



<b>Title</b>	<b>Assessing the role of ecotourism training in changing participants' pro-environmental knowledge, attitude and behaviour</b>
<b>Author(s)</b>	<b>Cheung, LTO; Fok, L</b>
<b>Citation</b>	<b>Asia Pacific Journal of Tourism Research, 2014, v. 19 n. 6, p. 645-661</b>
<b>Issued Date</b>	<b>2014</b>
<b>URL</b>	<b><a href="http://hdl.handle.net/10722/183853">http://hdl.handle.net/10722/183853</a></b>
<b>Rights</b>	<b>This is an Accepted Manuscript of an article published by Taylor &amp; Francis Group in Asia Pacific Journal of Tourism Research on 09 Jun 2013 available online at: <a href="http://www.tandfonline.com/doi/abs/10.1080/10941665.2013.797003">http://www.tandfonline.com/doi/abs/10.1080/10941665.2013.797003</a></b>



**Assessing the role of ecotourism training in changing participants' pro-environmental knowledge, attitudes and behaviours**

Journal:	<i>Asia Pacific Journal of Tourism Research</i>
Manuscript ID:	RAPT-2012-0192.R1
Manuscript Type:	Full-length Article
Keywords:	Ecotourism training, pro-environmental knowledge, environmental responsible behaviours, environmental education, Hong Kong

SCHOLARONE™  
Manuscripts

## Assessing the role of ecotourism training in changing participants' pro-environmental knowledge, attitude and behaviour

### Abstract

Ecotourism training is usually considered to be undertaken only by tourism practitioners for professional development. However, ecotourism training has a more important role to play, as it could be adopted as a long-term strategy for environmental conservation by altering people's attitudes and behaviours towards greater environmental responsibility. In this study, the role of ecotourism training with respect to pro-environmental knowledge enhancement as well as attitude and behavioural changes are investigated. A questionnaire survey was conducted on participants of an ecotourism training programme. Participants' environmental knowledge, attitudes and behaviours were evaluated using a pre- and post-test method. The results indicated that participants demonstrated a significant increase in environmental knowledge after the training. Moreover, participants' demographic characteristics such as age group, occupation and salary are significantly associated with the improvement in knowledge, change in pro-environmental attitudes and behaviours. Participants tend to adopt environmentally responsible attitudes and behaviours after completion of ecotourism training.

**Keywords:** Ecotourism training; pro-environmental knowledge; environmental responsible behaviours; environmental education; Hong Kong.

### Introduction

Hong Kong is a popular tourism destination in Asia, and its image as a "shopping paradise" is deeply rooted in the minds of overseas tourists. The countryside of Hong Kong, however, has generally been ignored and forgotten. The recent liveability ranking by the Economist Intelligence Unit (EIU) listed Hong Kong as the best city in the world (Economist Intelligence Unit, 2012). The coverage of Hong Kong's green space, natural and cultural assets

1  
2  
3  
4 have brought Hong Kong to the top of the list. Over 40% of Hong Kong's territory has been  
5  
6 designated as protected areas, including 24 country parks, 22 special areas, 4 marine parks and  
7  
8 a global geopark. These natural assets have not been widely used for ecotourism development.  
9  
10 The proximity of the country parks to the urban areas is another advantage for developing  
11  
12 Hong Kong's natural assets to become tourist hotspots. Unlike other urban areas in the world,  
13  
14 the country parks of Hong Kong are close to the urban areas with extensive coverage of road  
15  
16 networks to shorten the travel time between urban and rural areas. Such advantages could be  
17  
18 used to further develop the ecotourism industry and prolong the stays of overseas visitors in  
19  
20 Hong Kong.  
21  
22

23 The tourism industry is one of the major pillars of Hong Kong's economy. The total  
24  
25 revenue derived from inbound tourism grew rapidly from HK61 billion in 2001 to HK210  
26  
27 billion in 2010. The number of visitors also grew remarkably from 13 million in 2000 to over  
28  
29 36 million in 2010, an average 17.6% growth year to year (Tourism Commission, 2011).  
30  
31

32 Ecotourism is believed to benefit from the growth of the tourism industry in Hong  
33  
34 Kong (Marafa, 2005). The Hong Kong Tourist Association (HKTA) (now the Hong Kong  
35  
36 Tourism Board) started promoting green tourism in the mid-1990s (Cheung, 2010). The  
37  
38 programme successfully attracted overseas tourists to Hong Kong for bird watching, to conduct  
39  
40 research on dragonflies and to study tropical ecosystem and conservation issues. Most of the  
41  
42 participants were professionals in the field of environmental conservation. More travel agents  
43  
44 are bringing tourist groups to enjoy nature-based or ecotourism activities in the countryside of  
45  
46 Hong Kong. For instance, European and American groups have come to watch dolphins and  
47  
48 birds, and Japanese and Taiwanese groups have come for hiking or other passive leisure  
49  
50 activities, such as taking photos in a serene natural setting (Hopkinson & Stern, 2002).  
51  
52

53 Estimating the number of tourists currently participating in ecotourism activities is  
54  
55 difficult due to a lack of comprehensive surveys or statistics. The Hong Kong Tourism Board's  
56  
57 survey demonstrated that 24% of visitors are interested in ecotourism activities in Hong Kong  
58  
59  
60

1  
2  
3  
4 (HKTB, 2001). A study by Hopkinson and Stern (2002) estimated that further development of  
5  
6 ecotourism in Hong Kong would generate an additional HK\$4.1 billion in revenue based on  
7  
8 their estimation of 11% of tourists staying for an additional 1.9 days on average to participate in  
9  
10 ecotourism activities. The revenue would be even higher if we also account for the recent  
11  
12 increase of visitor numbers to Hong Kong.

13  
14 Since the SARS episode, the people of Hong Kong became increasingly aware of the  
15  
16 importance of conserving our natural environment and its contribution to the collective health  
17  
18 of the community (Tsang, Yeung, & Cheung, 2011). Thousands of people shifted their interests  
19  
20 from visiting shopping centres to visiting the country parks (Cheung & Jim, 2006), as they  
21  
22 believed that they could get away from the densely populated city centre to minimise the  
23  
24 opportunity of catching the fatal disease. They believed that salubrious outdoor activities in the  
25  
26 countryside could improve their health and provide an alternative travel experience. The  
27  
28 episode notably raised ecotourism patronage, highlighting the emerging need for  
29  
30 commensurate services. The local tour operators realised the huge market potential of  
31  
32 ecotourism and actively increased their organised tours to nature destinations in Hong Kong.  
33  
34 The number of participants in each tour is usually high, but these tours contribute little to a  
35  
36 better understanding of nature. Fortunately, some operators are more serious and conscientious in  
37  
38 organising ecotourism activities. These operators care about ecology, habitats, and species in  
39  
40 their activities, and they maintain a deep respect for nature in their behaviours (AFCD, 2003).  
41  
42  
43  
44

45 Due to the rapid development of ecotourism since 2003, an urgent need has arisen for  
46  
47 operators to train tour guides with sufficient ecological knowledge to organise ecotourism  
48  
49 activities. Ecotourism operators and higher education institutions have begun to organise  
50  
51 ecotour guide training courses for the public to absorb people who want a share of the recent  
52  
53 ecotourism development. The popularity of ecotourism in Hong Kong has also raised the  
54  
55 enthusiasm of people to participate in ecotourism training. Participants desire to enrich their  
56  
57 knowledge of Hong Kong's natural environment while also searching for opportunities to join  
58  
59  
60

1  
2  
3 the emerging industry. Various ecotourism training programmes have been organised by the  
4 ecotourism operators or training organisations, one after another. The Hong Kong Ecotourism  
5 and Travels Professional Training Centre, one of the leading ecotourism training organisations  
6 in Hong Kong, offers a variety of training courses that are related to ecotourism, such as a  
7 Professional Diploma of Ecotourism, a Certificate of Marine Ecotourism, and training courses  
8 on the identification of birds, butterflies, and plants. Participants of some of these courses are  
9 eligible to apply to the Continuous Education Fund (CEF), which is a government subsidy for  
10 continuing education credits that local residents between 18 and 60 years of age can receive  
11 (Cheung & Jim, 2006).  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22

23 The Hong Kong Government has also spared no effort to provide funding for human  
24 resource training in the field of ecotourism. Skill Upgrading Scheme (SUS) provided by the  
25 Education Bureau (EdB), together with the Vocational Training Council (VTC), have funded  
26 ecotourism courses to enhance the knowledge of local tourism practitioners on ecotourism and  
27 Hong Kong's natural environment. The SUS for ecotourism training was started in 2004 and  
28 subsidises 80% of the tuition for the participants. Local registered tour guides and persons  
29 who work in ecotourism-related companies are eligible to apply for the training courses.  
30  
31  
32  
33  
34  
35  
36  
37

38 In the first phase, which ended in 2006, 18 training courses were funded and organised  
39 through three different institutions and companies. In late 2006, more funding was granted to  
40 seek training organisations to develop 18 more training courses. Three training organisations,  
41 namely, the Hong Kong Ecotourism and Travels Professional Training Centre, the Hong Kong  
42 Travel & Tourism Training Centre Limited and the HKUST College of Lifelong Learning,  
43 have successfully been granted the right to organise the SUS ecotourism training in 2007.  
44  
45  
46  
47  
48  
49  
50

51 These 37-hour training courses consist of a series of lectures and field trips (Table 1),  
52 and they provide elementary knowledge, such as basic ecological and geological knowledge, to  
53 the students to help promote environmental awareness. All trainers of the SUS ecotourism  
54 trainings have to be registered with the relevant governmental bodies to control the quality of  
55  
56  
57  
58  
59  
60

1  
2  
3 teaching taking place. Other quality control mechanisms have been adopted, including lesson  
4 observations, lecture note reviews and student evaluations to monitor the quality of the courses  
5 and ensure that the courses are being run smoothly. Only persons with at least a Master's  
6 degree in environmental science, geography or a related field of study and at least three years of  
7 experience in the ecotourism industry are eligible to be the instructors of these courses.

8  
9  
10 Different ecotourism training courses have been running in Hong Kong for the last 8  
11 years. However, no research study has been conducted to investigate how successful these  
12 courses are. This study investigates the effectiveness of these training courses in regard to  
13 changing course participants' pro-environmental knowledge, attitudes and behaviours.

## 24 25 **Literature review**

### 26 *Effectiveness of environmental education programme*

27 Ecotourism is often recognized as an effective tool in environmental conservation (Gossling,  
28 1999; Twindale & Bourne, 2003). Enhancement of environmental knowledge and awareness  
29 could be improved through participation in ecotourism related activities (Hughes & Saunders,  
30 2005). Studies of the effectiveness of environmental education programmes and interpretation  
31 activities are well documented worldwide (Farmer, Knapp, & Benton, 2007; Hughes &  
32 Saunders, 2005; Kuo, 2002; Madin & Fenton, 2004; Powell & Ham, 2008; Tubb, 2003). The  
33 current literature suggests that environmental education programmes aim to encourage  
34 pro-environmental knowledge, attitudes, and behaviours (Ballantyne & Packer, 2011; Hsu,  
35 2004; Stern, Powell, & Ardoin, 2008). Farmer et al. (2007) stated that an environmental  
36 education programme could enhance an individual's pro-environmental behaviours.

37  
38  
39 Participants of such programme should first gain an understanding of their connection to the  
40 natural world. Next, they should be able to synthesize this knowledge and understand their  
41 roles within the environment. Finally, they should learn how to be a catalyst for the changes  
42 that are necessary for a sustainable existence. Hungerford (1996) has reported a similar idea  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 that pro-environmental behaviours must progress through three variables namely, entry-level,  
4 ownership, and empowerment. Studies by Thapa, Graefe, and Meyer (2005), Stern et al. (2008)  
5 and Kuo (2002) also stated that effective environment-related programmes could encourage  
6 participants to adopt environmentally friendly attitudes and enhance their environmental  
7 knowledge. Farmer et al. (2007) and Thapa et al. (2005) have commonly found that  
8 participation of environmental programmes positively affected participants' environmental  
9 attitudes. However, few studies have assessed the long-term positive results of knowledge  
10 gained and attitude changes (Hughes, Packer, & Ballantine, 2011). This aspect of research is  
11 worth studying to discover whether participants' pro-environmental knowledge and attitudes  
12 has been retained for a greater length of time after participating in environmental programmes  
13 and activities.

14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Many studies have claimed that environmental interpretation programmes (such as guided tour) at the tourism destination also contribute to the participants' knowledge enhancement and that these tours alter attitudes toward greater environmental responsibility. A study by Moscardo (1998) found that participants learned more about the Wet Tropic World Heritage Rainforest after they had participated in the interpretation programmes. Their findings also suggested that the interpretation programmes may change visitors' intention to engage in activities to protect the rainforest. Schanzel and McIntosh (2000) reported similar findings, where an appropriate interpretation programme reinforced the experience of a close encounter with wild penguins in a natural setting and that an increase in knowledge and awareness about the endangered birds was found among the participants. However, others have argued that the changes of participants' behaviours may result not from the interpretation programme but from other factors, such as social norms (Wheeller, 1994). Thus, it is difficult to conclude whether the changes in behaviour are an outcome of the participation in an interpretation programme. However, interpretation and environmental education programmes are often undervalued as the participants' knowledge accumulates progressively from undertaking these programmes.



1  
2  
3  
4 Such programmes could also play an important role in reinforcing participants' knowledge,  
5  
6 even if they already possess extensive environmental knowledge and display appropriate  
7  
8 behaviours and activities (Ballantyne & Packer, 2011; Kuo, 2002).  
9

### 10 11 12 *Ecotour guides and their role in environmental education*

13  
14 Training for ecotour guides or interpreters is essential for ecotourism development. Such  
15  
16 trainings could equip ecotour guides with better knowledge and attitudes to offer high quality  
17  
18 guided tour. Ecotour guides have a multiplicity of roles to play (Black, Ham, & Weiler, 2001;  
19  
20 Black & King, 2002; Christie & Mason, 2003; Orams, 1994, 1995; Weiler & Davis, 1993;  
21  
22 Weiler & Ham, 2002). Previous studies have suggested that guides are the heart and soul of the  
23  
24 ecotourism industry (Lindberg, Epler Wood, & Engeldrum, 1998), and they can disseminate a  
25  
26 message of pro-environmental attitudes and behaviours to minimize negative environmental  
27  
28 impacts at the ecotourism destinations (Black et al., 2001; Weiler & Davis, 1993). The role of  
29  
30 ecotour guides is similar to a teacher delivering an environmental education (EE) lesson to  
31  
32 visitors to enhance their pro-environmental knowledge and eventually change their attitudes  
33  
34 and behaviours towards being more environmentally friendly (Kimmel, 1999). Ecotourism and  
35  
36 environmental education are costly related and depends upon each other. Environmental  
37  
38 education is one of the components for performing ecotourism (Cheung, 2010; Clifton &  
39  
40 Benson, 2006; Fennell, 2001).  
41  
42  
43  
44

45 To address the environmental issues we face today, environmental education (EE) is of  
46  
47 paramount importance. EE has been actively promoted by the UNSECO's International  
48  
49 Environmental Education Programme since the early 1970s and has been defined as "process  
50  
51 of recognizing values and the clarifying concepts in order to develop the skill and attitudes  
52  
53 necessary to understand and appreciate the interrelatedness among man, his culture and his  
54  
55 biophysical surroundings" (Schmieder, 1975). Such skills and attitudes are essential to  
56  
57 nurturing the will and competence required to work for a sustainable future. In particular,  
58  
59  
60

1  
2  
3 teachers represent a preeminent role in the dissemination and implementation of EE through  
4 the “multiplier effect” (Powers, 2004; Van Petegem, Blicck, Imbrecht, & Van Hout, 2005):  
5  
6 where the training of one teacher has the potential to provide the knowledge and influence the  
7  
8 attitudes of many future students. It has consequently been recognized by the  
9  
10 UNESCO-UNEP (1990) that the education of teachers should be the ‘priority of priorities’  
11  
12 with regard to EE development.  
13  
14

15  
16 A number of studies have been conducted to evaluate the importance of environmental  
17  
18 awareness of teachers in EE. For example, a positive correlation between environmental  
19  
20 awareness of teachers and quality of EE has been supported by Nguyen (2001) and Shobeyri  
21  
22 and Prahallada (2008) in primary and secondary levels respectively. Kaplowitz and Levine  
23  
24 (2005) recognise the enhancement in environmental knowledge of pre-service teachers can  
25  
26 improve EE efforts. These authors suggest that future research should be conducted to  
27  
28 determine the role of environmental awareness and attitudes of EE practitioners with regard  
29  
30 to the effectiveness of their EE programmes.  
31  
32

33  
34 Ecotourism practitioners particularly ecotour guides, are hosts and conduits between the  
35  
36 tourists and their ecotourism destinations. They play a vital role in providing knowledge and  
37  
38 influencing the attitudes of tourists. Therefore, a successful ecotourism training program, in  
39  
40 some sense, is an essential tool for enriching and enhancing pre-service ecotourism  
41  
42 practitioners’ pro-environmental knowledge, attitudes and behaviours. Following the same  
43  
44 logic discussed above, the environmental awareness of ecotour guides is of great importance  
45  
46 to the quality of ecotourism services. Despite the importance of environmental awareness and  
47  
48 attitudes of ecotour guides, they have seldom been highlighted in the tourism research.  
49  
50

51  
52 The comparatively short history of the ecotourism industry in Hong Kong hinders  
53  
54 research related to the field of ecotourism. Various training organisations have started to  
55  
56 organise ecotourism training programmes from 2003 onwards, as market demand for such  
57  
58 training increased after the SARS tragedy (Cheung & Jim, 2006). The participants of these  
59  
60

1  
2  
3  
4 training programmes desired to enrich their knowledge of Hong Kong's environment and  
5  
6 nature while also searching for opportunities to join the emerging industry. However, these  
7  
8 training programmes differ in quality, they have not been properly monitored, and the  
9  
10 effectiveness of the programmes has never been evaluated.

11  
12 This paper aims to evaluate the effectiveness of ecotourism training on the participants'  
13  
14 changes in pro-environmental knowledge, attitudes, and behaviours. A self-evaluation  
15  
16 approach was employed to explore the changes after participants had completed an  
17  
18 ecotourism training course. Respondents were invited to respond to the questions based on  
19  
20 their self-evaluation. This research is important for four main reasons. First, this is a pioneer  
21  
22 study in the field of ecotourism in Hong Kong as no previous studies have been performed  
23  
24 thus far. However, the role of ecotourism upon environmental conservation (Fennell & Smale,  
25  
26 1992; Gosling, 1999; Twindale & Bourne, 2003); characteristics (Ballantine & Eagles, 1994;  
27  
28 Eagles & Cascagnette, 1995; Fennell & Smale, 1992; Nowaczek & Fennell, 2002; Tao,  
29  
30 Eagles, & Smith, 2004; Wright, 1996b) and attitudes of ecotourists (Lee & Moscardo, 2005);  
31  
32 along with the progress of ecotourism in developed or developing countries (Bury, 2008; Hall  
33  
34 & Lew, 1998; Spenceley, 2008) have been thoroughly studied in the past two decades.  
35  
36 Secondly, exploring the environmental knowledge, attitudes and behaviours of the trainees  
37  
38 after the ecotourism trainings is an essential topic, as these trainees could play a very  
39  
40 important role in promoting environmental conservation if they become real ecotourism  
41  
42 practitioners (Yamada, 2011). Thirdly, this study acts as a baseline to gauge the effectiveness  
43  
44 of ecotourism training, upon which the association between the environmental awareness of  
45  
46 ecotour guides and their participants may be further investigated. Finally, the findings can  
47  
48 provide vital information to the governmental funding body on whether financial support  
49  
50 should be enhanced for both students and training organizations.  
51  
52  
53  
54  
55  
56  
57

## 58 **Methods**

1  
2  
3  
4 Students of the SUS certificate of ecotourism, which is offered by the Hong Kong  
5  
6 Ecotourism and Travels Professional Training Centre (ETTC), a subsidiary training centre of  
7  
8 the HK Traveller Limited, were chosen for this study. The reason for the sample selection is  
9  
10 mainly that the ETTC was one of the training organisations granted the right to organise the  
11  
12 SUS ecotourism training programme, and they are the only authorised training organisation  
13  
14 to have successfully recruited enough students to participate in their courses. Altogether, they  
15  
16 have organised 14 out of 18 SUS ecotourism training courses approved by the EdB and VTC,  
17  
18 accounting for more than 75% of the total participants for the SUS ecotourism training  
19  
20 between late 2007 and early 2011. The ETTC offered their support for our study to distribute  
21  
22 the questionnaire to the course participants starting from the fifth cohort. Students who  
23  
24 participated in the certificate courses of ecotourism training between March 2009 and January  
25  
26 2011 (ten cohorts) were asked to complete the pre-training and post-training questionnaire  
27  
28 surveys to rate the perception of their knowledge on ecotourism, Hong Kong's natural  
29  
30 environment and the influence of ecotourism training for their pro-environmental knowledge,  
31  
32 attitudes and behaviours.  
33  
34

35  
36 Two set of questionnaires designed for the pre-training and post-training surveys. Two  
37  
38 sessions was included for pre-training questionnaire to record the socioeconomic  
39  
40 characteristics of the participants (section 1) and the self-rating of respondents' knowledge on  
41  
42 Hong Kong's natural environment and ecotourism (section 2). Likewise, first and second  
43  
44 sessions of pre-training questionnaire were included in the post-training questionnaire. An  
45  
46 extra section was added to collect participants' response regarding increased knowledge and  
47  
48 pro-environmental attitude and pro-environmental behaviour changes. This section was to  
49  
50 explore the changes of knowledge, attitudes and behaviours of the participants after the  
51  
52 completion of the training course.  
53  
54

55  
56 Altogether 184 students were invited to complete pre-training questionnaire in the first  
57  
58 lesson and were subsequently invited to complete the post-training questionnaire during the  
59  
60

1  
2  
3  
4 final lesson of the training course. The questions in the survey helped students to  
5  
6 self-evaluate their knowledge gained, as well as their attitude, and behaviour changes after  
7  
8 participating in the ecotourism trainings. The questions were based on a 10-point scale, with  
9  
10 1 as the lowest and 10 as the highest in the second sections of both pre- and post-training  
11  
12 questionnaires. This section evaluated the respondents' knowledge of ecotourism and Hong  
13  
14 Kong' natural environment to acquire their self-evaluated results. A 10-point scale was  
15  
16 adopted for the knowledge questions because it could be easily understood by the students  
17  
18 and easily associated with the 100-point scale widely adopted in the education system in  
19  
20 Hong Kong. Questions related to respondents' attitude and behaviour changes were included  
21  
22 in the third section of the post-training questionnaire. These questions were on a 5-point  
23  
24 Likert scale mostly adopted by tourism studies (Dolnicar, Grun, & Leisch, 2011), with 1 for  
25  
26 strongly disagree and 5 for strongly agree. The respondents' demographic characteristics  
27  
28 were documented in the section one of both questionnaires. The variables included gender,  
29  
30 age, household income, level of education, occupation and were used as information to test  
31  
32 the association between demographic characteristics and other variables.  
33  
34  
35

36 The collected data were entered into the SPSS 19.0 program for further analysis to  
37  
38 investigate the effectiveness of the ecotourism training courses and their influence on  
39  
40 participants' pro-environmental knowledge, attitude, and behaviour changes.  
41  
42  
43  
44

## 45 **Results and discussions**

### 46 *Respondents' characteristics*

47  
48 Altogether 184 participants were invited to complete the questionnaires and all  
49  
50 participants (100%) have submitted the questionnaires. However, six of the received  
51  
52 questionnaires were incomplete. Therefore, 178 (96%) valid questionnaires were used for this  
53  
54 study.  
55  
56

57 The demographic data (Table 2) indicated that male participants (55.1%) were slightly  
58  
59  
60

1  
2  
3 dominant; the respondents' ages were slightly higher as more than 61.8% of them were above  
4 36 years of age, of which 32.6% fell in the group between 46-55 years. Younger participants  
5  
6 (below 25 years of age) were comparatively fewer, accounting for less than 8%.  
7  
8

9  
10 In terms of education level, majority of the respondents had acquired higher education,  
11 as over 68.6% had obtained post-secondary education or above, of which over 50% obtained  
12 a university degree or above. This is considerably higher than the percentage of employed  
13 persons in Hong Kong, where only 31.5% of the population obtained post-secondary  
14 education in 2008 (The Census and Statistics Department, 2008).  
15  
16  
17  
18  
19

20 The high-income group dominated, as over 37% earned HK\$25,000 or more per month  
21 comparing with only 14.7% employed persons in the Hong Kong population. Their median  
22 salary was approximately HK\$20,000, which is much more than that of employed persons in  
23 Hong Kong, where their median salary is only HK\$10,500 (The Census and Statistics  
24 Department, 2008). Surprisingly, over 13% had no income, as they were students or retired.  
25  
26  
27  
28  
29

30 Regarding occupation, the largest group of the respondents were professionals (15.7%),  
31 followed by senior executives and managers (13.5%). Associate professionals, teachers, and  
32 civil servants accounted for 12.4%, 11.2%, and 10.1%, respectively.  
33  
34  
35  
36  
37

38 It is assumed that the demographic characteristics of ecotourism training participants  
39 may be different from the characteristics of ecotourists who participated in other ecotourism  
40 activities. However, However, the demographic characteristics of our respondents share a  
41 similarity with previous (Ballantine & Eagles, 1994; Crossley & Lee, 1994; Eagles &  
42 Cascagnette, 1995; Kretchaman & Eagles, 1990; Meric & Hunt, 1998; Tao et al., 2004;  
43 Wright, 1996a, 1996b), where ecotourism training participants tend to be more mature and  
44 possess higher education and higher income. However, this situation may not truly be  
45 reflected in the ecotourism training market, as the expense for taking up the training course  
46 would be much higher (HK\$2,250) than the participation in an ecotourism activity  
47 (approximately HK\$200) in Hong Kong. This may be the main factor discouraging young  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4 people (below 25 years of age) from participating in ecotourism training, leading to the low  
5  
6 number of young people being recorded in this study. Similarly, the comparatively high  
7  
8 tuition fee may also discourage participants from the low-income group.  
9

### 10 11 12 *Participants' knowledge on ecotourism and Hong Kong's natural environment*

13  
14 Participants were required to evaluate their knowledge about ecotourism and Hong  
15  
16 Kong's natural environment before and after the ecotourism training course. The results  
17  
18 showed that participants' knowledge of both ecotourism and Hong Kong's natural  
19  
20 environment were low. The majority of the participants rated their knowledge of ecotourism  
21  
22 (70.8%) and Hong Kong's natural environment (58.4%) at 4 or below on a 10-point scale  
23  
24 before the start of the course. However, only 6.7% and 11.4% of the participants rated their  
25  
26 post-training knowledge about ecotourism and Hong Kong's natural environment,  
27  
28 respectively, at 4 or lower. The mean score of ecotourism knowledge improved from 3.47 to  
29  
30 6.84. The score also improved from 4.38 to 6.83 for knowledge regarding Hong Kong's  
31  
32 natural environment (Table 3).  
33  
34  
35

36  
37 A paired sample *t* test was employed to assess the improvement in the knowledge of  
38  
39 Hong Kong's natural environment and ecotourism. The results indicated that participants'  
40  
41 post-training knowledge about ecotourism (mean = 6.84, standard deviation = 1.44) was  
42  
43 significantly ( $p < 0.01$ ) better than before training (mean = 3.47, standard deviation = 0.189).  
44  
45 Moreover, the participants' post-training knowledge about Hong Kong's natural environment  
46  
47 (mean = 6.83, standard deviation = 1.55) at the same time was significantly ( $p < 0.01$ ) better  
48  
49 than before training (*Mean* = 4.38, *Standard deviation* = 2.22).  
50

51  
52 The questionnaire survey results indicated the participants' knowledge was enhanced  
53  
54 after they had completed the ecotourism training course. They generally claimed that the  
55  
56 training course enhanced their knowledge about Hong Kong's natural environment (96.6%)  
57  
58 and ecotourism (95.5%), and no disagreement among all participants was recorded. This  
59  
60

1  
2  
3  
4 result was expected and is generally supported by many similar previous studies suggesting  
5  
6 that participants' knowledge was enhanced after they joined various environmental  
7  
8 programmes and activities (Kimmel, 1999; Stern et al., 2008; Thapa et al., 2005). Previous  
9  
10 results have suggested that environmental conservation programme significantly contributed  
11  
12 to the enhancement of environmental knowledge. However, the present study did not employ  
13  
14 an objective approach to test which aspects of environmental knowledge among participants  
15  
16 were enhanced.  
17  
18  
19

### 20 21 *Pro-environmental attitudes and behaviours*

22  
23 The participants' were required to self-evaluate changes in their post-training attitudes  
24  
25 and behaviours by stating the level of agreement of the questions in the third section of the  
26  
27 post-training questionnaire. The agreement of the participants on the statements of various  
28  
29 pro-environmental attitudes and behaviours were recorded and all statements are listed in  
30  
31 Table 4.  
32  
33

34  
35 Positive results towards the pro-environmental knowledge, attitudes, and behaviours  
36  
37 were observed. Over 90% of the participants' agreed with PEK1 (96.6%), PEK2 (95.5%),  
38  
39 PEA1 (92.1%) and PEA2 (92.2%). No disagreement was recorded for PEK1 and PEK2 and  
40  
41 less than 5% of the participants disagreed with PEA1 (4.5%) and PEA2 (3.3%). In terms of  
42  
43 pro-environmental behaviours (PEB), over 75% of the participants agreed with the statements  
44  
45 of all PEBs in which over 88.8% of them agreed with PEB2, followed by PEB4 (78.7%).  
46  
47 Comparatively high mean score for all PEKs, PEAs, and PEBs were reported, with scores all  
48  
49 above 3.7 in a 5-point scale (Table 5). In general, the mean score of the PEKs (PEK1 = 4.42;  
50  
51 PEK2 = 4.33) was slightly higher than the PEAs (PEA1 = 4.22; PEA2 = 4.30) and PEBs  
52  
53 (PEB1 = 3.90; PEB2 = 4.17; PEB3 = 3.74; PEB4 = 3.90). These results demonstrate that  
54  
55 ecotourism training plays a more important role in increasing participants' pro-environmental  
56  
57 knowledge than attitudes and behaviours. However, the impact of the training is still valid, as  
58  
59  
60



1  
2  
3 majority of participants claimed that their attitudes and behaviours were altered towards  
4 being more environmentally friendly. These results could eventually contribute to a long-term  
5 positive effect on the environment. The study results were also in line with other studies  
6 indicating participants' pro-environmental knowledge, attitudes and behaviours were  
7 significant enhanced after their participation in environmental-related programmes and  
8 activities (Powell & Ham, 2008).  
9

10  
11  
12  
13  
14  
15  
16  
17  
18  
19 *Association between socioeconomic factors and pro-environmental knowledge (PEK),*  
20 *attitudes (PEA) and behaviours (PEB).*  
21

22  
23 A Kruskal-Wallis test was employed to investigate whether socio-economic factors  
24 govern the participants' pro-environmental knowledge, attitudes, and behaviours, and these  
25 results are listed in Table 6.  
26  
27

28  
29 The results reported that the variables age group, occupation and salary indicated  
30 significantly associated with pro-environmental knowledge, attitudes and behaviours. Age  
31 group indicated a significant association with PEA1, PEB2, PEB3 and PEB4. Surprisingly,  
32 the mean scores of PEA1 (3.57), PEB2 (3.71), PEB3 (3.29) and PEB4 (3.43) of young  
33 participants (25 or below) were the lowest comparing with other age categories. In term of  
34 occupation types, the respondents' occupation was significantly associated with PEK1, PEA1,  
35 PEB3 and PEB4. Similarly, students were recorded the lowest mean score of PEA1 (Student:  
36 3.75), PEB3 (Student: 3.5) and PEB4 (Student: 3.75). However, the mean score of  
37 pro-environmental knowledge was enhanced (PEK1 & PEK2) among the young participants  
38 and students, indicating the mean score of young participants were higher than the other age  
39 categories and occupation types. Students even recorded the highest mean (PEK1: 4.63;  
40 PEK2: 4.63) among all occupation types, demonstrating that young participants tend to claim  
41 they benefited greatly from the enhancement of pro-environmental knowledge after the  
42 training course. This may be because young participants generally have a higher capacity to  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 learn new knowledge (Sangpikul & Batra, 2007), leading to an assumption that they would  
4 pay more attention on the content regarding ecotourism and Hong Kong's natural  
5 environment. Undoubtedly, young participants have no obstacle to learn and absorbing  
6 environmental knowledge through training. However, they tend not to be keen to actualize  
7 what they learned during the lessons. They are not likely to consider changing their attitudes  
8 and behaviours towards environmentally friendly (Twenge, Campell, & Freeman, 2012).  
9 Such a finding is contradicted by the traditional wisdom that age is negatively correlated with  
10 environmental concern (Albrecht, Bultena, & Hoiberg, 1986; Martinsons, So, Tin, & Wong,  
11 1997; Schwepker & Cornwell, 1991; Van Liere & Dunlap, 1980). This may be because young  
12 participants in the materialistic society of Hong Kong are not likely to sacrifice their  
13 comfortable lifestyle. They tend to refuse to turn their knowledge into practice that would  
14 reduce their convenience and comfortableness (Twenge et al., 2012). Therefore, they may  
15 refuse to choose environmental friendly products and services. This finding is different from  
16 that of Lee (2008), who suggested that adolescents in Hong Kong displayed a rather  
17 promising market opportunity for green products. Young participants are not likely to take  
18 action and keen to join voluntary work for environmental conservation, as they may believe  
19 that such extra work would affect to their existing lifestyle. They tend not to be hard workers  
20 for environmental conservation (Twenge et al., 2012).  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41

42 Salary is another socioeconomic characteristic indicating a significant association with  
43 PEKs and PEBs. However, the result did not show any linear relationship. Comparing the  
44 mean score between different salary categories, participants within the salary category of  
45 "HK\$25,000-35,000" recorded the lowest mean score for PEK1 (4.29) and PEK2 (4.21)  
46 indicating that they claimed to have less knowledge advancement after ecotourism training,  
47 despite of such high mean scores being recorded on a 5-point scale. All participants with  
48 salary between HK\$45,000 and 55,000 (mean score: 5) claimed that they strongly agreed that  
49 the training course could enhance their knowledge on ecotourism and Hong Kong's natural  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 environment. The mean score of the PEBs also showed that this group of participants is more  
4 likely to put their knowledge into practice, as they claimed that they are strongly agreed to  
5 change their lifestyle to be more environmentally friendly (mean score: 5) and willing to  
6 choose environmentally friendly products and services (mean score: 5).  
7  
8  
9

10  
11 In summary, the results of this study clearly indicated the positive influence of  
12 ecotourism training towards pro-environmental knowledge, attitudes and behaviours. These  
13 results are consistent with many studies showing that participation in environmentally related  
14 activities or programmes lead to the enhancement of environmental knowledge and  
15 improvement of environmental attitudes and behaviours (Bradley, Waliczek, & Zajicek, 1999;  
16 Higham & Carr, 2002; Orams, 1997; Powell & Ham, 2008). Orams (1997) reported that  
17 participants' environmental knowledge or understanding was enhanced after the participation  
18 of environmental interpretation programmes. These programmes could promote more  
19 environmentally responsible behaviours for the participants. Powell & Ham (2008) likewise  
20 indicated that behaviours and intentions in environmental matters among respondents showed  
21 significant difference before and after they had joined ecotourism interpretation programmes.  
22 Bradley et al (1999) also indicated that knowledge and attitudes were correlated, with a direct  
23 relationship between the pre- and post-test scores for knowledge and attitudes.  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42

### 43 **Conclusion and implication**

44  
45 The study evaluated the effectiveness of ecotourism training in enhancing participants'  
46 pro-environmental knowledge, attitudes and behaviours. The results showed that  
47 pro-environmental knowledge among participants significantly improved after they  
48 completed ecotourism training, and their attitudes and behaviours also turned more  
49 environmentally responsible. Based on the results of our study and some previous studies, we  
50 are reminded that organising ecotourism-related training not only prepares trained persons for  
51 the industry, but also effectively enhances and alters participants' knowledge, attitudes, and  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 behaviours of participants towards greater environmental responsibility. Ecotourism-related  
4 training or activities could be promoted for both primary and secondary schools as  
5  
6 extracurricular activities or other learning experiences for students to enhance their awareness  
7  
8 of environmental conservation.  
9  
10

11  
12 However, it is necessary to extend funding support to local residents for participation in  
13 ecotourism training courses. For instance, the allocation to the Continuous Education Fund  
14 (CEF) could be raised to provide sufficient financial support to subsidize the participation of  
15 local citizens in appropriate ecotourism training courses. Other funding sources should also  
16 be made available for colleges and organisers to organise appropriate ecotourism training  
17 courses for the general public at a relatively lower cost.  
18  
19  
20  
21  
22  
23  
24

25 In addition, the government should take the initiative to monitor and control these  
26 ecotourism training courses in the market to improve their quality. Guidelines should also be  
27 provided to the organisers in helping to standardise the contents of various courses. For  
28 example, syllabi of ecotourism courses should be framed, reviewed, and commented by  
29 university scholars to ensure the essential content is covered. Finally, the government should  
30 periodically evaluate the funded courses to monitor their quality and effectiveness. Doing so  
31 would eliminate irregular organisers from wasting public funds.  
32  
33  
34  
35  
36  
37  
38  
39

40 Ecotourism training courses have long been treated as leisure courses for people who are  
41 interested in nature and as training for particular tourism practitioners to equip them with  
42 relevant knowledge for furthering the development of ecotourism industry. With reference to  
43 previous studies in the area of environmental education, EE teachers with higher  
44 environmental awareness including better environmental knowledge, and positive  
45 environmental attitudes and behaviours could positively influence their students to enhance  
46 their knowledge, attitudes and responsible behaviours regarding the environment (Kaplowitz  
47 & Levine, 2005; Nguyen, 2001). Similarly, well-trained ecotourism practitioners with  
48 pro-environmental knowledge, attitudes and behaviours also perform the same for the  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 participants of ecotours. This study brings a new direction and area for ecotourism research to  
4 encourage further investigate into the association between ecotour guides and tourists on the  
5 enhancement of environmental knowledge, and changing of pro-environmental attitudes and  
6 behaviours. Due to time limitations and the arrangement with the ETTC, only 184  
7 participants (56.8%) of the total expected participants (324) of all funded training courses  
8 were interviewed, so the findings may not be accurate enough to represent the effectiveness  
9 of all ecotourism-related training courses on the pro-environmental knowledge, attitudes and  
10 behaviours of participants. Further longitudinal research could be considered to investigate  
11 whether the duration of ecotourism-reelated training courses produces the desired outcomes  
12 and the retention of trainees' pro-environmental attitudes and behaviours.  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24

25 To conclude, increasing ecotourism training opportunities for the local community and  
26 local citizens could help nurture pro-environmental attitudes and behaviours and safeguard  
27 our invaluable natural resources from irresponsible human behaviours. This may be a vital  
28 mean for nurturing environmentally aware customers to enlarge the market for ecotourism  
29 development worldwide.  
30  
31  
32  
33  
34  
35  
36  
37

### 38 **References**

- 39  
40 AFCD. (2003). Strategy for the Sustainable Development of Ecotourism. Hong Kong:  
41 Agriculture, Fisheries and Conservation Department.  
42  
43  
44 Albrecht, D.E., Bultena, G., & Hoiberg, E. (1986). Constituency of the antigrowth moverment:  
45 a comparison of the growth orientation of urban status groups. *Urban Affairs*  
46 *Quarterly*, 21, 607-616.  
47  
48  
49  
50 Ballantine, J.L., & Eagles, P. F. (1994). Defining Canadian ecotourists. *Journal of*  
51 *Sustainable Tourism*, 2(4), 210-214.  
52  
53  
54 Ballantyne, R., & Packer, J. (2011). Using tourism free-choice learning experiences to  
55 promote environmentally sustainable behaviour: the role of post-visit 'action  
56 resources'. *Environmental Education Research*, 17(2), 201-215.  
57  
58  
59  
60

- 1  
2  
3 Black, R., Ham, S.H., & Weiler, B. (2001). Ecotour guide training in less developed countries:  
4 some preliminary research findings. *Journal of Sustainable Tourism*, 9(2), 147-156.  
5  
6  
7  
8 Black, R., & King, B. (2002). Human resource development in remote island communities:  
9 an evaluate of tour-guide training in Vanuatu. *International Journal of Tourism*  
10 *Research*, 4, 103-117.  
11  
12  
13 Bradley, J.C., Waliczek, T.M., & Zajicek, J.M. (1999). Relationship between environmental  
14 knowledge and environmental attitude of high school students. *The Journal of*  
15 *Environmental Education*, 30(3), 17-21.  
16  
17  
18  
19 Bury, J. (2008). New geographies of tourism in Peru: nature-based tourism and conservation  
20 in the Cordillera Huayhuash. *Tourism Geographies*, 10(3), 312-333.  
21  
22  
23  
24 Cheung, L.T.O., & Jim, C.Y. (2006). Improving ecotourism practice to enhance protected  
25 area management in Hong Kong. In C. Y. Jim & R. T. Corlett (Eds.), *Sustainable*  
26 *Management of Protected Areas for Future Generations* (pp. 373-387). Hong Kong:  
27 IUCN, WCPA, Gland, Switzerland and Cosmos Books.  
28  
29  
30  
31 Cheung, T.O. (2010). *Understanding Ecotourist Perception of Ecotourism Services and*  
32 *Development in Hong Kong*. (Doctor of Philosophy PhD Thesis), University of Hong  
33 Kong.  
34  
35  
36  
37 Christie, M. F., & Mason, P.A. (2003). Transformative tour guiding: training tour guides to be  
38 critically reflective practitioners. *Journal of Ecotourism*, 2(1), 1-16.  
39  
40  
41 Clifton, J., & Benson, A. (2006). Planning for sustainable ecotourism: the case for research  
42 ecotourism in developing country destinations. *Journal of Sustainable Tourism*, 14(3),  
43 238-254.  
44  
45  
46  
47 Crossley, J., & Lee, B. (1994). *Ecotourists and mass tourists: A difference in 'Benefits Sought'*.  
48 Washington DC: Travel and Tourism Research Association.  
49  
50  
51 Dolnicar, S., Grun, B., & Leisch, F. (2011). *Three good reasons NOT to use five and seven*  
52 *point Likert items*. Paper presented at the 21<sup>st</sup> CAUTHE National Conference,  
53 Adelaide, Australia.  
54  
55  
56  
57 Eagles, P. F., & Cascagnette, J.W. (1995). Canadian ecotourists: who are they? *Tourism*  
58  
59  
60

- 1  
2  
3 *Recreation Research*, 20(1), 22-28.  
4  
5  
6 Economist Intelligence Unit. (2012). Best Cities Ranking and Report: A Special Report from  
7 the Economist Intelligence Unit (pp. 23): Economist Intelligence Unit.  
8  
9  
10 Farmer, J., Knapp, D., & Benton, G.M. (2007). An elementary school environmental  
11 education field trip: long-term effects on ecological and environmental knowledge  
12 and attitude development. *The Journal of Environmental Education*, 38(3).  
13  
14  
15  
16 Fennell, D. A. (2001). A content analysis of ecotourism definitions. *Current Issues in*  
17 *Tourism*, 4(5), 403-421.  
18  
19  
20 Fennell, D., & Smale, B. (1992). Ecotourism and nature resource protection: implications of  
21 an alternative form of tourism for host nations. *Tourism Recreation Research*, 17(1),  
22 21-32.  
23  
24  
25  
26 Gossling, S. (1999). Ecotourism: a mean to safeguard biodiversity and ecosystem functions?  
27 *Ecological Economics*, 29, 303-320.  
28  
29  
30 Hall, C.M., & Lew, A.A. (1998). *Sustainable Tourism. A Geographical Perspective*. Harlow:  
31 Addison Wesley Longman Ltd.  
32  
33  
34  
35 Higham, J., & Carr, A. (2002). Ecotourism visitor experiences in Aotearoa/New Zealand:  
36 challenging the environmental values of visitors in pursuit of pro-environmental  
37 behaviour. *Journal of Sustainable Tourism*, 10(4), 277-294.  
38  
39  
40  
41 HKTB. (2001). *A Statistical Review of Hong Kong Tourism 2001*. Hong Kong.  
42  
43  
44 Hopkinson, L., & Stern, R. (2002). Wild but not Free: An Economic Valuation of the Benefits  
45 of Nature Conservation in Hong Kong. Hong Kong: Civic Exchange.  
46  
47  
48 Hsu, S. (2004). The effects of an environmental education program on responsible  
49 environmental behaviour and associated environmental literacy variables in  
50 Taiwanese college students. *The Journal of Environmental Education*, 35(2), 37-46.  
51  
52  
53  
54 Hughes, M., & Saunders, A.M. (2005). Interpretation, activity participation, and  
55 environmental attitudes of visitors to Penguin Island, Western Australia. *Society and*  
56 *Natural Resources*, 18, 611-624.  
57  
58  
59  
60

- 1  
2  
3 Hughs, K., Packer, J., & Ballantine, R. (2011). Using post-visit action resources to support  
4 family conservation learning following a wildlife tourism experience. *Environmental*  
5 *Education Research*, 17(3), 307-328.  
6  
7  
8  
9 Hungerford, H.R. (1996). The development of responsible environmental citizenship: a  
10 critical challenge. *Journal of Interpretation Research*, 1(1), 25-37.  
11  
12  
13 Kaplowitz, M.D., & Levine, R. (2005). How environmental knowledge measures up at a big  
14 ten university. *Environmental Education Research*, 11(2), 143-160.  
15  
16  
17 Kimmel, J.R. (1999). Ecotourism as environmental learning. *Journal of Environmental*  
18 *Education*, 30(2), 40-44.  
19  
20  
21  
22 Kretchaman, J., & Eagles, P. F. (1990). An analysis of the motives of ecotourists in  
23 comparison to the general Canadian population. *Society and Leisure*, 13(2), 499-508.  
24  
25  
26 Kuo, I.L. (2002). The effectiveness of environmental interpretation at resource-sensitive  
27 tourism destinations. *International Journal of Tourism Research*, 4, 87-101.  
28  
29  
30  
31 Lee, K. (2008). Opportunities for green marketing: young customers. *Marketing Intelligence*  
32 *& Planning*, 26(6), 573-586.  
33  
34  
35 Lee, W.H., & Moscardo, G. (2005). Understanding the impact of ecotourist resort  
36 experiences on tourists' environmental attitudes and behavioural intentions. *Journal of*  
37 *Sustainable Tourism*, 13(6), 546-565.  
38  
39  
40  
41 Lindberg, K., Epler Wood, M., & Engeldrum, D. (1998). *Ecotourism: A Guide for Planners*  
42 *and managers (Vol. 2)*. Nother Bennington, VT: Ecotourism Society.  
43  
44  
45 Madin, E.M.P., & Fenton, D.M. (2004). Environmental interpretation in the Great Barrier  
46 Reef Marine Park: an assessment of programme effectiveness. *Journal of Sustainable*  
47 *Tourism*, 12(2), 121-137.  
48  
49  
50  
51 Marafa, L.M. (2005, 2-5 October, 2005). *Community-based tourism initiatives: prospects for*  
52 *sustainable tourism on an outlying island in Hong Kong*. Paper presented at the 3rd  
53 Global Summit on Peace Through Tourism - Education Forum, Pattaya, Thailand.  
54  
55  
56  
57 Martinsons, M.G., So, S.K.K., Tin, C., & Wong, D. (1997). Hong Kong and China: emerging  
58  
59  
60



- 1  
2  
3 markets for environmental products and technology. *Long Range Planning*, 30(2),  
4 277- 290.  
5  
6  
7  
8 Meric, H.J., & Hunt, J. (1998). Ecotourists' motivational and demographic characteristics: A  
9 case of North Carolina travellers. *Journal of Travel Research*, 36(4), 57-61.  
10  
11  
12 Moscardo, G. (1998). Interpretation and sustainable tourism: functions, examples and  
13 principles. *Journal of Tourism Studies*, 9(1), 2-13.  
14  
15  
16 Nguyen, T.T. . (2001). Awareness of Vietnamese primary school teachers on environmental  
17 education. *International Research in Geographical and Environmental Education*,  
18 10(4), 429-444.  
19  
20  
21  
22 Nowaczek, A.M.K., & Fennell, D.A. (2002). Ecotourism in post-communist Poland: an  
23 examination of tourists, sustainability and institutions. *Tourism Geographies*, 4(4),  
24 372-395.  
25  
26  
27  
28 Orams, M.B. (1994). Creating effective interpretation for managing interaction between  
29 tourists and wildlife. *The Australian Journal of Environmental Education*, 10, 21-34.  
30  
31  
32 Orams, M.B. (1995). Using interpretation to manage nature-based tourism. *Journal of*  
33 *Sustainable Tourism*, 4(2), 81-94.  
34  
35  
36  
37 Orams, M.B. (1997). The effectiveness of environmental education: can we turn tourists into  
38 'greenies'. *Progress in Tourism and Hospitality Research*, 3(4), 295-306.  
39  
40  
41 Powell, R.B., & Ham, S.H. (2008). Can ecotourism interpretation really lead to  
42 pro-conservation knowledge, attitudes and behaviour? evidence from the Galapagos  
43 Island. *Journal of Sustainable Tourism*, 16(4), 467-489.  
44  
45  
46  
47 Powers, A. L. (2004). Teacher preparation for environmental education: faculty perspectives  
48 on the infusion of environmental education into pre-service methods courses. *The*  
49 *Journal of Environmental Education*, 35(3), 3-11.  
50  
51  
52 Sangpikul, A. , & Batra, A. (2007). Ecotourism: a perspective from Thai youths. *Journal of*  
53 *Hospitality, Leisure, Sport & Tourism Education*, 6(1), 81-85.  
54  
55  
56  
57 Schanzel, H.A., & McIntosh, A. (2000). An insight into the personal and emotive context of  
58  
59  
60

- 1  
2  
3 wildlife viewing at the Penguin Place, Otago Peninsula, New Zealand. *Journal of*  
4 *Sustainable Tourism*, 8(1), 36-52.  
5  
6  
7  
8 Schmieder, A.A. (1975, 13-20 October 1975). *The Nature and Philosophy of Environmental*  
9 *Education: Some Fundamental Goals, Concepts, Objectives and Development Issues*.  
10 Paper presented at the International Workshop on Environmental Education, Belgrade,  
11 Yugoslavia.  
12  
13  
14  
15 Schwegker, C.H. Jr, & Cornwell, T.B. (1991). An examination of ecological concerned  
16 customers and their intention to purchase ecologically packaged products. *Journal of*  
17 *Public Policy & Marketing*, 10, 77-101.  
18  
19  
20  
21 Shobeyri, S.M., & Prahallada, N.N. (2008). Environmental awareness among secondary  
22 school teachers in Iran and India. *Journal of Environmental Science and Technology*,  
23 10(1/36), 137-146.  
24  
25  
26  
27 Spenceley, A. (2008). Requirements for sustainable nature-based tourism in transfrontier  
28 conservation areas: a Southern African delphi consultation. *Tourism Geographies*,  
29 10(3), 285-311.  
30  
31  
32  
33 Stern, M.J., Powell, R.B., & Ardoin, N.M. (2008). What difference does it make? Assessing  
34 outcomes from participation in a residential environmental education program. *The*  
35 *Journal of Environmental Education*, 39(4), 31-40.  
36  
37  
38  
39 Tao, C.H., Eagles, P. F., & Smith, S.L.J. (2004). Profiling Taiwanese ecotourists using a  
40 self-definition approach. *Journal of Sustainable Tourism*, 12(2), 149-168.  
41  
42  
43  
44 Thapa, B., Graefe, A.G., & Meyer, L.A. (2005). Moderator and mediator effects of scuba  
45 diving specialization on marine-based environmental knowledge-behaviour  
46 contingency. *The Journal of Environmental Education*, 37(1), 53-67.  
47  
48  
49  
50 The Census and Statistics Department. (2008). Quarterly report on general household survey.  
51 Retrieved 24 Feb 2012, 2009, from  
52 [http://www.statistics.gov.hk/publication/stat\\_report/labour/B10500012008QQ02B010](http://www.statistics.gov.hk/publication/stat_report/labour/B10500012008QQ02B010)  
53 [0.pdf](http://www.statistics.gov.hk/publication/stat_report/labour/B10500012008QQ02B010)  
54  
55  
56  
57  
58  
59  
60 Tourism Commission. (2011). Hong Kong: the Facts: Tourism. Hong Kong: Tourism  
Commission.

- 1  
2  
3 Tsang, N.K.F., Yeung, S., & Cheung, C. (2011). A critical investigation of the use and  
4 effectiveness of interpretive services. *Asia Pacific Journal of Tourism Research*, 16(2),  
5 123-137.  
6  
7  
8  
9 Tubb, K.N. (2003). An evaluation of the effectiveness of interpretation within Dartmoor  
10 National Park in reaching the goals of sustainable tourism development. *Journal of*  
11 *Sustainable Tourism*, 11(6), 476-498.  
12  
13  
14 Twenge, J.M., Campell, W.K., & Freeman, E.C. (2012). Generational difference in young  
15 adult's life goals, concern for others, and civiv orientation 1966-2009. *Journal of*  
16 *Personality and Social Psychology*, 102(5), 1045-1062.  
17  
18  
19  
20  
21 Twindale, C.R., & Bourne, J.A. (2003). Commentary: practices, problems and principles for  
22 ecotourism: a case study. *Tourism Geographies*, 5, 482-492.  
23  
24  
25 UNESCO-UNEP. (1990). Environmentally educated teachers, the priority of priorities?  
26 *Connect*, 15(1), 1-3.  
27  
28  
29 Van Liere, K., & Dunlap, R. (1980). The social bases of environmental concern: a review of  
30 hypotheses, explanations, and public concern? *Public Opinion Quarterly*, 44(2),  
31 181-197.  
32  
33  
34  
35 Van Petegem, P., Blicck, A., Imbrecht, I., & Van Hout, T. (2005). Implementing  
36 environmental education in pre-service teacher training. *Environmental Education*  
37 *Research*, 11(2), 161-171.  
38  
39  
40  
41 Weiler, B., & Davis, D. (1993). An investigation into the roles of the nature-based tour leader.  
42 *Tourism Management*, 14(2), 91-98.  
43  
44  
45  
46 Weiler, B., & Ham, S.H. (2002). Tour guide training: a model for sustainable capacity  
47 building in developing countries. *Journal of Sustainable Tourism*, 10(1), 52-69.  
48  
49  
50  
51 Wheeller, B. (1994). Ecotourism: a ruse by other name. In C. P. Cooper & A. Lockwood  
52 (Eds.), *Progress in Tourism, Recreation and Hospitality Management* (Vol. 6, pp.  
53 3-11). London: Belhaven.  
54  
55  
56  
57 Wright, P.A. (1996a). North American ecotourism markets: motivations, preferences, and  
58 destinations. *Journal of Travel Research*, 35, 3-10.  
59  
60

1  
2  
3 Wright, P.A. (1996b). North American ecotourist: market profile and trip characteristics.  
4 *Journal of Travel Research*, 34(4), 2-10.  
5  
6

7  
8 Yamada, N. (2011). Why Tour Guiding is important for ecotourism: enhancing guiding  
9 quality with the ecotourism promotion policy in Japan. *Asia Pacific Journal of*  
10 *Tourism Research*, 16(2), 139-152.  
11  
12

13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

For Peer Review Only

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20

### List of tables

Table 1: Syllabi of SUS ecotourism training courses

Table 2: Socioeconomic characteristics of respondents

Table 3. Mean score of pre- and post- training knowledge of participants.

Table 4. Lists of pro-environmental knowledge, attitudes and behaviours

Table 5 Mean score of pro-environmental knowledge, attitude, and behaviour

Table 6. Kruskal-Wallis test of PEKs, PEAs, PEBs, among categories in four socioeconomic variables.

21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Table 1: Syllabi of SUS ecotourism training courses

Topics covered by lectures	Topics covered by field practices
<ul style="list-style-type: none"> <li>• Principles of ecotourism</li> <li>• The roles of an ecotour guide</li> <li>• Ecological and geological resources of Hong Kong</li> <li>• Protected area systems in Hong Kong</li> <li>• Safety guideline of countryside visit</li> </ul>	<ul style="list-style-type: none"> <li>• Bird watching</li> <li>• Dolphin watching</li> <li>• Wetland excursion</li> <li>• Identification of vegetation</li> <li>• Visit to cultural heritages</li> <li>• Visit to marine parks</li> </ul>

Table 2: Socioeconomic characteristics of respondents

<b>Gender</b>	<b>N</b>	<b>%</b>	<b>Education level</b>	<b>N</b>	<b>%</b>
Male	98	55.1	Secondary 3 or below	8	4.5
Female	80	44.9	Senior secondary	48	27.0
<b>Age groups</b>			Post-secondary	32	18.0
25 or below	14	7.9	Undergraduate	54	30.3
26 - 35	54	30.3	Post-graduate diploma	6	3.4
36 - 45	42	23.6	Master's or above	30	16.9
46 - 55	58	32.6	<b>Occupation</b>		
56 or above	10	5.6	Manager and administrator	24	13.5
<b>Monthly salary (HK\$)</b>			Professional	28	15.7
No income	24	13.5	Executive	8	4.5
8000 or below	10	5.6	Civic servant	18	10.1
8001 - 15000	28	15.7	Teachers	20	11.2
15001 - 25000	50	28.1	Associate professional	22	12.4
25001 - 35000	28	15.7	Clerical staff	18	10.1
35001 - 45000	26	14.6	Sales and service workers	8	4.5
45001 - 55000	2	1.1	Retired	10	5.6
55001 or above	10	5.6	Housewife	6	3.4
			Students	16	9.0

Table 3: Mean score of pre- and post- training knowledge of participants.

	Pre-training knowledge about ecotourism	Post-training knowledge about ecotourism	Pre-training knowledge about Hong Kong's nature	Post-training knowledge about Hong Kong's nature
Valid (N)	178	178	178	178
Mean (M)	3.47	6.84	4.38	6.83
Std. Deviation (SD)	1.89	1.44	2.22	1.55

Table 4: Lists of pro-environmental knowledge, attitudes and behaviours

---

**Pro-environmental knowledge (PEK)**

---

**PEK1:** After the completion of the ecotourism training, my knowledge about Hong Kong nature is enhanced

**PEK2:** After the completion of the ecotourism training, my knowledge about ecotourism is enhanced

---

**Pro-environmental attitude (PEA)**

---

**PEA1:** After the completion of the ecotourism training, my concern on environmental issues is greater

**PEA2:** After the completion of the ecotourism training, my concern on nature conservation is greater

---

**Pro-environmental behaviour (PEB)**

---

**PEB1:** After the completion of the ecotourism training, my lifestyle is changed to become more environmentally friendly

**PEB2:** After the completion of the ecotourism training, I am more concerned with our nature and environment and am willing to take action to protect our environment

**PEB3:** After the completion of the ecotourism training, I prefer to choose environmentally friendly products and services

**PEB4:** After the completion of the ecotourism training, I participate in voluntary work for environmental conservation

---

Table 5: Mean score of pro-environmental knowledge, attitude, and behaviour

Variables	Mean score	Standard Deviation
PEK1	4.42	0.56
PEK2	4.33	0.56
PEA1	4.22	0.73
PEA2	4.30	0.73
PEB1	3.90	0.80
PEB2	4.17	0.76
PEB3	3.74	0.78
PEB4	3.90	0.72

Table 6: Kruskal-Wallis test of PEKs, PEAs, PEBs, among categories in four socioeconomic variables.

N=178	Significance level			
	Age Group	Education Level	Occupation	Salary
PEK1				*
PEK2			**	*
PEA1	*		**	
PEA2				
PEB1				*
PEB2	**			
PEB3	*		**	**
PEB4	*		*	

\*. Significance at the 0.05 level

\*\* . Significance at the 0.01 level