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The impact of electronic environmental knowledge on the environmental behaviors of people

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ABSTRACT

Nowadays, we examined the connection between individuals' relationships with the natural environment, their environmental behaviors, and their environmental knowledge with a focus on environmental attitudes, environmental awareness, environmental values, public information, environmental skills, and environmental responsibility is very interesting. Environmental knowledge involves human discourse about interrelationships with the environment. The impact of people to perceive and interpret the relative health of environmental systems and to take appropriate action to maintain, restore, or improve the health of those systems is very important. Therefore, environmental teaching and learning is very necessary and can help to improve the environment behaviors of the people. The purpose of this paper is to investigate the impact of e-learning system the environmental of the behavior. Data were collected from 330 students of Tabriz Branch, Islamic Azad University. After performing satisfactory reliability and validity checks, the structural model was tested with the use of smart PLS 2.0. Results indicate that electronic environmental knowledge learning has a direct effect on person's environmental behaviors.

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1. Introduction

Nowadays, technology is perceived as an effective and indispensable element of life and has become the most distinctive characteristics of modern culture (Ordóñez de Pablos, 2014). In addition, web services and the Internet as an information hub facilitate knowledge sharing (Charband & Jafari Navimipour, 2016) and data transferring (Jafari Navimipour, Rahmani, Navin, & Hosseinzadeh, 2015; Navimipour, 2015; Souri & Jafari Navimipour, 2014). So, the use of it in the current era is considered as a solution for multinational organizations or educational institutions' for their expense and quality issues (Jafari Navimipour & Zareie, 2015). Also, the use these technologies and social networking has grown rapidly, and they are increasingly being incorporated into the teaching of higher education (Button, Harrington, & Belan, 2014). E-learning as a common use of internet and social networks utilizes electronic communication for learning and teaching from a distance (Oztekin, Delen, Turkyilmaz, & Zaim, 2013). E-learning as a support tool for educators is a medium of delivery of anytime, and anywhere of content to a dispersed learner community (Sandanayake & Madurapperuma, 2013). It is shifting from being instructor-centric to learner-centric so that personalization (learning according to individual's interest, knowledge base, and style), and learning flexibility (time and location) are enhanced (Xu, Huang, Wang, & Heales, 2014). In general, distance education or e-learning offer delivering education and teaching to students who are not physically present in traditional setting such as classroom, studio, meeting hall or conference hall (Ordóñez de Pablos, 2014) and in universities, it is used as a specific method to convey a content of a course or a program to the on-line students (Dharmawansa, Nakahira, & Fukumura, 2013). The field of environmental learning has grown over the past years and more recently is assuming the identifiers of an emerging profession (Heimlich, 2010) where serves a very similar function.

As another hand, Unesco has named the decade 2005−2014 as the decade for the "education for the sustainable development" (Pitoska & Lazarides, 2013). Environmental knowledge involves human discourse about interrelationships with the environment and is the degree of people capacity to perceive and interpret the relative health of environmental systems (Roth, 1992). Environmental education is considered a continuous and permanent process which is a dimension of integral education of all citizens, oriented so that the process of knowledge acquisition, development of habits, skills and attitudes and values formation by making

sustainable development (Rodrigues, 2014). Teaching and learning on environmental education is very necessary and is needed to teach students to act for the environment (Thathong & Leopenwong, 2014). Environmental knowledge does not only refer to information on environmental issues also the ability to synthesize holistically by the personal learning process. This learning process is embedded by socioeconomic, political, cultural, historical and ecological factors (Ramdas & Mohamed, 2014). Environmental knowledge is a measure of a person's knowledge about the interactions of humans and their environments, environmental issues, and the various connections in ecological systems (Burchett, 2015). Issues of environmental instability and worldwide environmental degradation have resulted in a call for greater emphasis on environmental education in order to create and maintain optimal and sustainable relationships between the public and the environment (Blanchet-Cohen & Reilly, 2013). Humankind is facing a number of global environmental challenges, such as climate change, resource depletion, or biodiversity loss. To counter these challenges, both international and interdisciplinary efforts have to be made. Undertakings such as trying to understand the key drivers and processes behind behavior causing these challenges, predicting their development over time and eventually changing the system enough to mitigate negative outcomes are essential (Klöckner, 2013).

Recent studies have demonstrated that there are major shortcomings in the public's understanding and awareness of environmental issues (Burchett, 2015). Therefore, since environmental education can have a significant influence on public's understanding and people behavior, the purpose of this paper is to investigate the impact of e-learning on environmental behavior of the people. Therefore, the contributions of this paper are as follows:

- Conserving of environmental resources by means of learning;
- Providing a model for a more comprehensive understanding of the factors that influence the people environmental behavior;
- Exploring future challenges for environmental resources;
- Providing suggestions for improving the environmental behavior of individuals.

Rest of this paper is organized as follows. In the next section, we review the related literature. In section 3, we discuss the research methodology by describing the data collection, present the research model, and define the measurement of variables. In Section 4, the results are analyzed. Finally, in section 5, the conclusions, limitations, and suggestions for future research are provided.

2. Related works

In a knowledge and information society, e-learning has built on the extensive use of advanced information and communication technologies to deliver learning and instruction (Jafari Navimipour & Zareie, 2015). Knowledge-based and learning systems deal with a very difficult task in all the activities regarding knowledge management, due to knowledge representation is not a trivial task (Lytras & de Pablos, 2011). Also, learning and education have always been seen as a key factor for improving the quality of life in any social and can build the future (Rodríguez-Barreiro, Fernández-Manzanal et al. 2013). Environmental behavioral scientists are increasingly seeking to apply principles of behavior analysis to manage the natural areas to decrease behaviors that are detrimental to the natural environment and promote pro-environmental ones (Ramkissoon, Graham Smith, & Weiler, 2013). The goals of environmental education are more explicitly stated in the generally accepted definition offered by the Charter (1976): where are the knowledge, skills, attitudes, motivations,

and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones (Heimlich, 2010). Also, the theory of reasoned action (TRA) is used to explain in overall the relationship between knowledge, attitude, and behavioral intentions and used to form a framework that relates environmental knowledge and willingness to pay (Ramdas & Mohamed, 2014). Individuals' environmental behaviors reflect their environmental knowledge. Hence, developing environmental knowledge is equivalent to developing responsible environmental behavior, and individuals' behaviors reflect the level of their environmental knowledge. The rest of this section provides a brief overview of the most important and state of the art research in the field of knowledge and environmental behavior.

Best and Kneip (2011) have tested the competing hypotheses in the context of post-consumer waste recycled. They have collected data from a natural experiment on recycling participation in Cologne/Germany. The obtained results showed that environmental attitudes directly increase the probability of recycling participation. Also, the effect of environmental concern is stronger when behavioral cost is low (Best & Kneip, 2011).

Botelho (2012) has evaluated the impact of training on employee behavior. This study uses the collected data by a large survey of over 700 small private healthcare in Portugal. He found that compliance with the law is far from ideal and that provision of education and training is the strongest policy factor influencing the degree of compliance (Botelho, 2012).

Zsóka, Szerényi, Széchy, and Kocsis (2013) have explored the relationship between environmental education and environmental knowledge, attitudes, and behavior. Basic statistical analyzes (frequencies and crosstabs), multidimensional scaling (MDS), and cluster analysis were performed on the data. The results showed that the focus of the environmental education appears to be important in shaping attitudes about sustainable consumption and increasing the awareness has a positive effect on consumption and environmental behavior (Zsóka et al., 2013).

Also, the impact of environmental knowledge on pro-environmental behavior is investigated by Vicente-Molina, Fernández-Sáinz, and Izagirre-Olaizola (2013). Data have been collected using a structured questionnaire. The samples for this study were university students from countries with different levels of economic development (United States of America, Spain, Mexico, and Brazil). The obtained results showed that pro-environmental behavior is influenced by motivation, knowledge, attitudes, and perceptions effectiveness (Vicente-Molina et al., 2013).

Zhang, Zhang, Zhang, and Cheng (2014) have focused on local residents' self-reported pro-environmental behaviors. They investigated whether residents' awareness of disaster's consequences, values and place attachment affects their pro-environmental behaviors based on value belief- norm and place attachment theories. They were using confirmatory factor analysis and structural equation modeling to verify the fitness of the data collected for the model. This research concludes that residents' awareness of disaster's consequences, values and place attachment impact their pro-environmental behaviors positively. The resulted showed that altruistic values are a more powerful predictor of pro-environmental behaviors compared with egoistic values and place attachment has a stronger impact on pro-environmental behaviors than the awareness of disaster's consequences and values (Zhang et al., 2014).

As another research in this scope, Kil, Holland, and Stein (2014) have examined the relationship between environmental attitudes, outdoor recreation motivations, and environmentally responsible behaviors. Data were collected using interviews and questionnaires. To determine the psychometric properties of the constructs and explore the proposed models, they have utilized SPSS18 and