Review Article

Co-designing expressive textile arts: student advancements in service-learning

Abstract

This study aims to find out the impact of expressive textile arts practice in co-design process on undergraduate students after taking a series of co-design textile arts and fashion creativity workshops from the service learning subject, "Community Engagement through Expressive Textile Arts and Fashion" offered by the Hong Kong Polytechnic University in 2018and 2019. A total of 38 prototypes had been jointly created by ex-mentally ill persons, people with intellectual disabilities, subject lecturers and undergraduate students during the co-design workshops in these two cohorts. Concepts of ex-mentally ill persons and people with intellectual disabilities in the community, expressive arts therapy, textile arts, expressive textile arts and service-learning subject were introduced in this subject. In the co-design process, students were expected to gain new knowledge and skills after they participated in the lectures, seminars, workshops and mini fashion show of the service-learning subject. In this study, quantitative research method was used to explore the impacts of co-design process on students practicing expressive textile arts with their service recipients. For the results, positive impacts are found on students regard to their participation in this service-learning subject. The main advancements include empowerment and enhancement of community engagement.

Keywords: co-design, expressive textile arts, fashion creativity, service-learning, empowerment, enhancement of community engagement

Jin LAM

Institute of Textiles and Clothing, The Hong Kong Polytechnic University, Hong Kong

Correspondence: Jin LAM, Assistant Professor, Room QT707, Institute of Textiles and Clothing, The Hong Kong Polytechnic University, Hunghom, Hong Kong, Tel +852 2766-6487, Fax +852 2773-1432, Email jin.lam@polyu.edy.hk

Introduction

In recent years, there is an evidence showing that co-design approach benefits students in supporting their empowerment and engagement.[1]The practice of designing arts emphasizes the nature of design activities, respect for different opinions, non-technical and non-verbal engagement, and continuous evaluation in the design process.[2] It is believed that service-learning subject practicing expressive textile arts in co-design process is effective to bring benefits to students. They can develop new skills and enhance their community engagement. In this study, it aims to explore the impact of expressive textile arts with co-design process on students after participating in a series of interactive textile arts and fashion creativity workshops in a service-learning subject offered by the Hong Kong Polytechnic University from May to July in 2018 and 2019. Cumulatively, 38 prototypes were co-created by subject lecturers, undergraduate students, ex-mentally ill persons and people with intellectual disabilities. Mini fashion show and static exhibition were held to present the prototypes in each year. Continuous 2-year data with 132 student responses were collected by quantitative research method, which were used to evaluate the impact of expressive textile arts on students participating in the service-learning subject. The findings in this study suggested that the service-learning project brings advancements to students.

About the service-learning subject

The service-learning subject titled, "Community Engagement through Expressive Textile Arts and Fashion" was offered in the summer semester in 2018 and 2019. There were 74 and 75 students, and 18 and 20 service recipients participated in this subject in 2018 and 2019 respectively. A total of 38 prototypes had been jointly created by ex- mentally ill persons, people with intellectual disabilities, subject lecturers and undergraduate students during attending the co-design workshops in these two years. Students participated in this service-

learning subject were full-time undergraduates from multidisciplinary specialism in the university. This subject was conducted with a combination of lectures and workshops about interactive textile arts and fashion creativity. And a seminar was delivered by the collaborative local community partners to introduce their background and the skills required for communication and cooperation with the service recipients before students meeting recipients in each year. Finally, mini fashion show and exhibition were held in the Hong Kong Polytechnic University to present the final expressive textile artworks, and students were required to complete the e-learning module and reflective journal.

The collaborative service agencies were "The New Life Psychiatric Rehabilitation Association" in 2018, and "The New Life Psychiatric Rehabilitation Association" and "The Hong Chi Association" in 2019. The service site of "The New Life Psychiatric Rehabilitation Association" focused on Yaumatei, Tsimshatsui and Mongkok Districts and "The Hong Chi Association" focused on Kwun Tong West in Hong Kong. The service recipients were ex-mental ill persons from "The New Life Psychiatric Rehabilitation Association" and people with intellectual disabilities from "The Hong Chi Association".

In the expressive textile arts making workshops, 2 to 5students were paired up with a recipient to discuss and co-design expressive textile artworks, the whole artworks making process was under subject lecturer's supervision.

The final expressive textile artworks were showcased in a styling presentation, a static exhibition, and a mini fashion show within the university. "I'm Perfection → I'm Perfashion 2018" was offered from May to July. The service recipients were 18 ex-mentally ill persons. Lectures and workshops were held in May. Mini fashion show and static exhibition was conducted from 4 to 13 July. "Iem powerful 2019" was also offered from May to July. The service recipients were 10 ex-mentally ill persons and 10 people with intellectual disabilities.

Lectures and workshops were held in May. Mini fashion show was showcased on 4 July and static exhibition was held from 4 to 12 July.

Expressive textile arts and fashion based intervention

Expressive arts therapy refers to creative arts therapy, intermodal expressive therapy, or interdisciplinary arts therapy, it is the practice of using storytelling, imagery, dance, drama, music, poetry, dream work, movement, and visual arts in an integrated way, to support human growth, development, and healing.[3] Textile arts are the linkage between handicrafts and arts as a metamorphosis of materials enriched with motifs, colours, meanings and concepts, it leads to unique personal experience.[4] Creative textile arts can facilitate people's engagement and empowerment and through engaging in creative activities, skills and confidence can be developed.[5]

Expressive textile arts were the medium used in the service-learning subject. Undergraduate students and service recipients practiced textile arts in the form of expressive arts together, they could gain benefits of these two art forms simultaneously. Expressive textile arts can be a tool to connect students and service recipients, and also promote student advancements. The application of colours, textures and patterns on textile artworks were emphasized in the workshops, they helped to interpret recipients' past experience and personal stories which leaded to self-discovery, self-expression and mental recovery. Mini fashion show was held in the university to demonstrate the final expressive textile artworks jointly created by students and service recipients. During the mini fashion show, recipients demonstrated their expressive textile artworks by modelling their designs by themselves and students assisted recipients throughout the show. The university as the venue for the mini fashion show and static exhibition acted as a social platform to propagate the results of the service-learning project to the public effectively.

Co-design process during workshops

Co-design process was adopted in the workshops of this subject. The co-design process during the workshops referred to the creative cooperation in design process among service provider, students and service recipients. The co-design process framework applied in the workshops was established with reference to the design process framework of empathy in design and co-design process framework.

Design process framework of empathy in design

Design process supports the development of empathy, which can assist student designers in service-learning to under stand users' needs empathically.[6]Kouprie and Visser concluded a framework of empathy in design practice involving four stages: stage i) 'discovery' to approach the users and motivate designer's exploration of users' need; stage ii) 'immersion' to make judgments and expand the understanding of the users, stage iii) 'connection' to connect the designers and users emotionally and understand the user's feelings, and stage iv) 'detachment' of designers to reflect the knowledge from users and initiate new ideas.[7]

Co-design process framework

In co-design practice, the design frameworks are focus on the emotional connection of designers and users. Sanders and Stappers proposed a four-stage-design process, which were: stage i) 'pre-design' was a research to provide designers inspiration and understand users' experiences which was an empathy process, stage ii) 'generation' to initiate ideas and concepts for further development, stage iii) 'evaluation' to assess the effectives, and stage iv) 'post-design' which had same purpose with pre-design stage while post-design focus on the users' experiences after a design was produced.[8]

Co-design process framework for expressive textile arts and fashion workshops

According to the review of process framework in empathy of design, co-design, and fashion and textile design, the theoretical co-design process framework for expressive textile art and fashion workshops is proposed and based on the 'analysis-synthesis-evaluation' concept. The framework is shown in Figure 1.

Analysis: The aim of analysis is to define problems and sub-problems of subjects. The stages included: a) 'Discovery' by group discussion of participants with lecturers,[8] both the lecturers and participants can have mutual understanding, b) 'Identification of problems and needs',[9] through the necessary information from participants, emotion or physical problems of participants and the need of workshops can be determined, and c) 'Definition of problem',[9] the needs on the expressive textile arts techniques, empathy in design and co-design are identified.
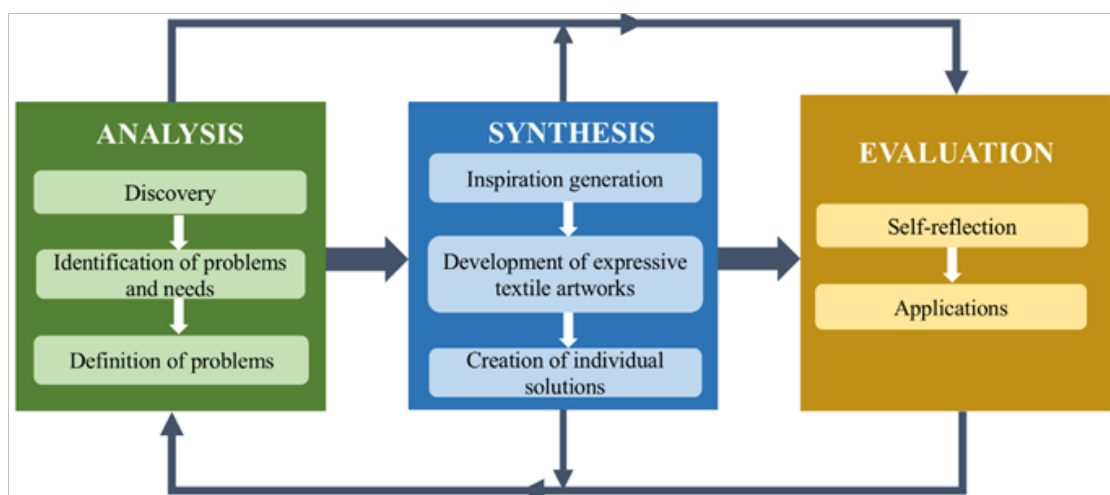

Figure 1 Theoretical co-design process framework for expressive textile arts and fashion workshops.

Synthesis: During this stage, preliminary ideas and solutions are created by the emotional resonance connection between participants and lecturers.[7] The steps include: a) 'Inspiration generation',[10] inspirations can be generated from past personal experiences or recovery stories. This step can recall the participants' own memories experiences, b) 'Development of expressive textile artworks',[9] participants create artworks according to their inspiration and different techniques, such as DIY stamping, fabric collaging, hand painting and other embellishments, and c) 'Creation of individual solutions',[9] solutions of problems can be created with group members or lectures. Participants are able to connect emotionally or understand others' feelings by peer supporting and the problem-solving process.[7]

Evaluation: The last phase is evaluation including: a) 'Self-reflection',[8] participants can have self-reflection by recalling their experiences, emotion and ideas generated during the workshops, and b) 'Applications',[11] the problem-solving methods learned from the expressive textile arts techniques can be applied into their personal life. A feedback loop is required throughout the framework for refinement.[9]

Student advancements in co-design based service-learning subject

A number of research papers studied the impacts of co-design intervention and service-learning subject on youth, showing positive results mainly on youth advancements (Table 1). This study mainly focusses on students who belong to the age group of youth. According to the World Health Organization, youth is defined as the age group of 15-24years.[12] The study by Kinloch, Nemeth and Patterson focused on learning and level of participation of students in their service-learning project, emphasizing this focus helps researchers to understand students' empowerment and community engagement in the service-learning subject.[13] Service-learning subject always focuses on students' transformation, especially in learning, behavioral and affective outcomes.[14] The service-learning subjects guide students into developing a strong connection to the community.[15] Service-learning subject benefits personal and social learning of students by facilitating their self-awareness, self-management, responsible decision making, social awareness and relationship skills, which leads to positive youth development.[16] It is explained that personal and social learning are the process which allow people learn to understand and manage their emotions, behave ethically and responsibly, prevent any negative behaviors, make good decisions, care about others and develop positive relationships with others.[16] In addition, students can acquire new skills from teammates and service recipients through the group interaction.[13] It is pointed out that high satisfaction of students towards their involvement in the service drives them to engage in more services.

Design is an intervention usually applied in service-learning. Students can gain design skills through art making service-learning.[17] The students who had participated in the design-based service-learning subject reflected their design abilities were strongly improved.[18] Service-learning with design element fosters students' creativity, it allows them to apply their design knowledge and experience on the artwork.[19] Also, design-based service-learning helps students to develop creative resilience.[18] As they may face challenges during the design-based service-learning project, and the project can train them to possess higher ability to overcome obstacles during design process. In addition, it improves problem-solving skill in real life and ability to work in team during designing their artworks.[19] And it is found out that design-based service-learning brings positive impacts to students on developing self-perceived skill in the areas of empathy, inspiration and relationship development.[18] Service learning in the form of group participation encourages the practice of teamwork and design-based service-learning project facilitates good teamwork and teambuilding of the participants, leading to better engagement in the service-learning activities.[17] Since good interaction in a team further promotes students' and service recipients' engagement in the service-learning activities.

Service-learning subject adopting co-design approach is believed to have similar result in promoting students' advancements. Co-design is defined as the "creativity of designers and people not trained in design working together in the design development process".[20] The design process of co-design enables a wide range of disciplines and stakeholders to collaborate together.[21] The principle of co-design process is a creative cooperation in design process during the programme delivery and usage, for instance, the interactions between service provider, students and recipients in service touch point.[22] The co-design approach provides designers a platform to listen to the participants, engaging them in design process and helping them to build up knowledge of good design.

A co-design pathway is able to utilize empathic techniques throughout the design process, resulted in developing empathic understanding of service recipients, identifying service recipients' centered criteria, developing empathic concern, and generating and evaluating design ideas.[6] The role of empathy in design is discussed in the ways of emphatic design and design for empathy.[24] In which emphatic design refers to an approach for designers to design with empathy in order to understand recipients' feelings, desires, needs and contexts, and create solutions. The emphatic design has potential to foster designers in unusual collaborative skills, observational skills, open-mindedness and curiosity. While 'design for empathy' means giving empathic feelings and behavior within the community. A broadened concept of empathy to foster empathy in the co-design process among various stakeholders.[23] In co-design process, instructors and students can gain a deeper understanding of the service recipients through communication with the elements of enhancing empathy, supporting engagement and providing inspiration.[24] Thus, it results in empathic understanding and engagement, and also creates mutual learning among participants.

The co-design process provides chances for undergraduate students to integrate knowledge which learn from their disciplines to cope with complex issues and develop critical thinking in the service-learning subject.[25] Undergraduate students had gained values during the co-design process in the service-learning course.[26] Students reflected the co-design process had made the course become interesting. And they admitted they had developed better understanding to the service recipients' needs during the co-design process. Also, students recognized their role of community participation and civic responsibility in the community after participating in the service-learning course.[26] The co-design service-learning course is a real practice which enables students to link with the real-world issues and understand the problems in the community.

Table 1 Student advancements in co-design based service-learning subject

	Personal and intellectual learning outcomes	Students' learning experience	Social and civic learning outcomes	Students' intention for continual engagement in community
Impacts of service-learning subject	• Facilitating self-awareness &self-management[16]	⇒ Autonomy		
		Autonomy ⇐	• Making responsible decision[16]	
		Interaction ⇐	• Establishing strong connection to the community[15]	⇒ Civic engagement
		Help & support ⇐		
		Interaction ⇐	• Fostering interaction & community engagement[13]	⇒ Civic engagement
		Interaction ⇐	• Developing social awareness & relationship skills[16,18]	⇒ Civic engagement
		Value & benefit ⇐	• Demonstrating empathy of the underprivileged members in the community[6,8,13]	⇒ Civic engagement
Impacts of design-based intervention	• Developing creative resilience &design knowledge[6,18,28]	⇒ Interest		
		⇒ Disciplinary knowledge		
	• Improving problem-solving skill in real life[19]	⇒ Challenge		
		⇒ Interaction		
	• Enhancing teamwork ability[19]	Interaction ⇐	• Fostering interaction & community engagement[17]	⇒ Civic engagement
		Interaction ⇐	• Fostering interaction & community engagement[18,21,22,28,32]	⇒ Civic engagement
		⇒ Interaction	• Developing communication & collaborative skills[23,25,29]	⇒ Civic engagement
	• Developing personal relationship with teammates[18]	Interaction ⇐	• Becoming a more responsible member in the community as a global citizen[26]	⇒ Civic engagement
			• Fostering equal participation[30,31,32]	⇒ Civic engagement
				⇒ Civic engagement
Impacts of co-design process	• Developing critical thinking[25]	⇒ Autonomy		
	• Recognizing own strengths & weaknesses[26]	⇒ Autonomy ⇒ Value & benefit		
	• Attaining values & reflections[26]	⇒ Reflection		
	• Achieving help & support[27,28]	⇒ Help & support		
	• Affirming efforts[31]	⇒ Effort ⇒ Interest		
	• Nurturing interest and passion[32]	⇒ Help & support		

In co-design process, students can gain help and support and know their strengths and weaknesses through receiving instructors' feedback on their work during the co-design project. As design reviews are the fundamental of design education and practice, instructors review students' work and then point out their strengths and weaknesses, remind them about the potential roadblocks and give alternative suggestions to help students to modify their work during the co-design process.[27]

Students can acquire design thinking skill through the design review conversations with instructors in the co-design process.[27] Students need to explain and elaborate their design ideas and reflect their feelings and thoughts to the instructors, they are able to practice their own design thinking in the conversations. And social relation can be built up through the interactions such as verbal and non-verbal communications and teammates' supportive behavior in the design process.[28] Co-design service-learning can be considered as a high impact practice to enhance students' personal relationship with their teammates and service recipients, promote learning, and further encourage them to have higher engagement in the service-learning activities.[18] Creation in co-design service-learning stimulates group interaction such as discussions and questions throughout the design process, the communication in this process facilitates development of personal relationship among student participants and service recipients. The participatory planning in the co-design process allows students to be reflective practitioners, to establish good collaborative relationship and communicate with people with different viewpoints, thus they can learn to work and communicate effectively with teammates and service recipients.[25] Similarly, co-creation in service-learning subject allows collaborative and co-constructive interactions between instructors, students and service participants, which provides a more equitable relationship among them during service-learning.[29] Dialogic relationships and collaborative decision-making processes developed among instructors, students and the service recipients in the co-design process can generate chances for students in learning and participation.[13] Co-design approach allows students to express their viewpoints with equal opportunities. Everyone in the co-design activities are equal participants, they are all designers which teach and learn from each other.[30] Co-design approach creates equal status among participants, forming a positive intergroup atmosphere in the activities.[31] Also, co-design activities consider youth as an equal partner in decision-making during the design process.[32] Thus, students can enjoy equal participation in service-learning. The designs developed under co-design approach incorporate ideas from students, which helps to affirm their efforts and this results in boosting them into ongoing engagement in the activities.[32]

Table 1 gives an overview of student advancements in co-design based service-learning subject summarized from the reviewed literatures, showing service-learning in co-design approach brings advancements to students in terms of learning outcomes, learning experience and intention for continual engagement in community. Students participated in co-design based service-learning can attain learning outcomes in 4 areas including personal, intellectual, social and civic learning outcomes, where the learning outcomes are correlated to students' learning experience in 9 themes(autonomy, help and support, effort, interest, disciplinary knowledge, interaction, challenge, value and benefit & reflection) and their intention for continual engagement in community. These learning outcomes and learning experience are the variables that would be adopted to design the pre and post self-administered questionnaires in this research.

Method

In this study, a quantitative research method was adopted to collect data. Pre and post self-administered questionnaires survey were conducted before and after the expressive textile arts making workshops in 2018 and 2019. The pre-experience questionnaire consisted of 18questions and the post-experience questionnaire included 57questions. Variables in the two questionnaires were 'students attainment of learning outcomes as a result of attending a service-learning subject', 'students' learning experience of their service-learning subject and project' and 'students' intention for continual engagement in community service after taking the service-learning subject'. Subjects were 74 and 75studentsenrolled in the service-learning subject in 2018 and 2019, respectively. 4-and 7-point Likert scaling and open-ended questions were adopted in the questionnaires for the questions regarding students' experience in the subject. The 4-point rating scale was set as 1 for 'definitely not', 2 for 'quite unlikely', 3 for 'quite likely' and 4 for 'definitely yes'. While the 7-point rating scale was set as 1 for 'strongly disagree', 2 for 'disagree', 3 for 'some-what disagree', 4 for 'neither agree nor disagree', 5 for 'some-what agree', 6 for 'agree', and 7 for 'strongly agree', where scales 1 to 3, 4 and 5 to 7 are later divided as 'little', 'a fair amount' and 'much' respectively. Respondents took an average time of 45 minutes to accomplish the questionnaire. Software IBM SPSS Statistics 25 was applied to analyze the data collected.

Results and discussion

The results of the pre-post questionnaires conducted in 2018 and 2019 are presented in Tables 2-4, they show the impacts of expressive textile arts co-design service-learning project on students practicing expressive textile arts with service recipients in the service-learning subject. Positive outcomes were found on students' rating in the areas of 'attainment of learning outcomes as a result of attending a service-learning subject', 'students' learning experience of their service-learning subject and project' and 'students' intention for continual engagement in community service after taking the service-learning subject'.

Students' attainment of learning outcomes as a result of attending a service-learning subject

Table 2 shows the students' attainment of learning outcomes, over 80% of the respondents 'much agreed' that they gained advancements in intellectual, social, civic and personal learning. For intellectual learning outcome, more than 84% of the respondents reflected that they had a deeper understanding of the linkage between service-learning and the academic content of the subject and claimed that they were able to apply and integrate knowledge to deal with complex issues. Over 85% of them asserted that they can solve challenging real-life problems. And not less than 80% of the respondents stated that they had learnt to think critically. A student reviewed herself after she completed this subject, 'I am able to identify and examine issues from different perspectives, and to deal with both anticipated and unanticipated problems that I may encounter in the service setting.'

For social learning outcome, over 85% of the respondents claimed that they could work effectively in teams and 87% of them stated they could communicate effectively with peers, collaborators and service recipients. Student reflected that 'We completed the SL project successfully, we need to work effectively in teams and communicate well with my classmates, the community partners, and the service

recipients.' 'To complete this fashion project, it cannot depend on only one person. It is a kind of teamwork. In our group, I am lucky that every teammate makes use of their strength and finishes the project together. Through the cooperation, I can learn new knowledge and skills of other field of studies from my group mates as they are from different disciplines.'

Table 2 Students' attainment of learning outcomes

Items	N	Mean	SD	Percentage distribution (%)		
				1-3 Little	4 A fair amount	5-7 Much
Intellectual learning outcomes						
2-1 Deeper understanding of the linkage between service-learning and the academic content of the subject.	131	5.44	0.90	2.3%	13.0%	84.7%
2-2 Applying/integrating knowledge to deal with complex issues.	132	5.41	0.95	2.3%	13.6%	84.1%
2-3 Solving challenging real-life problems.	132	5.36	0.98	5.3%	9.1%	85.6%
2-4 Thinking critically.	132	5.45	0.99	2.3%	15.9%	81.8%
Social learning outcomes						
2-5 Working effectively in teams.	132	5.67	1.00	2.3%	12.1%	85.6%
2-6 Communicating effectively with peers, collaborators, and service recipients.	131	5.61	1.00	3.1%	9.9%	87.0%
Civic learning outcomes						
2-7 Better understanding of the problems facing underprivileged members of the community.	132	5.38	0.97	3.8%	12.9%	83.3%
2-8 Increased interest/commitment to serve people in need.	132	5.45	0.98	3.0%	14.4%	82.6%
2-9 Becoming a more responsible member of your community.	132	5.53	0.94	2.3%	11.4%	86.3%
2-10 Cross-cultural awareness and skills.	132	5.44	0.92	1.5%	14.4%	84.1%
2-11 Becoming a more responsible global citizen.	132	5.47	0.94	2.3%	11.4%	86.3%
Personal learning outcome						
2-12 Better understanding of my own strengths and weaknesses.	132	5.54	1.07	3.9%	9.1%	87.0%
Overall learning outcome						
2-13 Overall learning gain.	131	5.57	0.92	2.3%	9.9%	87.8%

For civic learning outcome, more than 83% of the respondents revealed that they had better understand of the problems facing the underprivileged members of the community. A student expressed that 'I have participated lots of voluntary work to serve the community such as visited the elderly residents living alone and visit the poor family. However, these voluntary works were not last long period of time and most of them were organized one time only. Therefore, it is difficult for me to have a deeper understanding of the recipients. Different from my previous experiences, this service learning programme provides a chance for me to interact and understand the needy in my community.' Around 82% of them disclosed that service-learning subject increased their interests and commitment to serve people in need. Also, over 86% of them admitted that they became a more responsible global citizen and member of their community. And more than 84% of them claimed that they gained cross-cultural awareness and skills.

For personal learning outcome, 87% of the respondents revealed that they had better understand of their own strength and weaknesses,

which facilitates higher self-awareness. Students reflected that 'After completing the expressive textile artworks and the days of shooting and exhibition, we have reviewed our performance throughout the project and we found out our strengths and weaknesses.' Another student expressed that 'Since this is a big project, it is impossible to finish by one person. When there is cooperation, it would also a process to find ourselves the strengths and weaknesses. The process of everyone in the group to seek their position and role play is important to build up self-learning and also to train our cooperation skills.'

Students' learning experience of their service-learning subject and project

Apart from learning outcomes, students' learning experience of their service-learning subject and project is also focused in this study (Table 3). Over 70% of the respondents disclosed that they took this subject because of their interests. A student indicated 'I am passionate about fashion design, and therefore really like the idea of helping others through creative media, instead of the normal volunteering and

social work, this brings more joy, teamwork and excitement to both parties. I know that expressing creativity in fashion can be quite the therapeutic escape in some way for me, this course is an excellent way to share such an experience with people who don't get to do it in their lives.' And more than 80% of them reflected that this subject was very closely related to their major studies. A student expressed 'Before attending this service-learning workshop, I was quite excited and curious about my duties and details of the subject. I am a student from fashion and textile discipline with some experiences on garment or textile making, it is the first time for me to work out a whole set of outfit with the recipient from community. I hoped that I can make well use of my relevant textile knowledge to help the recipient and teammates to overcome the difficulties. I wish to gain more experiences on my field of study, so, I joined this programme.' Another student said, 'In this service, I am looking forward the workshops before attending because it provides the opportunity to apply my knowledge and skills that I have learnt in class to plan and deliver a service needed by the community.'

Table 3 Students' learning experience of their service-learning subject and project

Items		N	Mean	SD	Percentage distribution (%)		
					1-3	4	5-7
					Disagree	Neutral	Agree
Taking subject mainly for fulfilling SL requirement							
3-1	The main reason for me to take this SL subject is to fulfill the PolyU Service-Learning Requirement for graduation.	132	5.04	1.11	6.0%	27.3%	66.7%
Taking subject because of interest							
3-2	I took this subject because I was very interested in the SL project of the subject.	131	5.13	1.01	3.8%	25.2%	71.0%
Service closely related to my Major							
3-16	The service I performed was closely related to my chosen major/ discipline of study.	132	5.52	1.19	5.4%	12.9%	81.7%
Value & benefit							
3-3	I believe that the service I performed in the SL project has benefited the people I served.	132	5.48	0.98	3.0%	12.9%	84.1%
3-12	I felt that my service was appreciated by the collaborating agency/ service recipients.	132	5.55	0.92	3.1%	9.8%	87.1%
Effort							
3-13	I put a lot of effort into planning, preparing and delivering the service.	132	5.54	0.97	2.3%	13.6%	84.1%
Help & support							
3-4	My instructors and TAs prepared me appropriately for performing the service.	131	5.50	0.95	3.1%	12.2%	84.7%
3-6	I could feel the enthusiasm and passion of my instructors and TAs in delivering the subject and the service.	132	5.53	0.97	3.1%	10.6%	86.3%
3-8	Help and support was usually available from the instructors/TAs/ collaborative agency when I needed it.	132	5.49	0.96	3.8%	9.1%	87.1%
3-17	I benefited a lot from the interaction I had with the instructors, TAs and other students in class.	132	5.55	0.93	2.3%	10.6%	87.1%
Interaction							
3-5	My teammates in the SL project were generally motivated and supportive.	132	5.63	1.01	3.1%	9.8%	87.1%
3-7	There were a lot of opportunities for me to meet and interact with the people I served.	131	5.51	1.00	3.1%	11.5%	85.4%
3-11	I developed a good personal relationship with my teammates.	132	5.61	0.92	0.8%	13.6%	85.6%
Challenge							
3-9	The SL project provided challenging and meaningful tasks for me to accomplish.	131	5.54	0.95	3.1%	9.9%	87.0%

Table Continued

Items		N	Mean	SD	Percentage distribution (%)		
					1-3	4	5-7
					Disagree	Neutral	Agree
3-18	The SL project challenged me to try things that I had never done before.	132	5.53	1.01	3.8%	12.1%	84.1%
Autonomy							
3-10	In my SL project, I carried out tasks that were mainly designed by me/ my team rather than following instructions.	132	5.43	1.04	4.6%	9.8%	85.6%
Reflection							
3-14	I was required to engage regularly in reflective activities (e.g. writing reflective journals or project logs, debriefing sessions, project reports) during and after the SL project.	132	5.46	0.90	1.5%	12.9%	85.6%
3-15	The reflective activities of the subject were well structured with clear instructions and guidelines.	132	5.50	0.94	1.5%	14.4%	84.1%
Overall							
3-19	Overall, I found the experience of studying this SL subject highly useful and rewarding.	132	5.61	1.00	2.3%	12.8%	84.9%

Many students claimed that they gained new values and benefits in this service-learning. More than 84% of the respondents believed that the service they performed had benefited the service recipients. A student reviewed 'The ultimate goal of this course is to use appropriate visual languages, such as colors, textures or shapes to interpret the recipients' memories and personal stories to self-discovery and healing. By the end, they are able to regain their self-confidence as well as rebuilt self-identity through creativity expression.' And over 87% of them felt that their services were appreciated by the service collaborating agency and service recipients.

Students' efforts are related to their attainments. Over 84% of the respondents reflected that they put a lot of effort into planning, preparing and delivering the services. A student revealed that 'In the exhibition, it was a memorable day for us and our recipient as it showed the efforts and works of all people.' Also, one student said that 'The green floral jumpsuit and silky scarf are fully made by all of us and the recipient. Thus, these artworks are meaningful to me as they reflect the efforts of us and remind me of caring other people all the time.'

In this co-design service-learning subject, students could experience help and support from instructors, teaching assistants, people from collaborative agencies and other students in class. Over 84% of the respondents stated that instructors and teaching assistants prepared me appropriately for performing the service. Students stated that 'We had a few lectures about the brief idea of this course, including we were going to work with, what we are going to do and how was that going to help the recipients.' And around 86% of them disclosed that they could feel the enthusiasm and passion of the instructors and teaching assistants in delivering the subject and the service. In addition, more than 87% of them revealed that help and support was usually available from the instructors, teaching assistants and people from the collaborative agencies when they were needed,

and they were benefited a lot from the interaction they had with the instructors, teaching assistants and other students in class. A group of students disclosed that 'We were not very sure what we had to do, so the instructor showed us a clip of the last year service-learning course. The video was very upbeat and informative as we saw schoolmates sharing their experiences.' A student indicated she was benefited from her teammates by learning new skill, 'All my group mates were willing to teach like making a pair of new earrings and sewing cotton materials so that we could cooperate effectively and smoothly. When I first saw our finished garment, it was incredible, and I felt proud of all of us. I did not think that I could participate in the whole process and make textile artworks.'

Through this service-learning, students' interactions were motivated. Around 87% of the respondents claimed that their teammates in this service-learning project were generally motivated and supportive. And over 85% of them reflected that there were a lot of opportunities for them to meet and interact with the service recipients, and they also developed a good personal relationship with their teammates. One of the students shared, 'Once upon a time, our recipient found satisfied with the pattern of the cotton material I have selected for her when we were sourcing for materials. I remembered I have told her I love floral pattern too and it was fortunate that we have same taste and style as I could make a certain contribution to my team. I found really surprised and touched when she gave me a pair of tailor-made pants that she sewed for me.' Another student talked about the interactions between him and his recipient, 'In each workshop, our recipient gets up early to cook something for us. Also, she always brings some fruits and desserts. It made me satisfied and happy in each class. Once, we went to the Campus Chinese restaurant to eat dim sum with her. We chatted about everything when we were eating. She shared her personal experience and life principles with me.' A student commented on the communication method and relationship

among teammates, 'I perceived the relationship with my group will be friendly and easygoing. The group has been nice and listening to my ideas and they also provided many new ideas for the production process. They served the best effort for this collaboration and they try to help and call for my help in order to make a collaborated design. They also try to engage into different topics so that we do not feel bored while we are making the garments.'

During the service-learning project, students might face some challenges. 87% of the respondents agreed that the service-learning project provided challenging and meaningful tasks for them to accomplish. A student reflected after completion of this project, 'When I first saw our finished garment, it was incredible and I felt proud of all of us. I did not think that I could participate in the whole process and make textile artworks. To me, this is the most meaningful thing I did in this semester.' And around 84% of them expressed that this project challenged them to try things that they had never done before. A team of students denoted 'We lack professional sewing skills, and our service recipient wants her one-piece pants starts from zero, we tried our best to sew a new and tailor-made garment even without any experience before. Although we are not professional at all, we attempted again and again to alter a bit every time until she felt satisfied.'

Students experienced autonomy in this service-learning project. More than 85% of the respondents claimed that they carried out tasks in the project that were mainly designed by them or their team rather than following instructions. Reflective activities were offered to students in this service-learning subject. Over 85% of the respondents stated that they were required to engage regularly in reflective activities such as writing reflective journals or project logs, debriefing sessions and project reports during and after the SL project. More than 84% of them agreed that the reflective activities of the subject were well structured with clear instructions and guidelines.

Students' intention for continual engagement in community service

Overall, nearly 85% of the students found that the experience of studying this service-learning subject was highly useful and rewarding. After completing this service-learning subject, almost 90% of the students planned to participate in other community service or civic engagement activities (Table 4).

Table 4 Students' intention for continual engagement in community service

Item		N	Definitely not	Quite unlikely	Quite likely	Definitely yes
3-20	Do you plan to participate in other community service or civic engagement activities after completing this SL subject?	119	0.8%	10.1%	76.5%	12.6%

Conclusion

In this study, the result shows positive impacts on students regarding their participation in this service-learning subject. Students gained advancements after they had participated in the lectures, seminars, workshops and mini fashion show of this subject. An overview of student advancements in co-design based service-learning subject is reviewed. Service-learning in co-design approach brings advancements to students in 4 areas of learning outcome including personal, intellectual, social and civic learning outcomes, where the learning outcomes are correlated to students' learning experience in 9 themes (autonomy, help and support, effort, interest, disciplinary knowledge, interaction, challenge, value and benefit & reflection) and their intention for continual engagement in community. Students empowered new knowledge and skills like expressive textile arts, critical thinking, effective communication and problem-solving in the project. And they increased their self-awareness with better understanding of their strengths and weaknesses. Also, they had learnt to develop good personal relationship with others through effective team cooperation. This service-learning subject motivated students to engage in more social services in the community, which increases students' social awareness and facilitates their community engagement. In addition, it promoted students to be a responsible person to serve people in need.

Acknowledgments

Conflicts of interest

The author declares no conflict of interest.

Funding

References

1. Hagen P, Reid T, Evans M, et al. *A Co-design reconfigured as a tool for youth wellbeing and education: A community collaboration case study.* In: Huybrechts L, Teli M, Light A, Editors. *Proceedings of the 15th Participatory Design Conference V2; 2018 Aug 20-24; Hasselt & Genk, Belgium.* New York: Association for Computing Machinery. 2018;1–5.

2. Simonsen J, Robertson T. *Routledge international handbook of participatory design.* New York: Routledge; 2013.

3. Atkins SS. *Expressive arts therapy creative process in art and life.* Boone, NC: Parkway Publishers; 2003.

4. OrbánAM. From legendary textiles to fibre art, cultural fingerprints in textile art. *Diversitate Si Identitate Culturala in Europa*. 2013;10(1):109–118.

5. Griffiths S. The experience of creative activity as a treatment medium. *Journal of Mental Health*. 2008;17(1):49–63.

6. Hess JL, Fila ND. The manifestation of empathy within design: Findings from a service-learning course. *Co Design*. 2016;12(1-2): 93–111.

7. Kouprie M, Visser F. A framework for empathy in design: Stepping into and out of the user's life. *Journal of Engineering Design*. 2009;20(5):437–448.

8. Sanders EBN, Stappers PJ. Probes, toolkits and prototypes: Three approaches to making in codesigning. *Co Design*. 2014;10(1):5–14.

9. La Bat KL, Solkolowski SL. A three-stage design process applied to an industry- university textile product design project. *Clothing & Textiles Research Journal*. 1999;17(1):1–19.

10. Gaudion K, Hall A, Myerson J, et al. A designer's approach: How can autistic adults with learning disabilities be involved in the design process? *Co Design*. 2015;11(1):49–69.

11. Sanders E, Brandt E, Binder T. A framework for organizing the tools and techniques of participatory design. In: Bodker K, Bratteteig T, Loi D, Robertson T, editors. Proceedings of the 11th Biennial Participatory Design Conference. 2010 Nov 29 - Dec 3; Sydney, Australia. New York: Association for Computing Machinery; 2010:195–198.

12. World Health Organization. *Youth and health risks*. Sixty-four world health assembly. 2011; 1-7.

13. Kinloch V, Nemeth E, Patterson A. Reframing service-learning as learning and participation with urban youth. *Theory into Practice: Critical Service-learning Initiatives*. 2015;54(1):39–46.

14. Kiely R. A transformative learning model for service-learning: A longitudinal case study. *Michigan Journal of Community Service Learning*. 2005;(12)1:5–22.

15. Eyler J, Giles Jr. DE, Stenson CM, et al. At a Glance: What we know about the effects of service-learning on college students, faculty, institutions and communities, 1993-2000. 3rd edn. *Higher Education*. 2001;139.

16. Pellitteri J, Smith B. *Building academic success on social and emotional learning: What does the research say?* In: Joseph E Zins et al, Editors. *Reading & Writing Quarterly: Overcoming Learning Difficulties*. 2007;23(2):197–220.

17. Donald BF. *Reflective art making coupled with service-learning: Making community visible*. Pittsburgh, PA: University of Pittsburgh. 2017.

18. Malinin, LH. Soft skill development in service-learning: Towards creative resilience in design practice. *Proceedings of the Institution of Civil Engineers: Urban Design and Planning*. 2018;171(1):43–50.

19. Stefaniak J, Katsioloudis P, Matrood B. Toys Redesigned: The intersection of industrial technology and service-learning principles. *Technology and Engineering Teacher*. 2017;77(1):32–36.

20. Sanders EBN, Stappers PJ. Co-creation and the new landscapes of design. *Co Design*. 2008;4(1):5–18.

21. Burns C, Cottam H, Vanstone C, et al. *RED Paper 02: Transformation design*. Design Council, United Kingdom; 2006.

22. Steen M, Manschot M, Koning N. Benefits of co-design in service design projects. *International Journal of Design*. 2011;5(2):53–60.

23. Akoglu C, Dankl K. Co-creation for empathy and mutual learning: A framework for design in health and social care. *Co Design*. 2019.

24. Sleeswijk Visser F, Van Der Lugt R, Stappers PJ. Sharing user experiences in the product innovation process: Participatory design needs participatory communication. *Creativity and Innovation Management*. 2007;16(1):35–45.

25. Sletto B. Educating reflective practitioners: Learning to embrace the unexpected through service learning. *Journal of Planning Education and Research*. 2010;29(4):403–415.

26. Derr V. Integrating community engagement and children's voices into design and planning education. *Co Design*. 2015;11(2):119–133.

27. Adams R, Mcmullen S, Fosmire M. Co-designing review conversations - visual and material dimensions. *Co Design*. 2016;12(1-2):1–5.

28. Sonalkar N, Mabogunje, A, Leifer L, et al. Visualising professional vision interactions in design reviews. *Co Design*. 2016;12(1-2):73–92.

29. Kafai YB, Desai S, Peppler KA, et al. Mentoring partnerships in a community technology centre: A constructionist approach for fostering equitable service learning. *Mentoring & Tutoring: Partnership in Learning*. 2008;16(2):191–205.

30. Fisher K, Yefimova K, Bishop A. *Adapting design thinking and cultural probes to the experiences of immigrant youth: Uncovering the roles of visual media and music in ICT Wayfaring*. In: Kaye J, Druin A, Lampe C, et al, editors. *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems; 2016 May 7-12; San Jose, CA*. New York: Association for Computing Machinery. 2016:859–871.

31. Larkin M, Boden Z, Newton E, et al. On the brink of genuinely collaborative care: Experience-based co-design in mental health. *Qualitative Health Research*. 2015;25(11):1463–1476.

32. Nakarada-Kordic I, Hayes N, Reay S, et al. Co-designing for mental health: Creative methods to engage young people experiencing psychosis. *Design for Health*. 2017;1(2):229–244.