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# Factors Affecting Environmental Knowledge and Attitudes among Lebanese College Students

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This exploratory study aimed at assessing the variables that would positively affect the knowledge and attitude of a group of Lebanese college students regarding the environment, namely such factors as gender, age, previous hiking experience and living abroad. A purposeful sample of students attending the Lebanese American University, was asked to fill out a questionnaire that assesses four major domains related to attitudes towards the environment: concern, knowledge, willingness to act, present and past behavior, and a minor domain, experience with nature. Results showed overall significance with specific patterns emerging: living abroad correlated with knowledge and experience, frequency of hiking with all dependent variables and marginally with concern, and gender marginally with willingness to act, actual behavior and experience in favor of males. The independent variables of gender, living abroad and major yielded the most significant correlations with the dependent variable of experience with the environment. The strongest correlations were found between the pairs of females living abroad and knowledge, and between nonbusiness students and experience with the environment. Age consistently showed no correlation with any of the measured variables. As for hiking experience, a surprising trend emerged. Those with more hiking reported less experience with the environment. Implications and recommendations based on the findings are discussed.

Environmental problems are a worldwide concern and yet no country claims to be fully content with its environmental policy and practices. Lebanon is still in its embryonic stage as far as environmentalism is concerned. In fact, one of the major hurdles is that there is little appreciation of nature, particularly among the youth. According to a recent report, Lebanon's

“degreening” is happening at an alarming speed in the absence of planning, awareness, and a strong environmental initiative (Singh-Bartlett, 1999). Renowned educator Montessori maintained that a “prepared environment”<sup>1</sup> is ultimately an attitude rather than a place (as cited in Nelson, 1999). Accordingly, in order to deal with the lack of ecological sensitivity, changes in attitude towards the environment are needed to promote proactive behavior.

Today's college students are tomorrow's leaders. It seems logical that the behavioral

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changes towards the environment will be easier and more effective if students are ecologically knowledgeable, concerned, and initiated. At present, however, there is not much data available in Lebanon regarding what Lebanese students know, think, feel, and actually do with respect to ecology.

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## ATTITUDES, KNOWLEDGE, AND BEHAVIOR CHANGE

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Attitudes, defined by social psychology as “favorable or unfavorable evaluations of and reactions to objects, people, situations, or any other aspects of the world,” enable us to predict and change people’s behavior (Atkinson, Atkinson, Smith, Bem, & Nolen-Hoeksema, 1996, p. 606).

Newhouse suggested that attitudes, which are derived from life experiences and education, markedly influence behavior (as cited in Yilmaz, Boone, & Anderson, 2004). It is often ascertained that one barrier for attitude change is insufficient information about a certain aspect of life, and that the strategy of choice to effect a change of attitude is exposure to new information (Wade & Tavis, 1994).

Relative to environmental behavior, Hungerford and Volk (as cited in Yilmaz et al., 2004) and Arcury (1990) established a strong link between detailed knowledge of issues and environmentally responsible behavior. According to Yilmaz et al., “formal education influences students’ attitudes positively by developing students’ conceptions about environmental issues” (p. 1532).

The environmentalist movement, though a worldwide concern, started in the United States in 1892 (Benton & Funkhouser, 1994), but reached college campuses only recently (Keniry, 1993). Several studies focused on the effects of science courses on knowledge and attitudes, and found mostly proenvironmental outcomes (Arcury, 1990; Yilmaz et al., 2004; Simmons, 1998) or mixed results (Brown, 1997).

Environmental education programs (fieldtrips, hiking, camps, adventure activities) purport to enhance students’ appreciation and sensitivity towards the environment, outdoor behavior, and social relationships (Palmborg & Kuru, 2000). Hiking, which is less structured and not necessarily linked to curricular objectives, aims “to develop students’ affective relationship to the natural environment, their environmental sensitivity and outdoor behavior, as well as their social relationships, through personal experiences” (Palmborg & Kuru, 2000, p. 1).

There is a paucity of research on the effects of hiking on environmental attitudes and behavior, particularly studies dealing with college students. Haluza-Delay (2001) found that wilderness experiences may help develop an ecological sensitivity, which does not necessarily “translate into action back home.” (Haluza-Delay, 2001, p. 45). Gillett, Thomas, Skok, and McLaughlin (1991) found a significant increase for self-concept and environmental knowledge but none in attitude was noted among their group of adolescent hikers.

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## GENDER AND ENVIRONMENTALISM

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Many researchers studied the link between gender and environmental attitudes. Blocker and Eckberg (1997) found that women tend to be more concerned with their surrounding environment due to their sex-role socialization, whereas men’s role as breadwinner and their preference towards economic growth diminishes their sense of environmental awareness. Benton and Funkhouser (1994) found that female undergraduate students are less equipped with knowledge about the environment, but show more concern and greater commitment for proenvironmental behavior and responsibility than their male counterparts. MacDonald and Hara (1994) concluded that

gender difference explained little of the variance in environmental concern.

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## MAJOR

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Placing the burden of responsibility on business students as future business leaders, Benton and Funkhouser (1994) and Benton (1994) consistently found that business students lag behind their peers, even in cross-cultural comparisons, regarding the environment; they know less, care less, and express less commitment to nature than students not majoring in business administration.

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## THE ENVIRONMENTAL CRISIS IN LEBANON

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The environmental crisis has reached a cataclysmic proportion “bred by ignorance and greed” (Tamhaz, 2000, p. 1). Problems include “savage urbanization” (Tamhaz, p. 1), polluted sea and beaches, (Kmeir, 1998), open landfills and trash dumps, deterioration of soil due to erosion, rise in number of quarries because of lack of government control.<sup>2</sup> Meanwhile, no serious initiatives have been taken in Lebanon to raise ecological awareness with college students, and no studies have been conducted on college campuses to measure the impact of various effective educational strategies.

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## GENDER AND THE ENVIRONMENT IN LEBANON

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To date, only two conferences have been dedicated to women and the environment, both held at the Lebanese American University in October 1992 and November 1993, respectively, which did not include any empirical studies.

They consisted only of emotional lectures targeted mainly at empowering women to take part in the decision-making and legislation process that may favorably affect environmentalism.

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## AGE

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Studies reviewed in Yilmaz et al. (2004) revealed that favorable environmental attitudes are negatively correlated with age, particularly with respect to the variable of environmental concern, partly due to exposure to early science classes. At the college level, Benton (1994) found that gender differences became more manifest when students from both lower and upper divisions are compared.

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## LIVING ABROAD

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Although no such variable exists in the absolute, the authors hypothesize that exposure to an environment that is ecologically more sensitive than Lebanon—typically Western countries and oil-rich Arab nations known for their strict environmental policies—may have some impact on a visitor’s or resident’s knowledge and attitude. Since no studies have tackled the issue of the effect of living abroad on attitudes, this study may shed some light on this segment of the Lebanese population, namely young men and women who visited or resided abroad for a period of time exceeding three months.

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## PURPOSE OF THE STUDY

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The purpose of this study is to identify whether certain factors such as gender, age, previous experience with hiking, and living abroad in countries where there are environmental laws and practices, are explanatory variables with respect

to increased knowledge and favorable attitudes towards the environment among a sample of college students. Results of this study will help formulate more effective recommendations for follow-up educational strategies.

## METHOD

### Participants

The sample consisted of a group of 255 students (113 males, 141 females, and one whose gender was not specified) attending the Lebanese American University in Beirut (LAU), a private, expensive, American-style coed university with

two campuses and an enrolment of 5055 (LAU Catalogue, 2005). The sample has a confidence level of 95%, confidence interval 6 and a population of 4500 students.

The sample was drawn from several courses, most of which are campuswide requirements. For a full description of the sample, refer to Table 1. Students were selected in such a way as to ensure equality of genders, and a proportion of majors that approximates that of LAU's student population at large.

### Procedures and Instruments

The questionnaire was administered to students in three instalments over a period of three years, first in March 2000 then in May and June 2003 because the investigators needed an equal proportion of males and females and a distribution of majors more representative of LAU's student population. Therefore, 81 new participants were solicited to fill the gender and major gap. Comparative statistical analysis was conducted to ensure that results did not vary significantly between the first and second batches.

Participation in the study was voluntary. Students were asked by instructors to fill out the questionnaire after the purpose of the study was clearly explained. All participants willingly chose to participate. All questions were in English, which students speak fluently. The questionnaire was piloted on a group of 10 students to check for language clarity, duration of administration, and overall comprehension of statements.

### The Questionnaire

Subscribing to the notion that attitudes are measured through self-reports using a multitude of scales including concern, behavior, and commitment (Benton & Funkhouser, 1994), this study uses a single questionnaire combining a number of subscales to measure attitudes and knowledge. The questionnaire was divided into two main parts. The first solicited background information on the participants,

**Table 1**  
Description of the sample

Independent Variable	Percentages	Number of cases
Gender		
Males	44.5%	254
Females	55.5%	
Age		
18–19	27.1%	251
20–21	47.4%	
22–40	25.5%	
Lived Abroad		
Never, or less than three months	52.2%	255
More than three months	47.8%	
Class Standing		
Freshman-sophomore	42.6%	195
Junior	33.3%	
Senior	24.1%	
Major		
Education & Social Sciences	22.5%	244
Sciences	14.8%	
Communication Art	8.2%	
Business	49.2%	
Engineering	5.3%	
Frequency of Hiking		
Fewer than 4 times a year	61.7%	243
Between 5 and 8 times a year	22.2%	
Between 9 and 12 times a year	6.2%	
More than 12 times a year	9.9%	

namely age, gender, major, class standing, previous hiking experience, number of hiking trips taken per year, and whether the student had lived abroad for a period of time exceeding three months. The second part consisted of 66 five-point, Likert-type questions ranging from "strongly agree" to "strongly disagree" based on the self-report instrument used by Benton and Funkhouser (1994). This was a refined and shortened version of the original questionnaire developed by Maloney and Ward (as cited in Benton & Funkhouser, 1994) to measure attitudes towards the environment. Accordingly, questions were grouped into four main categories: Concern, Knowledge, Willingness to Act, and Present and Past Behavior, all pertaining to the environment. A small category was added to assess students' experience with the environment. Content was adapted to fit the Lebanese culture. Accordingly, statements reflected environmental realities endemic to Lebanon.

Approximately 25% of the questions were phrased negatively (e.g., "Natural spring waters above 500 m are not polluted"), and 75% were phrased in positive terms (e.g., "It gives me great pleasure to see natural reserves in Lebanon").

The Knowledge category (Kn) consisted of 23 questions addressing student's real knowledge about environmental issues, with special emphasis on the Lebanese environment. Questions included whether the respondent could name animals found in Lebanon or practical methods to reduce air pollution.

The Concern category (Cn) consisted of 14 questions assessing the degree of emotional response a student had about ecological issues, such as deforestation, air pollution and quarries.

Willingness to Act (WA) was comprised of 10 questions that tapped into the student's commitment to proenvironmental action, as evidenced by their willingness to donate money or time within various contexts of environmental awareness and preservation.

Actual Behavior (AB) had 13 questions that were meant to assess students' present and past behavior regarding environmental issues, regardless of the students' personal convictions.

This subscale queried them on such practices as using a car trash bag, amount of time spent in nature, and the use of environmentally friendly products.

Experience (Ep) consisted of six questions pertaining to the students' familiarity with nature in Lebanon. Questions addressed the number of trees, flowers, insects, and animals that each student had seen. Despite clear instruction, some students still left certain fields blank, such as class standing, gender, or age. Others left a few questions unanswered. This pattern explains the changing value of N in the results section.

Reliability analysis was performed on the 66 items. The Cronbach's alpha coefficient for each subscale varied between moderate and high (Table 2).

## Reliability of the Instrument

The five dependent variables of knowledge, willingness to act, concern, actual behavior, and experience were examined through various SPSS programs for outliers, and fit between their distribution and multivariate analysis. Those variables were all normally distributed.

In the previous studies used to develop the instrument, the Concern, Willingness to Act, and Actual Behavior subscales had Cronbach's alpha reliabilities of .85 for Concern scale, .81 for the Willingness to Act scale, and .89 for the Actual Behavior scale (Benton, 1994). In 1977, Dispoto, as cited in Benton (1994), estimated the reliability for the Knowledge scale to be .84 using the general Spearman-Brown formula.

**Table 2**  
**Reliabilities**

Factor	Reliabilities
Concern	.68
Knowledge	.83
Willingness to change	.87
Actual behavior	.68
Experience	.81

**Table 3**  
One-sample statistics for the 2000 and 2003 sample combined

	N	Mean	Std. Deviation	Std. Error Mean
Gender	254	.56	.498	.031
Coded age	251	1.58	.696	.044
Coded major	244	1.59	.577	.037
Lived abroad	255	2.08	.933	.058
Frequency of hiking	243	1.64	.975	.063
Coded concern	255	3.89	.391	.025
Coded knowledge	255	3.65	.641	.040
Coded willingness	255	3.57	.541	.034
Coded behavior	255	3.76	.592	.037
Coded experience	255	3.45	.867	.054

## RESULTS

The study showed an overall significance of  $F(3,819) = 976, p < .04$ . The 2000 and 2003 questionnaires were compared and differences were found insignificant (see Tables 3 and 4), and hence the 3-year discrepancy did not affect the validity of the results. The means and standard deviations of the four subscales are presented in Table 5.

A between-subjects multivariate analysis of covariance MANCOVA was performed on the five dependent variables with the different independent variables of living abroad, age, major, frequency of hiking, experience with nature,

**Table 4**  
One-sample statistics for the 2003 sample

	N	Mean	Std. Deviation	Std. Error Mean
Gender	80	.60	.493	.055
Coded age	79	1.66	.815	.092
Coded major	77	1.49	.529	.060
Lived abroad	81	2.22	.894	.099
Frequency of hiking	79	1.56	.984	.111
Coded concern	81	3.88	.430	.048
Coded knowledge	81	3.60	.606	.067
Coded willingness	81	3.54	.571	.063
Coded behavior	81	3.72	.617	.069
Coded experience	81	3.48	.896	.100

**Table 5**  
Means and standard deviations on the subscales

	N	M	SD
Concern	248	1.92	.41
Knowledge	241	2.30	.51
Willingness to Act	248	2.14	.66
Actual Behavior	246	2.15	.44
Experience	252	2.63	.83

and gender. The analysis included a sample size of  $N = 255$ .

Box's  $M$  showed that the variance-covariance matrix may be drawn from a population with identical variance covariance matrices, ( $F(180, 5881) = 1.12, p > .05$ ).

With the use of Pillai's trace criterion, the combined DVs were significantly related to the independent variable of frequency of hiking ( $F(15,531) = 1.70, p < .05$ ), and marginally to the independent variable of gender ( $F(5,175) = 2.23, p = .05$ ). The DVs were also significantly related to the interaction of living abroad, frequency of hiking, and experience with nature ( $F(20,712) = 1.90, p < .05$ ) and to the interaction between experience and gender ( $F(15,531) = 2.1, p < .05$ ) (Table 6).

## Gender and Age

Test of between-subjects indicates that the independent variable of gender found a marginal significance on actual behavior ( $F(1,179) = 3.8, p = .05$ ) and on willingness to act ( $F(1,179) = 3.66, p = .05$ ), with males scoring higher than females. Further, the independent variable of gender has a significant effect on experience

**Table 6**  
Pillai's trace

Variable	F	Significance level	$\eta^2$
Gender	2.23	.05	.06
Frequency	1.70	.02	.05
Living abroad *frequency of hiking *hiking experience	1.90	.02	.05
Hiking experience *Gender	2.10	.01	.06

( $F(1,179) = 6.5, p < .05$ ). Nonetheless, the covariate of age that had been adjusted did not have any significant effect on the DVs.

## Living Abroad

The living abroad variable showed that participants who lived abroad for more than three months, regardless of the country of residence, scored significantly higher on both experience ( $F(2,179) = 12.084, p < .05$ ) and knowledge ( $F(2,179) = 8.4, p < .05$ ) than those who did not live abroad, and those who lived abroad for less than three months.

## Frequency of Hiking

Frequency of hiking was significantly linked to actual behavior ( $F(3,179) = 4.085, p < .05$ ),

willingness to act ( $F(3,179) = 1.541, p < .05$ ), knowledge ( $F(3,179) = 1.543, p < .05$ ) and experience ( $F(3,179) = 1385, p < .05$ ), and had a marginal effect on concern ( $F(3,179) = 848, p = .05$ ). Although the frequency of hiking had a highly significant effect on actual behavior ( $p < .007$ ), a surprising pattern emerged. Those who hiked less than four times a year scored higher on actual behavior than those who hiked between five and eight times a year.

## Major

As for the variable of major, a significant effect was found on experience ( $F(2,140) = 3.510, p < .05$ ), with participants attending the School of Engineering scoring higher on experience than those attending the School of Arts and Sciences or the School of Business. Participants

**Table 7**

Dependent Variable	Major	Mean	Maximum	Minimum
Experience	Education & Social Sciences	3.25	5	1
	Sciences	3.44	5	2
	Communication Arts	3.65	5	1
	Business	3.48	5	1
	Engineering	4.08	5	3
	Total	3.47	5	1
Behavior	Education & Social Sciences	3.71	5	3
	Sciences	3.69	5	2
	Communication Arts	3.80	5	3
	Business	3.75	5	2
	Engineering	3.92	4	3
	Total	3.75	5	2
Willingness	Education & Social Sciences	3.65	5	3
	Sciences	3.58	5	2
	Communication Arts	3.65	4	3
	Business	3.13	4	2
	Engineering	3.31	4	3
	Total	3.57	5	2
Knowledge	Education & Social Sciences	3.49	5	2
	Sciences	3.81	5	3
	Communication Arts	3.80	5	2
	Business	3.61	5	1
	Engineering	3.92	4	3
	Total	3.64	5	1
Concern	Education & Social Sciences	3.89	4	3
	Sciences	3.92	5	3
	Communication Arts	4.00	5	3
	Business	3.87	5	2
	Engineering	3.77	4	3
	Total	3.89	5	2



**Table 8**  
**Multivariate model for the knowledge subscale**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3.48	2	1.74	7.00	.001
Intercept	1254.13	1	1254.13	5047.08	.000
Living Abroad	2.04	1	2.04	8.21	.005
Error	58.89	237	.25		
Total	1328.97	240			
Corrected Total	62.368	239			

<sup>a</sup>R Squared = .056 (Adjusted R Squared = .048).

attending business school scored consistently among the lowest on all DVs with a mean score ranging between 3.13 and 3.87 out of a maximum of 5. Further, communication art students, who include drama, journalism, audio-visual and broadcasting majors, showed a consistent pattern of positive attitudes, albeit not always the highest. (Table 7)

## Multivariate Model

Subsequently, a multivariate model was fitted for each subscale to include all the independent variables that showed statistical significance in the MANCOVA tables. Results of these models are presented in Tables 8 and 9.

Table 8 indicates that the model is significant at  $p < .001$ , and the independent variables combined explain 6% of the variance on the Kn subscale. Females who lived abroad for more than three months had the highest Kn

**Table 9**  
**Multivariate model for the experience subscale**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	22.03	6	3.67	5.93	.000
Intercept	849.98	1	849.98	1373.36	.000
Gender	5.240	1	5.24	8.50	.004
Living abroad	10.414	1	10.41	16.83	.000
Major	4.80	4	1.20	1.94	.105
Error	144.21	233	.62		
Total	1824.36	240			
Corrected Total	166.23	239			

<sup>a</sup>R Squared = .133 (Adjusted R Squared = .110).

means. Table 9 shows that the model is significant at  $p < .001$  and the independent variables combined explain 13.3% of the variance on the Ep subscale. Gender, living abroad and student major are all significantly related to the Ep subscale.

## CONCLUSION AND RECOMMENDATIONS

The findings of this pilot study highlight the relevant areas of focus for future research on environmental education. This group of young men and women attending a private college in Beirut generally show positive attitudes towards the environment, but their environmentally sensitive behaviors and willingness to advocate for the environment are less evident. Although attitudes are requisite for positive actions, research suggests that attitudes alone may not push the individual to act. To that end, one has to be passionate about and committed to a social issue to campaign on its behalf (Wade & Tavis, 1993). In the 1993 LAU conference, Mashnook (1993) eloquently described the chasm that exists within the Lebanese character, and goes a step further to label it a schizophrenic trait. On the one hand, he maintained, the Lebanese, particularly the educated ones, are aware at some intellectual level of the environmental crisis, ways to prevent it, and courses of action to resolve it. On the other hand, when it comes to the day-to-day practices, their behaviors belie their beliefs. The conference presenter concluded that no solutions could be envisaged before addressing this dichotomy, so as to reach a fully integrated belief system that harmoniously combines proactive behavior, personal convictions, and solution-oriented thinking. To emphasize this point, he invoked the effective ecological practices in Switzerland, where each citizen becomes an environmental vigilante, personally and directly responsible for enforcing the law and protecting nature, thus achieving the desirable congruence between

what one believes in and practices (Mashnouk, 1993).

The study is partly consistent with the trends identified in research regarding gender, experience with nature, and exposure to environmentally proactive societal models and their positive effect on proenvironmental attitude. It is also in tandem with the literature's contention that creating environmental awareness, encouraging proecological attitudes, and instilling the love of nature in young adults, are processes that are influenced by a myriad of factors.

MacDonald and Hara (1994) argued that gender, particularly among college students, had become no longer a strong predictor of environmental concern, although men tended to be more concerned about the environment, perhaps due to their higher political awareness and the opportunities to be politically active.

Perhaps our efforts should focus on both genders equally as far as environmental awareness campaigns and environmental education are concerned. Yet, we should continue empowering women to be more active in the environmental legislation arena, and encourage them to be part of the decision-making process that affects ecology on both the micro and macro levels.

## Environmental Education and Knowledge

Arcury (1990) asserted that increased public awareness and knowledge about the environment would foster more positive attitudes. However, Arcury cautioned against an emotional or misinformed approach to environmental abuse which has but a transitory effect, hence policymakers should first and foremost focus on improving the overall state of environmental education and raising public knowledge.

Since results of this study revealed that sustained exposure to an environmentally friendly culture helped the group develop more knowledge about the environment among other benefits, perhaps future research efforts should

capitalize on this finding when planning environmental awareness campaigns. Those should be directed to the public at large, particularly young males who seem more resistant to change. Further suggestions include offering courses that promote environmental awareness and knowledge.

Brown's (1997) studies on environmental education showed that, in order to influence students' attitudes towards environmental issues, college courses should be sustained, practical, inquiry-oriented, promoting problem-solving skills, and encouraging hands-on experiments.

These recommendations can be constructively used to re-design the course *Man and His Environment* at LAU which is a popular, multisectional elective course that introduces students to environmental problems and challenges facing mankind both regionally and internationally.<sup>3</sup> Many aspects of this course are in tandem with research recommendations, environmental knowledge, problem solving (through case studies), and real-life experiences (fieldtrips). However, there is room for improvement, particularly with respect to gender issues, decision-making, and actual behavior.

The course can empower both men and women to participate actively in the decision-making process regarding environmental issues. It can encourage women to capitalize on their nurturing qualities to be more proactive without the benefit of a male guardian to take charge or give permission. It can equally challenge men's sex-role socialization patterns regarding the environment to make a more serious commitment towards ecologically responsible behavior. Further, the course can rely on cooperative learning whereby students work collaboratively on resolving an environmental problem in real life, answering various inquiries. Finally, the course should teach students to transfer "environmental exposure" into action, especially if the great outdoors does not exist in the congestion of their day-to-day existence.

These objectives can be more easily attained when LAU adopts this environmental

agenda in all its courses, to the extent where it is applicable, so as to ensure sustainability of knowledge, skills, and attitudes, create a culture of proenvironmentalism on and off campus, maximize exposure to the entire student body, and create life-long ecological advocates.

This study has implications for environmental educators, and can be a starting point for other researchers who wish to further investigate some of the variables discussed in this study and to include carefully designed environmental awareness courses in the general college requirements. Further, it should be a sobering call to business schools that have considerable latitude on consuming behavior to plan through their courses more thoughtful approaches to consumption, and promote greater environmental awareness and concern towards the ecosphere.

Future research should investigate the reasons underlying the negative trend observed in the data, whereby students with more hiking experience or students who are in upper class standings tend to be less concerned about the environment and act less “green” or display fewer proactive stands relative to the environment. Finally, a thorough investigation relative to majors may also be helpful in explaining why students in various departments do not have similar outdoor experience.

This study has limitations with respect to generalizing these results to other populations and geographic locations in Lebanon since it is exploratory in nature. Also, the methodology of the study that relies on self-reports may have limitations in the absence of a supplemental qualitative instrument such as interviews or direct observations.

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## NOTES

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1. The “prepared environment” is Maria Montessori’s concept that the environment can be designed to facilitate maximum independent learning and exploration by the child.
2. For an exhaustive scientific review of the state of the environment in Lebanon, refer to Lebanon State of Environment Report published in 2001: Cost of Environmental Degradation, published by the Ministry of the Environment, and available at <http://www.moe.gov.lb/NR/rdonlyres/D94A660C-8CDE-4D70-9AC8-C9F7B2B33C63/0/Introduction.pdf> and <http://www.moe.gov.lb/Reports/SOER2001.htm>
3. Offered by Hourı (one of the authors), the course relies on a series of lectures, videos, case studies, and presentations by guest speakers. Some of the topics include: environmental problems and their causes, ecosystems and how they work, deforestation, global warming, ozone depletion, pollution, renewable energy sources, and so forth. Students are required to go on two field trips, usually to national reserves or places of special interest and direct relevance to the course material (e.g., recycling plants, sites developing integrated forest or land management, organic farming sites, remote and developing rural ecotourism sites). The students generally receive a full-hour lecture about the site in class or a 15-minute introduction followed by an onsite explanation about the significance of what they will be seeing. In the case of organic farming sites, students will help in picking the fruits and vegetables and taste them firsthand. They are often supplied with extra reading material from the site operator.

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