

Conference Paper

Measuring Individual Pro-Environmental Behavior Transformation: Contextualizing Individual Learning Behavior

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Abstract.

This paper proposes an experimental design that policy makers can use to reduce and minimize the environmental catastrophes. This paper uses an experimental design and questionnaire survey to assess the effectiveness of students' participatory approach to achieve pro-environmental behavior (PEB) and behavioral change strategy. The experiment comprises of assessing the effectiveness of (1) a video on the environmental catastrophe, (2) pictorial reading materials on environmental catastrophe, (3) a lab-based simulated eco-tourism trip, and (4) the socialization process towards building PEB. Three time-phase studies could be employed as a participatory form of PEB. The first phase will assess the pro-environmental attributes; the second phase will be the experimental-based treatment; and the third phase assess the behavioral change (the third phase will assess the behavioral change through the same set of questionnaires as stage one). We will assess the changes based on the questionnaire surveys (phase 3 minus phase 1). The four stimuli will be administered randomly (each respondent will get the four sequences of the stimulus differently; the reason is to minimize the sequence order bias of the stimulus). The findings have the potential to position the effectiveness of different stimuli in promoting positive PEB outcomes among individuals. Through the study, we hope a major change will occur around the globe through the manifestations of the four stimuli to understand how it will affect behavioral change. We propose to target the student groups as they are the voices of the future, and their behavior has important implications for now and the future.

Keywords: video on the environmental catastrophe, pictorial reading materials on environmental catastrophe, lab-based simulated eco-tourism trip, socialization process, pro-environmental behavior

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1. INTRODUCTION

Studying behavioral change in marketing is essential to business. The research on behavioral change will enlighten marketers in customizing the messaging and stimuli used in marketing communication to generate the precise impact to influence specific audiences and affect their behavioral change. To comprehensively understand the influencing factors in behavioral change, we propose studying different experimental stimuli that could provide useful information to the marketer in designing a customized marketing program to influence consumer behavior to achieve the business objectives. To research the influence of different stimuli on behavioral change, we propose to investigate the influence of different stimuli on the behavioral changes associated with environmental awareness related to environmental catastrophes.

The world is currently facing a severe environmental catastrophe. Each country is contributing to environmental disasters at a different rate. There have been many debates on why different measures to reduce environmental catastrophes have never been fruitful. Though many studies have been conducted to understand the phenomenon, there was no consensus on enhancing PEB. One of the most compelling reasons for studying environmental awareness and PEB is to craft appropriate strategies that everyone can use to minimize global environmental impact.

With the high density and knowledge between humans and the environment, there is growing insight into the harmful aspects of the lifestyles practiced by modern societies upon the environment. There is a shift in the PEB where change has become the main focus, not only on environmental policy but also on environmental psychology [1]. It is often observed that people with greater environmental knowledge and awareness tend to behave more environmentally friendly [2]. But is that the actual case? We observe that there are many environmental videos, campaigns, news, etc., around the world, which could lead to higher environmental awareness and knowledge, but what has been observed is that environmental catastrophe has been reported everywhere daily. Hence, is there an association between knowledge and behavior?

This paper proposes an experimental design that policy makers can use to reduce and minimize environmental catastrophes. This paper uses an experimental design and questionnaire survey to assess the effectiveness of students' participatory approach to achieve pro-environmentally behavior (PEB) and behavioral change strategy. The experiment comprises of assessing the effectiveness of (1) a video on the environmental catastrophe, (2) pictorial reading materials on environmental catastrophe, (3) a lab-based simulated eco-tourism trip, and (4) the socialization process towards building PEB.

2. LITERATURE REVIEWS

The Social learning theory [3] indicates that individuals learn social behaviors by observing the behaviors of other people, while the theory of norm reciprocity [4] states that individuals are likely to respond positively to a benefit received from others. Using the Social Learning Theory and the Theory of Norm reciprocity, we intend to understand how PEB can manifest.

2.1. Video

Traditional marketing communication approaches such as video remain the core platform for delivering marketing and promotional programs to audiences. As we know, the recording of visual and performing arts as video have been used to influence the audience's behavior in marketing by providing a richness of message content to achieve the marketing objectives [5]. In many developing countries, videos, seminars, talks, and pictorials are still widely used in marketing programs to influence the audience's buying behavior [6].

2.2. Pictorial Reading Material

Pictorial reading materials are also commonly used to make the content more accessible, memorable, and relatable to the target audience. They help convey messages quickly, establish brand identity, and stimulate emotional connections with consumers. Visual themes through pictorials representing different emotions constitute a clear link with illustration, which are powerful tools. Pictorial plays an important role as it can influence reality and intervene in an actual situation by using reinvented motifs with clear agendas and visual narratives [7].

2.3. Simulation Lab-based Trip

The objective of using a Simulation Lab-based Trip is to provide the needed experiences to the audience by using an artificially designed trip and aiming to provide the actual field equivalent experiences [8]. The simulation lab-based trip as a learning tool in education has also proven to be a practical approach that allows the audience to get influenced, absorbed, and changed learning behavior. In one of the studies by [9] to determine the effectiveness of simulation learning, the finding showed the students

accept the simulation learning as realistic and applicable to allow them to practice in reality. The simulation lab-based trip is useful for experiencing challenging, exciting interactions between the participant and the simulated environment and preparing the audience to adapt and change to the actual scenario.

2.4. Socialization Process

In some environmental communication programs, the marketer focuses on the interactions between ecological issues and human beings. The discussion area required an insightful communication process resulting from the speaker and audience interactions. The successful IMC process will only be achieved if unspoken body language is conveyed besides verbal communication [10]. In general, environmental communication is based on interpersonal communication and includes participatory decision-making, socialization, media, and communication elements; the socialization process will be a good tool for creating the audience's interest in the subject and influence objectively.

2.5. Overview of Environmental Catastrophe and Awareness

An environmental catastrophe is a catastrophic incident regarding the natural environment due to natural causes or human activity [11]. Environmental catastrophes' damage levels and frequency have increased in the last decades with rising and more volatile global temperatures [12]. Besides the environmental damage caused by environmental catastrophes, [13] have studied that although the economic growth in lower-middle-income countries is most sensitive to natural disasters, developed countries also experience negative impacts from environmental catastrophe disasters. As reported by [14], almost 100,000 people die annually due to environmental catastrophes, and property damages constitute 0.23% of cumulative world output. Besides the losses of life, [15] also found that the financial losses caused by environmental catastrophes have increased substantially since the 80s until today, indicating that the negative impacts of natural catastrophes are concentrated in third-world countries.

Environmental catastrophe has become a popular word in news and social media. The public started to receive relevant information through different channels [16]. With the fast-spreading by the media and press in sharing the insight of the mentioned environmental catastrophe, the awareness of public audiences to environmental catastrophe has increased significantly.

Environmental catastrophes caused by natural factors or human activities have gained significant attention from many parties and media due to their escalating frequency and severity. The increase in global temperatures has led to detrimental impacts on the natural environment and human society. These catastrophes are not limited to lower-middle-income countries; even developed nations experience negative consequences. The substantial human toll, property damage, and financial losses resulting from environmental catastrophes highlight the urgent need for mitigation and adaptation strategies.

The media and social platforms are crucial in disseminating information about these catastrophes, effectively raising public awareness and understanding. This heightened awareness underscores the importance of addressing environmental catastrophes and implementing measures to prevent and manage their consequences for the well-being of people and the planet.

2.6. Pro-Environmental Behavior (PEB)

Many behaviorists spend years trying to understand the gap between the people who do not and people who behave in a more environmentally friendly way. The exploration of the roots to explain the phenomenon of PEB did come to various conclusions, but no conclusive definition has been found earlier.

PEB is the behavior that consciously seeks to minimize the negative impact of one's actions on the environment [17], such as reducing the wastage of resources and energy, recycling, or using environmentally friendly material. When individuals intend to reduce the adverse effects of their actions on the environment, they demonstrate a heightened sense of responsibility and a commitment to sustainable practices that prioritize ecological well-being over convenience or immediate gains.

It is important to explore how environmental attitudes can affect environmental action to understand the influence on PEB. One factor influencing people's willingness to practice PEB is the information or message delivered by the environmental awareness program. When people are exposed to environmental awareness programs, they will have higher environmental awareness of their actions and choose to behave more in PEB. The study of microplastic pollution [18] indicated that the information on risk perception significantly affects PEB intention and is influenced by environmental awareness. The information from the environmental awareness campaign is the key success factor for people to start changing their lifestyle to PEB.

In the study of the analysis of PEB on ecological worldviews, environmental training/knowledge, and goal frames by Aygul and Ibrahim [19], the result estimated that

students who had been exposed to environmental awareness programs as environmental training would exhibit PEB behavior two times more than those without this exposure. Besides this, it was also estimated that individuals with environmental awareness training would behave more in voluntary PEB 4.7 times more than those who did not have environmental training [19]. As some studies indicated for example, [20] and [21], another important factor affecting people's behavior toward PEB is the information and message delivered from environmental awareness. With the higher density and detailed information about the relationship of humans with the environment delivered by the awareness program, people will have more exposure to understanding the environmental catastrophe.

Though there are many evidences of different strategies that can promote PEB, sadly, environmental catastrophe has been increasing and reported everywhere daily. Hence, a solution must be found to ensure environmental sustainability and resilience, thereby mitigating the negative impacts of such catastrophes and fostering a harmonious coexistence between human activities and the natural world.

The Social learning theory [3] indicates that individuals learn social behaviors by observing the behaviors of other people, while the theory of norm reciprocity [4] states that individuals are likely to respond positively to a benefit received from others. Using the Social Learning Theory and the Theory of Norm reciprocity, we intend to understand how PEB can be manifested among individuals.

In light of the increased attention that social norm involvements have been used as policy tools [22], we want to examine how the impact of social norm involvement (through the process of socialization) could impose a different perspective concerning PEB. The individuals usually trigger the willingness to act PEB way [23]. According to Klein and Hilbig [24], virtual nature experiences could also increase individuals' PEB through the increased salience of the importance of PEB, which only happens through cooperation between individuals. An interesting finding by Klanięcki, et al. [25] showed that the tendency to act in a PEB way would be enhanced when one feels connected to nature. On the other hand, the environmental issues portrayed by social media have also led to increased actions to identify different ways to resolve the environmental catastrophe by changing behavioral actions [26]—the findings of Chao, et al. [27] indicate that three key variables, social networks, learning and growth, and belonging and contribution could lead to environmentally friendly attitudes and PEB intention.

A general overview of some studies that have been conducted earlier. In Japan, Shimoda, et al. [28] have studied the predictive factor that affects both PEB and health

behavior, whereby they stated that individuals will be aware of and be involved in their health condition as a way to behave PEB. At the same time, Kaida and Kaida [29] investigated the associations between the balance of optimism and pessimism orientations attributed to personal traits between PEB and subjective well-being. In China, Gong, et al. [30] found a significant relationship between the impact of Internet use and individual-level PEB, while Hua, et al. [31] researched the role of social capital in PEB. The majority of the PEB studies that were conducted in Pakistan are involved at the organizational level, such as the banking sector and employee green behavior (Iqbal, Hassan, Akhtar, & Khan 2018), PEB and supply chain (Rasheed, Aslam, & Rashid, 2020), corporate social responsibility and employees' PEB (Ahmad et al., 2021). Pakistan has very minimal study on their local people and PEB. In Malaysia, Wong, et al. [32] have studied the links between environmental literacy and factors affecting PEB. On the other hand, Wong, et al. [32] studied on the sustainability values and their immediate interests to behave PEB.

Based on the above discussions and past literature reviews, we have developed the following hypotheses which could be used to understand how to enhance PEB:

H1: The video on the environmental catastrophe will lead to building PEB

H2: The pictorial reading materials on environmental catastrophe will lead toward building PEB

H3: The lab-based simulated environmental risk and experience will lead toward building PEB

H4: The socialization process will lead towards building PEB.

3. METHODOLOGY

Though many approaches could trigger PEB behavior and inconclusive findings, we propose that there should be a current understanding of the link between environmental awareness and PEB. We propose an experimental study that could be used to improve PEB through a behavioral change strategy. The experiment comprises of assessing the effectiveness of (1) a video on the environmental catastrophe, (2) pictorial reading materials on environmental catastrophe, (3) a lab-based simulated eco-tourism trip, and (4) a socialization process towards building pro-environmental behavior. Contextualizing individual learning behavior is essential, as it will shed light on the differences between individuals and their psychology and the importance of each experimental stimulus in reaching the desired outcome.

Based on the study, we hope to find a balance between the different strategies to induce PEB among people (especially students). Our strategies will be based on the findings based on the impact of these stimuli:

- (1) How a video will change the individual's behavior during the environmental catastrophe;
- (2) how pictorial reading materials will change the individual's behavior on environmental catastrophe;
- (3) How lab-based simulated eco-tourism trip will change the individual's behavior on environmental catastrophe;
- (4) The socialization process will change the individual's behavior on environmental catastrophe.

4. DISCUSSIONS

The big question is how these stimuli affect behavior and how behavior can be changed. This is a critical study as the study can provide better guidelines to policy makers worldwide on increasing PEB. The proposal hoped to provide a framework that could delineate good pro-environmental practices that all countries can use to solve the environmental catastrophe problems (through individual participation) by providing an inclusive view of the PEB and behavioral change strategy.

Though many approaches could trigger PEB behavior and inconclusive findings, this study will enhance the current understanding of the link between environmental awareness and PEB. The experiment comprises of assessing the effectiveness of (1) a video on the environmental catastrophe, (2) pictorial reading materials on environmental catastrophe, (3) a lab-based simulated eco-tourism trip, and (4) the socialization process towards building PEB. The importance of contextualizing individual learning behavior is hoped to shed light on the differences between individuals and their psychology, as well as the importance of each experimental stimulus in reaching the desired outcome, and to fill up the gap between individuals of different countries (if there are differences) in terms of the PEB.

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