



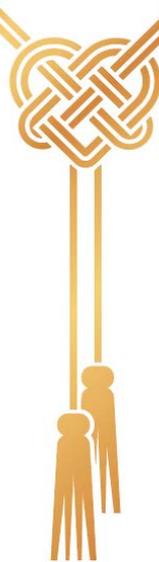
# Transforming holistic competency development and assessment in education and beyond

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# Summary of the Impact

## Holistic Competencies and Virtues Education (HAVE)

Holistic competency (HC) is an umbrella term including different types of generic skills (e.g., creativity; problem-solving), positive values and attitudes (e.g., appreciation; integrity; respect). These competencies are not only important for students' career, but also for their well-rounded development as a person (Chan et al, 2017; Chan & Yeung, 2019).

**Cecilia's HC research has achieved a range of significant impacts worldwide, especially in the following areas:**

1. Empowering students worldwide to self-assess and recognize their strengths and weaknesses in HC

2. Industry partnership and donation in developing and assessing students' and graduates' HC

3. Educators' professional development in developing and assessing students' HC

4. Societal awareness and knowledge of HC

5. Developing students' HCs

6. Initiating a shift in education culture



# Underpinning Research – an Overview

## When?

For over 15 years, Cecilia has dedicated her research to the development and assessment of holistic competencies and her professionalism in this field has gained recognition both locally and internationally.

## Role in the creation of such knowledge:

Cecilia is the corresponding author and principal investigator of her research on holistic competencies.

## Contextual information:

### Innovativeness and significance:

- Cecilia’s HC frameworks/models address a number of research gaps in HC education. Her Generic Skills Perception Instrument is among the first to validly measure students’ self-assessment of their HCs; her 4D framework on student HC assessment literacy for the first time illustrates what students need to know and do to improve HC assessment; her HCD framework and Chain of Mirrors provide powerful tools for educators to incorporate HC development into activities and the curriculum design.
- These studies not only facilitate a deeper understanding of students’ HC development, but also offer practical guidance/theoretical underpinning to a range of educational reforms at all levels of education.

- **3 GRF Grants**
- **2 UGC T&L Grants**
- **1 UGC Matching Fund**
- **External Donation**
- **Outstanding Young Researcher Award**
- **Many internal funds**

# Underpinning Research (1) – Generic Skills Perception Instrument



<b>Outline</b>	Two instruments have been developed. One specific for engineering (Chan et al, 2017), the other one is for all disciplines (Chan & Luk, 2020). Generic Skills Perception Instrument is the first validated instrument for students to self-assess their HC level and probe into their perceived importance of HCs. This instrument is important because students' perceptions and attitudes have an important bearing on their motivation and engagement in HC development. It also provides a reliable means for policymakers and educators to understand students' perspectives and thus to better integrate HCs into the curriculum. Adopted by many universities worldwide, the Instrument enables benchmarking across disciplines and countries.
<b>Time</b>	2015-2016; 2018 -2019
<b>Role</b>	Principal investigator; first author
<b>Contextual info</b>	The research involved 1241 engineering students from 3 universities in Hong Kong (1) The second research involved 2192 students from 6 universities in Hong Kong (2)
<b>Key findings</b>	Exploratory factor analysis resulted in eight scales and six scales respectively.

(1.) Chan, C.K.Y., Zhao, Y., & Luk, L.Y.Y. (2017). A validated and reliable instrument investigating engineering students' perceptions of competency in generic skills. *Journal of Engineering Education*, 106, Issue 2, 299 – 325. DOI: [10.1002/jee.20165](https://doi.org/10.1002/jee.20165).

(2.) Chan, C.K.Y. & Luk, L.Y.Y (2020). Development and validation of an instrument measuring undergraduate students' perceived holistic competencies. *Assessment & Evaluation in Higher Education*. DOI: 10.1080/02602938.2020.1784392

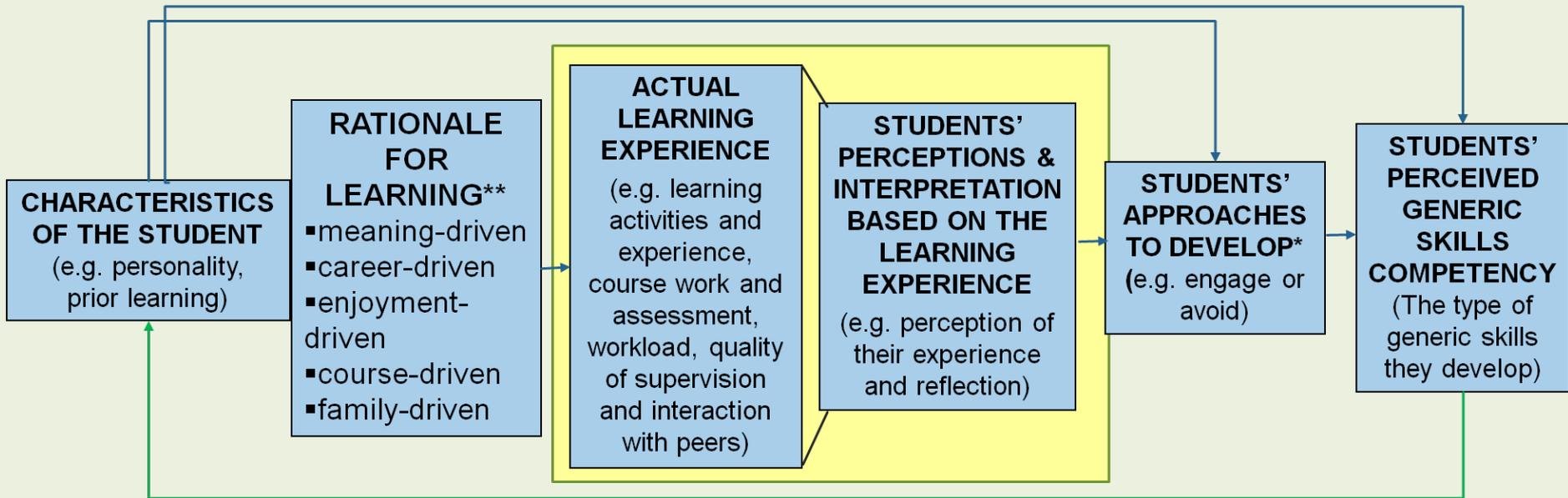
## Underpinning Research (2) – HCDFramework



<b>Outline</b>	Holistic Competency Development Framework (HCDF) (Chan & Yeung, 2019) provides guidance on how to integrate HC development into students' extra-curricular and in-class learning experiences. Five key components were identified: (1) students' characteristics; (2) rationale for learning; (3) students' actual and perceived learning experience; (4) students' approaches to developing HCs; and (5) students' HC development.
<b>Time</b>	2018
<b>Role</b>	Principal investigator; first author
<b>Contextual info</b>	<ul style="list-style-type: none"><li>• In response to the global imperative of nurturing all-round students, educational institutions and schools worldwide have been developing learning activities targeting HC development of students. However, there have been resistance and challenges on how to develop such competencies (Chan et al, 2017) . Extending the Presage-Process-Product (3P) framework to HC development, this study examined the relationship between students' motivation, perception, their approach to develop, and learning outcomes in those activities.</li><li>• The research involved 329 students from 6 secondary schools in Hong Kong.</li></ul>
<b>Key findings</b>	At the heart of this model is students' 'Approach to develop' HCs, i.e. their level of engagement in HC activities. It was found that students' rationale, their actual and perceived learning experiences could influence the development approach they take.

Chan, C.K.Y. & Yeung, N.C.J. (2019) Students' 'approach to develop' in holistic competency: an adaption of the 3P model, *Educational Psychology*, DOI: [10.1080/01443410.2019.1648767](https://doi.org/10.1080/01443410.2019.1648767).

# Students' Approaches to Holistic Competency Development Framework (HCDF)



Assumption is that students who are going through this framework, are already willing to participate the learning activity.

\*\*A Classification of the types of learning activities (in-class, out-of-class and extra-curricular).

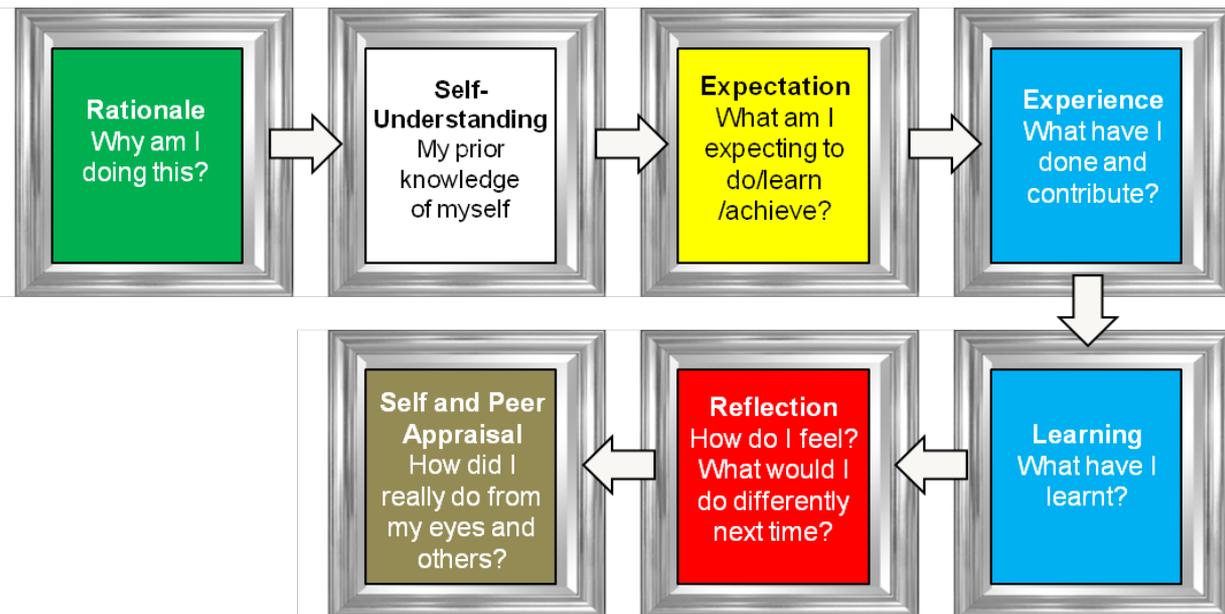
\*A learner is considered as an “engager” if he/she takes the opportunity of engaging in an activity; the development of holistic competencies is welcomed and practiced; student is considered as an “avoider” if they avoid the activities, thus there is little room for holistic competencies development.

# Underpinning Research (3) - Chain of Mirrors, the Metacognitive Learning Process

<b>Outline</b>	This Process facilitates teachers to design a curriculum that maximises students' HC development in and out of class. It highlights the 'must' elements that teachers need to provide for students to fully develop their competencies.
<b>Time</b>	2015-2019
<b>Role</b>	Principal investigator; first author
<b>Key findings</b>	These elements include the Rationale for Participating, Self-Understanding, Expectation, Experience, Learning, Reflection, and Self- and Peer-Appraisal. A number of programmes have been designed using the 'Chain of Mirrors' to enhance students' HCs in secondary schools and universities.

Chan, C.K.Y. (2017) *Developing the Indispensable and Measuring the Unmeasurable: Holistic Competencies Through an Evidence-Based Pedagogical Driven System* [Monograph no. 8]. In: Lau, CS. (Ed), *Preparing Healthcare Learners for a Changing World*, LKS Faculty of Medicine Bau Institute of Medical & Health Sciences Education, 68-75.

Chan, C.K.Y. (upcoming monograph) *Assessment in Experiential Learning*, Routledge.



# Underpinning Research (4) – A Four-dimensional Framework of Student HC Assessment Literacy



<b>Outline &amp; Innovativeness &amp; Key findings</b>	<p>This is the first framework to conceptualise student assessment literacy in HC, which incorporates 4 dimensions (i.e. Knowledge, Attitude, Action, and Critique). The framework is an important advancement in the field of education because it for the first time outlines what students need to know and do to implement valid HC assessment, foregrounding students' agency in this process. Cecilia is now working in partnership with many universities worldwide to promote this framework, as well as designing curriculum to cultivate students' HC assessment literacy.</p>
<b>Time</b>	2018-2020
<b>Role</b>	Principal investigator; first author
<b>Contextual info</b>	<ul style="list-style-type: none"><li>• As many universities worldwide have incorporated HC development into their course goals, developing assessment literacy in these competencies is placed high on the agenda. Yet, existing literatures on assessment literacy tend to focus on disciplinary knowledge, with little reference to HCs.</li><li>• The research involved 122 student interviews from 6 universities in Hong Kong</li></ul>

Chan, C. K. Y., & Luo, J. (2020). A four-dimensional conceptual framework for student assessment literacy in holistic competency development. *Assessment & Evaluation in Higher Education*. DOI: 10.1080/02602938.2020.1777388.

# Engagement (1) – Adoption of research instrument worldwide

## Australia

*The School of Dentistry and Oral Health and the School of Medicine at Griffith University*

605 students from the School of Dentistry and Oral Health have already been administered using Cecilia's instrument, and the teachers are using the findings to revamp their curriculum.



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香港中文大學  
The Chinese University of Hong Kong



香港浸會大學  
HONG KONG BAPTIST UNIVERSITY



香港教育大學  
The Education University  
of Hong Kong

## Malaysia

*The Engineering Faculty at INTI International University*

The Engineering Faculty at INTI International University is also adopting Cecilia's instrument and YOCLE to assess and enhance its students' HC development

## Taiwan, Thailand, India, UAE & Australia (in progress)

*National Taiwan University, Taiwan, King Mongkut's University of Technology Thonburi, Prince of Songkla University, Thailand, BITS Pilani, India, Higher Colleges of Technology, UAE and the University of Sydney, Australia.*

Working with Cecilia to implement the instrument and her approaches to the assessment of holistic competencies for their students.

## Hong Kong

In Hong Kong, six universities (HKU, HKUST, CUHK, HKBU, LingnanU and EdUHK) are also using the instrument and Cecilia is leading them in a collaborative development programme.

Data on 5,000 students have been collected to provide the researchers with a large benchmarking sample on student development and the assessment of holistic competency in Hong Kong.

# Engagement (2) – Implementation of HC activities

## Secondary education level:

Cecilia and her team designed a series of HC development activities for school students based on her HCDF and Chain of Mirrors frameworks. In 2017, a four-full-day programme for secondary school students (known widely as the HAVE, U Can programme) was successfully launched. The programme was conducted seven times for seven different secondary schools in Hong Kong, with over 1,000 students participating. The impact from teachers and students are shown in letters correspondence.



# Engagement (2) – Implementation of HC activities

## Higher education level:

In 2018, Cecilia led six Hong Kong universities to organise an enhanced version of the HAVE, U Can residential programme for university students. The programme was facilitated by trained university-student mentors who guided junior university students in their HC development. It was the largest student cross-institutional programme in Hong Kong.

Mentoring toolkit and guides have been designed and developed for dissemination to schools and educational institutions.



# Engagement (3) – Disseminating research outputs via public talks, workshops and lectures

Cecilia has provided many consultations and professional development workshops for non-profit, government-related organisations and universities in various countries, including South Korea, China, Singapore, Malaysia, Macau, Spain, Philippines, India, Iran, UAE, Thailand and Estonia.



Dr. Cecilia Chan speaking at the Higher Education Service-Learning Symposium on '21st Century Service-Learning Model for Inclusive Growth' (12th Nov 2018)



# Impacts (1) – Empowering students worldwide to self-assess and recognize their strengths and weaknesses in HC



The Dean of Engineering and Quantity Surveying stated:

*'Through employing Dr Chan's latest research inventory and e-platform (YOCLE) on generic skills and organising masterclasses to improve the teaching and assessment of generic skills, I believe not only that students from INTI will benefit from this process, but that we will contribute to transforming the education landscape and mindsets towards more balanced, holistic development of our students.'*



The President of LingnanU stated:

*'Dr Chan's instruments have been adopted by higher education institutions outside of Hong Kong. Comparisons with foreign institutions would mark where our university is stationed regarding generic skills and competencies.'*

Students using the instrument reported:

*'The questionnaire has helped me to reflect on my level of holistic competencies and to better realise the importance of holistic competency development.'*

In addition, many organisations are in support of Dr. Chan's work.



# Impact (2) – Industry partnership and donation in developing and assessing students’ and graduates’ HC

A technology company has adopted Cecilia’s research frameworks and a modified version of her instrument to develop a multi-deployment platform YOCLE. YOCLE (Your Out-Of-Classroom Learning Experience) is an e-platform dedicated to promoting students’ HC development. YOCLE incorporates a range of resource and functions, including the mentioned validated instrument, various assessment approaches, rubrics, and feedback systems, to record and provide concrete evidence of students’ HC development. According to the Director of this company, this e-platform has already been used by over 30 schools and universities. In addition, Dr. Chan received company donation and UGC matching fund to further her research.



25<sup>th</sup> June 2019

To Whom It May Concern:

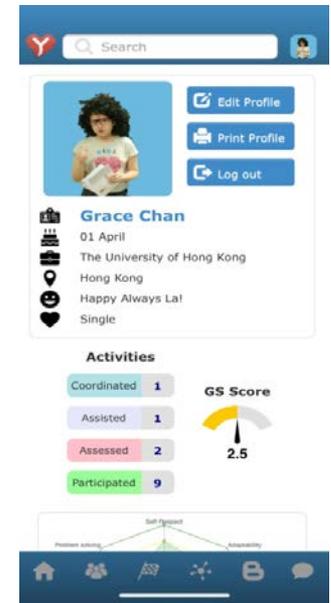
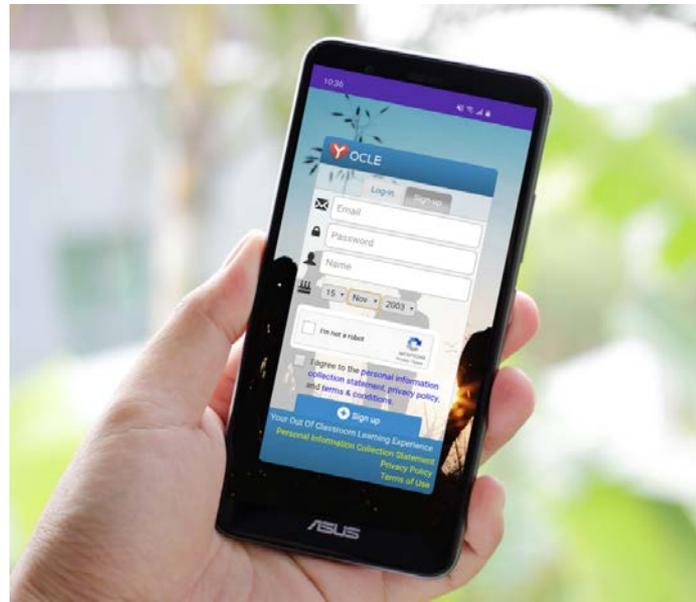
I am writing this letter to support Dr. Cecilia Chan’s research work for impact.

Eireann Limited aims at delivering sustainable and solid solutions in technology, and is keen to improve teaching and learning experiences in different education levels, and ultimately the overall quality of education. Our company has the expertise and experience and has built an e-platform to measure generic competencies based on Dr. Chan’s research frameworks and instruments. The platform “YOCLE”, a multi-deployment platform (web, android and IOS based) allows students to be more aware of their competencies development, provide a baseline to measure from, and can assess learning activities outside, inside and extra-curricular.

Dr. Chan’s forward-thinking ideas and pioneering research in the area of generic competencies have assisted us to build YOCLE with evidence-based data and findings. Since the launch of the system last year, we have already over 30 schools and universities using the system. We are expecting to increase to 100 schools and universities this year with new functions such as digital badging and surveys.

It is clear that Dr. Chan’s research are benefitting education and society, with better understanding and enhancement of generic competencies development, there are major impacts for future students.

For enquiries, please contact me through email at [tcolloton@eireannztechnology.com](mailto:tcolloton@eireannztechnology.com).



# Impact (3) – Educators’ professional development in developing and assessing students’ HC

## Professional development:

Cecilia’s workshops and lectures have benefited a number of teachers in understanding, developing and assessing students’ HCs. Her work has disseminated in many countries. Most recently, Cecilia has received a request from the Wake County Public Schools in the US to use one of her videos as part of their online professional development course. It will be used as training materials for all the schools in the Wake County in the United States.



Animations on Assessment developed by Chan

# Impact (4) – Enhancing societal awareness and knowledge of HCs

**Resource:** Cecilia developed an Assessment Resources website where she and her team share substantial resources for teachers to assess and develop students' HCs and other knowledge. The total number of unique visitors to the website between October 2010 and June 2019 was over 10 million.

**Public talks:** Cecilia has shared her insights and experience in HC development through multiple public talks and newspaper e.g. UNESCO, Times Higher Education, Times Education Supplement, Women Foundation, Estonia Newspaper



Times Higher Education  
Work Experience Should be a Job  
for Academics to Enhance  
Students' Holistic Competencies  
Written by  
Head of Professional Development, Dr. Cecilia Chan



# Impact (4) – Enhancing societal awareness and knowledge of HCs



## Media coverage:

Cecilia's research and practice (particularly the HAVE U Can programme) have received plentiful media coverage locally and internationally. Media publicity has contributed to raising societal awareness and knowledge of students' HC development.



六大學合辦全人發展課程 200生參與  
發佈日期: 2018-07-02



HAVE, U Can - one of the largest cross-institutional student teaching and learning programme in Hong Kong

Jul 01, 2018

Category: Education & Training Education

ASIA TODAY



參與學生可一嘗當宿生的滋味。

# Impacts (5) – Developing students' HCs

## HAVE, U Can programme for University students

Factual statements from student participants:

*'The programme has really given me the opportunity to overcome mental hurdles and enhance self-confidence.'*

*'I have refined my skills in leadership, socialising, and presentation.'*

## HAVE, U Can programme for Secondary School students

Factual statements from The Principal of Cognitio College (HK):

*'Dr Chan's work was able to engage the students to reflect on and develop their generic skills, particularly some of the affective skills such as respect, consideration and resilience.'*

### 製作派送愛心結 培養中學生關愛精神



■全能有情教育，以愛心結轉變教育文化。

【本報港聞部報道】為了發展和培養學生的全人發展，香港大學（港大）課程專業發展部創辦的「全能有情教育發展研究計劃」（下稱「全能有情教育」）推出了「情繫社會共結校園」活動，透過親手製作及贈送愛心結和心意卡予社區居民，培養學生關愛和欣賞他人的精神。是項計劃在今年1月份完成了首兩個階段，近120中學生及義工參加；本月將再接再厲，繼續透過工作坊等活動，推廣「全能有情教育」的重要性。

#### 反映港人不習慣有人關心

「全能有情教育」首階段以「愛心結工作坊」形式進行，分別在1月13日及1月16日於路德會協同中學及聖瑪加利男女英文中小學，約20名學校義工及約100學生參與製作愛心結。活動第二階段是為期兩天的「愛心結派發日」，學生分別於1月

20日及24日，在天后及南昌港鐵站派送愛心結。

「全能有情教育」由港大課程專業發展部陳嘉玉創辦，活動當日課程專業發展部訪問了近20名學生了解他們對工作坊、社區以及關愛大眾的看法。學生們一般都寫了些勵志的說話於心意卡上，如「每日一笑」和「永不放棄」等，以感謝或鼓勵身邊的朋友、家人及大眾。

當問及現時社區需要多些甚麼時，學生都認為香港社會過於繁忙，缺乏人情味，或沉迷電子產品而忽略了身邊的人，所以應該常常微笑並關心他人。途人收到繩結一般都很開心，但亦有人質疑我們是否收費，其中一名受訪同學說：「香港人不習慣有人關心他們，所以當我們派發愛心結時，有些人會覺得很奇怪，所以人與人之間，應該需要多些關心。」此活動反映出社會需要更多的關心和愛心。



Media coverage: secondary students making knots of hearts to share their good wishes with the public Singpao Daily News

# Impacts (5) – Developing students' HCs

## HAVE, U Can programme for Secondary School students

Factual statements from students:

*“My relationship with my father is not that good, or maybe only the way I treat him is not that good, and not very long after I finished mentoring at the workshop, it was my father’s birthday. In the past, even if it was his birthday, I would not say something very impressive or something that came from my heart. However, this time, I made a big step to help to improve the relationship and said ‘sorry’ and ‘I love you’ to him, which are things I did not say for years. Maybe you will think that it is easy to say, but for me, it is really hard. Moreover, I am a person who hates doing housework and almost never does it, but one time, I did, because I knew my dad was a bit sick, and I think this shows consideration. I think this change came after seeing the video of the parents’ interviews and how the students acted when they saw it in the [HAVE, U Can programme]...My father told me that he appreciated it, and this made me feel very happy and proud of myself and the improvement I had made. I also think that I grew up a lot, not just physically, but mentally.’*

**(With permission from the student)**

## Impact (6) – Initiating a shift in higher education culture

Between the instruments, the assessment literacy and curriculum guidelines and programmes, many local and international university leaders (e.g., presidents, vice-presidents, deans) explicitly expressed their willingness to support HC education and incorporate more HC activities into the curriculum.



*Reflection: My primary mission is to push for an overhauling shift in both culture and education, highlighting that holistic competencies need to become a part of education that is not to be completely overshadowed by academic knowledge, but instead enables further social and life-long learning.*

*I feel that young people may have lost some of those life-jewels that I would have developed when I was young. There are things that are valuable in life, and if we can help them to find these life-jewels, place the real-value where it is needed, that would be fulfilled my role as a teacher – Cecilia*

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