

## Knowledge of green buildings and environmental worldview among interior design students



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### ABSTRACT

The concept of green buildings is one of the main features of sustainable urbanism. Additionally, sustainability oriented lifestyles have the potential to create a sustainable society, and have recently been understood to be a significant driving force behind sustainable development. Younger generations are the professionals and decision makers of the future. Therefore, both as individuals living in the 21st century which has witnessed many environmental catastrophes and as future professionals with a direct impact on the environment via architectural planning and design, it is crucial for interior architecture undergraduate students to acquire sufficient knowledge and perception with regard to sustainability, ecological design and construction in particular. Within this framework, a survey was conducted among 100 participants who were randomly selected undergraduate students in Nicosia. In the first section, several subjects were asked about their environmental awareness and knowledge regarding various issues, including the concept of green buildings. In the second section, the level of their environmental worldview was assessed and the third section measured the participants' environmental behaviours. Furthermore, interior architecture instructors' environmental awareness was also examined with the help of a disparate survey. The results revealed that the participants did not exhibit a high level of endorsement either for environmental knowledge of the concept of green buildings, environmental worldview or for environmental behaviours.

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### 1. Introduction

A significant acceleration in environmental destruction has been experienced around the world, particularly after the Industrial Revolution. Consequently, the world has experienced many ecological challenges. Global warming and climate change, species loss and deforestation are among the hazardous results of this process. Sustainability as a key concept has been developed for eradicating the harmful causes of these on-going challenges (UN, 1987). The concept has now become a globally acknowledged term, combining all the experiences of environmentalism with sensitive social and economic considerations. In the meantime, different academic disciplines have proposed different

understandings and perspectives of this concept. It is fundamentally defined within three main dimensions: environmental, economic and social. Recently, culture has been determined to be a fourth dimension by many academicians and researchers. In general, sustainability as a concept has become one of the most successful approaches to be introduced.

Additionally, as these harmful processes have largely emerged as a result of increasing urbanisation, sustainable urbanism has emerged as a new discourse within the framework of sustainability, with its roots in the late 1950s (Oktay, 2012). Sustainable urbanism can be defined as the application of sustainable and resilient principles to the design, planning, and administration/operation of cities (Sharifi, 2016).

The accomplishment of sustainable urbanism can be fulfilled in a hierarchical order of urban environment scales. In other words, environmentally responsive buildings would create ecological neighbourhoods and these neighbourhoods would create sustainable quarters, ultimately resulting in

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the achievement of sustainability oriented urban environments. Therefore, it can be suggested that ecological design and construction including issues such as energy efficiency and use of renewable energy sources are among the fundamental elements on the path towards ecologically based physical environments (Allouhi et al., 2105; Aste et al., 2016).

Buildings consume around one-third of global energy, and generate about the same proportion of black carbon emissions (Murtagh et al., 2016). Buildings are responsible for around 35% of total energy usage worldwide. Consequently, the concept of green buildings has become a key focus area within the sustainable urbanism discourse.

As an emerging issue since early 1980s, green building contains responsible and resource-efficient processes for minimising adverse impact on the environment. For this reason, it has environmental, economic and social advantages (Olubunmi et al., 2016). In other words, the main characteristics of the concept of green buildings such as energy and water efficiency and reduced material and natural resource consumption, are also the factors improving health and sustaining environment.

Apart from the physical aspects, environmentally responsive individuals are also significant for sustainability efforts, regardless of their age, profession, culture, nationality or political view. Hence, without individuals whose actions are characterised by their environmental habits, values and attitudes, it will not be possible to fulfil sustainability attempts.

Furthermore, as future professionals will have a direct impact on the environment via architectural planning and design, it is therefore crucial for interior architecture students to acquire sufficient knowledge with regard to sustainability, ecological design and construction in particular. In other words, it is of critical importance that architects embrace ecological design and construction in their professional activities. Additionally, besides being future professionals, it is of critical importance for the interior design students, as individuals establishing future communities, to achieve environmentally responsive behaviour. Hence, environmental behaviour can be suggested to be the nucleus of ecological living (Barr and Gilg, 2006).

According to many researches, both environmental knowledge (Grob, 1995; Harraway et al., 2012; Mobley et al., 2010) and environmental worldview based on attitudes as value orientations (Barr et al., 2001; Davis et al., 2009; Gronhoj and Thogersen, 2012; Pauw et al., 2011) are significant research areas regarding their influence on environmental behaviour.

Within this framework, two disparate surveys were designed. The first survey was conducted among 100 participants who were randomly selected undergraduate students from Nicosia. The second one was for interior architecture instructors. The paper first provides a brief definition of both green buildings and the environmental worldview. It then introduces material and method, including the

sample, the research design and the measures. Subsequently, the user surveys' findings are displayed and evaluated. Finally, the findings are discussed on the basis of the literature review and recommendations are made.

The limitation of the study is related to the quantity of the sample. The research was based on 100 randomly chosen undergraduate students as respondents. However, further research conducted within disparate research contexts is needed worldwide in order to collect more concrete data in relation to environmental awareness and worldview.

## 2. Literature review

### 2.1. Green buildings

As the urbanisation process is accelerating in both developed and developing countries, the building construction industry has gained importance in the area of greenhouse gas (GHG) reduction. To elaborate among different scales of urban development, the construction sector needs particular focus due to its impact on both the environment and occupants of buildings. Hence, according to the United Nations Environmental Program, one third of the total end use energy is consumed in buildings (Dwaikat and Ali, 2016). Apart from the construction industry, transportation, industry, and agriculture are among the significant emitters of emissions worldwide.

As a developing concept, the definition of green buildings varies, although the main idea is to reduce the pressure of the built environment on the natural environment and human beings by lessening the GHG emissions and by improving the performance of the built environment.

In 1992, the concept of 'green buildings' was formally proposed at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, indicating that buildings should meet occupants' needs in terms of a comfortable living environment without compromising the ability to save energy and reduce environmental impacts (Liu and Lin, 2016).

In the meantime, numerous assessment methods and tools have been introduced to measure the performance of the building sector with respect to the pressure on the environment. More than 60 countries around the world have developed their own rating systems to evaluate and promote green buildings (Kibert, 2016). Although there are variations in the assessment methods, energy efficiency can be suggested to be one of the key features of green buildings. 'Water efficiency', 'waste reduction' and 'siting and structure design efficiency', 'materials efficiency', 'waste reduction', 'indoor environmental quality enhancement' are among the other key goals of green buildings.

Among the green rating tools used worldwide, the British Research Establishment Environmental Assessment Method (BREEAM) in the UK and the Leadership in Energy and Environmental Design

(LEED) in the USA are the two leading assessment methods. There have also been attempts in Turkey to develop a national green building assessment method. The Turkish Green Building Council was established in 2007 in order to prepare a unique green building rating system in the country.

## 2.2. Environmental worldview

Values are widely accepted as one of the key components that influence the making of choices between alternative courses of action, both by individuals in their professional or private roles as citizens and by collectives (Dietz et al., 2005; Kortenkamp and Moore, 2001; Oreg and Katz-Gerro, 2006; Stern et al., 1999; Stern, 2000; Goldman et al., 2014). The environmental worldview can briefly be defined as attitudes towards the environment. Attitudes as individuals' value orientations are based on values. Three types of environmental attitudes have been identified by scholars and researchers: *egoistic*, *social altruistic* and *biocentric* environmental attitudes.

Individuals holding *egoistic* environmental attitudes value the environment in terms of the consequences that the environmental damage may have on the individual themselves. Individuals holding *social-altruistic* environmental attitudes have a concern about the environment in relation to both themselves and others. Individuals with *biocentric* attitudes have a concern about the environment regarding the essential value of nature as a whole. They believe that individuals must protect the natural environment since all beings, including plants and animals, form a complete entity

within nature and all species have the right to survive (Kempton et al., 1995).

However, there are scientific studies that have only defined two types of attitudes, instead of three. The New Environmental Paradigm (NEP) scale (Dunlap and Van Liere, 1978; Dunlap et al., 2000) is one of the most widely used instruments by researchers for measuring environmental attitudes, and this also identifies two types of attitudes.

Within this perspective, egoistic and social altruistic dimensions are evaluated as a single dimension in which the human being is at the centre. Thus, *anthropocentric* individuals would value the environment because of its contribution to the quality of human life. Another motive is the *ecocentric* environmental attitude. It can be added that the ecocentric attitude is similar to the biocentric attitude. According to the *ecocentric* view, the individual and the environment are on equal terms, forming a unit (Asilsoy and Oktay, 2016).

The revised NEP scale (Dunlap et al., 2000), which is used within this study for measuring the students' environmental worldview, has been designed within five facets: The reality of limits to growth (item 1, item 6, item 11), ant anthropocentrism (item 2, item 7, item 12), the fragility of nature's balance (item 3, item 8, item 13), the rejection of exemptionalism (item 4, item 9, item 14), the possibility of an ecological crisis (item 5, item 10, item 15). Other characteristics of the instrument are that it involves one ecocentric statement (items 1, 3, 5, 7, 9, 11, 13, 15) and one anthropocentric (items 2, 4, 6, 8, 10, 12, 14) statement (Table 1).

**Table 1:** Revised new environmental paradigm (NEP) items (Dunlap et al., 2000)

NEP Facets	Scale Items
The reality of limits to growth	1. We are approaching the limit of the number of people the earth can support 6. The earth has plenty of natural resources if we only learn how to develop them 11. The earth is like a spaceship with very limited room and resources
Antianthropocentrism	2. Humans have the right to modify the natural environment to suit their needs 7. Plants and animals have as much right as humans to exist. 12. Humans were meant to rule the rest of nature.
The fragility of nature's balance	3. When humans interfere with nature, it often produces disastrous consequences 8. The balance of nature is strong enough to cope with the impact of modern industrial nations 13. The balance of nature is very delicate and easily upset
Rejection of exemptionalism	4. Human ingenuity will insure that we do NOT make the earth unlivable 9. Despite our special abilities, humans are still subject to the laws of nature 14. Humans will eventually learn enough about how nature works to be able to control it.
The possibility of an ecological crisis	5. Humans are severely abusing the environment 10. The so-called ecological crisis facing humankind has been exaggerated 15. If things continue on their present course, we will soon experience a major ecological catastrophe

## 3. Material and method

### 3.1. The sample of survey 1

A random sample of 100 students from first, second, third and fourth year design courses of the 2016-17 spring term in the Department of Interior Architecture, Faculty of Architecture, Near East University were chosen for the first survey. The number of participants was decided equally from each year. The respondents were selected randomly

within the design groups for the purposes of completing the questionnaire.

**Gender:** 55% of the 100 participants were female and the remaining 45% were male (Table 2).

**Age:** 92% of the participants in the study were between the ages of 16-25. The rest (8%) were between the ages of 26-40 (Table 3).

**Nationality:** 1% of the participants in the study had Turkish Cypriot profile, while 96% had Turkish nationality. The remaining 3% were from other countries (Table 4).

**Table 2:** Participants' gender profile (%)

Gender	Percent (%)
Female	55
Male	45
Total	100

**Table 3:** Participants' age profile (%)

Age	Percent (%)
16~25	92
26~40	8
41~55	-
Total	100

**Table 4:** Participants' nationality profile (%)

Nationality	Percent (%)
TRNC	1
TR	96
Foreign	3
Total	100

The survey was implemented starting from the second week of April 2017 until the end of the same month, for a total period of two weeks.

### 3.2. The interview schedule of survey 1

The first research questionnaire was designed under four main titles. These headlines were as follows: 'Environmental awareness in relation to ecological construction and design', 'Environmental attitudes', 'Environmental behaviour', 'Socio-demographic data' (Table 6).

**Table 6:** User survey's characteristics

Basic Components	Indicator
Environmental awareness and concern	Awareness and knowledge about ecological construction and design.
Environmental attitudes	Ecocentric and anthropocentric attitudes.
Environmental behaviors	Environmental behaviors about several categories such as energy saving, water conservation, waste management.
Socio-demographic data	Age, gender, nationality etc.

**Environmental behaviour:** Six items were used in the third section of the questionnaire for measuring the environmental behaviours of the respondents. These items covered several behavioural categories, such as energy saving, water conservation, green consuming etc.

### 3.4. The sample of survey 2

A sample of 10 Department of Interior Architecture instructors was chosen for the second survey. The respondents were selected randomly for the purposes of completing the questionnaire.

### 3.5. The interview schedule of survey 2

The second research questionnaire was designed under one main title having three Likert type items.

### 3.6. Measures of survey 2

**Environmental awareness:** Environmental awareness of the interior architecture instructors was measured in the questionnaire via three items.

### 3.3. Measures of survey 1

**Environmental awareness:** Environmental awareness and knowledge were measured in the first part of the questionnaire based on six items.

**Environmental worldview:** The environmental attitudes were measured via the revised New Environmental Paradigm (NEP) scale including 15 items (Dunlap et al., 2000) in the second section of the questionnaire. A five-point Likert type scale (strongly disagree to strongly agree) was used to record the participants' responses for each item. The answers to the eight odd numbered ecocentric items were coded as 5= STRONGLY AGREE, 4= AGREE, 3= UNSURE, 2= DISAGREE, OR 1= STRONGLY DISAGREE and the answers for the seven even numbered anthropocentric items were reverse scored. According to the NEP scale, it is expected that agreement with the ecocentric items and disagreement with anthropocentric items will indicate an ecological worldview.

**Table 5:** Participants' Duration in University (%)

Duration	Percent (%)
1 year	18
2 years	24
3 years	16
4 years	28
4+ years	14
Total	100

## 4. Results

### 4.1. Students' knowledge and perception regarding sustainability and green buildings

In the first section of the questionnaire, six items about environmental awareness in relation to sustainability and green buildings were evaluated. The first item of the first section asked about the existence of any course about sustainability that they had taken during their undergraduate education. When the results of the students' responses to this item were evaluated, the results revealed that 70% of the participants replied 'yes', while the remaining 30% indicated that they had not taken any course about sustainability (Table 7).

**Table 7:** Participants' responses to the item 'Have you taken any course on sustainability throughout your undergraduate education' (%)

A1	Frequency	Percent (%)
Yes	70	70
No	30	30
Total	100	100

When the second item 'I have adequate knowledge about the concept of sustainability' was evaluated, it was found that 23% of the participants replied 'strongly agree' and 31% replied 'agree', while 25% of were unsure. The rest replied disagree (16%) or strongly disagree (5%).

When the third item in the first section 'I am aware of the significance of sustainable design and construction within the architectural field' was evaluated, it was observed that 32% replied 'strongly agree' and 33% replied 'agree', with 20% indicating that they were unsure. The rest replied disagree (8%) or strongly disagree (7%).

When the fourth item of the first section 'I have adequate knowledge about the characteristics of buildings which are certified as green' was evaluated, the findings revealed that 19% of the participants replied 'strongly agree' and 33% replied 'agree', with 20% indicating that they were unsure. The rest replied disagree (15%) or strongly disagree (13%).

When the fifth item 'I believe that buildings certified as green must be more widespread within the construction sector' was evaluated, the results revealed that 44% of the participants replied 'strongly agree' and 16% replied 'agree', with 22% unsure. The rest replied disagree (10%) or strongly disagree (8%).

When the last item of the first section 'I will give priority to the use of sustainable building materials and construction techniques within my professional life' was evaluated, it was found that 39% of the participants replied 'strongly agree' and 28% replied 'agree', with 23% stating that they were unsure. The rest replied disagree (5%) or strongly disagree (5%) to this item. The findings of the remaining five items from the first section are displayed below. A five points Likert scale (strongly disagree to strongly agree) was used for these items (Table 8).

**Table 8:** Participants' responses to the items about knowledge and perception regarding sustainability as a concept, green buildings and sustainable building material and construction (%)

Items about knowledge and perception regarding sustainability and green buildings	Strongly Disagree (%)	Disagree (%)	Unsure (%)	Agree (%)	Strongly Agree (%)
A2. I have adequate knowledge about the concept of sustainability	5%	16%	25%	31%	23%
A3. I am aware of the significance of sustainable design and construction within the architectural field	7%	8%	20%	33%	32%
A4. I have adequate knowledge about the characteristics of buildings which are certified as green	13%	15%	20%	33%	19%
A5. I believe that buildings certified as green must be more widespread within the construction sector	8%	10%	22%	16%	44%
A6. I will give privileged for using sustainable building materials and construction techniques within my professional life	5%	5%	23%	28%	39%

#### 4.2. Students' environmental worldview

Environmental worldview was measured in the second part of the questionnaire with the revised NEP scale. The revised NEP scale contains 15 items. In total, the mean score of the participants was calculated as 3.42. It is accepted that a NEP mean score of 3 is the boundary between an anthropocentric and ecocentric worldview (Rideout

et al., 2005; Van Petegem and Blicck, 2006). Therefore, the result showed that the respondents had a medium level of ecological worldview. In other words, the findings suggest that environmental attitudes among the sample are closer to being characterised by the NEP, rather than the DSP (Table 9).

**Table 9:** Participants' responses to the NEP scale items

	S. Disagree (%)	Disagree (%)	Unsure (%)	Agree (%)	S. Agree (%)	Mean Score
B1	4%	10%	20%	26%	40%	3,88
B2	28%	21%	12%	20%	19%	3,19
B3	3%	9%	21%	17%	50%	4,02
B4	14%	19%	21%	15%	31%	2,7
B5	1%	5%	8%	24%	62%	4,41
B6	0%	1%	5%	19%	74%	1,31
B7	1%	2%	4%	12%	81%	4,7
B8	12%	18%	26%	16%	28%	2,7
B9	4%	5%	23%	25%	43%	3,98
B10	19%	23%	30%	16%	12%	3,21
B11	11%	16%	28%	27%	18%	3,25
B12	38%	18%	16%	19%	9%	3,57
B13	11%	11%	13%	27%	38%	3,7
B14	8%	10%	26%	28%	28%	2,42
B15	1%	6%	13%	20%	60%	4,32

##### 4.2.1. Ecocentric attitudes

When the responses to the eight ecocentric items were evaluated (B1, B3, B5, B7, B9, B11, B13, B15), the highest agreement among the participants was

for B7 - *Plants and animals have as much right as humans to exist*. In total, 81% replied 'strongly agree' and 12% replied 'agree' for this item. Among the ecocentric items, the second highest agreement of participants was for B5 - *Humans are severely*

abusing the environment, as 62% replied ‘strongly agree’ and 24% replied ‘agree’ for this item. Conversely, the respondents’ lowest level of agreement was for item B11 - *The earth is like a spaceship with very limited room and resources* with 27% replying ‘agree’ and 28% replying ‘unsure’. Additionally, 18% replied ‘strongly agree’ to this item.

**4.2.2. Anthropocentric attitudes**

As previously suggested, according to the NEP scale design, participants are expected to express agreement for the ecocentric items and disagreement for the anthropocentric items. When the anthropocentric items’ responses were evaluated, the highest disagreement was related to item B12 - *Humans were meant to rule the rest of nature*. In regard to this item, 38% replied strongly disagree and 18% replied disagree, 16% were unsure, 19% replied agree and 9% replied strongly agree. Another relatively low agreement level was observed for the item B10 - *The so-called ecological crisis facing humankind has been exaggerated*. However, among these seven anthropocentric items, the lowest disagreement of participants was for B6 - *The earth has plenty of natural resources if we only learn how to develop them, with* 74% replying ‘strongly agree’ and 19% replying ‘agree’ to this item.

Additionally, when the findings were evaluated in terms of the NEP facets, the participants’ mean scores on the NEP subscales revealed that ‘*the possibility of an ecological crisis*’ NEP facet had the highest endorsement (Mean=3.98). The second highest endorsement (Mean=3.82) was for the *antianthropocentrism* NEP facet. Additionally, ‘*the reality of limits to growth*’ (Mean=2.81) and ‘*rejection of exemptionalism*’ (Mean=3.03) NEP facets had the weakest levels of endorsement (Table 10).

**4.3. Students’ environmental behaviours**

When the results of the environmental behaviour items were evaluated, it was found that there was not a high commitment regarding these environmentally responsive behaviour items.

**Table 11:** Participants’ responses about ‘environmental behaviour’ items

Environmental Behavior Items	Always	Usually	Sometimes	Rarely	Never
C1. I used papers double-sided as much as possible	15%	18%	26%	15%	26%
C2. I switch lights off in unused rooms	34%	19%	16%	13%	18%
C3. I prefer not to use plastic products	24%	16%	29%	10%	21%
C4. I support environmental campaigns and attend to the environmental activities	22%	16%	17%	22%	23%
C5. Instead of using car, I prefer to use public transportation	11%	14%	17%	18%	40%
C6. I prefer to buy local products and food instead of export ones	26%	27%	22%	11%	14%

Such that when we evaluate the results of the second survey’s first item ‘*My lectures’ content includes environmental topics (ecological design, global warming, recycling, etc.)*’, %20 of them replied ‘disagree’, another %20 replied ‘strongly agree’ and the rest %60 replied ‘agree’. When we evaluate the findings of the second item (*I am sufficiently*

**Table 10:** Respondents’ mean scores on NEP facets

	Mean Score
The Reality of Limits to Growth	2,81
Item 1	3,88
Item 6	1,31
Item 11	3,25
Antianthropocentrism	3,82
Item 2	3,19
Item 7	4,70
Item 12	3,57
The Fragility of Nature’s Balance	3,47
Item 3	4,02
Item 8	2,70
Item 13	3,70
Rejection of Exemptionalism	3,03
Item 4	2,70
Item 9	3,98
Item 14	2,42
The Possibility of an Ecological Crisis	3,98
Item 5	4,41
Item 10	3,21
Item 15	4,32

For example, the highest agreement levels were for the items C2. *I switch the lights off in unused rooms* and C6. *I prefer to buy local products and food instead of imported ones*. Regarding the item C2, 34% replied ‘always’, 19% replied ‘usually’, 16% replied ‘sometimes’ and the rest replied ‘rarely’ (13%) and ‘never’ (18%) to this item. Regarding the item C6, 26% answered ‘always’, 27% answered ‘usually’, 22% replied ‘sometimes’, 11% replied ‘rarely’ and 14% replied ‘never’. The responses to the items C1 and C5 were also meaningful. For example, for item C1. *I used papers double-sided as much as possible*, only 15% answered ‘always’ and 18% answered ‘usually’. The rest replied ‘sometimes’ (26%), ‘rarely’ (15%) and ‘never’ (26%). Regarding the item C5. *Instead of using a car, I prefer to use public transportation*, only 11% answered ‘always’, 14% answered ‘usually’, 17% answered ‘sometimes’, 18% replied ‘rarely’ and a significant portion of the respondents (40%) replied ‘never’ (Table 11).

**4.4. Instructors’ environmental awareness**

When we evaluate the results of the second questionnaire which was conducted with interior architecture instructors, it can be suggested that the agreement was more than the disagreement for all of the three items.

*informed about the global environmental problems and the solutions to these problems*), %10 replied ‘disagree’, another %10 replied ‘unsure’, %20 replied ‘strongly agree’ and the rest %60 replied ‘agree’. When we evaluate the second questionnaire’s third item ‘*I am sufficiently informed about local environmental problems in my country*

and the solutions to these problems', %20 of the respondents replied 'strongly disagree', %10 replied 'disagree', %10 replied 'unsure', another %10

replied 'strongly agree' and the rest %50 replied 'agree' (Table 12).

**Table 12:** Respondents' responses about second survey's items

	S. Disagree (%)	Disagree (%)	Unsure (%)	Agree (%)	S. Agree (%)
2A. My lectures' content includes environmental topics (ecological design, global warming, recycling, etc.)	%0	%20	%0	%60	%20
2B. I am sufficiently informed about the global environmental problems and the solutions to these problems	%0	%10	%10	%60	%20
2C. I am sufficiently informed about local environmental problems in my country and the solutions to these problems	%20	%10	%10	%50	%10

## 5. Conclusion

The concept of green buildings is one of the key issues of the current attempts to achieve sustainable urbanism. It is necessary for both developed and developing countries to support and increase the application of green building design and construction. Therefore, it is imperative that professionals in fields like architecture and interior architecture are aware of the significance and have adequate knowledge of ecological design and construction. Furthermore, it is essential for the young generations to adopt an environmental worldview and to behave in an environmentally responsive manner in their daily lives. Hence, they will be the citizens of the near future with the power to shape their communities and they will be able to participate in decision-making processes.

In this respect, a survey was conducted among the interior architecture undergraduate students in Nicosia, N. Cyprus in order to measure their 'environmental awareness regarding sustainability and green buildings', 'environmental worldview' and 'environmental behaviours'. The results revealed that the participants did not exhibit a high level of endorsement either for environmental knowledge or for environmental worldview and environmental behaviours. For example, the mean score for environmental worldview was measured as 3.42. The score implies that respondents have a medium level of ecocentric view towards the environment. Additionally, in relation to their environmental behaviour responses, it can be argued that the students do not have a high level of commitment to maintain environmentally responsive behaviour in their daily lives either.

However, as the whole world is experiencing ecological catastrophes such as global warming and climate change etc., it is almost compulsory for people to have a high level of environmental worldview and to behave as ecologically responsive citizens, particularly for younger generations. Furthermore, another survey was conducted with the instructors. The findings of the second survey imply that it would be convenient for the instructors to increase the commitment in relation to environmental education.

Therefore, it will be beneficial to merge the environmental aspects to the whole curriculum to creating more environmentally qualified education

programs. Environmental education can be used as an efficient tool for increasing young individuals' environmental awareness and concern (Asilsoy et al., 2017). Therefore higher education institutions in the field of urban planning must respond adequately to the challenges by strengthening their disciplinary profiles and expertise on which to build their interdisciplinary interconnectedness with other disciplines in the arena of sustainability (Korobar and Siljanoska, 2016). Such an education system would have the power to increase the young generations' potential for becoming both environmentally responsive citizens and professionals.

## Compliance with ethical standards

## Conflict of interest

The authors declare that they have no conflict of interest.

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