



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

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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

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3 have brought Hong Kong to the top of the list. Over 40% of Hong Kong's territory has been
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5 designated as protected areas, including 24 country parks, 22 special areas, 4 marine parks and
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7 a global geopark. These natural assets have not been widely used for ecotourism development.
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9 The proximity of the country parks to the urban areas is another advantage for developing
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11 Hong Kong's natural assets to become tourist hotspots. Unlike other urban areas in the world,
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13 the country parks of Hong Kong are close to the urban areas with extensive coverage of road
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15 networks to shorten the travel time between urban and rural areas. Such advantages could be
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17 used to further develop the ecotourism industry and prolong the stays of overseas visitors in
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19 Hong Kong.
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23 The tourism industry is one of the major pillars of Hong Kong's economy. The total
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25 revenue derived from inbound tourism grew rapidly from HK61 billion in 2001 to HK210
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27 billion in 2010. The number of visitors also grew remarkably from 13 million in 2000 to over
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29 36 million in 2010, an average 17.6% growth year to year (Tourism Commission, 2011).
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32 Ecotourism is believed to benefit from the growth of the tourism industry in Hong
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34 Kong (Marafa, 2005). The Hong Kong Tourist Association (HKTA) (now the Hong Kong
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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
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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
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50 activities, such as taking photos in a serene natural setting (Hopkinson & Stern, 2002).
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53 Estimating the number of tourists currently participating in ecotourism activities is
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55 difficult due to a lack of comprehensive surveys or statistics. The Hong Kong Tourism Board's
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57 survey demonstrated that 24% of visitors are interested in ecotourism activities in Hong Kong
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4 (HKTB, 2001). A study by Hopkinson and Stern (2002) estimated that further development of
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6 ecotourism in Hong Kong would generate an additional HK\$4.1 billion in revenue based on
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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
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12 increase of visitor numbers to Hong Kong.

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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
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18 of the community (Tsang, Yeung, & Cheung, 2011). Thousands of people shifted their interests
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20 from visiting shopping centres to visiting the country parks (Cheung & Jim, 2006), as they
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22 believed that they could get away from the densely populated city centre to minimise the
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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.
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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
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40 their activities, and they maintain a deep respect for nature in their behaviours (AFCD, 2003).
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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
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49 activities. Ecotourism operators and higher education institutions have begun to organise
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51 ecotour guide training courses for the public to absorb people who want a share of the recent
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53 ecotourism development. The popularity of ecotourism in Hong Kong has also raised the
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55 enthusiasm of people to participate in ecotourism training. Participants desire to enrich their
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57 knowledge of Hong Kong's natural environment while also searching for opportunities to join
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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).
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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.
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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.
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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
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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.

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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.

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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
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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.

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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.

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4 Such programmes could also play an important role in reinforcing participants' knowledge,
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6 even if they already possess extensive environmental knowledge and display appropriate
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8 behaviours and activities (Ballantyne & Packer, 2011; Kuo, 2002).
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10 11 12 *Ecotour guides and their role in environmental education*

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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
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18 guided tour. Ecotour guides have a multiplicity of roles to play (Black, Ham, & Weiler, 2001;
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20 Black & King, 2002; Christie & Mason, 2003; Orams, 1994, 1995; Weiler & Davis, 1993;
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22 Weiler & Ham, 2002). Previous studies have suggested that guides are the heart and soul of the
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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 closely related and depends upon each other. Environmental
37
38 education is one of the components for performing ecotourism (Cheung, 2010; Clifton &
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40 Benson, 2006; Fennell, 2001).
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45 To address the environmental issues we face today, environmental education (EE) is of
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47 paramount importance. EE has been actively promoted by the UNSECO's International
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49 Environmental Education Programme since the early 1970s and has been defined as "process
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51 of recognizing values and the clarifying concepts in order to develop the skill and attitudes
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53 necessary to understand and appreciate the interrelatedness among man, his culture and his
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55 biophysical surroundings" (Schmieder, 1975). Such skills and attitudes are essential to
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57 nurturing the will and competence required to work for a sustainable future. In particular,
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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):
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6 where the training of one teacher has the potential to provide the knowledge and influence the
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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’
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12 with regard to EE development.
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16 A number of studies have been conducted to evaluate the importance of environmental
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18 awareness of teachers in EE. For example, a positive correlation between environmental
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20 awareness of teachers and quality of EE has been supported by Nguyen (2001) and Shobeyri
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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
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26 improve EE efforts. These authors suggest that future research should be conducted to
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28 determine the role of environmental awareness and attitudes of EE practitioners with regard
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30 to the effectiveness of their EE programmes.
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34 Ecotourism practitioners particularly ecotour guides, are hosts and conduits between the
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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
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40 some sense, is an essential tool for enriching and enhancing pre-service ecotourism
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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
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46 to the quality of ecotourism services. Despite the importance of environmental awareness and
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48 attitudes of ecotour guides, they have seldom been highlighted in the tourism research.
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52 The comparatively short history of the ecotourism industry in Hong Kong hinders
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54 research related to the field of ecotourism. Various training organisations have started to
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56 organise ecotourism training programmes from 2003 onwards, as market demand for such
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58 training increased after the SARS tragedy (Cheung & Jim, 2006). The participants of these
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4 training programmes desired to enrich their knowledge of Hong Kong's environment and
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6 nature while also searching for opportunities to join the emerging industry. However, these
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8 training programmes differ in quality, they have not been properly monitored, and the
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10 effectiveness of the programmes has never been evaluated.

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12 This paper aims to evaluate the effectiveness of ecotourism training on the participants'
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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
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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
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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,
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26 1992; Gosling, 1999; Twindale & Bourne, 2003); characteristics (Ballantine & Eagles, 1994;
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28 Eagles & Cascagnette, 1995; Fennell & Smale, 1992; Nowaczek & Fennell, 2002; Tao,
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30 Eagles, & Smith, 2004; Wright, 1996b) and attitudes of ecotourists (Lee & Moscardo, 2005);
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32 along with the progress of ecotourism in developed or developing countries (Bury, 2008; Hall
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34 & Lew, 1998; Spenceley, 2008) have been thoroughly studied in the past two decades.
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36 Secondly, exploring the environmental knowledge, attitudes and behaviours of the trainees
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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
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42 practitioners (Yamada, 2011). Thirdly, this study acts as a baseline to gauge the effectiveness
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44 of ecotourism training, upon which the association between the environmental awareness of
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46 ecotour guides and their participants may be further investigated. Finally, the findings can
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48 provide vital information to the governmental funding body on whether financial support
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50 should be enhanced for both students and training organizations.
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58 **Methods**

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4 Students of the SUS certificate of ecotourism, which is offered by the Hong Kong
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6 Ecotourism and Travels Professional Training Centre (ETTC), a subsidiary training centre of
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8 the HK Traveller Limited, were chosen for this study. The reason for the sample selection is
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10 mainly that the ETTC was one of the training organisations granted the right to organise the
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12 SUS ecotourism training programme, and they are the only authorised training organisation
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14 to have successfully recruited enough students to participate in their courses. Altogether, they
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16 have organised 14 out of 18 SUS ecotourism training courses approved by the EdB and VTC,
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18 accounting for more than 75% of the total participants for the SUS ecotourism training
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20 between late 2007 and early 2011. The ETTC offered their support for our study to distribute
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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
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28 surveys to rate the perception of their knowledge on ecotourism, Hong Kong's natural
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30 environment and the influence of ecotourism training for their pro-environmental knowledge,
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32 attitudes and behaviours.
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36 Two set of questionnaires designed for the pre-training and post-training surveys. Two
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38 sessions was included for pre-training questionnaire to record the socioeconomic
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40 characteristics of the participants (section 1) and the self-rating of respondents' knowledge on
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42 Hong Kong's natural environment and ecotourism (section 2). Likewise, first and second
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44 sessions of pre-training questionnaire were included in the post-training questionnaire. An
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46 extra section was added to collect participants' response regarding increased knowledge and
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48 pro-environmental attitude and pro-environmental behaviour changes. This section was to
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50 explore the changes of knowledge, attitudes and behaviours of the participants after the
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52 completion of the training course.
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56 Altogether 184 students were invited to complete pre-training questionnaire in the first
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58 lesson and were subsequently invited to complete the post-training questionnaire during the
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3 final lesson of the training course. The questions in the survey helped students to
4 self-evaluate their knowledge gained, as well as their attitude, and behaviour changes after
5 participating in the ecotourism trainings. The questions were based on a 10-point scale, with
6 1 as the lowest and 10 as the highest in the second sections of both pre- and post-training
7 questionnaires. This section evaluated the respondents' knowledge of ecotourism and Hong
8 Kong' natural environment to acquire their self-evaluated results. A 10-point scale was
9 adopted for the knowledge questions because it could be easily understood by the students
10 and easily associated with the 100-point scale widely adopted in the education system in
11 Hong Kong. Questions related to respondents' attitude and behaviour changes were included
12 in the third section of the post-training questionnaire. These questions were on a 5-point
13 Likert scale mostly adopted by tourism studies (Dolnicar, Grun, & Leisch, 2011), with 1 for
14 strongly disagree and 5 for strongly agree. The respondents' demographic characteristics
15 were documented in the section one of both questionnaires. The variables included gender,
16 age, household income, level of education, occupation and were used as information to test
17 the association between demographic characteristics and other variables.
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36 The collected data were entered into the SPSS 19.0 program for further analysis to
37 investigate the effectiveness of the ecotourism training courses and their influence on
38 participants' pro-environmental knowledge, attitude, and behaviour changes.
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45 **Results and discussions**

46 *Respondents' characteristics*

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48 Altogether 184 participants were invited to complete the questionnaires and all
49 participants (100%) have submitted the questionnaires. However, six of the received
50 questionnaires were incomplete. Therefore, 178 (96%) valid questionnaires were used for this
51 study.
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57 The demographic data (Table 2) indicated that male participants (55.1%) were slightly
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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%.
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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).
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18 The high-income group dominated, as over 37% earned HK\$25,000 or more per month
19 comparing with only 14.7% employed persons in the Hong Kong population. Their median
20 salary was approximately HK\$20,000, which is much more than that of employed persons in
21 Hong Kong, where their median salary is only HK\$10,500 (The Census and Statistics
22 Department, 2008). Surprisingly, over 13% had no income, as they were students or retired.
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26 Regarding occupation, the largest group of the respondents were professionals (15.7%),
27 followed by senior executives and managers (13.5%). Associate professionals, teachers, and
28 civil servants accounted for 12.4%, 11.2%, and 10.1%, respectively.
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32 It is assumed that the demographic characteristics of ecotourism training participants
33 may be different from the characteristics of ecotourists who participated in other ecotourism
34 activities. However, However, the demographic characteristics of our respondents share a
35 similarity with previous (Ballantine & Eagles, 1994; Crossley & Lee, 1994; Eagles &
36 Cascagnette, 1995; Kretchaman & Eagles, 1990; Meric & Hunt, 1998; Tao et al., 2004;
37 Wright, 1996a, 1996b), where ecotourism training participants tend to be more mature and
38 possess higher education and higher income. However, this situation may not truly be
39 reflected in the ecotourism training market, as the expense for taking up the training course
40 would be much higher (HK\$2,250) than the participation in an ecotourism activity
41 (approximately HK\$200) in Hong Kong. This may be the main factor discouraging young
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4 people (below 25 years of age) from participating in ecotourism training, leading to the low
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6 number of young people being recorded in this study. Similarly, the comparatively high
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8 tuition fee may also discourage participants from the low-income group.
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10 11 12 *Participants' knowledge on ecotourism and Hong Kong's natural environment*

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14 Participants were required to evaluate their knowledge about ecotourism and Hong
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16 Kong's natural environment before and after the ecotourism training course. The results
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18 showed that participants' knowledge of both ecotourism and Hong Kong's natural
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20 environment were low. The majority of the participants rated their knowledge of ecotourism
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22 (70.8%) and Hong Kong's natural environment (58.4%) at 4 or below on a 10-point scale
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24 before the start of the course. However, only 6.7% and 11.4% of the participants rated their
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26 post-training knowledge about ecotourism and Hong Kong's natural environment,
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28 respectively, at 4 or lower. The mean score of ecotourism knowledge improved from 3.47 to
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30 6.84. The score also improved from 4.38 to 6.83 for knowledge regarding Hong Kong's
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32 natural environment (Table 3).
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36 A paired sample *t* test was employed to assess the improvement in the knowledge of
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38 Hong Kong's natural environment and ecotourism. The results indicated that participants'
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40 post-training knowledge about ecotourism (mean = 6.84, standard deviation = 1.44) was
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42 significantly ($p < 0.01$) better than before training (mean = 3.47, standard deviation = 0.189).
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44 Moreover, the participants' post-training knowledge about Hong Kong's natural environment
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46 (mean = 6.83, standard deviation = 1.55) at the same time was significantly ($p < 0.01$) better
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48 than before training (*Mean* = 4.38, *Standard deviation* = 2.22).
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52 The questionnaire survey results indicated the participants' knowledge was enhanced
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54 after they had completed the ecotourism training course. They generally claimed that the
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56 training course enhanced their knowledge about Hong Kong's natural environment (96.6%)
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58 and ecotourism (95.5%), and no disagreement among all participants was recorded. This
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4 result was expected and is generally supported by many similar previous studies suggesting
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6 that participants' knowledge was enhanced after they joined various environmental
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8 programmes and activities (Kimmel, 1999; Stern et al., 2008; Thapa et al., 2005). Previous
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10 results have suggested that environmental conservation programme significantly contributed
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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
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16 were enhanced.
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20 21 *Pro-environmental attitudes and behaviours*

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23 The participants' were required to self-evaluate changes in their post-training attitudes
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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
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29 pro-environmental attitudes and behaviours were recorded and all statements are listed in
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31 Table 4.
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34 Positive results towards the pro-environmental knowledge, attitudes, and behaviours
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36 were observed. Over 90% of the participants' agreed with PEK1 (96.6%), PEK2 (95.5%),
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38 PEA1 (92.1%) and PEA2 (92.2%). No disagreement was recorded for PEK1 and PEK2 and
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40 less than 5% of the participants disagreed with PEA1 (4.5%) and PEA2 (3.3%). In terms of
41
42 pro-environmental behaviours (PEB), over 75% of the participants agreed with the statements
43
44 of all PEBs in which over 88.8% of them agreed with PEB2, followed by PEB4 (78.7%).
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46 Comparatively high mean score for all PEKs, PEAs, and PEBs were reported, with scores all
47
48 above 3.7 in a 5-point scale (Table 5). In general, the mean score of the PEKs (PEK1 = 4.42;
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50 PEK2 = 4.33) was slightly higher than the PEAs (PEA1 = 4.22; PEA2 = 4.30) and PEBs
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52 (PEB1 = 3.90; PEB2 = 4.17; PEB3 = 3.74; PEB4 = 3.90). These results demonstrate that
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54 ecotourism training plays a more important role in increasing participants' pro-environmental
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56 knowledge than attitudes and behaviours. However, the impact of the training is still valid, as
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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).
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19 *Association between socioeconomic factors and pro-environmental knowledge (PEK),*
20 *attitudes (PEA) and behaviours (PEB).*
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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.
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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
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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).
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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
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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).
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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.
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43 **Conclusion and implication**

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

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Table 1: Syllabi of SUS ecotourism training courses

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

Table 2: Socioeconomic characteristics of respondents

Gender	N	%	Education level	N	%
Male	98	55.1	Secondary 3 or below	8	4.5
Female	80	44.9	Senior secondary	48	27.0
Age groups			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	Occupation		
56 or above	10	5.6	Manager and administrator	24	13.5
Monthly salary (HK\$)			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