

# Investigating the environmental behavior of business and accounting university students

Accounting  
university  
students

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Grigorios Kyriakopoulos

*School of Electrical and Computer Engineering, National Technical University of Athens, Zografou, Greece, and*

Stamatios Ntanos and Sofia Asonitou

*Department of Business Administration, School of Business, Economics and Social Sciences, University of West Attica, Athens, Greece*

Received 13 November 2019  
Revised 24 February 2020  
17 April 2020  
22 April 2020  
Accepted 22 April 2020

## Abstract

**Purpose** – The purpose of this study is to explore the underlying dimensions of environmental behavior (EB) and examine how environmental education (EE) and ecological sensitivity (ES) motivate the EB of Business Administration and Accounting students (BAS).

**Design/methodology/approach** – A questionnaire survey was conducted and a sample of 190 BAS was randomly selected from the departments of Business Administration and Accounting and Finance at the University of West Attica (UNIWA), Greece.

**Findings** – The analysis was structured upon four underlying components under the EB of the sample: information seeking, recycling, green consuming and active participation. A positive relationship between EB and EE was revealed, while EB and ES were moderately interrelated. An important result was the hesitation of students to convert EE and ES to active participation and green consuming behavior, thus reaffirming similar results from other studies.

**Research limitations/implications** – The findings should be further developed using larger samples among other higher education institutions. Future research could be extended to students who reside at suburban or rural regions or students who are educated upon diverse academic disciplines. The basket of questions can be enriched with issues of immediate concern among future business executives such as the “ethical” role of accountants or the value creation for local societies.

**Originality/value** – The significance of this study lies on associating students’ EB with formal EE with personality characteristics such as ES. Educational policy-makers can enrich the curricula of BAS with environmentally oriented courses and teaching methods that can increase the active participation of students.

**Keywords** Higher education, Sustainability, Environmental behavior, Business and accounting students, Ecological sensitivity, New ecological paradigm (NEP) scale

**Paper type** Research paper

## 1. Introduction

Nowadays, to produce useful knowledge and technical skills, higher education (HE) is mostly determined by corporate and market demands. Unavoidably, knowledge is “practical” and “rational” only if it translates into financial success at the individual level, as well as the economic growth and profit maximization at the national dimension of the system (Zuk and Zuk, 2018). However, severe global environmental problems led United Nations to the creation of 17 sustainable development goals, which are starting to be adopted into the individual firms’ strategies in the context of the ethical responsibility of business (United Nations, 2019). In a similar managerial context, Law *et al.* (2017) denoted



International Journal of  
Sustainability in Higher Education  
Vol. 21 No. 4, 2020  
pp. 819-839  
© Emerald Publishing Limited  
1467-6370  
DOI 10.1108/IJSH-11-2019-0338

that employees begin to establish a connection to the natural environment with essential knowledge and information of specific environmental issues when they first receive training experience about nature through nature-based environmental education (EE) and awareness training.

From an educational viewpoint, children can cope with the lack of experience of the natural world through EE (White *et al.*, 2018). Note that there is a high demand in universities to promote and enhance the undergraduates' ES by strengthening the knowledge and practices of green finance and environmental protection (Zhu *et al.*, 2017). Therefore, the curriculum of HE attracts considerable attention because of its contribution to the EB of future employees and firms' leaders.

The problem setting of this study originates from the fact of continuing inability to sufficiently adapt social and economic systems to the ecological context (Ferrer-Balas *et al.*, 2010). Although universities may not be the cause of many of current problems, one could argue that they contribute to them by disseminating and re-producing dominant knowledge and education. Moreover, note that universities are the places where the future leaders, entrepreneurs, decision-makers and scholars are being prepared (Ferrer-Balas *et al.*, 2010). Theoretical-empirical research that considers the incorporation of environmental management and ecological issues in the set of main business school activities within university teaching is a relatively recent topic. Business schools must assume a position of leadership in this field with significant changes in how administrators and Business Administration and Accounting students (BAS) are currently educated by changing courses, as well as the Business School as a whole (Jabbour *et al.*, 2013).

In the Greek HE context, there is no similar research to investigate the EB of undergraduate BAA students. Considering that these students will be the future employees and managers responsible for taking "environmentally sensitive decisions" within their firms, it becomes imperative to investigate their current EB. Other disciplines in the business curriculum to enhance EB, in addition to EE, are grounded on corporate social responsibility (CSR) and social and environmental accounting (SEA), which can contribute to a holistic EE and ethical professional development (Gray *et al.*, 1994; Coulson and Thomson, 2006; Asonitou and Hassall, 2019). To the best of authors' knowledge, despite the sporadic inclusion of CSR in the curriculum of HEIs, SEA education and EE are not included in any accounting and business curriculum in Greek HEIs, thus leaving a gap to students' environmental training. To provide an open, integrated and holistic business and accounting curriculum in the Greek HEIs, time constraints and systems' structure are included in the barriers (Asonitou, 2015).

This paper aims to explore the underlying dimensions of EB and examine how EE and ES motivate EB using a sample of BAS from the University of West Attica (UNIWA), Greece. The structure of the paper is as follows. The background of EE, ES and EB are discussed in Section 2. Section 3 provides information on the background of the study. Section 4 develops the methodological approach while the research outcomes are deployed in Section 5. Section 6 presents the discussion while the conclusions and future research orientations are outlined in Section 7.

## 2. Literature review

### 2.1 Environmental education

EE is defined as follows:

a learning process in which individuals gain awareness of their environment, acquire knowledge, skills, values and experiences, which will subsequently enable them to act – individually and collectively – to solve environmental problems (UNESCO-UNEP, 1978; White *et al.*, 2018, p. 2).

EE has been a part of the curriculum in Western educational systems for decades; however, there seems to be a dominant social paradigm that tends to be anthropocentric or egocentric. Countries and governments are generally perceived to value consumerism, which is central to their economic systems. However, consumerist societies, underpinned by egocentric values, are not sustainable (Blackley and Sheffield (2016)).

Most students strongly agree that science and technology are essential for society; however, their opinions differ about science and technology as problem-solvers for the environment. Under the view that most environmental issues (and their solutions) are science-related, there is clearly a role for school science education in such an engagement. However, EE is not merely a matter for science educators. Such an education constitutes a challenge to a conventional subject-based curriculum and pedagogy (Gough, 2008). EE is not equally effective in preparing citizens for future environmental predicaments. Emiru and Waktola (2018) stressed out that:

- substantial different perceptions are unveiled between countries, gender, religiosity and exposure to natural parks, museums and documentaries; and
- the readiness of the younger generation to tackle the environmental challenges is limited because of failure to develop and implement a practical organizational framework upon climate policies and EE.

Addressing those barriers is essential within the HEIs' academic settings (Jabbour *et al.*, 2013).

HEIs are engaging in efforts to contribute to sustainable development by recognizing that they not only educate future business leaders, decision-makers and intellectuals, but that they, themselves, should be learning organizations to practice sustainability in their activities such as education, research, outreach and campus facilities management (Ferrer-Balas *et al.*, 2010). In general, HEIs obligations to society include improvements in the planet's environmental quality and should be accompanied by the greening of universities' main activities, teaching, research, outreach services for society and their strategic and operations management (Jabbour *et al.*, 2013). Primarily, business schools' commitment to the environment should occur through their academic activities and in how the business school can itself be an organization that generates less environmental impacts and operates in a greener manner (Jabbour *et al.*, 2013). Business schools can include environmental management in their administrative actions – planning, organizing, directing and controlling – through:

- the direct adoption of environmental management initiatives, with or without a formal environmental management system (commonly attained) by practices of reuse, recycling and reducing consumption of inputs; and
- the awareness of employees, teachers and BAS about the possibilities and challenges of an environmentally proactive business school (Jabbour, 2010; Jabbour *et al.*, 2013).

Another vital aspect of environmental consideration of EE is related to strengthen the ethics in education. Business is now perceived by the public as “ethically challenged” because of ethical misconduct because business leaders responsible for these scandals are commonly graduates of prestigious business programs, indicating that many of the most highly regarded business schools have failed to instil ethics and social responsibility to their graduates. Therefore, management scholars advocate that the accrediting bodies, professional organizations and business schools' teaching management courses need to

rethink how business ethics can experience an immediate upgrade to influence future business, suggesting ways to make teaching business ethics more effective. However, meaningful changes of business ethics education could also face disappointing prospects (Floyd *et al.*, 2013).

Strengthening of EE enables individuals and communities to reflect on ways of interpreting and engaging with the environment. Joint consideration of environmental, social, cultural and economic systems, as well as their interdependence is required to enact more sustainable patterns of living (Blackley and Sheffield, 2016). Thus, the research focus on business schools is justifiable because it is an increasingly crucial topical subject and because such schools are being criticized for not being appropriately sensitized regarding the crises of the current society.

### 2.2 Ecological sensitivity

The interpretation of ecological sensitivity (ES) is not an easy task. Ecology is valued as a science with competing paradigms, provisional theories, incommensurable worldviews and extensive theoretical and methodological debates (Korfiatis, 2005). According to Kukkonen *et al.* (2018), sensitivity towards nature is the basis for the enjoyment of nature. Moreover, the enjoyment of nature is directly and positively related to the intention of supporting pro-environmental activity, thus supporting sustainability.

It seems essential at this stage of increasing global environmental problems to be able to balance between ecological appreciation and economic development. In the last two decades, the conceptualization of ES under systemic socio-political environments has been of vivid research interest. Under this context, community receptivity is a concept that associates the physical and the social environment with the community readiness to enhance the participation of educated persons, especially in developed economies (Bricout and Gray, 2006). Note that by providing explicit connections and skills in environmental programs – through engaging students in environmental scientific investigations that stem from their issues and questions – can increase students' engagement, sensitivity and self-efficacy of environmental issues (Hashimoto-Martell *et al.*, 2012).

The methodological appreciation of ES was fully determined at the study of Dunlap *et al.* (2000) by updating a scale that was used to estimate ES, known as the NEP Scale. The authors denoted the appropriate selection and treatment of a new set of items, designed to measure endorsement of an ecological worldview, thus constituting the “New Ecological Paradigm Scale” (Dunlap *et al.*, 2000).

Note that those managers who are graduates of business schools lacking environmental management education may lack knowledge, increase distrust and lead to confusion and doubt concerning these beneficial “win-win” projects (Jabbour *et al.*, 2013). Managers with low levels of knowledge about green issues tend to lack a commitment to environmental management initiatives and do not make favorable decisions regarding environmental management issues. This process may result in frustration, organizational inefficiency and rework for proponents of green projects and improvements (Jabbour *et al.*, 2013). However, the main barriers to the creation, diffusion and adoption of sustainability principles in universities reside to the facts that

- “sustainability” is in itself an abstract concept, lacking relationship with the academic routine;
- universities do not engage sustainability skilled staff and experts to suitably deal with the issue of “sustainability”;

- it is possible that universities have not devoted financial resources in sustainability issues; and
- “sustainability” is an issue studied by environmentalists, with no scientific value within classical areas of expertise (Jabbour, 2010).

### 2.3 Environmental behavior of business students

As people are in continuous interaction with their environment, nearly all human behavior could be called environmental behavior (EB). This term would include all activities regardless of the fact how insignificant their impact on the environment is. In a period where the society registers changes of the environment, ecosystems, biosphere and climate in connection with human activity, the attention of professionals is focused on such EB that is conceptualized under the usage of energy, raw materials, waste production and pollution. Therefore, the entities of environmental and pro-EB are denominated as follows:

Environmental behavior therefore is [...] such a behavior which has a significant impact on the environment [...]. Environmental behavior of an individual may be unintentional and not reflected; in such case, the person does not realize the impact of his/her behavior (Krajhanzl, 2010, p. 252).

Pro-environmental behavior is such behavior which is generally (or according to the knowledge of environmental science) judged in the context of the considered society as a protective way of environmental behavior or a tribute to the healthy environment (Krajhanzl, 2010, p. 252).

Kukkonen *et al.* (2018) denoted that ecological knowledge is leading to global concerns; therefore, it should be promoted through scientific education. Students are a significant entity in sustainability because they are major consumers of resources including paper, water and energy with severe repercussions for university budgets and environment. In the study of Thondhlana and Hlatshwayo (2018) for university students, a high level of heterogeneity in reported pro-EB, attributed to a suite of internal and external factors. Primarily, internal factors seemed to constrain students from acting pro-environmentally. The authors reported that personal attributes such as negligence, discomfort and preference were barriers to pro-EB. Furthermore, the respondents considered the lack of knowledge as a significant barrier to such behavior. Thus, universities can encourage students towards the sustainability concept by focusing on the campus settings and using situational strength sources (Meyer *et al.*, 2010) such as recycle bins, use of solar panels or wind turbines, energy-saving devices and conferences on energy and the environment (Thondhlana and Hlatshwayo, 2018).

In relevant studies, it is implied that environmental knowledge provided through formal education by itself cannot directly lead to change in EB (Janmaimool and Khajohnmanee, 2019). In terms of “active participation,” situational factors beyond the control of participants were cited as barriers to pro-environmental actions (Mtutu and Thondhlana, 2016). Actually, the “active participation” supports educational makers to improvise and incorporate environmental practices into the habits of the students by aligning their goals and university dimensions, including curriculum, campus operations, research and outreach activities. The aim is the achievement of an essential contribution in establishing a sustained green culture by offering university paradigms (Chakraborty *et al.*, 2017).

Bozoglu *et al.* (2016) researched the awareness, the attitudes and the EB of HE students in Turkey. The socio-demographic and economic variables tested in the study included gender, age, parental education, residence and family income. Household size, university and other

institutions as primary information sources and membership to environmental clubs or organization had no statistical influence on the environmental attitude. The differences between the environmental attitudes and behaviors of students in different faculties were investigated by [Muderrisoglu and Altanlar \(2011\)](#). The authors found that, although the students of the Faculty of Forestry had the highest number of environmental courses, this had “no effect on their environmental attitude and behaviour on graduation time.” Moreover, male students’ environmental awareness was unusually low compared to that of females. The study concluded that “environmental awareness of the students was not enough to put this awareness into practice in their daily life” ([Bozoglu et al., 2016](#)).

According to the previous literature, while knowledge, environmental attitudes, environmental awareness and EB are associated ([Kukkonen et al., 2018](#)), they are not predictors of behaviors that are socially normed. In a theoretical context, the process of behavioral change includes covert and overt activities that people need to apply, or be engaged in, to move through several stages, from ignorance to involvement ([Bennett, 1975](#); [Velicer et al., 1998](#)). Those stages are summarized as follows:

- Precontemplation: At this stage, people just do not yet see themselves as having a problem.
- Contemplation: At this stage, they are more aware of the personal consequences and are able to think about the problem.
- Preparation/Determination: At this stage, people start to make a (lifestyle) change and are trying to gather information.
- Action/Willpower/Implementation: At this stage, people are determined to change their behavior and they are actively involved in taking steps to change their attitude.
- Maintenance: At this stage, the main challenge is not to be tempted in returning to indifference ([Bennett, 1975](#); [Velicer et al., 1998](#)).

### 3. Background information

In the Greek formal educational system, the EE concept was introduced into the official teaching curricula in 1990 (Law 1892/31–7-90) for primary and secondary education schools. Despite the legal intervention, the application of EE programs at schools is not considered to be satisfactory regarding their content and effectiveness because it is mainly based on the initiatives and the personal efforts of the educators who do not always have the necessary administrative support. The content of the EE programs often comprises fragmented knowledge on environmental issues or it is focused on aesthetic or civilization issues ([Sklavani and Sakelari, 2002](#)). Other barriers to EE effectiveness are the encyclopaedic character and the lack of action and participation of pupils. EE programs constitute an activity outside the official curriculum and therefore are considered less significant pedagogical factors that are occasionally replaced by other activities ([Sklavani and Sakelari, 2002](#)).

The University of West Attica (UNIWA) was created by the merging of two former Technological Educational Institutions (TEI of Athens and Piraeus University of Applied Sciences), according to the National Law 4521, in March 2018. In 2019, UNIWA embraced the National School of Public Health and became the third-largest HEI in Greece. The university covers many disciplines such as Public Health, Management, Economics and Social Sciences, Food Sciences, Health and Welfare Sciences, Applied Arts and Culture and Engineering. UNIWA operates on three campuses: one campus is located in Central Athens,

and the other two are located in the Western suburbs. The School of Administrative, Economic and Social Science comprises six departments, including the Department of Business Administration and the Department of Accounting and Financial Economics from which the students for this research were selected. The participants of this study come from the campus of Ancient Olive Grove, situated in the area of ancient Lyceum of Plato philosopher. Within the curriculum of the two participating departments in this study, the following courses are indirectly related to EE. For the Business Administration students, during the seventh semester of their studies, the course of Business Ethics is a mandatory course and that of corporate social responsibility is an optional course. For the Accounting and Financial Economics students, both Business ethics and Corporate Governance are optional courses in the eighth semester. To the best of authors' knowledge, there are no specific EE courses in any Business or Accounting department in Greek Universities. Furthermore, the authors of this study are not aware of any research undertaken in Greek HEIs to explore the EB and its relationship with the EE. However, in a research on the awareness on renewable energy systems (RES) of Greek university students and staff, results confirmed that there is a demand for more environmental information on the curricula; however, the main perceived obstacles for rapid RES expansion were those of public indifference and lack of information (Ntanos *et al.*, 2016).

The major challenge at business schools is to incorporate environmental management in their sustainability system (Jabbour *et al.*, 2013). One could notice a gap in UNIWA own environmental management. However, this is rapidly changing through a set of specific projects. The first project concerns the installation of big recycling baskets in a central outdoor spot of the campus, only a month ago. This designates that UNIWA has not so far devoted financial resources to invest in sustainability issues and possibly this has been an additional barrier to the creation, diffusion and adoption of sustainability principles in the university that would strengthen students' EB (Jabbour, 2010). The second project that deserves mentioning is the treatment of the surrounding space of UNIWA buildings, which is full of olive oil trees. Until now, the olive fruits were not collected but left to rot in the ground. According to a new initiative, the harvesting of the olives would be assigned to a rehabilitation organization of young people who can use the profits to support their organization. A third action is the use of an electric bus among the three campuses with zero gas pollution. These three projects constitute an example of the "environmental management," which may presumably reinforce the EB of students through the active and practical application of the environmental problem-resolution approach, acting as a paradigm at their immediate social context (Jabbour, 2010; Chakraborty *et al.*, 2017).

#### 4. Methodology

This study aims to explore the ecological appreciation of BAS in a Greek business school. Specifically, the study intends to explore whether EB is affected by EE and ES. For this reason, two research hypotheses are formulated:

*HA.* How is EB related to EE for the respondents of BAA departments?

*HB.* How is EB related to ES for the respondents of BAA departments?

##### 4.1 Sample and data collection

Data collection was performed by administering a questionnaire during the second semester of 2019 to a sample of students coming from the departments of Business Administration and Accounting and Finance at the University of West Attica, Greece. The target population

(N) of this study is the total number of university students in the Departments of Business Administration and Accounting and Finance. According to the students' records, the population of registered students is  $N = 2000$ . Simple random sampling was used to obtain a representative sample out of the target population. Concerning sample size estimation (n), the authors used equation (1) provided by Eng (2003), which is appropriate for descriptive studies, where the main objective is the description of one or more characteristics of a specific sample:

$$n = \frac{4 \cdot s^2 \cdot (Z_{crit})^2}{D^2} \quad (1)$$

where  $s$  is the standard deviation,  $Z_{crit}$  is the critical value according to authors' selected level of confidence and  $D$  is the width of the confidence interval of the mean. According to authors' pilot study, using a sample of 30 students, the authors calculated the mean and standard deviation for all the variables expressed in a five-point rating scale. The variable with the highest standard deviation was a question concerning the preference of public transport over private car use with  $s = 1.51$ . By deciding to use the 95% confidence level and accepting a width of  $D = 0.5$  for the confidence interval of the mean, the appropriate sample size was calculated according to equation (2):

$$n = \frac{4 \cdot (1.51)^2 \cdot (1.96)^2}{0.51^2} = 140 \quad (2)$$

The authors then requested from the Department administration services to provide them with the email list of all the registered students, and the authors numbered the emails starting from 1 to 2,000. By using the RANDBETWEEN function in MS Excel, the authors randomly picked up 400 numbers that corresponded to students' emails, and then the authors forwarded the questionnaire via email to students and asked them to return it to authors in a completed form. The authors received 190 completed questionnaires, i.e. a response rate of 47.5%, exceeding authors' minimum calculated sample size.

#### 4.2 Measures and survey instrument design

The questionnaire consisted of four sections regarding EB (section A), EE (section B), ES (section C) and the Demographics (section D). Concerning content validity, all the questions stem from the following relevant literature:

Questions regarding students' EB were adopted from relevant reviewed studies about university students' attitudes and behavior towards the environment (Muderrisoglu and Altanlar, 2011; Bozoglu *et al.*, 2016). Questions regarding EE were adapted to the specific sampling population, being based on the following works of Gough and Sharpley (2005), Hassan and Ismail (2011), Zhu *et al.* (2017) and White *et al.* (2018). Questions regarding ES included the 15 items of the New Environmental Paradigm (NEP) scale (Dunlap *et al.*, 2000). The questions on all three sections were measured in a 1 to 5 rating scale anchored at 1 (strongly disagree) and 5 (strongly agree). All three sections comprise 15 questions each. Before the distribution, the questionnaire was given to the University Research Ethics Committee, which provided authors with the necessary permission to conduct the survey. The face validity of the research instrument was performed through a pilot study using a sample of 30 students to ensure that the questions were comprehensive and complete. The student's comments were considered and appropriate practices were followed (Krosnick and Presser, 2010), which are listed below:



- All questions concern variables that are directly related to the central purpose of the research.
- All questions are closed type to ensure the uniformity of the data collected.
- Negative content questions are avoided or paraphrased to reduce the risk of misunderstanding the question or confusing respondents.
- After proper amendments, the instrument was distributed to the final student sample.

The questionnaires' reliability was examined by applying the Alpha Cronbach Index in all three sections of the questionnaire. The sections on EB and EE resulted in a high alpha of 0.868 and 0.804 respectively, meaning that the variables are measuring the same dimension. The section about ES (NEP scale) had a lower though acceptable reliability of 0.680. This was expected because, in similar research concerning the consistency of NEP scale in 14 different countries, the alpha coefficient varied between 0.47 and 0.81 while the mean reliability of the scale was 0.70 (Schultz and Zelezny, 1999). Furthermore, a value of 0.60 can be accepted in social research studies (Hair *et al.*, 2006).

#### 4.3 Data analysis method

The authors performed factor analysis in the sections of EB and EE to identify the underlying structures. They also calculated the ES score by following the method of Dunlap *et al.* (2000). The new quantitative variables that were calculated by the factor analysis procedure were included in the hypothesis's tests under one-way ANOVA and Pearson's correlation coefficient. The statistical analysis was performed using SPSS v17 and Microsoft Excel.

## 5. Results

### 5.1 Sample profile

The average age of the respondents lies between 21 and 23 years, while around 78% of them had their permanent residence in an urban area. In around 70% of the respondents, the monthly household income was lower than 1500 euros. Most of the respondents (60%) were registered in the Department of Business Administration, while the others were in the Department of Accounting and Finance.

### 5.2 Environmentally responsible behavior (questionnaire section A)

Most of the respondents recycle paper and aluminum (60%) and sort their wastes to recyclable and non-recyclable material (50%). A proportion of 43% limits car use by preferring public transportation and 38% of them are disseminating information about environmental issues. However, 45% do not use ecological detergents and 53% do not read the product label nor change a brand because of environmental concerns. Moreover, 70% do not donate money to environmental organizations or participate in municipal programs.

For accessing the main dimensions that constitute the concept of EB, the authors performed factor analysis, on questionnaire section A concerning the EB of the respondents. The KMO measured at 0.843, and the Bartlett test was statistically significant at the 95% level. The analysis returned four factors, explaining 68% of the total variance, a result which is considered high, especially in social sciences, according to Hair *et al.* (2006). The final rotated factor matrix is presented below (Table 1).

According to the nature of the assigned questions to each of the factors, the main factors behind the ecological behavior of the respondents are described as follows:

**Table 1.**  
Factor analysis of the  
EB section

Questions	Factors			
	1	2	3	4
1. Do you read publications focusing on environmental issues?	0.832			
2. Are you talking to others about environmental issues?	0.809			
3. Are you trying to get information on what you can do to help solve environmental issues?	0.730			
4. Are you watching TV programs about environmental problems?	0.687			
5. Do you recycle papers and newspapers?		0.916		
6. Do you recycle glass bottles or jars or aluminum containers?		0.862		
7. Sort your waste to separate non-recyclable from recyclable materials?		0.860		
8. Do you choose to change a product brand because of your environmental concern?			0.833	
9. Do you use ecological detergents?			0.786	
10. Do you read labels on products to see if their content is safe for the environment?			0.780	
11. Do you stop buying from a company because you believe it is burdening the environment?			0.585	
12. Do you participate in municipal/community initiatives to clean or improve the environment?				0.799
13. Do you report of environmental crimes or crimes on animals to the competent authorities?				0.738
14. Do you donate money or subscribe to organizations protecting the environment?				0.687

- Factor 1: Active Information Seeking (items 1,2,3 and 4),
- Factor 2: Recycling (items 5,6 and 7),
- Factor 3: Green Consuming (items 8,9,10 and 11),
- Factor 4: Active Participation (items 12,13 and 14).

The data above indicated that the first factor of “Active Information seeking” included four questions that are concentrated on students’ information collection and information dissemination concerning environmental issues. It can also be stressed out that most respondents were in favor of Active Information seeking.

The second factor of “Recycling” included three questions representing the recycling behavior of the respondents. Most of them were active in recycling as can be seen from the positive answers.

The third factor was “Green Consuming,” and it depicted the buying behavior towards environmental products. This factor included four questions. Upon the answers given at those specific questions, it is noteworthy that most of the respondents are not active towards “Green Consuming” because most of them were not willing to change a brand because of environmental concerns and they did not read the labels of the products nor used ecological detergents.

Finally, the fourth factor was “Active Participation,” and it included three questions about participation in environmental initiatives. The answers to those questions revealed a low level of active involvement in environmental actions.

The aforementioned four factors that were estimated by the analysis were considered as the variables of the analysis conducted.

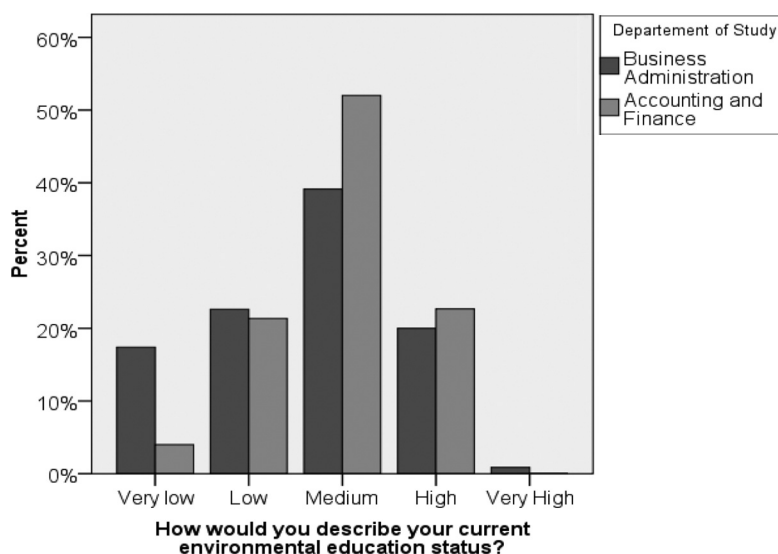
### 5.3 Environmental education (questionnaire section B)

In a question concerning the self-reported level of EE that the respondents have received through their formal education up to now, most of the respondents (53% of Accounting and finance and 43% of Business Administration) placed themselves in the “moderate EE” class. By looking at Figure 1, the authors notice that the respondents of the Accounting and Finance department self-reported to have a higher EE level than the students of Business Administration.

Most of the respondents (82 %) considered the integration of more environmental oriented courses to be highly or extremely important to them. The students of Business Administration had a stronger desire to integrate more environmental courses into their curricula than the Accounting and Finance students, although this difference was not statistically significant. Furthermore, there was an intense desire among respondents to enrich their knowledge on environmental issues and to further develop their environmental awareness. Essential benefits of EE according to respondents are increasing their knowledge on environmental issues (89%) and acquiring environmental awareness through education (83.2%).

Concerning the appropriateness of EE methods, the most preferred method for teaching EE courses is by solving real problems and through case studies; however, the least preferred methods are role-playing and lectures. For accessing the dimensions that constitute the concept of EE, the authors performed the factor analysis on the questionnaire section B, concerning the self-reported EE benefits according to the respondents' surveyed. The KMO measured at 0.803, and the Bartlett test was statistically significant at the 95% level. The analysis is presented in Table 2.

The factor analysis on the questions concerning the benefits of EE revealed that there is only one construct under these questions; thus, the authors saved the factor as a new variable that they used in the following sections.



**Figure 1.**  
Respondents self-reported EE level

*5.4 Ecological sensitivity (questionnaire section C)*

The level of environmental awareness of BAS was accessed using the 15-faceted NEP scale. The mean score in each of the scale's facets with a maximum of 5 is presented below (Table 3). The score on the even items (2, 4, 6, 8, 10, 12 and 14) is reversed to represent a positive pro-environmental statement.

After reversing the even items of the NEP scale, the authors created a new variable, representing the average ecological score of the respondents according to all the NEP scale statements according to the method of Dunlap *et al.* (2000). This scoring of 3.51 out of 5 revealed that the respondents' surveyed were not fully committed to ecologic awareness.

*5.5 Hypothesis tests*

The following hypothesis were formulated and tested:

*HA0.* EB is not related to EE

*HA1.* EB is related to EE

**Table 2.**  
Factor analysis of the  
EE section

Questions	Factors
1. Acquiring environmental awareness	0.767
2. Gaining knowledge about environmental issues	0.810
3. Cultivation of critical thinking	0.802
4. Cultivation of environmental problem solving	0.829
5. Cultivation of initiative to undertake future actions	0.745
6. Forms environmentally conscious future managers	0.672

**Notes:** Extraction Method: Principal Factor Analysis. <sup>a</sup>1 factors extracted

**Table 3.**  
Environmental  
awareness of  
respondents as  
captured by the NEP  
scale

NEP scale (Dunlap <i>et al.</i> , 2000)	Mean Score	Std. Deviation
1. We are approaching the limit of the number of people the Earth can support.	4.2	0.74
2. Humans have the right to modify the natural environment to suit their needs.	3.6	0.95
3. When humans interfere with nature, it often produces disastrous consequences.	4.4	0.69
4. Human ingenuity will ensure that we do not make the Earth unlivable.	4.0	0.69
5. Humans are seriously abusing the environment.	3.3	0.97
6. The Earth has plenty of natural resources if we just learn how to develop them.	4.1	0.75
7. Plants and animals have as much right as humans to exist.	2.6	0.96
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	3.6	1.00
9. Despite our special abilities, humans are still subject to the laws of nature.	2.8	0.99
10. The so-named "ecological crisis" facing humankind has been greatly exaggerated.	3.4	1.17
11. The Earth is like a spaceship with very limited room and resources.	3.9	1.03
12. Humans were meant to rule over the rest of nature.	2.0	0.91
13. The balance of nature is very delicate and easily upset.	3.4	0.99
14. Humans will eventually learn enough about how nature works to be able to control it.	3.8	1.11
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	3.6	0.94
<b>AVERAGE SCALE SCORE</b>	<b>3.51</b>	

The one-way ANOVA analysis was performed between the variables of EE current status and the four factors of the environmentally responsible behavior (Table 4).

According to the results, the authors partially accept  $H_{A,1}$  because EE is related to Active Information Seeking and Recycling, at the 95% level of confidence. It can be signified that as EE level becomes higher, students are keener on information seeking on environmental issues and are more active towards recycling. However, green consuming and active participation are not related to EE self-reported level.

To further verify the previous findings, the authors used the variable concerning the perceived benefits of EE that was calculated by factor analyzing the EE section; moreover, the authors used the Pearson correlation coefficient to find its relationship with the dimensions of EB. The results are presented in Table 5.

The results reveal a weak but statistically significant coefficient between EE and the variables of active information seeking and recycling.

Continuing the analysis, the authors assessed the relation between EB and ES.

The following hypothesis was thus formulated and tested:

*H<sub>B0</sub>*. EB is not related to ES

*H<sub>B1</sub>*. EB is related to ES

One-Way ANOVA	Sum of squares	Df	Mean square	F	Sig.
<i>Active information seeking</i>					
Between groups	13.69	4	3.422	3.612	0.007
Within groups	175.31	185	0.948		
Total	189.00	189			
<i>Recycling</i>					
Between groups	12.80	4	3.201	3.361	0.011
Within groups	176.20	185	0.952		
Total	189.00	189			
<i>Green consuming</i>					
Between groups	8.31	4	2.078	2.127	0.079
Within groups	180.69	185	0.977		
Total	189.00	189			
<i>Active participation</i>					
Between groups	3.07	4	0.768	0.764	0.550
Within groups	185.93	185	1.005		
Total	189.00	189			

**Table 4.**  
Results of the one-way ANOVA between EB and the self-reported level of EE

	EE perceived benefits	Active information seeking	Recycling	Green consuming	Active participation
Pearson correlation	1	0.209	0.202	0.08	0.005
Sig. (2-tailed)		0.004	0.005	0.275	0.947
N	190	190	190	190	190

**Table 5.**  
Correlation between the factors of EB and EE perceived benefits

The Pearson correlation coefficient was calculated for the variable of the NEP scale score and each of the four factors of the environmentally responsible behavior (Table 6).

According to the results, the authors partially accept  $H_{B,1}$ . ES was positively related with Active Information seeking (factor 1) with a coefficient of 0.32, indicating a moderate positive relationship; moreover, it was related to Green Consuming (factor 3), with a correlation coefficient of 0.15, indicating a weak positive relationship. Both coefficients were significant at 95% level of confidence. Furthermore, ES was weakly related to recycling, with a coefficient of 0.13, significant at the 90% level of confidence; however, Active Participation (factor 4) was not related to ES. So, as the NEP score becomes higher, representing a stronger ES, the variables of active information seeking, green consuming and recycling get higher scores. However, active participation seems not to be related to the ES.

The findings of this study pointed out the importance of introducing EE into the business and accounting curriculum because it helps shape the ES and the environmental awareness of business and accounting students in UNIWA. Although students mostly placed themselves in the “medium EE” class, they would welcome further related knowledge.

### 6. Discussion

This study aimed to investigate the EB of BAS of UNIWA in relation to EE and ES. Analysis of the EE scale indicated that there is a strong desire among UNIWA students to enrich their knowledge on environmental issues and to develop their environmental awareness further. UNIWA students referred to “solving real problems and use of case studies” as the most appropriate methods to learn about environmental problems and related issues. This result is in accordance with the study of Segalas *et al.* (2009) who concluded that students achieve better cognitive learning outcomes of sustainability when multi-methodological experiential and active learning education is used.

One-way ANOVA between self-reported EE level and EB showed that as the EE level becomes higher, the EB becomes more positive, especially in the case of green consuming for which the relation is almost linear. However, green consuming and active participation are not related to EE, leading to partially accepting hypothesis  $H_{A, 1}$ . These results are in accordance with other studies about the positive influence of education on students’ behavior and awareness and their ability to reconnect and respect the natural world (Hassan and Ismail, 2011; White *et al.*, 2018). Blackley and Sheffield (2016) designated that strengthening of EE enables individuals and communities to reflect on ways of engaging with the environment, protecting the environment and creating a more ecologically and socially just world through informed action.

Active Participation component of EB included three items:

- (1) participation in municipal community initiatives to clean or improve the environment;

**Table 6.**  
Correlation between  
the factors of EB and  
ecological sensitivity  
(NEP)

	NEP Score	Active information seeking	Recycling	Green consuming	Active participation
Pearson correlation	1	0.318	0.130	0.146	0.059
Sig. (2-tailed)		0.000	0.073	0.044	0.417
N	190	190	190	190	190

- (2) report of environmental crimes or crimes on animals to the competent authorities; and
- (3) money donation or subscriptions to organizations protecting the environment.

A close examination of the above three items could explain the low penetration of education in affecting these behaviors because they pertain to cultural issues of Greeks that are not easily reversed. It is well recognized that the “community culture” is not strong among Greek citizens who are not willing to sacrifice their time and money for issues of community concern (Chatzoglou and Vraimaki, 2009). Regarding animals’ protection only very recently authorities have issued proper laws that are not yet fully disseminated and properly respected (Keep Talking Greece, 2018). Even more, “whistleblowing” in Greece has a negative meaning and is not yet “widely accepted” by citizens despite its positive intention to protect animals. Among deep cultural issues that will need a holistic consideration is the role of family; therefore, it should be a parallel effort in educating and informing both students and families. The results of this study should be interpreted by considering the financial crisis that Greece has suffered in the last decade, making it difficult to donate money or subscribe into organizations to protect the environment.

Green Consuming component depicted the buying behavior of students towards environmental products. A close examination of the four items that constitute green consuming leads to the inference that students as consumers are deeply influenced by the branding policy of certain products that would not let them change buying behaviors in favor to the environment. Moreover, financial issues could explain the low use of ecological detergents because usually they are more expensive than conventional products.

The above-recognized difficulty to convert EE and ES to active participation and green consuming behavior is noticed in the studies of Bozoglu *et al.* (2016) who confirmed the non-linear relationship between EE and EB of students. Moreover, Muderrisoglu and Altanlar (2011) reported that, although the students of Faculty of Forestry had the highest number of environmental courses, they sustained less participation in environmentally responsible behaviors compared to the students of other faculties. Similar results were obtained by the study of Janmaimool and Khajohnmanee (2018, 2019) who concluded that diverse environmental knowledge significantly correlated with pro-EBs. Moreover, they reported that environmental knowledge provided through formal education might promote environmental attitudes, but it may not contribute to students’ active engagement towards EB.

In assessing the relation between EB and ES, it was found that ES was positively related to active information seeking, recycling and green consuming while ES was not related to active participation. This means that as the NEP score becomes higher, representing a stronger ES, active participation of students is not affected. This outcome designates the difficulty in raising the ecological engagement of students, and the complexity of related components when investigating motivation and self-efficacy of environmental issues as shown in the studies of Hashimoto-Martell *et al.* (2012) and Henderson and Zarger (2017).

Finally, UNIWA students reported having received so far “moderate EE.” In primary and secondary formal education, EE effectiveness is doubted because of its encyclopaedic character. In UNIWA, related courses such as Business Ethics and CSR, are offered in the seventh and eighth semester. The participants of this survey are in the first and second semester of their studies; therefore, it can be probably assumed that their EE perception comes from family orientation, social media, school discussions, seminars or sporadic lectures. This proves the importance of non-typical scholarly sources to instill environmental attitude and to act complementarily to formal educational programs (Hamid

*et al.*, 2017). *Bozoglu et al.* (2016) who reached the same conclusion proposed that because the students are influenced by non-formal environments to a great extent, the environmental awareness and attitudes of the parents should be raised by informing them about the difficulties of environmental problems that they are not even aware of.

Considering the research outcomes of *Bennett (1975)* and *Velicer et al. (1998)* presented in the literature review section, the main aspects of achieving environmental behaviour change are as follows:

- These five steps imply strategies' planning, which involves time-demanding processes that cannot be instantly accomplished, because in case of fast or careless implementation, there is always a danger to think of returning to old behaviours and resist the temptation to stay on the "changing" route.
- Maintenance includes the consolidation of the behaviours initiated during the action stage and its goal is to maintain the new status quo. People are conscious that they exerted much progress to constantly reformulate the rules of their lives and are acquiring new skills to deal with life and avoid relapse which could return to their old behaviour.
- Each one step is considered as the prerequisite inflow to the next step in a looped path; thus, it can be helpful BAS to re-evaluate their progress in moving up and down through these stages. However, the overall process is accomplished only at the maintenance step. This step is determining the environmental behaviour change because former problem behaviours are no longer perceived as desirable and BAS remain aware that what they are striving for is personally worthwhile and meaningful.

## 7. Conclusions and future research

This study aimed to explore how EE and ES are related to EB of UNIWA Business and Accounting Students. The results showed that students have a moderate EE level and a moderate degree of self-reported ecological awareness. Both EE and ES are positively related to EB of students.

The lack of active participation is assigned to an inherent characteristic of local culture and perhaps to the authorities' inertia on responding to citizens' reports (*Arabatzis and Malesios, 2013*). Reinforcing EB and active participation is the result of various factors and takes multiple stages to achieve (*Bennett, 1975*). Proper environmental management of students' immediate context and active involvement of students in creating "greener environments" may support the adoption of sustainability principles by business and accounting students (*Jabbour, 2010*). Moreover, active and experiential learning is positively related to EB of students. Therefore, academics should reconsider how they can enrich their teaching methodology in various disciplines to achieve the higher order learning outcomes such as analysing, evaluating and creating (*Sawin, 1957*). These skills will be valuable to the business and accounting graduates when they will be asked to analyse costs and various data and combine multidisciplinary information to make critical valuations of environmentally related projects as future business executives.

Business and accounting academics should provide students with more "transformative learning" than "encyclopaedic learning." Transformative learning is about enabling students to reflect critically on their prior assumptions and stereotypes that have been formed by the society, the family, the mass media and other sources (*Mezirow, 2000; Dirkx et al., 2006*). Students when entering university are in the process of becoming adults, they



try to find their own identity and start their studies full of prior assumptions about their future role as managers (Illeris, 2016).

The limitations of this study reside firstly to the small sample surveyed within only one HEI. The second limitation is the narrow geographic coverage. Future research could be extended to BAS who live outside the urban context. Since this research is a preliminary study in HE, it can be validated by using larger samples of students, among other HEIs. Moreover, the instrumental tool of this study can be extended in enriching the basket of questions and issues of immediate concern among future business executives such as social and environmental accounting, green finance or corporate responsibility. The generalization of research findings can be verified by conducting a further investigation about the existence of differences between students of diverse academic disciplines.

A holistic approach should be followed by preparing teachers on how to prepare managers to value the ethical business and the economic development under their social and environmental benefits. This is a challenge for HEIs, for HE academics and for policymakers (Chen and Akilah, 2015). Finally, at an operational level of propositions, future research focus should be driven on business schools, assuming great flexibility in fashioning curricula to meet their missions and to fit with the specific circumstances of particular programs. Each one business school should have the freedom to determine how to best integrate teaching business principles and ethics to meet the needs of its mission and learning goals for each degree program (Floyd et al., 2013).

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### Further reading

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### About the authors

Dr Grigorios Kyriakopoulos is a Teaching and Research Associate at the School of Electrical and Computer Engineering, NTUA, Greece. He has accomplished a solid education background by completing 19 academic qualifications including Chemical Engineering (MEng, PhD and PostDoc), Business and Management (BA and MA), Energy (MSc), Environmental Studies (BSc and 2 MSc), Hellenic Culture (BA and MA), Education (PGCertEdu), Human Resource Management (CertHE) and Psychology (HND and PGCert). Grigorios has over 20 years of academic teaching experience in tertiary education institutions, including the Schools of Electrical Engineering (NTUA) and Chemical Engineering (NTUA), Hellenic Naval Academy, Merchant Marine Academy of Greece, and the School of Pedagogical and Technological Education of Athens (Greece). He serves as an editorial member for 16 journals and he is a reviewer for >234 international scientific journals, as well as a technical committee member for 30 international scientific conferences. Grigorios is the (co)author of 50 papers and the research fields of his specialization are that of Engineering, Environment, Energy, Renewable Energy Sources, Waste Management, Circular Economy, Business Administration, Education, Culture, Extroversion and Internationalization of SMEs, Development Economics and Behavioral Ecology. Grigorios Kyriakopoulos is the corresponding author and can be contacted at: [gregkyr@chemeng.ntua.gr](mailto:gregkyr@chemeng.ntua.gr)

Dr Stamatios Ntanos is a Research and Laboratory Teaching Staff at the University of West Attica (Former Technological Educational Institute of Piraeus), Greece. He has >18 years of academic teaching experience in the Departments of Business Administration and Accounting. His research interests include renewable energy sources and the environment, sustainable development, social evaluation of environmental investments, statistical analysis, economics and finance and business and management.

Dr Sofia Asonitou is an Assistant Professor of Accounting Education at the department of Business Administration, University of West Attica, Greece. She holds a Bachelor's Degree in Economics from National and Kapodistrian University of Athens, an MBA from VUB-SOLVAY in Brussels and PhD in Accounting Education from Sheffield Hallam University, UK. Her research interests are mainly in the accounting education area, in innovative teaching methods and in continuing professional development and training. Her teaching interests are in management accounting, financial statement analysis and auditing. She has also participated in many national and international conferences and has published her studies in related scientific journals.

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