Impact of service leadership education on university students in Hong Kong

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Abstract

This study assessed the changes of students in universities in Hong Kong after studying a 3-credit subject about service leadership in two semesters. A total of 148 undergraduate students studying the subject conducted a questionnaire before and after the study. The questionnaire measures students' positive youth development, satisfaction with life, and qualities related to service leadership. Results revealed that students of both semesters had positive changes in different positive youth development indicators. Students' improvement in life satisfaction and qualities related to service leadership were also found in one semester. Findings of the study offer further support to effectiveness of service leadership subject in nurturing positive development and leadership development of students.

Keywords: Objective outcome evaluation, service leadership, positive youth development, developmental changes, life satisfaction

Introduction

Leaders are essential for the development of a society in any historical stage. Different leadership styles emphasize the cultivation of different characteristics and qualities (1). Leadership was regarded as a process that a person exerts influence on a group of people to pursue a collective goal (2). In the industrial time and manufacturing economy, the core activity in economy is mass production of goods or products; the production process is highly standardized; the organizational structure is highly hierarchical; and the workers are treated more as "screws" in a huge machine (3). Accordingly, the leadership styles are normally autocratic and transactional (3). In addition, the leadership mainly focuses on leaders' own professional and task-related competences, that is, the "hard skills" (2, 4).

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However, there has been a significant socio-economic transformation in recent years. One prominent feature of this transformation is the prevalence and dominating of the service economy in the global landscape. According to different research studies and statistics, the service economy has become the major driver of economic development and major contributor of GDP in many countries and districts including the United States (5), countries of the Organization for Economic Co-Operation and Development (6), and Asian Pacific nations or regions (7). Hong Kong is without exception. During the past two decades, there has been a rapid increase and expansion of service economy in Hong Kong's economic development. The contribution of service industry to GDP of Hong Kong has increased from 87.3% to 92.2% between 2000 and 2016 (8). Particularly, Hong Kong's economic growth is driven by four key service industries including "financial services, tourism, trading and logistics, and professional and producer services," which contributed to more than half of the GDP of Hong Kong (9). In recent years, there has been rising of new service industries including medical and educational services, cultural industries, certification services, and innovation and technology, which helps together to shape Hong Kong's competitive edge in global economic competition (9).

The economic activities, organizational structure, and manpower requirement are very different between manufacturing economy and service economy, so do the required leadership styles. In service-based economy, knowledge creation and service provision are core activities for economic development. The economic inputs are mainly knowledge and skills and the outputs are high-quality and individualized services provided to customers based on customer-producer negotiation and communication (3, 10). Besides, tasks become highly complex in service-based economy for which leaders cannot make decisions solely by themselves but need shared decision making with their followers and even other stakeholders. Therefore, human assets, human interaction, and social relationship play an essential role in service economy and success of organization (4). This requires organizational structures to be decentralized and flexible to allow for knowledge storing, sharing, and creation, and to give full support

to autonomous and highly motivated workers (3). This also requires leadership to focus on empowerment, relationship building, motivation, caring, support, and collaboration to maximize contributions of employees in service-based economy (3, 10). In other words, possessing hard skills is far from enough for being effective leaders. Leaders' generic competences, morality, character, and disposition of care become vital (11-13).

Envisioning the above mentioned socioeconomic transformation in Hong Kong society and required leadership styles, The Hong Kong Institute of Service Leadership and Management (HKI-SLAM) put forward a concept and related framework of service leadership. Service leadership was conceptualized as "satisfying the needs by consistently providing quality personal service to everyone one comes into contact with, including one's self, others, groups, communities, systems, and environments" (14). Besides, the service leadership effectiveness is dependent on three key qualities: care, character, and competence (15). First, effective leadership requires not only domain-specific competences but also intrapersonal and interpersonal competences that are required for relationship building in service-based economy. Second, effective service leaders should be ethical role models of their followers. Their moral characters are vital for gaining trust and commitment from their followers. Third, effective service leaders should love their followers, listen to their followers' views, and show empathy to their followers, which is "care" of leadership. As such, Po Chung (14), the co-founder of HKI-SLAM, argued that a successful service leader is a well-prepared, highly motivated, capable, and "on-the-spot socialized entrepreneur who possesses relevant task competencies and is judged by superiors, peers, subordinates, and followers to exhibit appropriate character strengths and a caring social disposition."

Although there are strong needs for service leaders in Hong Kong's society, the existing university education in Hong Kong shows worrying signs regarding students' healthy and holistic development. A body of research suggests that there are higher rates of developmental problems amongst students in Hong Kong universities. For instance, different studies suggest that Hong Kong university students may experience from moderate to high level of mental

health problems such as stress, depressive symptoms, and anxiety (16). Besides, employer surveys suggest that local employers were dissatisfied with the generic qualities of university graduates particularly for their interpersonal communication skills and psychological maturity (17). One reason might be that the traditional three-year undergraduate education system overemphasized on specialized education and neglected students' holistic development (17, 18). As such, it is imperative to nurture university students' holistic development including the development of soft skills and leadership qualities required by the service-based economy and society in Hong Kong.

In recent years, the university education of Hong Kong has experienced significant changes as a response to current socioeconomic change. Particularly, the three-year undergraduate education curriculum has been transformed to a four-year one since the 2012/13 academic year, with one additional year being devoted mainly to general education and students' holistic development (18). Along with this transformation, there is an increasing awareness of leadership development among university students. Particularly, since 2012, the HKI-SLAM has collaborated with Victor and William Fung Foundation to launch the Li and Fung Service Leadership Initiative to fund the eight universities under the University Grants Committee (UGC) of Hong Kong to develop programs to nurture students' service leadership qualities (19).

Under this initiative, all the eight UGC-fund universities developed their own leadership programs according to the service leadership framework proposed by HKI-SLAM (20-22). Among these programs, a prominent one was the "Service Leadership" (SL) subject developed by The Hong Kong Polytechnic University (PolyU). The SL subject is a credit-bearing (3 credits) subject developed combining the HKI-SLAM framework of service leadership with theories of positive youth development. It aims at fostering positive development of students as well as nurturing their related qualities of service leadership (23). The subject content consists of 12 lectures on topics and qualities related to service leadership and positive youth developments (23). Specifically, the content centers on leadership competences such as competences in intrapersonal and interpersonal dimensions, strength in character,

and disposition of care (24). Besides, an active and experiential-learning based pedagogy is adopted. Each lecture is delivered through combination of lecturing, group activities (such as group debate, discussion, and drawing), and class activities (such as personal reflection and sharing). With regard to the assessment, multiple assessment methods are adopted including group project, individual term paper, and class participation. The subject has been implemented at PolyU in different semesters since the 2012/13 academic year as a subject of general education for undergraduate students.

Evaluation is one necessary component for a high-quality educational program. It helps not only assess subject outcomes but also identify possible rooms for further improvement. As such, evidence-based evaluation studies based on different methods were regularly conducted in 2012/13 – 2014/15 academic years as an integral component to monitor the implementation and examine the effectiveness of the SL subject. These methods included quasi-experimental design (25), students' subjective evaluation of the subject content and teaching (26), as well as qualitative evaluation methods such as individual interview and focus group (27). In general, these evaluation studies revealed positive impacts of SL subject on students as well as students' positive perceptions of the subject (4, 13, 23). For example, Shek, Yu, and Ma (25) conducted an objective outcome evaluation on a two-credit SL subject (a pilot subject of the three-credit SL subject) offered in the 2012/13 academic year based on quasi-experimental design. They found that students gained significant improvement in several positive youth development indicators such as behavioral and moral competences, and in overall service leadership qualities (25). A qualitative evaluation study was also conducted on the same subject in the same academic year which illustrated that most students studying the subject used positive descriptors and/or metaphors to illustrate their experiences in the subject (28). In addition, a subjective outcome evaluation was performed on the SL subject offered in the 2013/14 academic year, which found that most of the students had positive views of the subject content, teaching, and benefits to their development (13).

Although these existing evaluation studies suggest the effectiveness of the subject, they were

still inadequate due to the following reasons. First, the existent evaluation studies mostly focused on evaluating the SL subject in its early years of implementation, i.e., from 2012/13 to 2014/15 (12, 25). Few studies have been conducted to evaluate the subject after 2014/15 academic years. As evaluation is an integral and necessary component in program implementation, evaluation studies should be conducted in each academic year to ensure the smooth implementation and assess effects of the SL subject. Second, most of the existing studies adopted methods of subjective outcome evaluation or qualitative evaluation, few studies adopted pretest-posttest design to examine the subject impact. Although the existing few objective outcome evaluation studies suggest the positive impact of the subject on student positive development and development of service leadership qualities, the findings should be replicated by further evaluation studies based on the same methods.

Against the aforementioned background, this study aimed to examine the effectiveness of the SL subject at PolyU offered in the 2015/16 academic year. The study adopted the method of a single-group pretest-posttest design, which was widely adopted in educational, psychological, clinical, and evaluation fields (29-31). Although it was criticized as having relatively weak internal validity, the method has its own value. For example, it can be used when there is a high difficulty to carry out control groups due to practical or ethical reasons (32). In addition, it can also be used when the time span between pre- and post-tests is short to allow less influence of other confounding factors (32). Considering it is difficult to find randomly assigned control and experimental groups in university settings and the pre- and post-test time span is short (one semester) for this study, the single-group pre- and post-test design was employed to assess the changes of students in positive developmental indicators after studying the SL subject.

Methods

The participants were 148 undergraduate students taking Service Leadership (SL) subject in either Semester 1 (S1) or Semester 3 (S3) of the 2015/16 academic year at PolyU. Among these students, 52

took SL subject in S1 and 96 took the subject in S3. Around one half (51.9%) of the participants in S1 group were female, while around one third (32.3%) of the participants in S3 group were female. The participants' mean age was 19.9 ± 2.30 years in S1 group and 23.7 ± 4.30 years in S3 group, respectively. Table 1 shows detailed demographic information of the participants.

In S1 and S3 of the 2015/16 academic year, all students taking the SL subject were invited to fill in a paper-and-pencil survey questionnaire at the first and the last lectures of the subject. In S1 group, 91 and 52 questionnaires were collected at pre- and post-tests, respectively. Fifty-two questionnaires were matched successfully. In S3 group, 96 questionnaires were matched successfully between 101 and 96 questionnaires collected respectively at pre- and post-tests.

Instruments

The survey questionnaire consisted of 70 items measuring demographic features of the participants and their performance in three constructs including Chinese Positive Youth Development Scale (CPYDS), Satisfaction with Life Scale (SWLS), and Service Leadership Scale (SLS). Description of the three measures is presented as below.

Chinese Positive Youth Development Scale (CPYDS)

The CPYDS attempts to measure the optimistic growth of Chinese adolescents (33). It consists of 15 subscales, among which 10 were adopted in the study being indicators of students' positive development. The 10 subscales include "Social Competence" (SC, 3 items), "Emotional Competence" (EC, 3 items), "Cognitive Competence" (CC, 4 items), "Behavioral Competence" (BC, 2 items), "Moral Competence" (MC, 4 items), "Self-Determination" (SD, 3 items), "Clear and Positive Identity" (CPI, 2 items), "Belief in the Future" (BF, 3 items), "Spirituality" (SP, 4 items), and "Resilience" (RE, 3 items). All items are rated on a 6-point Likert scale (1 = "Strongly disagree" to 6 = "Strongly agree"). Three composite scores, i.e., "Cognitive-Behavioral Competencies" (CBC), "Positive Identity" (PI), and "Positive Youth

Development Qualities" (PYDQ) are further computed based on the 10 subscales. CBC is composed of "Cognitive Competence," "Behavioral Competence," and "Self-Determination." PI includes "Clear and Positive Identity" and "Belief in the Future". PYDQ contains "Social Competence," "Emotional Competence," "Moral Competence," "Spirituality," and "Resilience." Previous studies reported that CPYDS had favorable psychometric properties (33). The Cronbach alpha of CPYDS ranged from .90 to .92 in the present study, indicating excellent reliability of the measure.

Satisfaction with Life Scale (SWLS)
SWLS contains five items to assess people's overall judgement of their quality of life (34). This study used the translated Chinese version of the scale which was revealed to possess good reliability in previous research studies (35, 36). All items are rated on a 6-point Likert (1 = "Strongly disagree" to 6 = "Strongly agree"). A higher score shows a higher degree of satisfaction with life. The Cronbach alpha of the scale ranged from .86 to .90 in the present study, which indicates good reliability.

Service Leadership Scale (SLS)
Referring to the HKI-SLAM framework of service leadership, the present study used four indicators to assess service leadership related qualities. The four indicators are "Self-Leadership" (SL, 5 items), "Caring Disposition" (CD, 8 items), "Character Strength" (CS, 15 items), and "Belief and Values of Service Leadership" (BVSL, 6 items) (25). All items are rated on a 6-point Likert scale (1 = "Strongly disagree" to 6 = "Strongly agree"). Different subscales of service leadership quality all demonstrated good reliability in previous studies (25). The Cronbach alphas of these subscales ranged from .92 to .94 in the present study, revealing high reliability of the measures.

Table 1. Demographic information of the participants

		Semester 1 (S1)		Semester 3 (S3)		Whole Sample	
		N	%	N	%	N	%
Gender	Male	24	46.2%	61	63.5%	85	57.4%
	Female	27	51.9%	31	32.3%	58	39.2%
	Did not indicate	1	1.9%	4	4.2%	5	3.4%
	Total	52		96		148	
Age	Mean	19.90		23.70		22.35	
	SD	2.32		4.27		4.11	

Data analyses

First, we analyzed demographic statistics of the participants (see table 1). Second, we computed reliability test for each scale and subscale of the questionnaire. Third, we performed repeated measures MANOVA to assess the participants' change in indicators of PYD, satisfaction with life, and qualities of service leadership with time (pre- and post-tests) being independent variable. Specifically, we performed multivariate analyses for the whole sample, S1 group, and S3 group, respectively.

Results

Table 2 shows results of the repeated measures MANOVA on the overall effects of the SL subject offered in S1 and S3 of the 2015/16 academic year. The multivariate effect of time on the 10 subscales of CPYDS was statistically significant, $F(10, 136) = 4.58$, $p < .001$, partial eta squared = .25. Besides, multivariate effect of time on the three higher order factors of CPYDS was also found to be significant, $F(3, 143) = 5.19$, $p < .01$, partial eta squared = .10. Regarding the univariate effects of time, there was significant increase in participants' scores on SC, EC,

CC, BC, and CPI ($p < .01$ for EC, $p < .001$ for CC and CPI, and $p = .001$ for SC and BC), while the participants' scores on MC, SD, BF, SP, and RE remained stable. Regarding the univariate effects of time on the three higher order factors, the participants' scores for CBC, PI, and PYDQ all had significant increase ($p < .001$ for CBC, $p < .01$ for PI, $p < .05$ for PYDQ).

The participants also had significant increase in their score of SWLS, $F(1, 146) = 8.44$, $p < .01$, partial eta squared = .06. Regarding SLS, a multivariate effect of time was also found, $F(4, 144) = 2.66$, $p < .05$, partial eta squared = .07. For univariate effects, three subscales (i.e., SL, CD, and CS) of SLS showed significant increase ($p < .05$ for SL and CD, $p < .01$ for CS) between pre- and post-tests. The fourth subscale, BVSL, also demonstrated marginalized significant increase ($p = .055$).

Effects of the Subject in S1

Repeated measures MANOVA was also conducted separately to the participants in S1 group to identify effects of the SL subject offered in S1. The results are shown in Table 3. Regarding the CPYDS, although there was no significant multivariate effect of time on the 10 subscales, the multivariate effect was found on the three higher order factors, $F(3, 48) = 3.18$, $p < .05$, partial eta squared = .17. The results of univariate effect revealed that the participants increased significantly in scores of CC ($p < .001$), BC ($p < .05$), and one higher order factor CBC ($p < .01$), while they did not change significantly in scores of other subscales and higher order factors. There was no significant multivariate effect of time on the participants' score on SWLS and SLS. Univariate effect tests showed that the participants increased significantly in the score of SL ($p < .05$) and CS ($p = .05$), while they remained stable in scores of BVSL.

Table 2. Results of repeated measures MANOVA for the whole sample (S1 + S3)

Variables	Pretest		Post-test			
	M(*SD*)	α (mean)[#]	M (*SD*)	α (mean)[#]	*F*	*η2*
Chinese Positive Youth Development					4.58***^^^^	.25
Social Competence (SC)	4.53(.70)	.89(.74)	4.68(.58)	.83(.62)	10.48[a]	.07
Emotional Competence (EC)	4.38(.68)	.72(.46)	4.54(.57)	.63(.36)	10.29**	.07
Cognitive Competence (CC)	4.40(.64)	.80(.50)	4.60(.57)	.76(.45)	16.55***	.10
Behavioral Competence (BC)	4.34(.65)	.56(.38)	4.54(.62)	.48(.31)	12.21[a]	.08
Moral Competence (MC)	4.47(.56)	.35(.16)	4.44(.59)	.44(.21)	0.34	.00
Self-Determination (SD)	4.47(.74)	.78(.55)	4.54(.62)	.73(.48)	1.96	.01
Clear and Positive Identity (CPI)	4.10(.83)	.79(.65)	4.36(.76)	.79(.66)	18.27***	.11
Belief in the Future (BF)	4.66(.77)	.79(.56)	4.74(.71)	.79(.55)	1.62	.01
Spirituality (SP)	4.36(.75)	.52(.23)	4.43(.70)	.42(.20)	1.44	.01
Resilience (RE)	4.50(.71)	.77(.52)	4.58(.71)	.84(.64)	2.43	.02
Higher Order Factors					5.19**^^^	.10
Cognitive-Behavioral Competencies (CBC)	4.41(.59)	.87(.44)	4.57(.50)	.84(.37)	14.84***	.09
Positive Identity (PI)	4.44(.72)	.85(.53)	4.59(.67)	.86(.55)	8.76**	.06
Positive Youth Development Qualities (PYDQ)	4.44(.50)	.84(.27)	4.52(.48)	.84(.29)	5.49*	.04
Life Satisfaction	3.97(.86)	.87(.58)	4.15(.81)	.88(.61)	8.44**	.06
Service Leadership Scale					2.66*^^	.07
Self-Leadership (SL)	4.42(.66)	.83(.50)	4.53(.59)	.80(.44)	6.40*	.04
Caring Disposition (CD)	4.58(.53)	.87(.45)	4.66(.55)	.89(.49)	5.03*	.03
Character Strengths (CS)	4.42(.45)	.82(.24)	4.51(.47)	.85(.27)	7.82**	.05
Beliefs and Values of Service Leadership (BVSL)	4.67(.68)	.87(.53)	4.79(0.7)	.92(.67)	3.75[b]	.03

Mean inter-item correlation.

*p < .05; **p < .01; ***p < .001; [a]p = .001; [b]p = .055.

^^^^ Adjusted Bonferroni value = .005; ^^^ Adjusted Bonferroni value = .017; ^^ Adjusted Bonferroni value = .013.

Table 3. Results of repeated measures MANOVA for the participants in S1

Variables	Pretest		Post-test			
	M(*SD*)	α (mean)#	M (*SD*)	α (mean)#	*F*	*η2*
Chinese Positive Youth Development					1.50^^^^	.27
Social Competence (SC)	4.71(.63)	.87(.69)	4.73(.51)	.78(.55)	.06	.00
Emotional Competence (EC)	4.53(.58)	.62(.35)	4.65(.53)	.67(.41)	2.53	.05
Cognitive Competence (CC)	4.46(.61)	.81(.51)	4.72(.54)	.75(.43)	11.31***	.18
Behavioral Competence (BC)	4.43(.62)	.64(.48)	4.62(.53)	.48(.32)	4.32*	.08
Moral Competence (MC)	4.44(.54)	.25(.12)	4.38(.50)	.25(.13)	.69	.01
Self-Determination (SD)	4.54(.71)	.83(.62)	4.64(.57)	.80(.58)	1.14	.02
Clear and Positive Identity (CPI)	4.32(.81)	.89(.80)	4.37(.68)	.77(.63)	.27	.01
Belief in the Future (BF)	4.73(.75)	.81(.61)	4.73(.65)	.72(.47)	.01	.00
Spirituality (SP)	4.37(.77)	.60(.31)	4.41(.64)	.19(.12)	.18	.00
Resilience (RE)	4.54(.66)	.83(.62)	4.58(.69)	.86(.68)	.16	.00
Higher Order Factors					3.18*^^^	.17
Cognitive-Behavioral Competencies (CBC)	4.48(.57)	.89(.47)	4.67(.46)	.84(.36)	7.47**	.13
Positive Identity (PI)	4.57(.72)	.88(.62)	4.58(.61)	.83(.50)	.04	.00
Positive Youth Development Qualities (PYDQ)	4.50(.47)	.83(.26)	4.53(.42)	.78(.25)	.26	.01
Life Satisfaction	4.13(.79)	.89(.63)	4.24(.76)	.90(.65)	1.15	.02
Service Leadership Scale					1.80^^	.13
Self-Leadership (SL)	4.47(.58)	.86(.54)	4.64(.53)	.84(.51)	5.21*	.09
Caring Disposition (CD)	4.68(.54)	.89(.50)	4.77(.55)	.92(.60)	2.58	.05
Character Strengths (CS)	4.45(.42)	.82(.24)	4.55(.42)	.82(.24)	4.00ᶜ	.07
Beliefs and Values of Service Leadership (BVSL)	4.78(.73)	.92(.67)	4.91(.56)	.91(.62)	2.36	.04

Mean inter-item correlation.
*p < .05; **p < .01; ***p < .001; ᶜp = .05.
^^^^ Adjusted Bonferroni value = .005; ^^^ Adjusted Bonferroni value = .017; ^^ Adjusted Bonferroni value = .013.

Table 4. Results of repeated measures MANOVA for the participants in S3

Variables	Pretest		Post-test			
	M(*SD*)	α (mean)#	M (*SD*)	α (mean)#	*F*	*η2*
Chinese Positive Youth Development					3.89***^^^^	.31
Social Competence (SC)	4.43(.72)	.90(.75)	4.66(.62)	.85(.65)	14.43***	.13
Emotional Competence (EC)	4.30(.72)	.74(.49)	4.48(.59)	.61(.33)	7.74**	.08
Cognitive Competence (CC)	4.37(.66)	.80(.50)	4.54(.58)	.76(.45)	7.06**	.07
Behavioral Competence (BC)	4.29(.66)	.51(.34)	4.51(.66)	.47(.31)	7.87**	.08
Moral Competence (MC)	4.48(.58)	.41(.19)	4.47(.64)	.52(.26)	0.02	.00
Self-Determination (SD)	4.43(.76)	.75(.52)	4.49(.63)	.70(.43)	0.88	.01
Clear and Positive Identity (CPI)	3.98(.83)	.74(.59)	4.36(.81)	.80(.67)	23.59***	.20
Belief in the Future (BF)	4.63(.78)	.77(.54)	4.74(.75)	.81(.59)	2.37	.03
Spirituality (SP)	4.36(.74)	.49(.21)	4.44(.73)	.52(.26)	1.47	.02
Resilience (RE)	4.47(.74)	.74(.49)	4.58(.73)	.83(.63)	2.74	.03
Higher Order Factors					4.10**^^^	.12
Cognitive-Behavioral Competencies (CBC)	4.37(.59)	.86(.42)	4.52(.51)	.84(.36)	7.63**	.08
Positive Identity (PI)	4.37(.72)	.83(.49)	4.59(.71)	.87(.57)	11.69ᵃ	.11
Positive Youth Development Qualities (PYDQ)	4.41(.52)	.85(.27)	4.52(.52)	.86(.32)	6.11*	.06
Life Satisfaction	3.88(.89)	.86(.56)	4.10(.83)	.87(.59)	7.79**	.08
Service Leadership Scale					1.25^^	.05
Self-Leadership (SL)	4.39(.7)	.83(.49)	4.47(.61)	.78(.41)	2.09	.02
Caring Disposition (CD)	4.52(.52)	.85(.42)	4.61(.54)	.86(.43)	2.70	.03
Character Strengths (CS)	4.41(.46)	.82(.24)	4.49(.50)	.56(.29)	4.11*	.04
Beliefs and Values of Service Leadership (BVSL)	4.61(.64)	.83(.46)	4.72(.76)	.93(.68)	1.81	.02

Mean inter-item correlation.
*p < .05; **p < .01; ***p < .001; ᵃp = .001.
^^^^ Adjusted Bonferroni value = .005; ^^^ Adjusted Bonferroni value = .017; ^^ Adjusted Bonferroni value = .013.

Effects of the Subject in S3

A significant multivariate effect of time on the 10 subscales of CPYDS was found based on repeated measures MANOVA, $F(10, 85) = 3.89$, $p < .001$, partial eta squared = .31, and on the three higher-order factors of CPYDS, $F(3, 92) = 4.10$, $p < .01$, partial eta squared = .12. Univariate effect tests showed that the participants increased significantly in scores of SC, EC, CC, BC, and CPI ($p < .001$ for SC and CPI, and $p < .01$ for EC, CC, and BC) and in scores of all three higher-order factors ($p < .01$ for CBC, $p = .001$ for PI, and $p < .05$ for PYDQ). The participants' score of SWLS also significantly increased between pre- and post-tests, $F(1, 94) = 7.79$, $p < .01$, partial eta squared = .08. Although no significant multivariate effect of time was found on SLS, univariate effect tests showed that the participants' score on CD ($p = .046$) has increased significantly between pre- and post-tests.

Discussion

This study assessed the impact of SL subject offered in two semesters of the 2015/16 academic year at PolyU through a single group pretest-posttest design. Students' improvements in a set of positive youth developmental indicators, satisfaction with life, and qualities related to service leadership were assessed. In general, the results revealed that the students gained significant improvement in positive youth development in general and some of its specific indicators, their satisfaction with life, and qualities related to service leadership after taking the subject. This indicates that the subject offered in the 2015/16 academic year was effective in fostering students' positive development, wellbeing, and development of qualities of service leadership.

The results are consistent with the findings of existing evaluative studies on the subject offered in previous academic years. For example, Shek, Yu, and Ma (25) evaluated a 2-credit SL subject (a piloted version of the 3-credit SL subject at PolyU) offered in early years based on objective outcome evaluation method. They found that students had positive changes in general positive youth development and some of its specific indicators, as well as in overall service leadership qualities. In another study objectively evaluating an intensive (3.5-day in length) SL subject offered to students in mainland China, it was found that the subject promoted students' development in most of the constructs indicating youth's positive development, satisfaction with life, and qualities related to service leadership (37). While these previous studies provided evidence about the effectiveness of SL subject, they were either based on a piloted version or an adapted version for students outside of Hong Kong. These findings added strong evidence to the fact that SL subject is an effective program for promoting university students' positive, holistic, and service leadership development. It also suggests the quality implementation of the subject in different academic years.

Several specific observations deserve attention. First, univariate effects showed that the participants gained significant improvement in most of the measured competences including social, emotional, cognitive, and behavioral competences, as well as their positive identity. This indicates that the subject is particularly useful in promoting students' development in these aspects. Social competence refers to interpersonal and social skills. Emotional competence refers to one's awareness of and abilities to manage emotions of oneself, and to understand and respond to others' emotions (38). Cognitive competence means an individual's cognitive abilities such as logical and critical thinking. Behavioral competence refers to the ability of utilizing different strategies to shape socially desirable behaviors in social interactions and to make appropriate behavioral choice (39). These different aspects of competences are vital to student development and are related to a set of positive developmental outcomes such as self-esteem (40), positive coping (41), and increased psychological wellbeing (42). They were also negatively associated with a set of youth developmental problems such as internalizing and externalizing behaviors (43), depression (40) and substance abuse (44). These competences were also important qualities for effective leadership development as shown by literature (45, 46). Therefore, students' improvement in these positive development indicators indicates that SL subject is particularly useful and effective in promoting students' multi-facet and holistic competences.

Second, results indicate that SL subject is also effective in promoting students' subjective wellbeing indicated by life satisfaction. Life satisfaction means people's global evaluation and perception of their quality of life as a whole (47). It is regarded as an important psychological strength based on positive psychology (48). Adolescents and university students with higher life satisfaction would have better psychosocial functioning (49), higher self-esteem (50), and better self-perceived health status (51). They were also less likely to develop problem behaviors (52) and have reduced level of anxiety and depression (53). As research revealed that adolescents in Hong Kong perceived lower-level satisfaction with life compared with US adolescents (54), it is necessary to promote adolescents and university students' life satisfaction to build up their strengths. Based on this, the results of the present study can help to show that SL subject could be one important mean or intervention strategy to help to elevate students' life satisfaction.

Third, students' service leadership qualities were promoted through studying the SL subject. This is important since one of the major purposes of the subject is to foster students' development in important qualities related to service leadership including generic competences, morality, and disposition of care according to positive youth development theory and framework of service leadership put forward by HKI-SLAM (55). As service leadership is an important quality that is highly needed for manpower in Hong Kong's economic and social development, the findings indicate that the SL subject can promote the required key service leadership qualities needed by the society. It also indicates that leadership knowledge, attitudes, and skills can be taught and nurtured through effective educational programs.

With regard to the result that students did not have change in some constructs such as "Moral Competence," "Self-Determination," "Spirituality," and "Resilience," this might be explained by several reasons. First, the effect of educational program on some developmental indicators such as morality and spirituality might take longer time to show. Second, the development of some qualities might also need more practice, life experience, and self-reflection in later life. It is hard to show significant improvement of students in these indicators in just one semester time. Third, although a lot of interactive, reflective,

and experiential learning activities are integrated in the SL subject, the teaching of the subject still needs to be continuously examined and improved to further enhance the effectiveness of the subject in promoting these developmental indicators.

Moreover, the separated analyses on students' changes in S1 and S3 groups showed that students in S3 group gained more positive improvement than students in S1 group. This might be due to the reason that the intensive-teaching-and-learning design might be more effective compared to the normal design of the subject as students may have more intensive time to be engaged in and reflect on their learning. This is also supported by the results of previous studies that the intensive SL subject offered in mainland China had much positive impact on students' development in all the indicators (37). Further studies need to be conducted to understand more about this issue. Of course, this is important to further examine the sustainability of the positive effects observed in the study.

This study had several limitations. First, although pre- and post-test design can help identify students' changes before and after studying the service leadership subject, students' improvement might also be influenced by their naturally maturing factors. Therefore, future studies should be conducted by adding control groups to better determine students' changes under the impact of SL subject. Second, as mentioned earlier, development of some indicators might need time, practice, and integration of experience; therefore, future studies might follow up with the students for a period of time after taking the subject to identify long-term effects of the subject on student development. Third, as objective outcome evaluation method can only identify effectiveness of the subject but not the subjective viewpoints and feedbacks of different stakeholders to the subject, future studies may adopt both objective and subjective outcome evaluation methods to form a more comprehensive understanding of the effects of the SL subject and give more valuable suggestions to its further improvement. Fourth, to evaluate the effectiveness of the subject in a more vigorous approach, scholars developed validated measures to assess students' knowledge about service leadership, their attitudes towards service leadership, as well as their behaviors related to service leadership (56-58). It is

valuable and important to utilize these measures in the objective outcome evaluation to assess students' changes in knowledge, attitude, and behavior of service leadership to provide more evidence on effectiveness of the subject in future. Last but not the least, as previous research suggests an association between positive youth development and life satisfaction (52), it is worth to further examine the association between students' change in life satisfaction and PYD across studying the subject to further understanding of the impact of the subject.

Despite of the above limitations, this study provides significant evidence about the effectiveness of service leadership subject at PolyU, which is vital for continuous improvement and sustainable development of the subject.

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Ethical compliance

The authors have stated all possible conflicts of interest within this work. The authors have stated all sources of funding for this work. If this work involved human participants, informed consent was received from each individual. If this work involved human participants, it was conducted in accordance with the 1964 Declaration of Helsinki. If this work involved experiments with humans or animals, it was conducted in accordance with the related institutions' research ethics guidelines.

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