



## Effects of Liberal Studies on Hong Kong Students' Environmental Knowledge and Behaviour



### Report

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## Executive Summary

This report is based on the data collected from over 400 first year HKIEd students in 2014 in order to explore students' perceptions on the effects and impact of compulsory environmental education as a result of the introduction of the New Senior Secondary Curriculum in Hong Kong. This study was an essential part of the Centre of Lifelong Learning Research and Development (CLLRD)'s commitment to the Education Plus framework. The study was designed in alignment with current research demands for systematic evaluation data on sustainable development curricular implementation in secondary education. The pre-experimental design of this pilot study included one questionnaire, administered to the participants in March 2014. The report consists of four parts: a detailed description of a purpose of this study, methods of data collection used in the study, and the analysis procedures. The results of the study are displayed in a final section of the document, where we present findings within each area of the questionnaire instrument. The document is followed by "Conclusions," "References", and "Appendices" sections.

The participants reported their perceptions of change in environmental knowledge, environmental behavior, and environmental understandings after taking a Liberal Studies course in a senior secondary school:

- the majority of students perceived that Liberal Studies helped increase their environmental knowledge and change their environmental behavior;
- top factors that might influence students' environmental understanding included TV, internet, Newspapers/magazines, family, friends, and other school lessons or activities; and
- there were no gender differences in students' perceptions, except within the area of students' choice to participate in environmental group activities.

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## 1. Introduction

“Effects of Liberal Studies on Hong Kong Students’ Environmental Knowledge and Behaviour” was a pilot project, undertaken as part of the CLLRD greater research commitment to conducting research and high quality teaching and professional development for practitioners globally, with particular reference to the Asia Pacific region and to Hong Kong and Mainland China. The study followed up on the recent curricular reforms in Hong Kong, which introduced a new compulsory environmental/sustainability module into the Secondary Liberal Arts curriculum in 2009.

The purpose of this report is to help Hong Kong policymakers and educators to have a first look on the possible effects of the reforms on student perceptions, after three years of implementation of the new curriculum in secondary schools. Another aim is to connect Hong Kong secondary education with a global curricular movement, which promotes sustainable development in diverse educational systems.

In the USA, a study of middle school students showed that environmental education in relation to climate change improved students’ knowledge and actions, although significant misconceptions remained (Bofferding & Kloser, 2014). In Canada, the results of two case studies showed that students believed that environmental studies programmes can affect environmental change but with “real world” constraints in terms of enacting this change (Breunig, Murtell, Russell, & Howard, 2014). In Israel, an experimental study showed similarly that the environmental education programmes influenced students’ behavioural intentions and personal norms.

Studies in Greece showed that only a few students considered environmental education influenced their environmental behaviour (Liarakou, Kostelou, & Gavrilakis, 2011). Additionally, no significant differences were found in pro-environmental behaviour (Gottlieb, Vigoda-Gadot, & Haim, 2013). However, a cross-national (UK, Australia, Brunei, Greece, India, Korea, Oman, Singapore, Spain, Turkey, and the USA) study showed that socio-culture characteristics might influence students’ pro-environmental actions (Boyes et al., 2014). The effect of environmental education programmes on Hong Kong students’ environmental knowledge and behaviour is still not clear.

The study also elaborates on findings of a local research (Cheung, Fok, Tsang, Fang, & Tsang, 2014), which suggests that both traditional and digital media—websites and digital social network—might play important role in disseminating environmental knowledge.

## 2. Research Methods

### 2.1 Procedures

First year students at HKIEd who took the Hong Kong Diploma of Secondary Education (HKDSE) were invited to complete an anonymous questionnaire regarding their attitudes and actions on environmental issues. The questionnaires were collected on paper, with the data input manually and independently checked for errors.

### 2.2 Sample

Four hundred and fifteen students answered the questionnaire; three returns were excluded because the respondents had not taken the HKDSE. In the sample, there were 293 (71.1%) female students, 116 (28.2%) male students, and 3 (0.7%) students who did not indicate their gender (Table 1).

Table 1. Sample Distribution by Gender

	Frequency	Percent (%)
Female	293	71.1
Male	116	28.2
Not specified	3	0.7

### 2.3 Instrument

The questionnaire included five scales and a background question on gender. Three scales were designed to measure students' perceptions of the effect of the Liberal Studies programme on their environmental knowledge (eight items; the Cronbach's Alpha = 0.939), environmental behaviour (nine items; the Cronbach's Alpha = 0.937), and active participation in environmental group activities (three items; the Cronbach's Alpha = 0.949). Another scale measured students' participation in environmental group activities (three items; the Cronbach's Alpha = 0.668), and the last scale measured students' perceptions of other influences that might affect their understanding of environmental issues (six items; the Cronbach's Alpha = 0.749).

### 2.4 Data Analysis

Descriptive analyses using SPSS (Version 21) were conducted to illustrate students' ratings on each item of each scale. Confirmatory Factor Analyses (CFA) with Covariate (gender) were conducted using Mplus software (Muthén & Muthén, 2012) to examine any gender differences in the variables for this study.

### 3. Results

#### 3.1 Students' Perceptions of the Effect of Liberal Studies Programme on Environmental Knowledge

The perceived level of students' knowledge of environmental issues has increased as a result of the Liberal Studies programme. This Knowledge Increase Scale (KIS) was measured using eight items. These items were "Climate change", "Air quality", "Waste disposal", "Biodiversity", "Nature conservation", "Industrial pollution", "Renewable energy", and "Ozone layer depletion". There were four response categories to indicate increase in knowledge: "No change", "Slightly more", "More", and "Much more". The average rating and percentage distribution for these items are presented in Table 2, and the cumulative percent bar charts are presented in Figure 1.

Table 2. Percent Distribution and Means of Knowledge Increase Scale

Item	No change	Slightly more	More	Much more	Mean	S.D.
Q18 Ozone depletion	26.2%	34.7%	34.5%	4.6%	2.17	0.873
Q14 Biodiversity	26.2%	34.0%	34.5%	5.3%	2.19	0.887
Q12 Air quality	21.4%	31.6%	41.7%	5.3%	2.31	0.866
Q11 Climate change	20.9%	30.1%	42.2%	6.8%	2.35	0.885
Q16 Industrial pollution	19.7%	33.7%	38.3%	8.3%	2.35	0.888
Q15 Nature conservation	19.2%	31.8%	42.5%	6.6%	2.36	0.865
Q13 Waste disposal	18.2%	27.3%	47.4%	7.1%	2.43	0.868
Q17 Renewable energy	15.5%	23.8%	45.6%	15.0%	2.60	0.924

Note: Response scale was coded as 1 = No change, 2 = Slightly more, 3 = More, and 4 = Much more. Ozone = Ozone layer depletion. S.D. = Standard Deviation. Percentage within each item might not add to 100% because of rounding error.

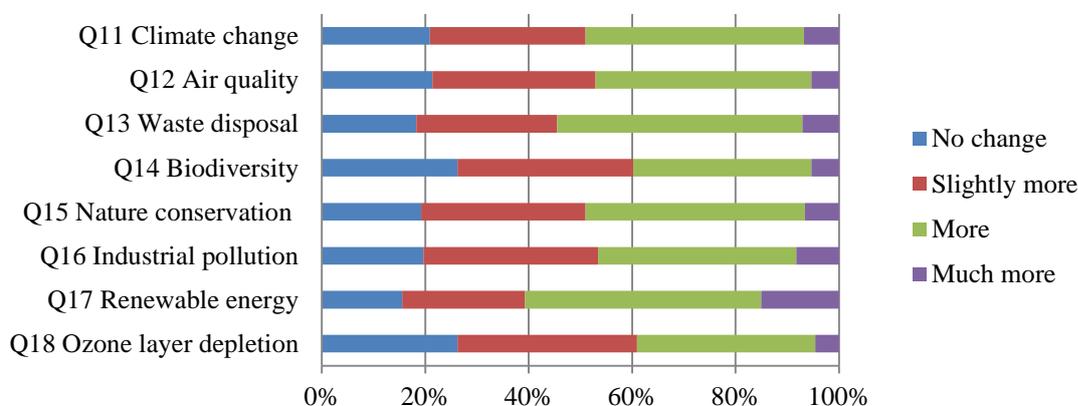


Figure 1 Cumulative Percent Bar Chart of Knowledge Increase Scale

Students considered their knowledge increased most on three environmental issues: renewable energy (q17, mean 2.60, “More” or “Much more” to 60.6%), Waste disposal (q13, mean 2.43, “More” or “Much more” to 54.5%), and Nature conservation (q15, mean 2.36, “More” or “Much more” to 49.1%). The three issues on which students considered their knowledge increase least were: Ozone layer depletion (q18, mean 2.17, “More” or “Much more” to 39.1%), Biodiversity (q14, mean 2.19, “More” or “Much more” to 39.8%), and air quality (q12, mean 2.31, “More” or “Much more” to 47.0%). All items in the Knowledge Increase Scale had 39% or more of students indicating “More” or “Much more”. In addition, 26.2% or fewer students considered their knowledge on the items had not changed.

### 3.2 Students’ Perceptions of the Effect of Liberal Studies Programme on Environmental Behaviour

The change in students’ environmental behaviour as a result of the Liberal Studies programme (Behaviour Change Scale - BCS) was measured using two sets of items. The “Recycle” set has three items with a common theme of “As a result of what you learnt in the Liberal Studies Programme, do you recycle more”. The items are “Recycle paper”, “Recycle metals”, and “Recycle plastic”. There were four response categories: “No change”, “Slightly more”, “More”, and “Much more”.

The “Protection” set has six items with a common theme of “As a result of what you learnt in the Liberal Studies Programme, do you do less of the following:”. The items are “Use air conditioning”, “Use water”, “Waste food”, “Use plastic bags”, “Spend money on clothes”, and “Spend money on electronic goods”. The four response categories were: “No change”, “Slightly less”, “Less”, and “Much less”. Both the Chinese and English expressions of the items were shown in the questionnaire, and each corresponding response category for the two parts were the same in Chinese. Therefore, the same coding method was used for these two parts, that is, No change was coded as 1, and Much less or Much more was coded as 4. The average rating and percentage distribution for the items of Behaviour Change Scale are presented in Table 3, and the cumulative percent bar charts are presented in Figure 2.

Table 3. Percent Distribution and Means of Behaviour Change Scale

Behaviour Change Scale	No change	Slight more/less	More/Less	Much more/less	Mean	S.D.
Q35 Spend on clothes	50.6%	28.4%	18.1%	2.9%	1.73	0.857
Q22 Recycle metals	47.3%	30.9%	19.4%	2.5%	1.77	0.845
Q36 Spend on electronics	49.9%	26.2%	20.5%	3.4%	1.78	0.890
Q31 Use air conditioning	43.8%	30.6%	22.0%	3.7%	1.86	0.886
Q32 Use water	39.0%	33.3%	23.8%	3.9%	1.93	0.884
Q23 Recycle plastic	40.9%	28.4%	26.7%	3.9%	1.94	0.912
Q21 Recycle paper	38.4%	27.9%	27.9%	5.9%	2.01	0.948
Q33 Waste food	34.3%	26.0%	30.9%	8.8%	2.14	0.994
Q34 Use plastic bags	29.4%	28.7%	28.9%	13.0%	2.25	1.020

Note: Response scale was coded as 1 = No change, 2 = Slightly more/less, 3 = More/Less, and 4 = Much more/less. S.D. = Standard Deviation. Spend on clothes = Spend money on clothes. Spend on electronics = Spend money on electronic goods. Percentage within each item might not add to 100% because of rounding error.

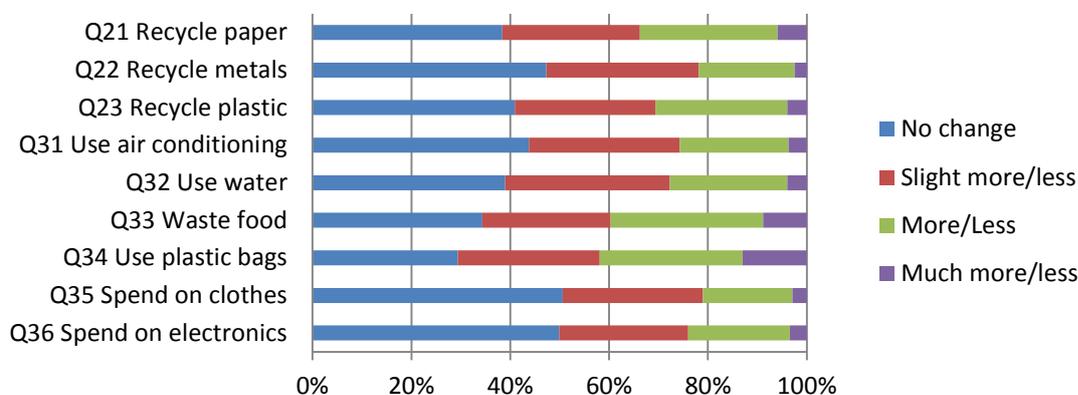


Figure 2 Cumulative Percent Bar Chart of Behaviour Change Scale

Students considered their behaviour changed most on three environmental activities: Use plastic bags (Q34, mean 2.25, Less or Much less to 41.9%), Waste food (Q33, mean 2.14, Less or Much less to 39.7%), and Recycle paper (Q21, mean 2.01, More or Much more to 33.8%). The three issues on which students considered they changed least were: Spend money on clothes (Q35, mean 1.73, Less or Much less to 21.0%), Recycle metals (Q22, mean 1.77, More or Much more to 21.9%), and Spend money on electronic goods (Q36, mean 1.78, More or Much more to 23.9%). All items in the Behaviour Change Scale had over 21% of students indicating “More/less” or “Much more/less”. In addition, 50.6% or fewer students considered their environmental behaviour had not changed.

### 3.3 Students’ Environmental Group Activity Participation

Students’ Environmental Group Activity Participation (Group Participation Scale) was measured by three items with a common theme of “Have you done any of the following:”. The items were “Donated money to an environmental group? (eg. Friends of the Earth, Green Power etc.)”, “Joined an environmental group?”, and “Volunteered or been paid for work in an environmental organization”. There were two response categories: “Yes” and “No”. The average rating and percentage distribution for the items of Group Participation Scale are presented in Table 4. Around 25% of students had participated in environmental group activities in some form.

Table 4. Percent Distribution and Means of Group Participation Scale

Group Participation Scale	No	Yes
Q43 Worked in an environmental organization	76.0%	24.0%
Q41 Donated money	75.8%	24.2%
Q42 Joined an environmental group	74.6%	25.4%

Note: Donated money = Donated money to an environmental group.

A following up question to each item of the Group Participation Decision Scale asked whether the Liberal Studies programme had influenced students' environmental group activities participation (Group Participation Decision Scale). The common theme for these questions was "If "yes" to any of the above, was this decision as a result of the Liberal Studies programme you studied at school?" There were two response categories: "Yes" and "No". The average rating and percentage distribution for the items of Group Participation Decision Scale are presented in Table 5. Among the students who participated in environmental groups activities, 38.4% to 45.2% had made the decisions as a result of the Liberal Studies programme.

Table 5. Percent Distribution and Means of Effects of Liberal Studies on Group Activity Participation

Group Participation Decision Scale	No	Yes
Q51 Donated money	61.6%	38.4%
Q53 Worked in an environmental organization	59.8%	40.2%
Q52 Joined an environmental group	54.8%	45.2%

Note: Donated money = Donated money to an environmental group.

Based on the data from Group Participation Scale and followed up questions, students can be classified into three groups for each listed activity: have not participated, participated not as a result of liberal studies programme, and participated as a result of liberal studies programme. Table 6 illustrates the results. From 9.3 % to 11.5% of students participated in the listed activities because of the Liberal Studies programme they studies at school.

Table 6. Percent Distribution of Students' Group Activity Participation

Activities	Not Participated	Participated (NLSP)	Participated (LSP)
1 Donated money	75.8%	14.9%	9.3%
2 Joined an environmental group	74.6%	13.9%	11.5%
3 Worked in an environmental organization	76.2%	14.2%	9.6%

Note: Donated money = Donated money to an environmental group. Participated (NLSP) = Participated not as a result of Liberal Studies programme. Participated (LSP) = Participated as a result of Liberal Studies programme.

### 3.4 Students' Perceptions of other Influences on their Environmental Understanding

Students' perceptions of other influences that had increased their understanding of environmental issues (Other Influence Scale) were measured by six items with a common theme of "Have other influences increased your understanding of environmental issues?". The items are "Other school lessons or activities", "TV", "Newspapers/magazines", "Internet", "Family", and "Friends". There were two response categories: "Yes" and "No". The average rating and percentage distribution for these items are presented in Table 7.

Table 7. Percent Distribution and Means of Other Influence Scale

Other Influence Scale	No	Yes
Q65 Family	55.3%	44.7%
Q66 Friends	54.1%	45.9%
Q61 Other school lessons or activities	34.0%	66.0%
Q63 Newspapers/magazines	25.1%	74.9%
Q64 Internet	18.1%	81.9%
Q62 TV	17.7%	82.3%

The three influences that students considered most increased their understanding of environmental issues were: TV (Q62, 82.3%), internet (Q64, 81.9%), and newspapers/magazines (Q15, 74.9%). The three influences students considered least increased their understanding of environmental issues were: family (Q65, 44.7%), friends (Q66, 45.9%), and other school lessons or activities (Q61, 66.0%). All items in the Other Influence Scale had a positive response from 44% of students. In addition, 55.3% or fewer students considered their understanding of environmental issues was not increased by the listed influences.

### 3.5 Gender Differences in Students' Environmental Group Activity Participation

CFA with gender as covariate for Students' Environmental Group Activity Participation fits the sample data well: CFI = 1.000, TLI = 1.000, RMSEA = 0.000 (90% C.I.: 0.000-0.086, P value of RMSEA  $\leq$  0.05 = 0.774), Chi-Square value for the finale model was 1.284 (d.f. = 2, P = 0.5262). Figure 3 depicts the result of final CFA , there is no significant gender difference in students' environmental group activity participation (R-squared of Group Activity is 0.001).

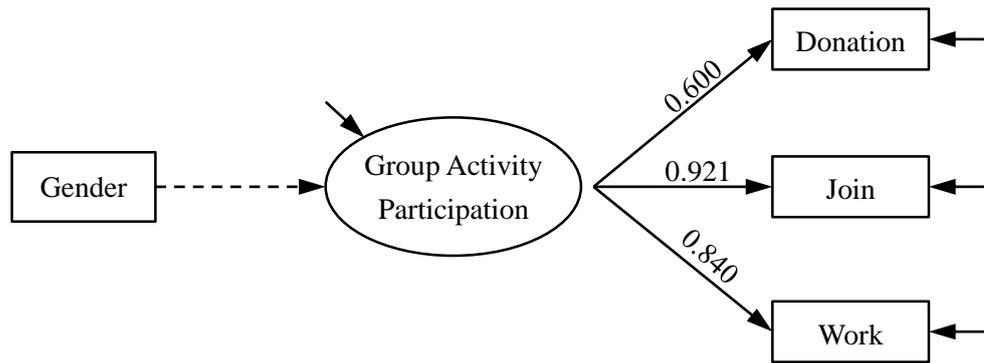


Figure 3 CFA for Students' Environmental Group Activity Participation

Note: All estimated parameters were standardized (STDYX). Significant effects were shown as arrow with solid line; non-significant effect was shown as arrow with dotted line. Female was coded as 0, and male as 1. Donation = Donated money to an environmental group. Join = Joined an environmental group. Work = Volunteered or been paid for work in an environmental organization.

### 3.6 Gender Differences in Students' Perceptions of the Influences on Environmental Issues

CFA with gender as covariate for students' perceptions of the effects of the influences on their environmental knowledge, environmental behaviour, and decision of environmental group activities participation fits the sample data well: CFI = 0.988, TLI = 0.987, RMSEA = 0.051 (90% C.I.: 0.045-0.056, P value of RMSEA  $\leq$  0.05 = 0.420), Chi-Square value for the finale model was 630.847 (d.f. = 308, P = 0.000). Although the Chi-square values for the final model remained statistically significant, it was substantially lower than that for the baseline mode (28301.812, d.f. = 351); given the sensitivity of Chi-square to sample size (N = 409 in this study, three cases were excluded because of not indicating their gender), the model-data discrepancies are acceptable (Byrne, 2012). Figure 4 depicts the result of final CFA.

As is shown in the Figure 4, there is no significant gender difference in students' perceptions of the effect of the Liberal Studies programme on their environmental knowledge or environmental behaviour. Significant gender differences in students' perceptions of the effect the Liberal Studies programme on their environmental group activity participation and students' perceptions of the effect of other influences on their understanding of environmental issues were found.

As is mentioned above, only students who participated in the listed environmental group activities answer the following up questions on whether they thought the Liberal Studies programme affect their environmental group activities. Results of these studies showed significant differences between the perceptions of these students. Male students were found more agree (standardized coefficient = 0.263, with female students coded as 0, male students

coded as 1) that their decisions of the participation were results of Liberal Studies programme that effect; however, female students were found more agree that (standardized coefficient = - 0.129, with female students coded as 01, male students coded as 1) other influences increased their understanding of environmental issues (R-squared of Knowledge Increase, Behaviour Change, Group Participation, and Other Influences, is 0.000, 0.005, 0.069, and 0.017, respectively).

The correlation between students' perceptions of the effect of Liberal Studies on their environmental knowledge, environmental behaviour, and decision to participate in environmental group activities were all significant, with the correlation coefficient ranging from 0.335 to 0.686. Students' perceptions of other influences on their understanding of environmental issues were not significantly correlated to students' perceptions of the effect of Liberal Studies on their environmental knowledge or decision to participate in environmental group activities. However, it was significantly correlated to students' perceptions of the effect of Liberal Studies on their environmental behaviour, but with a low coefficient as standardized correlation 0.161.

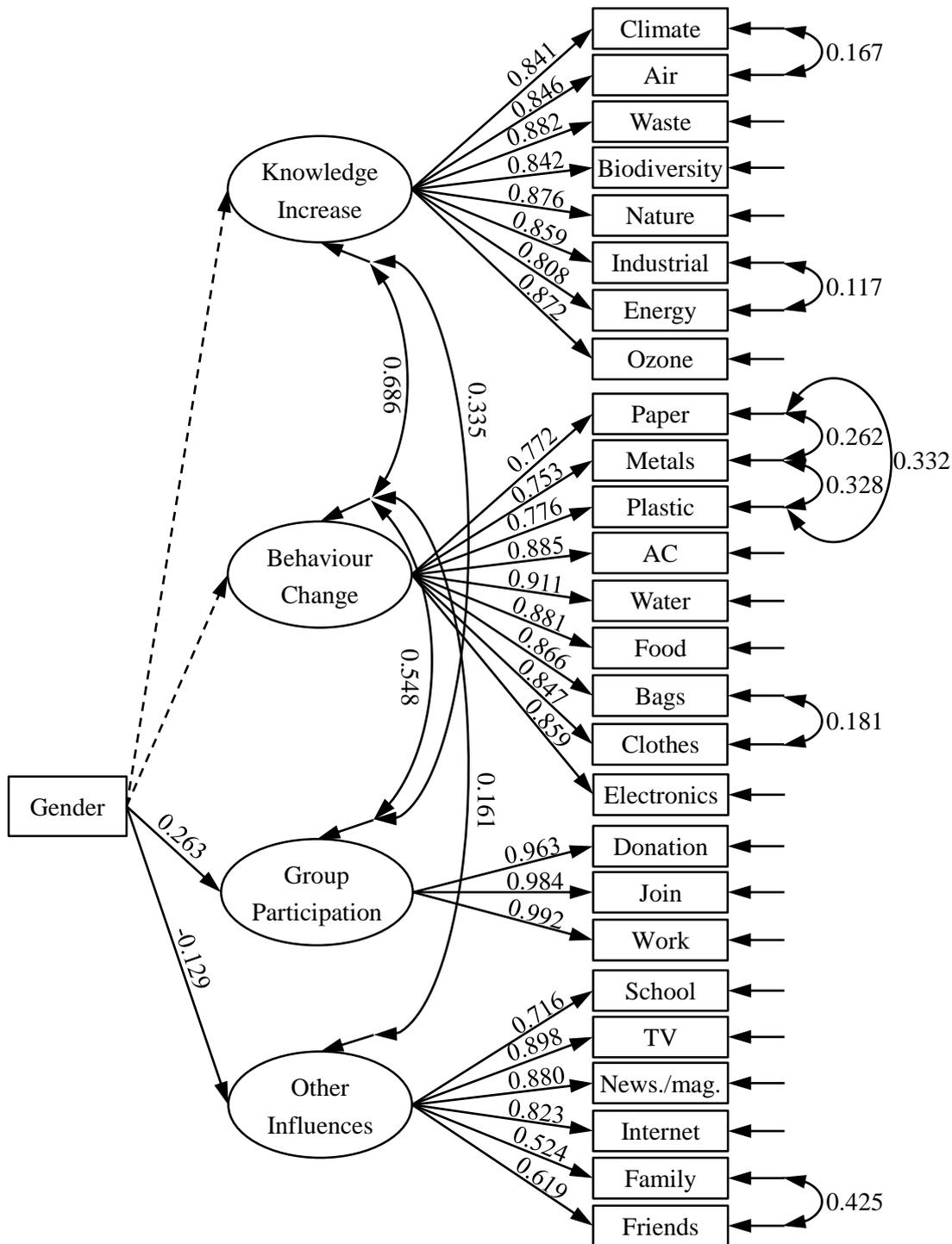


Figure 4. CFA for Students' Environmental Group Activity Participation

Note: All estimated parameters were standardized (STDYX). Significant effects were shown as arrow with solid line; non-significant effect was shown as arrow with dotted line. Non-significant correlation coefficients for the latent variables were not shown. Female was coded as 0, and male as 1. AC = Use air conditioning. Donation = Donated money to an environmental group. Join = Joined an environmental group. Work = Volunteered or been paid for work in an environmental organization. School = Other school lessons or activities. News./Mag. = Newspapers/magazines.

#### 4. Conclusion

This study aims to illustrate the effects and impact of compulsory environmental education as a result of the introduction of the New Senior Secondary Curriculum in Hong Kong. The results of this study showed that there was a perceived increase in knowledge of the selected environmental issues, with over 39% of students reporting “More” or “Much more” knowledge, and 26% or fewer students reporting “No Change” in their knowledge.

With regard to behaviour changes, 21% of students indicated “More/Less” or “Much more/less” in terms of positive changes to recycling or resource wastage. 29.4% to 50.6% of students considered their environmental behaviour had not changed. Moreover, around 75% students have not participated in environmental group activities i.e. donating money, joining an environmental group or working in an environmental organization. Over 38.4% (that is 9.3% of the sample) of students who participated in these activities agreed that their decision was a result of the Liberal Studies programme. These results indicate that the effect of Liberal Studies on students’ perceived environmental knowledge is greater than the effect on their actual behaviour. The correlation between students’ perceptions of the effect of Liberal Studies on their environmental knowledge, environmental behaviour, and decision of environmental group activities participation were all significant (over 0.335), and this is consistent with finding of the study conducted in the USA (Levy & Marans, 2012), which might suggest the effect of students’ environmental knowledge on students’ environmental behaviour.

In addition to the Liberal Studies programme, other influences such as TV, internet, newspapers/magazines, family, friends, and other school lessons or activities might also affect students’ environmental understanding, which was indicated by over 44.7% students. More than 74% students reported that media, including TV, internet and newspapers/magazines, increase their understanding of environmental issues.

This is consistent with the result of Robelia, Greenhow, and Burton's (2011) study, which showed that young people reported higher levels of positive environmental behaviour when involved with the *Facebook* application. However, correlation between students’ perceptions of the effect of Liberal Studies and other influences were quite low or not significant. Future studies could be conducted to compare the effect of each influence.

Gender differences were only found in students’ perceptions of the effect of Liberal Studies on their decision to participate in environmental group activities, and other influences’ effecting their understanding of environmental issues. Further work in this area is recommended.

## References

- Bofferding, L., & Kloser, M. (2014). Middle and high school students' conceptions of climate change mitigation and adaptation strategies. *Environmental Education Research*, (May 2014), 1–20. doi:10.1080/13504622.2014.888401
- Boyes, E., Stanisstreet, M., Skamp, K., Rodriguez, M., Malandrakis, G., Fortner, R. W., ... Yoon, H.-G. (2014). An international study of the propensity of students to limit their use of private transport in light of their understanding of the causes of global warming. *International Research in Geographical and Environmental Education*, 23(2), 142–165. doi:10.1080/10382046.2014.891425
- Breunig, M., Murtell, J., Russell, C., & Howard, R. (2014). The impact of integrated environmental studies programs: are students motivated to act pro-environmentally? *Environmental Education Research*, 20(3), 372–386. doi:10.1080/13504622.2013.807326
- Byrne, B. M. (2012). *Structural equation modeling with Mplus :Basic concepts, applications, and programming*. New York: Routledge Academic.
- Cheung, L. T. O., Fok, L., Tsang, E. P. K., Fang, W., & Tsang, H. Y. (2014). Understanding residents' environmental knowledge in a metropolitan city of Hong Kong, China. *Environmental Education Research*, (May), 1–18. doi:10.1080/13504622.2014.898247
- Gottlieb, D., Vigoda-Gadot, E., & Haim, A. (2013). Encouraging ecological behaviors among students by using the ecological footprint as an educational tool: a quasi-experimental design in a public high school in the city of Haifa. *Environmental Education Research*, 19(6), 844–863. doi:10.1080/13504622.2013.768602
- Levy, B. L. M., & Marans, R. W. (2012). Towards a campus culture of environmental sustainability: Recommendations for a large university. *International Journal of Sustainability in Higher Education*, 13(4), 365–377. doi:10.1108/14676371211262317
- Liarakou, G., Kostelou, E., & Gavrilakis, C. (2011). Environmental volunteers: factors influencing their involvement in environmental action. *Environmental Education Research*, 17(5), 651–673. doi:10.1080/13504622.2011.572159
- Robelia, B. a., Greenhow, C., & Burton, L. (2011). Environmental learning in online social networks: adopting environmentally responsible behaviors. *Environmental Education Research*, 17(4), 553–575. doi:10.1080/13504622.2011.565118
- Muth é n, L. K. & Muth é n, B. O. (2012). *MPLUS statistical analysis with latent variables: User's guide* (7th ed.). Los Angeles, CA: Muth é n & Muth é n.

## Appendix 1 Questionnaire Instrument

Questionnaire for first year students on the effects of the S5-6 Liberal Studies Programme on environmental awareness and behaviour

關於中六中七的通識教育科對於  
大學一年級學生的環保意識與行為的影響研究

Thank you for completing this short survey. Your responses will be completely anonymous.  
感謝您完成這個調查。調查涉及的資料將會保密。

Q1 Has your knowledge of the following issues increased as a result of the Liberal Studies programme:

問題一 您關於以下事項的知識有因為通識教育科而提高嗎：

	No change 沒有變化	Slightly more 有少許變化	More 有變化	Much more 有很大變化
Climate change: 氣候變化:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air quality: 空氣質量:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Waste disposal: 廢物處理:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biodiversity: 生物多樣性:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nature conservation: 自然保育:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industrial pollution: 工業污染:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Renewable energy: 可再生能源:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ozone layer depletion: 臭氧層損耗:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q2 As a result of what you learnt in the Liberal Studies Programme, do you recycle more:  
問題二 您有沒有因為接受通識教育而作出更多回收的活動：

	No change 沒有變化	Slightly more 有少許變化	More 有變化	Much more 有很大變化
Recycle paper 回收紙張	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recycle metals 回收金屬	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recycle plastic 回收塑膠	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q3 As a result of what you learnt in the Liberal Studies Programme, do you do less of the following:

問題三 您有沒有因為接受通識教育而減少以下的行為：

	No change 沒有變化	Slightly less 有少許變化	Less 有變化	Much less 有很大變化
Use air conditioning 使用冷氣機	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use water 使用水	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Waste food 浪費食物	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use plastic bags 使用塑膠袋	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spend money on clothes 在衣物上的開銷	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spend money on electronic goods 在電子產品上的開銷	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q4 Have you done any of the following:

問題四 您有沒有以下行為

	Yes 有	No 沒有
Donated money to an environmental group? eg. Friends of the Earth, Green Power etc. 捐錢給環保團體? 例如：地球之友，綠色力量，等。	<input type="checkbox"/>	<input type="checkbox"/>
Joined an environmental group? 參加環保團體?	<input type="checkbox"/>	<input type="checkbox"/>
Volunteered or been paid for work in an environmental organization 義務或者受薪為環保組織服務?	<input type="checkbox"/>	<input type="checkbox"/>

Q5 If “yes” to any of the above, was this decision as a result of the Liberal Studies programme you studied at school?

問題五 如果您有以上任何行為，是否因為在學校裡面接受了通識教育？

Yes 有	No 沒有
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Donated money to an environmental group?    
eg. Friends of the Earth, Green Power etc.

捐錢給環保團體?  
例如：地球之友，綠色力量，等。

Joined an environmental group?

參加環保團體?

Volunteered or been paid for work  
in an environmental organization

義務或者受薪為環保組織服務?

Q6 Have other influences increased your understanding of environmental issues?

問題六 有沒有其他因素增加了您對環境問題的認識?

Yes  
有

No  
沒有

Other school lessons or activities:    
其他學校課程或課外活動:

TV:    
電視:

Newspapers/magazines:    
報紙/雜誌:

Internet:    
網絡:

Family:    
家庭:

Friends:    
朋友:

Other/其他: \_\_\_\_\_

Q7 Please indicate your gender    
問題七 請表明您的性別

Male  
男性

Female  
女性

Thank you / 多謝