " ** " indicate the pretest-posttest comparison was statistically significant at the .01 level.
Source: Lau et al. (in press)

CONCLUSION

To conclude, preliminary validity and reliability was established for the S-LOMS-SV via the above validation through historical data. Next, we moved on to test the S-LOMS-SV through a new sample of students who only completed the 21 shortlisted items, and who thus could not have been influenced by the other discarded items.

VALIDATION WITH A NEW SAMPLE

The S-LOMS-SV was then put on a pilot test with a new sample of 970 students from Hong Kong Baptist University (HKBU, n=578, females: 65%, males: 35%, mean age: 21.0 years), The Hang Seng University of Hong Kong (HSU, n=356, , females: 56%, males: 44%, mean age: 21.3 years), and The Singapore University of Social Sciences (SUSS, n=36, , females: 69%, males: 31%, modal age group: 26-45 years, 61%). They enrolled in the pilot test on a voluntary basis, and answered the S-LOMS-SV twice, i.e., before (pretest phase: 970 respondents) and after their service-learning courses or programmes (posttest phase: 657 respondents), resulting in 511 matched pairs between the two phases. Detailed validation results are reported in the paper by Lau et al. (2024).

CONSTRUCT VALIDITY

The CFA with the overall sample (n=970) collected from the pretest phase indicated marginally satisfactory results, with the chi-square test rejected (655.78, df = 176, p < .01). Other fit indices reached or nearly reached satisfactory levels (NNFI=.94; CFI=.95; IFI=.95; RMSEA = .05, confidence interval: .05, .06), with several error covariances between items from the same or higher-level developmental domains in the original S-LOMS needing to be added. The items' loading values for their respective categories were between .71 and .92; whereas the inter-factor correlations among the four overarching categories between .68 and .90. For details, please refer to Table 6.

To confirm the model stability, a multi-sample analysis by both gender and school (HKBU vs. HSU vs. SUSS) was conducted and showed satisfactory results, with overall factor structures yielding similar goodness of fit to that of the overall sample as reported earlier. In the subsequent steps of further restricting other model criteria, including factor loadings, factor correlations, error variances, and error covariances, the analysis by gender was able to produce satisfactory results for all the above restrictions, while the analysis by school produced similar results except the criteria of equivalent error variances and covariances. These results indicated that the model has good factor structure stability across gender and school. Moreover, the between school comparisons also provided evidence for preliminary cross-cultural validity for the S-LOMS-SV, by considering that the SUSS respondents represented the Singapore sample,

despite its small sample size.

Overarching Category/Item	F1	F2	F3	F4	α
S-LOMS-SV					.97
Inter-factor Correlation					
F1: Knowledge Application	1				.91
F2: Personal & Professional Skills	.90	1			.93
F3: Civic Orientation & Engagement	.74	.89	1		.93
F4: Self-awareness	.68	.85	..87	1	.89
Item	**Item Factor Loading**				
01	.81				
02	.86				
03	.92				
04		.78			
05		.83			
06		.85			
07		.71			
08		.77			
09		.79			
10		.71			
11		.79			
12			.83		
13			.82		
14			.78		
15			.82		
16			.81		
17			.82		
18				.80	
19				.87	
20				.87	
21				.76	

Table 6. Confirmatory Factor Analysis Results & Reliability
Source: Lau et al. (2024)

RELIABILITY

The reliability for the S-LOMS-SV, indicated by Cronbach's alpha values, showed satisfactory results for both the pretest and posttest data. The values of .97 and .98 were obtained for the pretest and posttest phases at the scale level, and between .89 and .95 for the four overarching categories. The reliability by gender, school, and region also showed similar findings. See Table 7 for the details.

Pretest	Overall	Male	Female	HKBU	HSU	Hong Kong	SUSS (Singapore)
Sample size	970	370	600	578	356	934	36
Knowledge Application	.91	.92	.91	.90	.92	.91	.97
Personal & Professional Skills	.93	.93	.93	.93	.93	.93	.98
Civic Orientation & Engagement	.93	.93	.92	.92	.92	.92	.96
Self-awareness	.89	.89	.90	.89	.89	.89	.96
S-LOMS-SV	**.97**	**.97**	**.97**	**.97**	**.97**	**.97**	**.99**
Posttest	Overall	Male	Female	HKBU	HSU	Hong Kong	SUSS (Singapore)
Sample size	657	245	412	382	241	623	34
Knowledge Application	.93	.93	.92	.93	.92	.93	.97
Personal & Professional Skills	.95	.95	.95	.95	.94	.95	.97
Civic Orientation & Engagement	.94	.95	.94	.95	.93	.94	.94
Self-awareness	.91	.91	.91	.92	.89	.91	.89
S-LOMS-SV	**.98**	**.98**	**.97**	**.98**	**.97**	**.98**	**.96**

Table 7. Reliability Results
Source: Lau et al. (2024)

CRITERION VALIDITY: PRETEST-POSTTEST COMPARISONS

Comparing between pretest and posttest data from the matched respondents (n=511) at the item level obtained satisfactory results with posttest scores statistically significantly higher than the pretest scores derived from the paired t-test at overarching category, and scale levels. This results thus indicate that student development gained from the service-learning intervention (see Table 8 for details).

Category/Item	Overall (n=511)			HK (HKBU & HSU) (n=477)			Singapore (SUSS) (n=34)		
	Pretest	Posttest	d	Pretest	Posttest	d	Pretest	Posttest	d
Knowledge Application	**6.78**	**7.56**	**.47**	**6.83**	**7.56**	**.46**	**6.13**	**7.52**	**.68**
01	6.80	7.61	.44	6.84	7.61	.43	6.18	7.59	.63
02	6.71	7.49	.42	6.76	7.49	.41	6.00	7.41	.65
03	6.83	7.58	.41	6.88	7.58	.39	6.21	7.56	.66
Personal & Professional Skills	**6.77**	**7.59**	**.61**	**6.80**	**7.57**	**.60**	**6.31**	**7.92**	**.91**
04	6.67	7.59	.48	6.72	7.59	.47	6.00	7.65	.68
05	6.66	7.56	.51	6.72	7.55	.49	5.82	7.74	.82
06	6.77	7.64	.53	6.81	7.61	.50	6.35	7.97	.86
07	6.76	7.62	.50	6.78	7.58	.46	6.50	8.24	.97
08	6.66	7.48	.49	6.71	7.46	.46	5.97	7.68	.91
09	6.55	7.48	.52	6.56	7.46	.51	6.35	7.74	.73
10	7.15	7.74	.36	7.18	7.70	.33	6.85	8.24	.78
11	6.90	7.64	.47	6.92	7.61	.44	6.62	8.12	.91
Civic Orientation & Engagement	**7.20**	**7.82**	**.48**	**7.22**	**7.77**	**.45**	**7.01**	**8.45**	**.83**
12	6.89	7.59	.43	6.88	7.54	.40	7.00	8.32	.75
13	6.72	7.49	.47	6.74	7.45	.45	6.44	7.91	.75
14	7.59	8.07	.31	7.61	8.04	.28	7.21	8.53	.67
15	7.32	7.93	.38	7.32	7.88	.35	7.26	8.68	.72
16	7.46	8.01	.33	7.49	7.97	.29	7.03	8.62	.79
17	7.26	7.80	.34	7.26	7.75	.31	7.15	8.62	.71
Self-awareness	**7.00**	**7.67**	**.52**	**6.98**	**7.62**	**.52**	**7.29**	**8.38**	**.62**
18	6.92	7.58	.41	6.91	7.53	.39	7.12	8.26	.61
19	7.10	7.74	.41	7.10	7.70	.38	7.06	8.35	.74
20	7.13	7.75	.41	7.12	7.69	.39	7.32	8.47	.70
21	6.83	7.60	.45	6.77	7.55	.46	7.65	8.44	.35
S-LOMS-SV	**6.94**	**7.67**	**.61**	**6.96**	**7.63**	**.60**	**6.67**	**8.10**	**.87**

Table 8. Pretest-posttest Comparisons Results
Remark: All comparisons were statistically significant at .05 level.
"d" denotes the Cohen's d-value which indicates the pretest-posttest comparison effect size. The d-value reaching .20, .50 and .80 indicates the small, moderate, and large effect size respectively.
Source: Lau et al. (2024)

CRITERION VALIDITY: KNOWN-GROUP ANALYSES

The known-group analyses employed the Hong Kong sample. The respondents (n=692) were divided into two groups: those without prior service-learning experience (n=354) and those with prior service-learning experience (n=338). It was hypothesised that the S-LOMS-SV scores of those with prior service-learning experience should be higher than those without, which was confirmed by the independent t-test with results shown in Table 9.

CRITERION VALIDITY: PREDICTING STUDENT DEVELOPMENTAL OUTCOMES BY SERVICE-LEARNING EXPERIENCE

We employed structural equation modelling (SEM) to use the respondents' service-learning experience ratings to predict their developmental outcomes. Apart from the S-LOMS-SV, the Hong Kong sample (n=477) respondents in the posttest phase also answered the Experience Questionnaire, an additional 12-item scale in Likert scale format concerning four aspects of student service-learning experience. The first aspect was service design, including applying course knowledge in service, challenging and meaningful service, service allowing interaction with people from different backgrounds, student reflection under clear guidance, and student participating in service design. The second aspect concerned training and support provided to students. The third aspect covered student effort and workload devoted to service, and service duration. The fourth aspect concerned impacts on community partners and the community, as perceived by students. Confirmatory factor analysis (CFA) results (NNFI=.97; CFI=.98; RMSEA=.06, confidence interval: .05, .07; item factor loading ranged between .79 to .95) and Cronbach's alpha values (.90 to .94 for the four aspects, and .97 for the whole scale) confirmed the Experience Questionnaire's validity and reliability with satisfactory results.

A model was constructed by loading the factor "service-learning experience" on the mean scores of the four aforementioned aspects from the Experience Questionnaire, which predicted the factor "student developmental outcomes", loaded on the mean scores of the four overarching categories collected through the S-LOMS-SV. Excellent model's goodness of fit was obtained (S-B χ^2 =

Overarching Category/Item	Mean		d-value
	Without S-L Experience (n=354)	With S-L Experience (n=338)	
Knowledge Application	**6.71**	**6.97**	**.17**
01	6.70	6.98	.16
02	6.64	6.90	.15
03	6.77	7.03	.16
Personal & Professional Skills	**6.69**	**7.01**	**.25**
04	6.63	6.93	.19
05	6.63	6.91	.18
06	6.63	6.98	.23
07	6.69	7.01	.19
08	6.60	6.93	.20
09	6.47	6.89	.25
10	7.00	7.34	.21
11	6.86	7.09	.15
Civic Orientation & Engagement	**7.08**	**7.34**	**.19**
12	6.72	7.07	.22
13	6.70	6.88	.11
14	7.45	7.64	.12
15	7.14	7.52	.23
16	7.34	7.59	.15
17	7.10	7.36	.15
Self-awareness	**6.82**	**7.13**	**.21**
18	6.74	7.07	.18
19	7.00	7.22	.14
20	7.01	7.26	.16
21	6.54	6.99	.25
S-LOMS-SV	**6.83**	**7.12**	**.23**

Table 9. Known-group Analysis Results
Remark: All comparisons were statistically significant at .05 level, except item 13, 14 and 19.
d-value denotes the Cohen d's value which indicates the comparison effect size. The d-value reaching .20, .50 and .80 indicates the small, moderate, and large effect size respectively.
Source: Lau et al. (2024)

26.38, df = 17, p = .07; NNFI=.99; CFI=1.00; IFI=1.00; RMSEA = .03, confidence interval: .00, .06). To conclude, service-learning experience was able with statistical significance to predict student developmental outcomes with 25% (path coefficient=.50) of the R-square. The above results further established the criterion validity of the S-LOMS-SV .

CONCLUSION

The above CFAs and multi-sample analyses on the overall sample and sub-samples by gender and school confirmed the construct validity of the S-LOMS-SV, while Cronbach's alpha values supported satisfactory reliability for the scale and its overarching categories. Further evidence provided by pretest-posttest comparisons, known-group analyses, and the SEM using service-learning experience to predict student developmental outcomes revealed the satisfactory criterion validity of the S-LOMS-SV in measuring developmental effects arising from service-learning. This is consistent with the findings of prior research that service-learning experience is conducive and important to student developmental outcomes (Melchior & Bailis, 2002; Ngai et al., 2018; Snell & Lau, 2022). Moreover, the above results provided preliminarily support for the scale's cross-cultural validity in a jurisdiction (Singapore in the current study) beyond Hong Kong. To conclude, this validation exercise with a new sample obtained satisfactory results, thereby confirming the validity and reliability of the S-LOMS-SV.

SCALE CONSTRUCT DEFINITIONS

This section elaborates the construct definitions for the overarching categories, as reference points for users when selecting categories for their own investigations.

No	Overarching Category	Abb	Construct Definitions
1	Knowledge Application	KA	The extent to which a student can apply subject knowledge to practical, real-life situations and problems.
2	Personal & Professional Skills	PPS	The extent to which a student possesses soft skills which cannot be easily learnt from lectures and books alone, but which are conducive to personal and professional development.
3	Civic Orientation & Engagement	COE	The extent to which a student cares about well-being in the broader community and seeks to engage constructively in community affairs.
4	Self-awareness	SA	The extent to which a student is aware of their own strengths and weaknesses in terms of abilities and personal attributes.

SCALE

ADMINISTRATION

FORMAT AND SCORING

The S-LOMS-SV comprises 21 self-description items. As with S-LOMS, the constituent items are to be rated on a 10-point Likert scale, from point 1 as "strongly disagree" to 10 as "strongly agree".

The scoring of the S-LOMS-SV follows the unweighted pretest-posttest difference mean approach. The scores for the four overarching categories are derived by averaging the scores of their constituent items. The score for the overall scale is obtained by averaging the sores of all 21 items. Missing items are excluded from the computation. The posttest minus pretest scores means indicate the pretest-posttest differences, i.e., the service-learning effectiveness, based on the perceptions of the respondents.

Item	Description	Score
1	I know how to apply what I learn in class to solve real-life problems.	7
2	I am able to apply/integrate classroom knowledge to deal with complex issues.	8
3	I know how to transfer knowledge and skills from one setting to another.	4
	The score for knowledge application = (7 + 8 + 4) / 3	**6.33**

Example 1. Scoring for the overarching category of knowledge application

Item	Description	Score
18	I am positive about myself.	7
19	I know my strengths and weaknesses.	8
20	I have a clear understanding of my own values and principles.	Missing
21	I am always motivated to learn.	9
	The score for self-awareness = (7 + 8 + 9) / 3	**8.00**

Example 2. Scoring for the overarching category of self-awareness

ADMINISTRATION METHODS

The S-LOMS-SV should be administered just before service-learning activities have commenced (pretest), and shortly after all such activities have finished (posttest). Since acquiring course knowledge for applying to service has been an essential part of service-learning, and knowledge application is one of the major developmental outcomes underpinning service-learning effectiveness in student development, it is recommended that service-learning "activities" should include associated course lectures and academic preparation and assignment. Therefore, it is suggested that the "pretest phase" to be put at the very beginning of the service-learning courses and programmes, while the "posttest phase" can be set at the conclusion of the last lectures or activities of such courses and programmes.

For the pretest-posttest approach, the administration of the S-LOMS-SV requires administrators to obtain identifier information in order to be able to match the pretest and posttest data collected from the same respondent, so that the pretest-posttest differences can be computed. It is therefore advised that assurance of data confidentiality should be highlighted instead of promising that the survey is anonymous, to motivate higher response rates and obtain better data quality.

As with S-LOMS, researchers and service-learning practitioners can choose to collect data about all or some overarching categories of the S-LOMS-SV at their discretion, as the scale allows such flexibility. That said, since the S-LOMS-SV scale has been streamlined to 21 items and covers all the core service-learning developmental outcomes for students, we recommend using the entire S-LOMS-SV scale, as a credible source of data for quality assurance purposes.

For those service-learning researchers, who are interested in investigating outcomes for one of more particular developmental domains, we encourage selection of items for those developmental domains from the original 56-item S-LOMS. For example, to measure social innovation, the researcher may consider choosing all the items contained within S-LOMS for creative problem solving skills, critical thinking skills, and self-reflection skills, as separate measures for these three domains can then be obtained. Conversely, those researchers who prefer to focus on the overarching category level are advised to use the S-LOMS-SV as it is shorter.

The S-LOMS-SV can also be administered alongside other measures, but in that event, we recommend that the 10-point Likert scale should be retained for respondents to answer, given that the S-LOMS-SV has not been validated for use with other rating formats.

THE NEXT STEPS

With the advent of the shorter version of S-LOMS-SV, which can be deployed more easily than S-LOMS in the field, we believe that collecting empirical evidence to indicate student developmental outcomes arising from service-learning will become more prevalent and well received by managements in universities and other educational institutions. Next, we are planning to establish a centralised database, so as to develop benchmarks for various specifications, such as different types of service-learning courses and programmes, as well as different levels of education in different geographical regions, To this end, we invite all of you to join this endeavour by collaborating with us to administer S-LOMS and S-LOMS-SV in your courses and programmes, and contribute your school's data to the database. If you are interested, please do not hesitate to contact this manual's authors for further details and discussion.

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APPENDCIES

S-LOMS-SV ENGLISH QUESTIONNAIRE

Please choose the appropriate scores (1: strongly disagree; 10: strongly agree) to indicate the extent to which you agree with each of the following statements.

Overarching Category/Item	Strongly disagree 1	2	3	4	5	6	7	8	9	Strongly agree 10
Knowledge Application										
01. I know how to apply what I learn in class to solve real-life problems.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
02. I am able to apply/integrate classroom knowledge to deal with complex issues.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
03. I know how to transfer knowledge and skills from one setting to another.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Personal & Professional Skills										
04. I am able to generate original ideas.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
05. I feel confident in identifying the core of a problem.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
06. I often modify my strategies to solve a problem when the situation changes.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
07. I am good at building relationships between people.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
08. I am good at resolving conflicts.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
09. I am confident in leading others toward common goals.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10. I reflect on myself regularly.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
11. I often look at complex issues from different angles.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Overarching Category/Item	Strongly disagree 1	2	3	4	5	6	7	8	9	Strongly agree 10
Civic Orientation & Engagement										
12. I will contribute my abilities to make the community a better place.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
13. I can identify issues that are important for a disadvantaged community.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
14. I respect the needs of people from different backgrounds.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
15. I care about others.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
16. I observe others' feelings and emotions.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
17. I believe that taking care of people who are in need is everyone's responsibility.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Self-awareness										
18. I am positive about myself.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
19. I know my strengths and weaknesses.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
20. I have a clear understanding of my own values and principles.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
21. I am always motivated to learn.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

S-LOMS-SV CHINESE QUESTIONNAIRE

請選擇適合的分數（1分：非常不同意；10分：非常同意）以顯示你對以下句子的同意程度。

類別/題項	非常不同意 1	2	3	4	5	6	7	8	9	非常同意 10
Knowledge Application										
01. 我可以在生活中應用課堂學到的知識以解決實際問題。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
02. 我可把課堂知識運用以應付複雜問題。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
03. 我知道如何在不同處境靈活運用知識及技能。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Personal & Professional Skills										
04. 我有創新意念。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
05. 我對指出問題的核心充滿信心。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
06. 當情況有變，我經常能夠調整策略以解決問題。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
07. 我善於與人建立關係。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
08. 我善於化解衝突。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
09. 我對領導別人邁向共同目標充滿信心。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10. 我會不時自我反省。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
11. 我經常以不同角度審視複雜的問題。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

類別/題項	非常不同意 1	2	3	4	5	6	7	8	9	非常同意 10
Civic Orientation & Engagement										
12. 我會盡力利用自己的才幹建設更好的社區。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
13. 我可指出弱勢社區所面對的重大問題。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
14. 我尊重不同背景人士的不同需要。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
15. 我關心別人。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
16. 我可察覺別人的感受及情緒。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
17. 我認為每個人均有責任幫助需受助人士。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Self-awareness										
18. 我對自己評價正面。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
19. 我知道自身的長處和短處。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
20. 我了解自身的價值觀和原則。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
21. 我有學習的動力。	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

ACCESS FOR THOSE WITH SPECIAL NEEDS OR A DISABILITY

Similar with S-LOMS, administrators of the S-LOMS-SV should ensure that all those who wish to provide their responses can do so. Some standard administration procedures may be unsuitable for those with special needs or physical challenges. For example, some individuals may not have access to a computer or electronic device for answering the S-LOMS-SV, while some with a visual impairment may be unable to read the printed questionnaire. There may also be language barriers. Processes of administration may need to be adapted to accommodate such individuals.

Possible measures for widening accessibility include providing an interpreter for those who cannot understand the language medium adopted for the S-LOMS-SV, and offering braille copies of the questionnaire for those who are visually impaired. Administrators should note that the issues mentioned here are not exhaustive. It is recommended they seek salient advice and information from student services offices (or their equivalent) and programme management offices within their institutions.