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## Academic papers

# Measuring the marginal effect of pro-environmental behaviour: Guided learning and behavioural enhancement

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## ABSTRACT

This paper aims to examine the pro-environmental behaviour (PEB) outcome and change through student participation and guided learning in an ecotourism-education-based study setting. The authors collected responses from 100 students who visited ecotourism sites as part of their learning curriculum at the end of a semester. The ordered probit model was employed to predict the variables under study. The findings suggest that students' participations, coupled with professional guides, has significant and positive effects on PEB. The findings have the potential to position participatory and guided learning as effective solutions in promoting positive education outcome among individuals.

## 1. Introduction

The escalating incidences, and occurrences of natural catastrophe, the changing climate and environment, the deterioration of flora and fauna, etc. have caused many to raise a distress cry, calling to increase human responsibility and to build PEB. According to [Zsóka, Szerényi, Széchy, and Kocsis \(2013\)](#), most environmental problems are due to lack of knowledge; hence, personal understanding of the causes of environmental problems becomes crucial. On the other hand, technology and the borderless world have brought forth amplified knowledge and information about environmental issues and catastrophe.

[Lozano, Lukman, Lozano, Huisingsh, and Lambrechts \(2013\)](#) state that a common premise to promote sustainability is an increase in awareness and education among the public. The concept of education for sustainable development gained momentum and exposure through the United Nation Sustainable Development Goal 4, that by the year 2030, all individuals acquire the knowledge and skills needed to promote sustainable development and sustainable lifestyles through education. With the increased pressure on sustainability and environment, the burdens of sustainability can be relegated to students, who are more susceptible to PEB ([Lozano et al., 2013](#)). At a younger age, behavioural change and modification are easier to achieve ([Korda & Itani, 2013](#)); hence, to enable continuous natural sustainability, younger individuals are urged to take the lead to act in a more PEB manner. Such demands for sustainability help articulate the rationale and need for students in developing countries to develop literacy in PEB behaviour as part of their higher education learning.

A private university in Malaysia has taken the initiative to encourage its students to develop a PEB and become more responsible towards the nature and the environment. This move has attracted attention, as few lecturers had carefully designed a final year subject to incorporate the understanding and symbiosis between human actions and nature through an ecotourism study trip.

It has long been acknowledged that higher education institutions have the capability to take initiative and motivate their students

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to achieve certain learning outcomes through properly planned pedagogy. This enables the students to develop a profound moral responsibility, awareness, knowledge, skills, and other values that are desirable to achieve educational objectives (Brighouse, Ladd, Loeb, & Swift, 2016 is critical in achieving). As part of the teaching and learning system, higher education is critical to achieving a transformative change (from rote learning (Malatji, 2016) or classroom learning (Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013)) by connecting the education pedagogy to the environment through active, experiential, inquiry-based learning and a real-world problem for long-term retention of knowledge, skills, and values.

The objective of this paper is to examine the PEB outcome and change through student participation and guided learning in an ecotourism-education-based study setting. This paper contributes to the existing knowledge in terms of utilising subject lecturers and tour guides to develop PEB using an ordered probit method to delineate the marginal effects of each explanatory variable. It also allows the predictors to translate the likelihood of observing a particular ordinal outcome into probability. This study also contributes to the continuous efforts to manage and protect ecotourism resources and to achieve a balance between conservation and visitation for future sustainability.

## 2. Research context

There is a need to promote experiential learning, to include a more holistic approach that focuses on individual students' needs, self-expression, and learning through reflection on doing (Ernst, 2012; Huang, Backman, Chang, Backman, & McGuire, 2013). Ellis, Carette, Anseel, and Lievens (2014) stipulate that because learning is both a process and a product, the process of learning and understanding what is happening outside textbooks should be built into the curriculum.

With the escalating need to nurture the younger generation on the importance of sustainability, this paper employs an ecotourism study trip in an attempt to examine the extent to which experiential learning influences PEB and sustainability behaviour among higher education students using an ordered probit model. The experiential trip was a three-day, two-night stay at an ecotourism resort located in the northern part of Malaysia. Prior to the ecotourism visit, students were exposed to the basic theoretical underpinnings (textbook knowledge) of sustainability and symbiosis between human and nature and a few case studies to prepare them mentally. They were also briefed about pollution cause and effect, natural catastrophe, and to behave in an environmentally-friendly manner.

During the trip, students visited one of the oldest tropical rainforests in Malaysia to understand the challenges and prospects of sustainability. Students were encouraged to participate in the experiential trip, seminars, and forums on survival skills during the trip. The ecotourism trip is to assess if students are able to link theory to practice and to portray environmentally friendly actions. The students were also asked to conduct additional research on their own before and after the trip as part of their assessment. This was done with the hope that students will have a clearer picture of the sensitivity of the ecosystem and the importance of preservation and sustainability.

Research indicates that experiential learning enables the facilitation of critical analysis and understanding of the outside world through observation and experiencing unfamiliar social phenomena (Huang et al., 2013). Therefore, the ecotourism trip is a way to create a space for inquiry, dialogue, reflection, and action about the practical world. Experiences gained through field trips are long-lasting with long-term knowledge retention (Liddicoat & Krasny, 2014) and help establish a conceptual link to the core curriculum.

### 2.1. Packaging the sustainable attitude into sustainable behaviour

Attitude is an expression of favour or disfavour towards an object and event. In the event of the ecotourism study trip, Giannakos, Chorianopoulos, and Chrisochoides (2015) state that learning can account for most of the attitudes we hold. In this sense, by activating an affective or emotion node, attitudes can be changed through the ecotourism exposure. On the other hand, behaviour is the actions made by individuals in conjunction with themselves or their environment; it is the response of the system to stimuli. When an individual evaluates the suggested behaviour (PEB) as positive (attitude) and believes that their peers want them to perform a certain behaviour (subjective norm), this will lead to intention (motivation) and the likeliness to act is higher. The ecotourism study trip was packaged in such a way that participants hopefully transform their attitude towards a sustainable PEB.

### 2.2. Two streams of PEB

The literature on PEB consists of two major streams: one focuses on social-psychological constructs and the other focuses on socio-demographic variables of altruistic behaviour (Dietz, Kalof, & Stern, 2002). Research on the first stream employs the social-psychological constructs of the Theory of Planned Behaviour (TPB) (Ajzen, 1991) and Parker, Manstead, and Stradling (1995)'s extended TPB. These theories have proven to be especially popular in PEB through the examination of three factors: attitudes toward behaviour, perceptions of social norms, and perceptions of behavioural control. In the second stream, research suggests that social contexts and demographic criteria shape PEB (Dietz et al., 2002).

## 3. Research framework and propositions

Experiences, activities, and the feeling of environmental value tend to evoke interest in PEB and increase the motivation to learn more (Negev, Sagy, Garb, Salzberg, & Tal, 2008). This is in line with Lozano et al. (2013), who found that attitudes toward behaviour were positively related to environmental awareness, where the type of information provided had direct implications in

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