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A Common Outcome Measurement for Service-Learning in Hong Kong

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Abstract

Use of service-learning is burgeoning among higher education institutions in Hong Kong and expanding in Asia. The positive student outcomes that have been reported in Western society, however, are not as widely recognized in Asian society. Asian institutions of higher education need a standardized measurement of outcomes that will help refine the practice of service-learning, increase government funding for this pedagogy, and encourage cross-institution collaboration. This article describes the development, testing, and verification of the common outcomes measurement (COM), a tool for generating reliable data on student learning outcomes achieved through different service-learning initiatives. With nine domains and 34 items, the COM contributes to both theoretical and practical aspects of service-learning. As a verified means of measuring service-learning outcomes in Asian circumstances, the COM encourages development of quality education that can yield community impacts in Hong Kong.

Keywords: outcomes measurement, service-learning, students' learning outcomes, higher education, cross-institution

The use of service-learning as a pedagogy is burgeoning among many higher education institutions (HEIs) in Asia. HEIs are all keen to demonstrate positive learning outcomes through service-learning. Each HEI measures expected outcomes from its own perspectives. However, incompatible independent assessment practices make cross-institutional comparisons impossible. This article attempts to develop one common outcome measurement (COM) of service-learning for measuring students' learning impacts in order to foster the development of service-learning and cross-institution collaboration in Hong Kong.

Service-Learning in Asia

Service-learning has been implemented in Asia for more than 10 years. After the first Asia Pacific Regional Conference on Service-Learning organized at Lingnan University in 2017 in Hong Kong, more Asian universities from China, India, Indonesia, Japan, Korea, Myanmar, Vietnam, Singapore, the Philippines, and Taiwan have also explored various service-learning opportunities (Ma, 2018). The term *service-learning* was not new to many institutions, though it was introduced from Western society.

> Service-learning can be defined as a research-based teaching method where guided or classroom learning is applied through action that addresses an authentic community need in a process that allows for youth initiative and provides structured time for reflection on the service experience and demonstration of acquired skills and knowledge. (Kaye, 2010, p. 9)

Simply, many Asian HEIs acknowledge that "Service-Learning is a teaching method that combines academic knowledge and community service" (Ma, Chan, Liu, & Mak,

2018, p.3) yet we use different terminologies in different Asian contexts; hence, service-learning actions may be equivalent to "social concern," "community outreach," "community-based research," or "community engagement." They all embrace performing service-learning to meet community needs and to serve the community. Like many others, we believe that service-learning is a powerful and high-impact tool that combines rigorous academic study with community service. The service accomplished by students reinforces their academic learning through critical self-reflection (OSL, 2006). Positive outcomes of service-learning on students, including enhanced personal and social development, matured interpersonal and communication skills, realized life satisfaction, and enlightened academic and professional development, have been widely recognized in Western society (Astin, Vogelgesang, Ikeda, & Yee, 2000; Felten & Clayton, 2011; Steinberg, Hatcher, & Bringle, 2011; Vogelgesang & Astin, 2000). Many studies in Asia have also proven that service-learning can advance student development and help in developing students' academic knowledge, skills, and caring dispositions as well as civic learning and personal growth (Ma, Chan & Chan, 2016; Ma & Lo, 2016; Shek, Ma & Yang, 2019; Snell, Chan, & Ma, 2013). Different studies concurred that service-learning has positive impacts on students' development and learning.

At Lingnan University, service-learning is expected to be driven by the learning objectives of the contributing academic course in response to identified needs of the community through the eyes of participating students. Students have reported positive improvement in seven learning outcome indicators: subject-related knowledge, communication skills, organizational skills, problem-solving skills, social competence, research skills, and civic orientation (Chan, Lee & Ma, 2009; Ma & Chan, 2013). Continuous reflection serves as the bridge for participants to make connections between theory and service. New knowledge is generated from inside (Hargreaves, 2003); academic learning is enhanced (Astin et al., 2000; Vogelgesang & Astin, 2000), sparked through interaction, communication, and the collective formulation of new ideas (Harris, Jones, Sharma, & Kannan, 2013, p. 214). Furthermore, students' leadership skills (Snell et al., 2013) are improved, and civic engagement (Steinberg et al., 2011) is encouraged through service-learning. Having demonstrated the strength of this pedagogy, Lingnan University has taken the lead to develop the COM in collaboration with other universities in Hong Kong.

Service-Learning in Hong Kong

The terms *social service*, *community service*, and *voluntary work* have been used interchangeably among nongovernmental organizations and schools. Service-learning was first adopted as a volunteering concept in Chung Chi College of the Chinese University of Hong Kong in 1995 (Ma, 2018). Not until Lingnan University set up the first Office of Service-Learning in 2006 did the term "service-learning" grow popular and widely accepted by the community and even in schools, where they tried to embed service-learning into the curriculum. With the extensive territory-wide education reform in 2012, more universities set up their own service-learning office or experiential learning center to promote "serving to learn" and "learning to serve."

Since universities need to be audited every 5 years, outcomes measurement becomes an important indicator to show the impacts of service-learning. Many HEIs, therefore, are trying to measure outcomes according to their own belief. Standardization of declared outcomes becomes an issue when comparing different service-learning programs in Hong Kong. Without a common and standardized measurement, it would be difficult for service-learning to win trust from people who are doubtful of its usefulness and worthiness in university education, especially in Asian education. The purpose of having a standardized measurement is to help to attune service-learning outcomes in Hong Kong, persuade the government to provide more funding for the development of service-learning education, and encourage cross-institution collaboration. Thus, reliable measurement of service-learning outcomes is important among HEIs. Especially, it can be a tool for administrators and faculty to generate reliable data on student learning outcomes through service-learning initiatives.

The Development of HESLN and the Need for a Common Outcome Measurement

In an interconnected world, university graduates are expected to care about their community. This global concern is universal among tertiary institutions. Service-

learning fills the gap between academic learning and practical service. Therefore, service-learning was adopted in universities in Hong Kong, and the Higher Education Service-Learning Network (HESLN) was formed in 2009 to provide a platform to share service-learning experience and resources among local universities.

Because service-learning was a new pedagogy, HEIs needed to provide reliable data on student learning outcomes directly related to service-learning; hence, "the administrators and faculty responsible for implementing this unique pedagogical approach to student learning seek effective and efficient assessment methodologies to measure discipline-specific student experiences" (Crowe, 2003, p. 1). However, different universities had their own measurement and studies in service-learning, which unfortunately hid a deficiency in service-learning research, namely, a "tendency to report specific findings, most typically from case studies (e.g., one class, one program, one institution) without making justified generalizations about practice, theory and policy" (Bringle & Hatcher, 2000, p. 73).

A standardized technique to measure and compare the effectiveness of various service-learning programs across different organizations is long overdue. The development of a common outcomes measurement of service-learning can make a significant contribution to the field. The common outcomes measurement, as a validated tool with nine domains and 34 items, represents a milestone of service-learning development in Hong Kong, as it is not only the first collaborative research on service-learning among institutions, but also a tool that fits into Asian circumstances. It also encourages the respective institutions to think further about creating quality education and community impacts together in Hong Kong.

Methodology

Inspired by the experiences of Campus Compact (a U.S. coalition of colleges and universities dedicated to promoting community service, civic engagement, and service-learning in higher education), representatives from 10 member universities and tertiary institutions1 of the HESLN explored opportunities for collaboration between local universities in service-learning development. In 2009, they proposed to set up a large, common, cross-university, standardized database in Hong Kong to facilitate collaborative studies of the impacts of service-learning programs on students' learning outcomes.

Then, the research team looked into literature concerning the development of psychological scales (Morais & Ogden, 2011; Neff, 2003) to delineate a roadmap for generating one useful COM. Principles learned from the field of psychometrics in the development of scales were employed. The procedure was found consistent with the flowchart proposed by MacKenzie, Podsakoff, and Podsakoff (2011), except that "norm development" is not relevant to our case. Four phases were conducted from 2010 to 2012 for the development of the COM. They are, in tandem, mapping out the focus of inquiry (Phase 1), item pool generation (Phase 2), reducing and refining the scale (Phase 3), and pilot test (Phase 4).

Phase 1. Mapping out the Focus of Inquiry (Conceptualization)

HESLN enacted a panel discussion to define the boundary and focus of inquiry for research and then identified numerous items pertinent to the domains of students' learning efficacy for intended measurement. Based on this tentative database, the research team step by step reorganized and finalized questionnaire items as a recursive process, and finally built up the study framework underlying the questionnaire. With *conceptualization* as in MacKenzie et al.'s (2011) model completed, nine domains were identified based on the members' experiences: (1) self-understanding/confidence; (2) communication skills; (3) problem-solving skills; (4) civic engagement, social responsibility, and willingness to contribute; (5) team skills; (6) self-reflection; (7) general knowledge application; (8) caring for others; and (9) intercultural competence.

Phase 2. Item Pool Generation (Development of Measures)

A set of potential questionnaire items was generated based on face validity—*development of measures* in MacKenzie et al.'s (2011) model. Face validity means "quality of an indicator that makes it seem a reasonable measure of some variable" (Babbie, 2013, p. 191). By consolidating the contents of different previous studies in existing literature and questionnaires used by some local uni-

versities, the research team generated a set of scale items that were potentially useful in the COM questionnaire. A literature survey was made to locate the reference to each item in the set. Some modifications to the wording of the items were made according to the specifications of this exploration. If no reference underlying a particular item deemed indispensable was found, the item would be constructed according to our own theorizing. Through the panel discussion of several HESLN meetings, we accomplished face validity for the questionnaire items.

Phase 3. Reducing and Refining the Scale (Model Specification)

Phase 3 involves an item-reduction exercise (Larwin & Harvey, 2001)—*model specification* process in MacKenzie et al.'s (2011) model. In this phase, validity and reliability of the COM (Cabrera-Nguyen, 2010; Drost, 2011) became our genuine concern. In the process of reducing and refining the scale items, the research team followed two general principles:

1. Retain items that entail logical relevance to the cognition-attitude-behavior model and weed out those that do not.
2. Keep the number of items minimal by retaining only those most relevant to all domains of study (for the practical concern of students' ease of completing the survey).

Phase 4. Pilot Test (Scale Evaluation and Refinement & Validation)

Phase 4 involved a pilot run for the statistical validity of the scales—*scale evaluation and refinement* in MacKenzie et al.'s (2011) model. A tentative set of questionnaires was made after the eight member universities voted to elucidate expert judgment on content validity and face validity on the most appropriate few items in the scale domains in use. Questionnaires in English were then administered. Data obtained in this pilot test (Pilot 1) were used to perform statistical reliability tests for the development of a statistical model. Functionally it is an item grouping exercise (exploratory factor analysis) using data from Pilot 1 questionnaires (78 items). Pilot 1 was conducted in May 2011. This was followed by computing intercorrelations between all pairs of items and hence ascertaining the redundancy of similar items—scale evaluation, aimed at enhancing internal consistency through reducing the number of items. The reduced questionnaire (36 items) was subjected to Pilot 2 experimentation (from September 2011 to July 2012), followed by repeated statistical validity tests (concurrent, convergent, and discriminant). Reliability was further estimated using data from the SLRS Lingnan Model ABC (alternative forms, surveyed among Lingnan service-learning participants only) and validity checked. Confirmatory factor analysis was then completed. This article will focus on the result of Pilot 2.

Results

Data collection using the 36-item version with a pre- and posttest design was conducted from September 2011 to July 2012. We obtained a total of 193 valid sample pairs, out of 215 university students from five local universities. By institution, 44 (22.8%) students were from Lingnan University, 21 (10.9%) from the City University of Hong Kong, 40 (20.7%) from the Hong Kong University of Science and Technology, 23 (11.9%) from Hong Kong Shue Yan University, and 65 (33.7%) from the Education University of Hong Kong (formerly the Institute of Education). By gender, 136 (70.5%) respondents were female and 57 (29.5%) respondents were male. The majority of students were Year 1 (N = 56, 29%) and Year 2 students (N = 74, 38.3%). The majority of their study majors included education, (N = 57, 29.5%), business (N = 53, 27.5%), social sciences (N = 51, 26.4%), sciences (N = 15, 7.8%), and arts (N = 13, 6.7%). More information about their general demographics, including gender, area of study, and year of study can be found in Table 1. Their answers for the pre- and posttest questionnaires were received for analysis on consistency, scale reliability, and validity.

Internal Consistency Reliability Testing

For the 36-item questionnaire, reliability analysis was run to test the internal consistency of the overall scale and the nine domains separately. According to Nunnally (1967), Cronbach's alpha reliability coefficients above .80 are acceptable, those in the .70 range are marginally acceptable, and those below .70 are considered suspect and will underestimate the true relationship between two variables. Further, according to DeVellis (2003), the acceptable Cronbach's alpha coefficient of a scale should be above

Table 1. The General Demographics of Students (N = 193)		
Gender	**Frequency**	**%**
Male	57	29.5
Female	136	70.5
Total	193	100.0
Area of study		
Arts	13	6.7
Social sciences	51	26.4
Business	53	27.5
Sciences	15	7.8
Education	57	29.5
Others (e.g., exchange, foundation year)	4	2.1
Total	193	100
Year of study		
Foundation year	7	3.6
Year 1	56	29.0
Year 2	74	38.3
Year 3	38	19.7
Year 4	14	7.3
Exchange	4	2.1
Total	193	100.0

Table 2. Cronbach's Alphas of the Nine Domains (36-Item Version)		
	Cronbach's alphas	
	Pretest	Posttest
Overall	.95	.95
Self-understanding/confidence	.82	.82
Communication skills	.86	.86
Problem-solving skills	.80	.82
Civic engagement, social responsibility, and willingness to contribute	.87	.85
Team skills	.83	.83
Self-reflection	.80	.82
General knowledge application	.77	.84
Caring for others	.75	.67
Intercultural competence	.62	.49

.7. The Cronbach's alphas for the overall scale were .95 (pretest) and .95 (posttest), which show that the measurement is significantly reliable. Results also show that most of the domains are reliable (Table 2), with Cronbach's alphas ranging from .67 (caring for others, posttest) to .86 (communication skills, pre- and posttest), except for intercultural competence, whose Cronbach's alphas were .62 (pretest) and .49 (posttest). All items of the same constructs are interrelated, with coefficients larger than .35, except Item 36 (.15, intercultural competence, posttest). Further internal consistency reliability analysis of the 36 items in nine domains separately is charted in Table 3 for reference.

The 34-item version was consolidated through item reduction in terms of three selection criteria: (1) item-total correlation, (2) reliability if the item is removed, and (3) close relation to the domain topic (Table 4). Results show that most of the domains are reliable in Cronbach's alphas after the item reduction (eliminating Item 7 and Item 36; see Table 4).

Paired Sample *t*-test and Correlations

To ensure validity of the items measuring the differences of participants before and after taking part in service-learning programs, a paired sample *t*-test was run for the 34 items as well as the nine domains with a 10-point Likert scale. Results show that most participants experienced significant positive gains through their service-learning (Table 5).

Also, all nine domains were significantly correlated with each other, both pretest and posttest, with coefficients ranging from .38 to .75 (Table 6 & 7).

Discussion

Validity of the 34-Item Common Outcome Measurement

One classic model for measuring success in informal and cocurricular education is the cognition-attitude-behavior model; this serves to examine how students develop personal and social capabilities, civic responsibilities, and other areas concerned. The 34-item version of the COM adopted a variety of questionnaire items for each and every domain. The cognition-attitude-behavior model basically delineates the process of how certain expected behaviors of students are developed. People begin with beliefs and perceptions on certain issues on which they base their interpretation; on the cognitive level, they develop attitudes of what is favorable or unfavorable for them. Their attitudes end up guiding them to perform certain kinds of behaviors. Ideally, each domain should include at least one item asking about the cognition, the attitude, or the behavior aspect of achievements. Therefore, the validated 34-item COM can serve as a question bank to allow different institutions to measure their own learning outcomes through service-learning.

Significance of the Nine Outcome Domains

The entire scale evaluation and validation process started with expert focus groups examining possibilities of what they believed were attributes of whole-person development outcomes after completing service-learning projects. The experts came up with nine domains that are important for contemporary skillsets: (1) self-understanding/confidence; (2) communication skills; (3) problem-solving skills; (4) civic engagement, social responsibility, and willingness to contribute; (5) team skills; (6) self-reflection; (7) general knowledge application; (8) caring for others; and (9) intercultural competence. They then offered items borrowed from a questionnaire repository of their own work or from published psychometric instruments related to the nine agreed-upon domains. Our research team exercised caution by tracing publication sources or existing outcome instruments and also the areas of learning outcomes claimed in the original source. Subsequent reliability exercises trimmed down the number of items but would not shake the nine established domains. The research team further confirmed that certain items (civic engagement, social responsibility, and willingness to contribute) do belong to one statistical domain (1) despite different labels in common language.

Factor Analysis for Civic Engagement, Social Responsibility, and Willingness to Contribute

Maximum likelihood factor analysis with oblimin rotation (delta = 0) was conducted to assess the underlying structure for the scale "civic engagement, social responsibility, and willingness to contribute." The Kaiser-Meyer-Olkin (KMO) measure is .87,

Table 3. Internal Consistency Reliability Analysis of 36 items					
		Pretest (Alpha = .82)		Posttest (Alpha = .82)	
	Self-understanding/confidence	Item-Total Correlation	Alpha if Item Deleted	Item-Total Correlation	Alpha if Item Deleted
1.	I am aware of my personal strengths and weaknesses.	.60	.79	.66	.77
2.	I am open to new experiences and willing to take risks and accept challenges.	.68	.75	.67	.77
3.	I often seek out challenging opportunities that test my skills and abilities.	.66	.76	.64	.78
4.	I am confident in my abilities.	.62	.78	.62	.79
	Communication skills	Pretest (Alpha = .86)		Posttest (Alpha = .86)	
5.	I feel comfortable to present my ideas in front of others.	.74	.82	.76	.80
6.	I know how to communicate my ideas in a situation that is new to me.	.76	.81	.77	.79
7.	I understand the importance of participating in group discussion with others.	.61	.87	.53	.89
8.	I feel confident in communicating ideas precisely with people.	.76	.81	.77	.79
	Problem-solving skills	Pretest (Alpha = .80)		Posttest (Alpha = .82)	
9.	I feel confident in identifying a problem.	.68	.71	.73	.73
10.	I feel confident in tackling a problem.	.59	.76	.69	.75
11.	Before I solve a problem, I gather as many facts about the problem as I can.	.63	.74	.61	.78
12.	I go through the problem-solving process again when my first option fails.	.55	.78	.54	.82
	Civic engagement, social responsibility, and willingness to contribute	Pretest (Alpha = .87)		Posttest (Alpha = .85)	
13.	I am aware of the important needs in the community.	.62	.87	.61	.84
14.	I am or plan to become actively involved in issues that positively affect the community.	.78	.81	.73	.79
15.	I feel a personal obligation to contribute in some way to the community.	.76	.82	.69	.81
16.	It is my responsibility to help improve the community.	.75	.83	.73	.79

Table continued on next page

Table 3. Internal Consistency Reliability Analysis of 36 items *continued*					
		Item-Total Correlation	Alpha if Item Deleted	Item-Total Correlation	Alpha if Item Deleted
	Team skills	Pretest (Alpha = .83)		Posttest (Alpha = .83)	
17.	I am able to remain calm and reasonable even when conflict among group arises.	.63	.81	.68	.78
18.	I cooperate successfully with other students in a variety of situations.	.71	.77	.68	.78
19.	I notice and compliment the accomplishments of others.	.65	.80	.60	.81
20.	I participate effectively in group discussions and activities.	.67	.79	.70	.77
	Self-reflection	Pretest (Alpha = .80)		Posttest (Alpha = .82)	
21.	I am assertive and independent.	.52	.79	.59	.81
22.	I am motivated to learn, participate and achieve in school.	.64	.73	.72	.74
23.	I believe self-reflection can improve myself.	.65	.72	.64	.78
24.	I will evaluate myself after completing a task.	.62	.74	.64	.78
	General knowledge application	Pretest (Alpha = .77)		Posttest (Alpha = .84)	
25.	I am aware of the importance of evaluation and outcome with knowledge learned in class.	.57	.72	.63	.81
26.	I feel confident in applying knowledge in my areas of study.	.59	.71	.70	.78
27.	I understand the need to adapt my theoretical knowledge in various real-life situations.	.67	.67	.74	.77
28.	I learn course content better when connections to real-life situations are made.	.49	.77	.62	.82
	Caring for others	Pretest (Alpha = .75)		Posttest (Alpha = .67)	
29.	I am aware of the thoughts and feelings of other people.	.41	.75	.37	.66
30.	I believe that the world would be a better place if prejudices no longer exist.	.57	.67	.45	.62
31.	I feel comfortable building relationships with people from different backgrounds.	.53	.69	.54	.56

Table continued on next page

Table 3. Internal Consistency Reliability Analysis of 36 items *continued*					
		Item-Total Correlation	Alpha if Item Deleted	Item-Total Correlation	Alpha if Item Deleted
	Caring for others *continued*	Pretest (Alpha = .75)		Posttest (Alpha = .67)	
32.	I believe that taking care of people who are in need is everyone's responsibility.	.66	.62	.49	.59
	Intercultural competence	Pretest (Alpha = .62)		Posttest (Alpha = .49)	
33.	I am keen to learn more about people from other cultures.	.61	.41	.43	.35
34.	When I interact with people from other cultures, I try to understand their behaviors, perceptions or feelings in the context of their cultures.	.47	.55	.44	.35
35.	I believe that paying attention to the body language of those from other cultures would allow me to understand more about them.	.35	.60	.48	.32
36.	I am interested in making friends with people of different cultural background.	.39	.68	.15	.80

Note. Item 36 was reversed.

Table 4. Cronbach's Alphas of the Nine Domains (34-Item Version)		
	Cronbach's alphas	
	Pretest	Posttest
Overall	.95	.96
Self-understanding/confidence	.82	.82
Communication skills	.87	.89
Problem-solving skills	.80	.82
Civic engagement, social responsibility, and willingness to contribute	.87	.85
Team skills	.83	.83
Self-reflection	.80	.82
General knowledge application	.77	.84
Caring for others	.75	.67
Intercultural competence	.68	.80

Table 5. Paired Sample Test by Domain (n = 193)

Domains	Pretest		Posttest		Difference (%)	t-test
	Mean	SD	Mean	SD		
1. Self-understanding/confidence	7.43	1.08	7.85	0.96	5.54%	5.98***
2. Communication skills	7.15	1.25	7.63	1.22	6.74%	5.64***
3. Problem-solving skills	7.37	0.99	7.71	0.97	4.66%	5.39***
4. Civic engagement, social responsibility and willingness to contribute	7.72	1.13	8.06	0.97	4.39%	4.39***
5. Team skills	7.59	0.95	7.92	0.93	4.41%	4.44***
6. Self-reflection	7.73	1.05	7.96	1.04	2.98%	3.01***
7. General knowledge application	7.64	0.98	7.87	1.03	3.03%	3.25***
8. Caring for others	7.97	1.06	8.21	0.90	2.97%	3.35***
9. Intercultural competence	7.99	1.18	8.30	1.00	3.88%	3.58***

****p* < .001

and the Barlett's test of sphericity is significant, indicating a reasonable analysis for the scale. Four factors with eigenvalue larger than 1 were extracted. The first factor accounted for 42.5% of total variance, the second factor accounted for 5.4%, the third factor accounted for 5.5%, and fourth factor accounted for 4.2%. However, as the contributions of the second, third, and fourth factors to the total variance are trivial (Figure 1), it is indicated that one factor should be satisfactory.

These nine domains were supported by various literature on student learning outcomes measurement (Furco & Root, 2010; Payne & Edwards, 2010; Stafford, Boyd, & Lindner, 2003). In the service-learning arena, it is generic to include academic achievement, personal competence, interpersonal relationship development, and citizenship as the intended outcomes (Wang, Ye, Jackson, Rodgers, & Jones, 2005). Further justifications from literature for the nine domains of the COM are detailed below:

- ***Self-understanding/confidence.*** Positive impact of intervention programs has been reported on self-confidence and academic improvement (Keup, 2005). Goleman (1995) attributed increased self-confidence to feeling useful through meaningful legitimate service projects in the community.
- ***Communication skills.*** Pooling results of numerous research reports, Eyler, Giles, Stenson, and Gray (2001) summarized that "service-learning has a positive effect on interpersonal development and the ability to work well with others, leadership and communication skills" (p. 1).
- ***Problem-solving skills.*** Service-learning is seen as a platform for students to enhance thinking skills and knowledge application necessary for success outside academia. Students produce comprehensive projects and analytical reflective journals, and they demonstrate critical thinking and problem-solving skills in multiple contexts (Eyler & Giles, 1999).
- ***Civic engagement, social responsibility, and willingness to contribute.*** Cultivating social responsibility within Asian universities is the third mission of contemporary HEIs (Ma & Tandon, 2014). The civic orientation outcome has always been a major concern in community service evaluations (Reeb, Katsuyama, Sammon, & Yoder, 1998) and thus becomes one of the attributes for measuring university social responsibility.

Table 6. Correlation Among the Nine Domains (Pretest)									
Domains	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Self-understanding/ confidence	1								
2. Communication skills	.75**	1							
3. Problem-solving skills	.61**	.57**	1						
4. Civic engagement, social responsibility and willingness to contribute	.57**	.59**	.56**	1					
5. Team skills	.65**	.62**	.60**	.62**	1				
6. Self-reflection	.65**	.60**	.60**	.58**	.60**	1			
7. General knowledge application	.60**	.46**	.59**	.59**	.49**	.70**	1		
8. Caring for others	.48**	.35**	.44**	.63**	.56**	.53**	.57**	1	
9. Intercultural competence	.38**	.30**	.36**	.52**	.49**	.45**	.44**	.59**	1

***p < .01*

Table 7. Correlation Among the Nine Domains (Posttest)									
Domains	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Self-understanding/ confidence	1								
2. Communication skills	.71**	1							
3. Problem-solving skills	.72**	.66**	1						
4. Civic engagement, social responsibility and willingness to contribute	.54**	.43**	.55**	1					
5. Team skills	.65**	.69**	.61**	.61**	1				
6. Self-reflection	.65**	.66**	.66**	.53**	.75**	1			
7. General knowledge application	.64**	.60**	.68**	.59**	.70**	.74**	1		
8. Caring for others	.44**	.42**	.46**	.61**	.59**	.51**	.58**	1	
9. Intercultural competence	.46**	.46**	.46**	.63**	.60**	.56**	.60**	.75**	1

***p < .01*

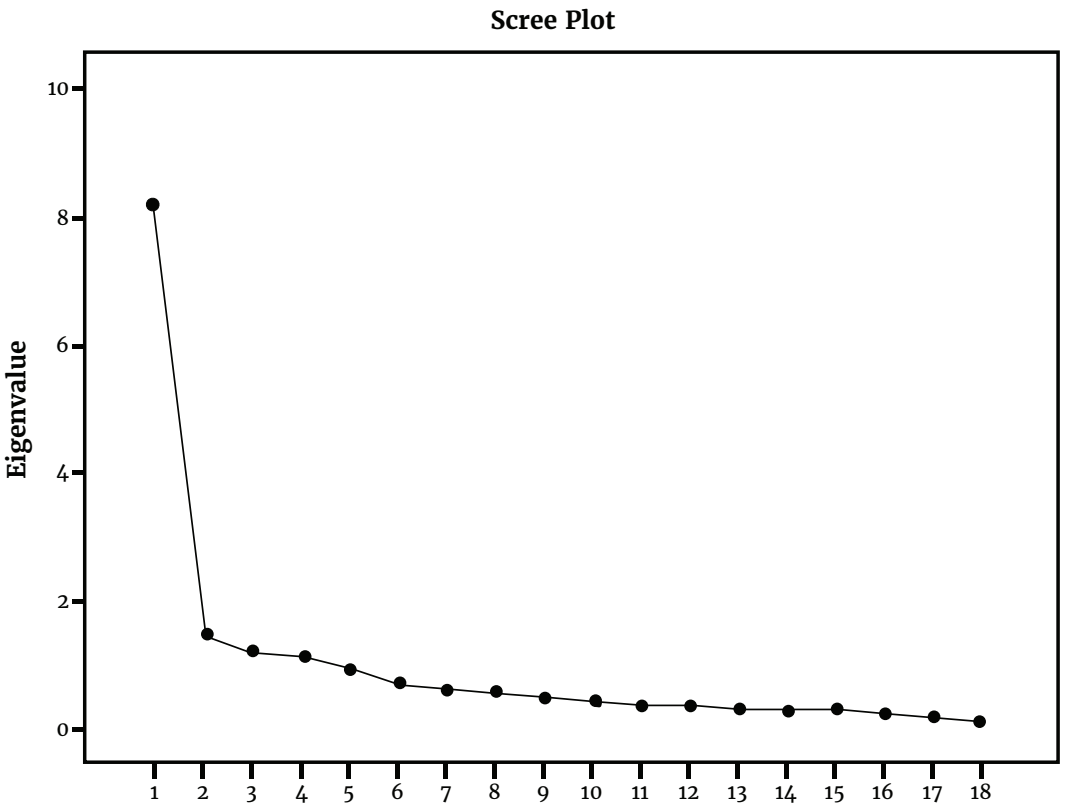

Figure 1. Scree Plot of the Factor Analysis for the Captioned Scale

- ***Team skills.*** Team skills captured the attention of group work learning trainers (Prichard, Stafford, & Bizo, 2006). To be a good team player is a necessary skill in future career development in a flat organization environment (Drucker, 1998).
- ***Self-reflection.*** Reflection is the process of engaging people to make meaning of their experiences. It constitutes a key stage of a transformative learning model (Kiely, 2005), and self-reflection is the trait with the most significant impact on leadership life skill development (Stafford et al., 2003).
- ***General knowledge application.*** It is important to motivate faculty members to consider using service-learning pedagogy, as students can use knowledge gained in service-learning experiences to make the world a better place (Miller, 1997).
- ***Caring for others.*** Students experience a sense of interconnectedness with others and their environment through a service-learning program. They learn to open their hearts to others and become more empathetic through self and group reflection (Louie-Badua & Wolf, 2008). Service-learning is a pedagogical tool for developing empathy and a conscientious reminder of the perspectives of people in the community (Harding, 1991), and hence it is more likely that service-learning participants will develop into sensible global citizens (Raysen & Katzarska-Miller, 2013) because of their care and compassion.
- ***Intercultural competence.*** Learning and serving outside Hong Kong is common among service-learning programs in HESLN member universities and likewise elsewhere in other countries (e.g., Liu & Lee, 2001). Given the differences in the political system, social structure, and cultural aspects, cross-cultural contact is inevitable for participants in these programs. Crabtree (2008) postulated that by placing students

Table 8. Comparison Between COM and Other Scales		
Common outcome measurement	Seven domains of learning indicators (Ma & Chan, 2013)	Civic-minded Graduate (CMG) Scale (Steinberg, Hatcher, & Bringle, 2011)
Self-understanding/ confidence		Self-efficacy
Communication skills	Communication skills	Listening
Problem-solving skills	Problem-solving skills	
Civic engagement, social responsibility, and willingness to contribute	Civic orientation	Volunteer opportunities, contemporary social issues, valuing community engagement, social trustee of knowledge, behavioral intentions
Team skills	Organizational skills	Consensus-building
Self-reflection		
General knowledge application	Subject-related knowledge	Academic knowledge and technical skills
Caring for others	Social competence	
Intercultural competence		Diversity
	Research skills	

in a cross-cultural setting, hence combining academic study with international service experience, the synergistic scenario can have a positive impact on students' intercultural awareness, communication capabilities, and appreciation of cultural differences.

To measure the development of participants' intercultural competence, items were selected from the Cross-Cultural Adaptability Inventory (CCAI) and consolidated into intercultural adaptability (Paige, 2004). When the COM is compared with other scales (Table 8), it can be seen to include most of those scales' necessary domains in measuring students' service-learning outcomes.

The Ways Forward

The development of the COM provides a question bank to local institutions for measuring students' learning outcomes through service-learning. It also serves as a milestone of service-learning development in Hong Kong because it is the first collaborative research on service-learning among tertiary institutions. It contributes to the development of service-learning in both theoretical and practical perspectives.

Our next ambition is to fine-tune the questionnaire items, keep a balance in each domain in response to the traditional cognition-attitude-behavior model, and make the COM incorporable to all stakeholders (e.g., faculty, service-learning coordinators, students, agencies, etc.) from all HEIs in Hong Kong, including universities, community colleges, and vocational training institutes.

The COM questionnaire would also allow for objective comparison between different service-learning programs, enable screening for more effective programs, empower improvements of service-learning administration, and support training for service-learning coordinators and agency coordinators, as well as encourage individual reflection on personal achievements for students. Investigations in this aspect could be enhanced through qualitative research such as focus groups or open-ended interviews of purposively sampled subjects.

Research literature on various claimed attributes of service-learning outcomes remains scarce. Most of the outcomes are intuitive links considered natural among service-

learning experts and also in accord with reasonable expectations of educators. More evidence on measuring students' learning outcomes needs to be created in Asia, as many HEIs start to adopt service-learning as a pedagogy and believe it can create positive impacts on students. Research related to service-learning should be encouraged among HEIs, and more funding from the university/government should be available for faculty and administrators. It is especially important to further construct a theoretical framework of pedagogy for service-learning and explore the causal flow between service-learning program logistics and the perceived reasons for successful learning.

With a theoretical framework in hand, COM exploration could be extended beyond Hong Kong, especially in the Asian context. In view of the emergence of service-learning education in Asia, some of the HEIs are investigating the possibilities of using COM for their institutions. For example, Taiwan Normal Teaching University is using the COM to compare the learning outcomes of students from Hong Kong and Taiwan before and after conducting service-learning. A validated Chinese version of the COM questionnaire has already been published by a Hong Kong and Taiwanese team (Chao, Liu, Ma, & Liu, 2018). Other countries, like the Philippines, Indonesia, and Vietnam, have also shown interest in using the validated versions. It is indeed encouraging that more research may be performed to study the feasibility of applying the COM in other countries/cities, while taking into consideration local culture differences and language interpretation variance. Although a similar questionnaire has been developed in Western society, it is important for Asia to develop its own based on cultural needs.

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