

CSD Research Report

Environmental Service Learning Programs in the United Arab Emirates: Impacts on Environmental Awareness and Civic Engagement

Fares Howari

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Center for Social Development
Global Service Institute



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George Warren Brown School of Social Work

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United Arab Emirates: Impacts on Environmental Awareness and
Civic Engagement**

Dr. Fares M. Howari
CSD Research Fellow in Civic Service
United Arab Emirates University
Faculty of Science
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Center for Social Development
Global Service Institute
George Warren Brown School of Social Work
Washington University
One Brookings Drive
Campus Box 1196
St. Louis, MO 63130
tel 314-935-8827
fax 314-935-8661
e-mail: gsi@gwbmail.wustl.edu
<http://gwbweb.wustl.edu/csd/gsi>

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I. Abstract

This study evaluates environmental service-learning in the United Arab Emirates in relation to demographic variables and student characteristics. A diverse group of school and community sites were selected to reflect common demographic, geographic, and cultural characteristics of the region. As part of the survey design, human and social capital scales relating to environmental themes were administered. Statistical analyses were performed between the final attitude index scores and demographic variables of interest. UAE citizens, or Emirati, ($M=156.88$, $SD=12.42$) were found to have a more positive attitude toward the environment than others ($M=152.05$, $SD=14.29$) ($t(258)=2.96$, $p=.008$). Education level and age were also significantly associated with final attitude index scores. Participants ages 18-22 ($M=158$, $SD=12$) scored significantly higher ($p<.003$) than both those younger than 18 ($M=149$, $SD=13$) and those older than 22 ($M=152$, $SD=11$). A reliable main effect was observed across gender and financial status ($F= 6.479$, $p< 0.002$), but there was no reliable main effect for gender and age. Interview data were also collected. Responding to questions about environmental problems confronted by the UAE and neighboring regions, many interviewees indicated that more involvement and technical solutions are needed. Interviewees also provided insights into why service learning activities are poorly implemented, attributing this to nine factors. These factors are presented along with the challenges associated with implementing a formal Environmental Service-Learning Program in the UAE. The results from this study have implications for future practice and research in relation to service participation and environmental attitudes in the United Arab Emirates.

II. Executive Summary

This study was designed to examine environmental attitudes in relation to demographic variables and student characteristics represented by gender, age, nationality, financial status, and marital status. Students who had participated in environmental service programs (ESP) and students who had not been exposed to such programs were surveyed. The data were analyzed by SPSS using cross-tabulation procedures, descriptive statistics of the checklist survey question results ($n=21$), t-test, one-way analyses, post hoc tests, and univariate analysis of variance. The study found that the scores of participants ($n=260$), on Likert Scaling, of the questionnaire items ($n=39$) were ≥ 3 . This may indicate that most of the responses could be characterized as indicative of a neutral attitude or a positive attitude.

The study found that visiting natural sites strongly encouraged students to enroll in environmental activities and volunteer work. In addition, students indicated that the way that environmental concerns were presented to them as well as the engagement of parents, family, and teachers in environmental concerns played significant roles in attracting them to environmental service work. They also reported that participation in this work helped them to develop positive attitudes toward the environment. Students also observed that awareness of the environment was more likely to develop when they considered the balance between industrial development and environmental protection activities. The study also found that a heavy class load discouraged students from environmental work. Furthermore, membership in different ethnic communities, especially when related to the parents' level of education and financial status, may have had a positive or negative impact on a student's environmental awareness. These factors may also have influenced student attitudes towards participation or engagement in environmental programs. Finally, cultural and traditional determinants seemed to have a slight impact on student attitudes toward the environment.

The study found that apathy was the main barrier (51.9%) that prevented students from participating in environmental activities, followed by few opportunities to participate in environmental workshops (28.5%). Participants in this study expressed the opinion that a luxurious or materialistic lifestyle was associated with an apathetic attitude about the environment (43.8%). They also suggested that apathy could result from a lack of general education (26.2%) and ignorance of environmental issues (25.4%). They also reported, however, that environmental service learning had an impact on motivating students to do better in their classes (41.5%). From the participants' point of view, even religious people need to be clean and care about the environment, but they get lazy (49.6%) to implement them or like to follow the instructions but the surroundings temptation and distractions act as a barrier (43.1%). Most of the participants agreed that using car pooling (63.8%) or smaller cars could reduce pollution to a good degree (74.6%).

Contrary to what was hypothesized, there was no significant difference between students exposed to an environmental service program and students who were not exposed. It is likely that no difference was detected because the majority of answers were on the positive side of the rating scale. This finding was supported by the oral interview results. These results indicated that the majority of the participants were concerned about the environment,

whether they had been exposed to environmental service or not, although the students themselves expressed the belief that service learning can increase environmental awareness.

The study did find that there was a significant difference between the responses of Emirati citizens and other UAE residents, with citizens expressing a more positive attitude toward the environment. There were also significant differences associated with educational level and age. The post hoc test showed that the significant differences occurred between ages 18-22 and < 18 ($n=54$, mean 149), as well as between ages 18-22 ($n=171$, mean 158) and those > 22 ($n=35$, mean-152), with the 18-22 years olds rating highest. The study also observed a reliable main effect across gender and low financial status, $F= 6.479$ $P< 0.002$, but no reliable main effect for gender and age, $F = 0.373$. The main effect and the interaction of variables within and among groups are presented with interpretation in tabular and graphical formats. Factors affecting the implementation and integration of environmental service learning programs are presented with analyses. The results from this study have implications for future practices and research in relation to service participation and environmental attitudes in the United Arab Emirates.

Environmental attitudes and civic programs: A critical study of engagement in the United Arab Emirates

1. Background

Service learning and environmental awareness have gained more attention lately as potentially important school activity because it helps students learn important academic skills and revitalizes the civic mission of schools (Billig 2000). Research on service learning shows that it can have multiple positive outcomes for participating students, schools, and communities (Allen 1997; ACPA 1996; Astin 1999; Mckenna and Rizzo 1999). The present study investigates the relationships between environmental awareness and civic attitudes and programs, and explores the relationship between civic service and the environmental attitudes of citizens and residents of the United Arab Emirates (UAE). The study outlines the relevant variables and then explores the problems of disengagement and the shortage of voluntary pro-environment work. The study examines the associated cultural determinants of related issues. Environmental organizations, schools, and others interested in the environment were surveyed in order to determine the effect of engagement on their attitude toward environmental civic activities. Students exposed to service learning activities through the Environment Society of UAEU or environmental training (instructed) and others not exposed to a service learning program (not-instructed) were also surveyed.

The project site is located in the UAE, a nation located on the eastern end of the Arabian Peninsula, with a population of 2.8 million, including an estimated 1.6 million non-nationals. The UAE has a very interesting diversity of communities, some with their own schools and cultural traditions and organizations. The Emirati constitute 19% of the population, Iranians and members from other Arab nations represent 23%, and South Asians 50%. Other expatriates including Westerners and East Asians amount to 8% of the population. Thus, the UAE is a prospective area for investigating how communities of different ethnicities and national origin respond to civic service programs. The country is a federation of seven emirates: Abu Dhabi, Dubai, Sharjah, Ajman, Umm al-Qaiwain, Ras al-Khaimah and Fujairah. The national borders include the Arabian Gulf to the north, and the Gulf of Oman to the east, and are shared with the Sultanate of Oman and Saudi Arabia to the south, and Qatar and Saudi Arabia to the west. In the UAE, as in many parts of the world, environmental awareness and attitudes are an issue of academic and public concern. Some believe that the lack of environmental awareness is demographically dependent. Others suggest that this lack of awareness is related to low involvement in civic service protection and related activities. However, one of the basic objectives of this research is to measure and document the impact of environmental service learning activity on participants' attitudes and behavior.

1.2 Research questions and significant findings

The central focus of the study was to understand the impact of service-learning on environmental awareness and civic engagement among participants. The study also addressed research questions about barriers to participation and realization of outcomes. In the present study, the working hypothesis was that students whose service-learning experiences addressed environmental

priorities would develop greater levels of interests and engagement than participants who did not engage in service-learning. Also, it was hypothesized that communities that utilize service-learning in community development would develop more positive attitudes toward environmental conservation than those who did not. These hypotheses, if found to be true, strengthen the rationale for schools to implement service-learning as a strategy for community development.

In essence, this research study was designed to examine civic attitudes of service-learning (SL) to students in relation to demographic variables and students characteristics. The characteristics used were gender, age, marital status, and income. The present study may be considered an important one because it analyzes themes and variables related to civic service that have not been studied before in this part of the world. The proposed study may have a role in strengthening programs in the UAE, building student civic capacity and strengthening community problem-solving capacity. These ideas are in line with earlier research showing that service learning can increase students' ability to learn complex subject matter, decrease their involvement in risky behaviors, and encourage them to form bonds with adult role models (Billig, 2000).

Additionally, some of the results from this study are expected to supply vital information and analyses necessary to the social programs supported by the UAE government as well as private establishments, schools, and social service institutions in the UAE. Future scholars may wish to examine the impacts of the studied variables on large-scale implementations of regional service learning programs.

1.3. Type of environmental service-learning projects

Interested researchers in civic services and environmental education have become progressively more convinced that environmental service-learning should be a part of the academic curriculum to develop practical skills, self-esteem, and a sense of civic responsibility in youth. An example of such an environmental service-learning project is a school recycling program, where students gain

awareness of waste reduction, recycling, composting, and related activities. The present study integrates two approaches to environmental education and service learning centered on the “Five Elements of Environmental Service Learning”(e.g. Lienk, 2002) The “Five Elements of Environmental Service Learning” include exploring/ mapping local environments; making community partners; participating in local environmental service; reflecting on the learning which results from the service; and celebrating/ communicating about environmental service.



Fig. 1. Participants presenting their water projects and other sampling to test the effect of fertilizers on soil and agriculture

The survey used in this study addresses the proposed research questions. It was designed with the help of students and other participants, and was reviewed by several specialists. The survey focused on assessing students' understanding of environmental ethical issues, environmental social issues, and environmental political issues from multiple perspectives; concepts included water availability and contamination, household hazardous waste, pollution of creeks and springs, pollution from farming, and environmental awareness.

Three main interactive events were organized with participating students. The first was an environmental exhibition in Al Amal Middle School that examined students' environmental projects and achievements which focused on waste recycling and protection activities. Students were surveyed following the exhibition. The second event was an Environmental Awareness Day at UAE University where interviews were conducted with students. The third event was an environmental competition and "aqua fest" in cooperation with Our Own English Schools System which examined environmental awareness in relation to service learning activities. Participants and non participants (control) were surveyed. In one school, some students had studied the effect of fertilizers on soils, while others had worked on recycling projects, and on extending services to farmers. Students had been introduced to themes related to their tasks, and guidelines for the work day were presented. Examples of pre- survey activities are shown in Figs 1-3.

Interviews were conducted with students during these activities. Each interviewee was asked to introduce her/himself in terms of his/her environmental interests, concerns, problems or barriers, as well as his/her suggested solutions. A total number of 18 interviews with willing participants were carried out.

1.4. Theoretical perspectives and hypotheses

The present study refers to human capital (Eyler and Giles 1999) as a framework for measuring civic outcomes of service-learning among student participants. Within this framework, citizenship consists of five elements: knowledge, skills, values, efficiency, and commitment. It is reasoned that these same key ingredients lead to responsible citizenship and thereby result in a civic disposition favorable to community development.

In this study, it yet to be determined if the environmental behaviors and attitudes are related as much to type and degree of education, as they are with respect to lack of engagement with civic service programs, especially those related to environmental protection. As indicated earlier, it was hypothesized that participants or students whose service-learning experiences have targeted



Fig. 2. Al-Amal School students presenting their environmental projects



Fig. 3. UAEU Environment Society students in volunteering work

a community's high priorities were expected to develop greater levels of human and social capital than students whose service focus were issues that communities consider less crucial.

The volunteers and participants were given general education materials before and after class hours. The material discussed why, and in what ways, the natural world is a social concern, and why civic service is an important aspect of this concern. The materials and training focused on engaging opportunities to bridge student academic coursework with the surrounding community. These experiences allowed students to contribute to their community in a positive manner and to begin to develop an understanding of their own views and/or role in larger political concerns about the environment.

2. Methodology

2.1 Research design and sampling techniques

Quantitative and qualitative methods were chosen in order to collect a range of data from participants. Participant observations and interviews were the main method for qualitative data collection. Site visits consisting of personal interviews and surveys with students were the principal method of data collection (Fig. 4). Most of the site visits involved trips to project sites to meet the participants and to observe students' performance. Careful consideration was given to select a diverse group of school and community sites, reflecting common demographic, geographic, and cultural characteristics of the region. Personal interviews were also conducted with each participant, enabling elaboration on survey responses and collection of additional information about specific projects, the service-learning program, the school system, and the community. Students were interviewed once upon completing their projects and once after taking the survey (n=20). The interviewed students cover four major geographical areas including Dubai, Abu Dhabi, Al-Ain, and Southern Emirates. One thousand surveys were distributed, 500 were returned, and 260 of those were eligible (i.e. all survey variables had been completed).



Fig. 4. Collecting data and presenting the project to participants

2.2 Data collection procedures

Control and comparison groups were considered. A master data set of survey results was analyzed using the Statistical Package for Social Science (SPSS V.13). Emphasis was placed on analyzing sample groups, which consisted of participants from each survey site and were similar in terms of demographic and visit-related characteristics. Descriptive statistics, t-test (e.g. gender, marital status, nationality, and environmental involvements), ANOVA (e.g. financial status and age), and MNOVA were performed, and interpretations determined significant differences at

$\alpha=0.05$ significance level. The interview was developed based on the written questionnaire to ensure comparability.

A table of variable names, descriptions, and scale types was constructed. Data screening consisted of identifying and eliminating cases with missing or inaccurate values, and running standard checks to ensure no violation of assumptions (Fig 5). One-way analysis of variance and t-tests were used to measure the significance of mean differences. Findings included overall survey results, results from interviews (same questions were asked for all participants), and supporting conclusions drawn between the two.

The questioner posed a series of questions focusing on cultural determinants, bureaucracy, administrators, teachers, and others. In-depth analyses were shaped to demonstrate the benefits of service-learning programs for students, and how to strengthen management skills and capacity of local administrations and civic institutions to improve delivery of essential outreach environmental programs related to the services. Sets of quantitative questions were asked about project priority, student human capital development, student social capital development, community impacts, related environmental and civic service concepts mentioned above. Scaled questions utilized a 5-point Likert scale (1= "strongly agree" to 5= "strongly disagree").



Fig. 5. Classifying and screening the collected questioners

2.3 Sample description

The research design depended mainly on a combination of surveys and personal interviews. The target population consisted of students with ages ranging from 14 to 28. Community and family members were also included in the sample. This broad group was targeted because of the varied intellectual and social development levels represented. Respondent age was divided into three different intervals: below 18, 18-22, and over 22. Nationality was divided into citizens and "other." The financial status or income data were divided into three categories: high (15000), medium (5000), and low (2000). Location of community or residence was divided into the UAE's main major cities including Abu Dhabi, Dubai and Sharjah, Ajman Umm Al Qewain and Ras Al Khaimah, Fujirah, and Al Ain. Five academic majors were also considered for the subsequent statistical analyses as shown in Table 1. In this study, 73 participants were exposed to service learning programs and 187 participants were considered as a control group; the control group consisted mainly of students and family members who did not serve.

3. Findings

Table 1 shows a summary of respondents' main characteristics.

Table1: The sample distribution based on the demographic variables

The biographical variables		Examinee Type		Total
		Instructed	Not Instructed	
Categories		(73)	(187)	(260)
Gender				
	Male	22	60	82
	Female	51	137	188
Age				
	Below 18 Years	10	44	54
	Between 18 - 22 years	50	121	171
	More than 22 years	13	22	35
Nationality				
	Emirates	60	127	187
	Others	13	60	73
Financial Status				
(income)				
	High "15,000"	17	43	60
	Medium "5,000"	54	129	183
	Less than 2000"	4	15	19
Marital Status				
	Single	61	168	229
	Married	12	19	31
Environmental Activities involvement				
	Participate	38	124	162
	Don't participate	35	63	98
Education				
	College	61	123	184
	School	12	64	76

Results of the five scale survey for all the items were examined against the study variables (gender, age, nationality, financial status, and marital status). Results indicated that particular age groups have positive attitudes toward environmental issues (Table 2) and appreciate citizenship responsibilities as related to environmental issues.

Fig. 6 and Table 2 represent the descriptive statistics of the modes of questionnaire respondents resulted from their ratings on the five point Likert Scale. The answers of the overall responses on the attitude scale were normally distributed and covered the scale levels from 1 (“strongly disagree”) to 5 (“strongly agree”). By considering the mean of the rating, it was found that overall response to the questions was positive, i.e. none of the responses fell into the “strongly do not agree” category and only one item fell into the “disagree level”. Most of the responses were

either "not sure" (5 items), "agree" (30 items), or "strongly agree" (3 items). Most of the answers were ≥ 3.5 on the scale with total mean of (155.52) and standard deviation of 13.12, which means that the responses to this part of the survey (attitude scale) fell in the agree level (3.50 – 4.49) when dividing the total mean by the number of total items (39). These statistics indicate that respondents have positive attitudes toward environmental involvement.

Table 2 demonstrates that participants strongly agreed that the global environment was in danger and their personal involvement would improve the environment and the quality of their lives. After visiting the natural sites, the participants strongly felt the desire to help, and enrolled in environmental activities. Participants agreed that school environmental protection projects increased their environmental awareness especially when they worked as a team and they believe that doing so is considered a good indicator of their society's cultural development.

The way environmental concerns are presented by parents, family, teachers, friends, and lectures plays a significant role in attracting students to engage environmentally and can help to promote positive attitudes toward the environment. Participants agreed that volunteering had a major role in building students' characters and personality in a positive way toward environmental awareness and related services.

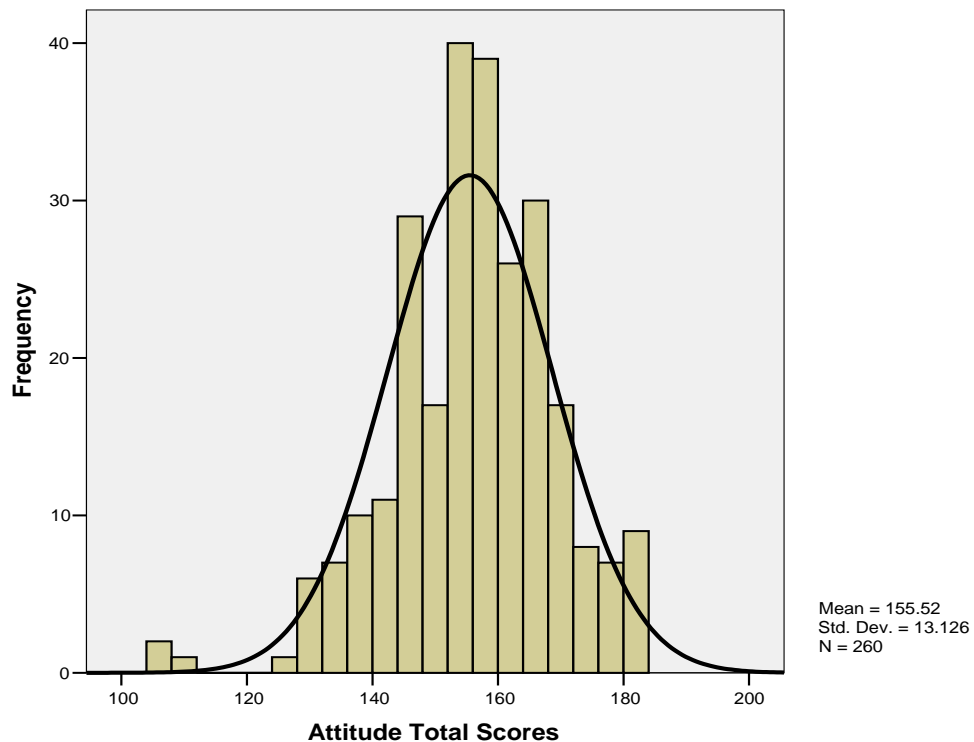


Fig. 6. Graphical representation of the bode of the survey results

Table 2: Descriptive statistics of the attitudes measure (mean, SD, and Rank)

Quest.		Mean	S D	Rank
Q32	Do you think that the global environment is in danger?	4.63	.677	1
Q35	Do you think that caring about the environment would improve the quality of life?	4.62	.650	2
Q16	Do you think that field trips or picnics to natural sites affect your willingness and feelings toward environmental activities?	4.52	.778	3
Q14	Do you think that environmental protection projects at your school increase environmental awareness?	4.48	.788	4
Q18	In your opinion, is team work better than individual work when it comes to environmental service learning?	4.43	.925	5
Q27	Do you think that growth of environmental awareness is an indicator of cultural development?	4.42	.832	6
Q28	Do you believe that the way we present environmental concerns has a role in attracting students?	4.41	.783	7.5
Q6	Do you think that parents can have a strong role in motivating their children to be environmentally engaged?	4.41	.868	7.5
Q19	Do teachers have a role in increasing environmental awareness among their students?	4.35	.903	9.5
Q26	Do you think that volunteering has a role in building student character and personality in a positive way?	4.35	.864	9.5
Q20	Do you think that the family has a role in encouraging their children to be engaged environmentally?	4.32	.807	11
Q21	Do you think that the approval of parents for their kids' environmental extracurricular activities encourages and motivates students toward such activities?	4.29	.861	12
Q15	Do you think that rewards influence your willingness and feelings toward environmental activities?	4.28	.930	13
Q31	Do you think that youth participation in environmental work for fun could increase environmental awareness and giving?	4.26	.869	14
Q8	If you have a friend who is active in environmental service learning, will this motivate you to do the same?	4.25	.956	15
Q12	Do you think that environmental lectures and workshops motivate students to be environmentally active?	4.19	.910	16
Q4	Do you think that the pressure from class load isolates you from environmental work?	4.14	1.065	17
Q13	Do you think that environmental readings will influence your engagement in environmental activities?	4.12	.880	18
Q1	Are you the kind of person who is willing to engage in environmental activities without hesitation?	4.11	.911	19
Q9	Do you think that TV has a positive role in encouraging people to be environmentally active?	4.06	1.099	20.5
Q17	Do you think that team work and the inter-group relations affect your environmental performance?	4.06	1.067	20.5
Q2	Are you the kind of person who likes to be engaged with unrestricted	4.00	1.000	22

	environmental activities?			
Q36	Do environmental societies and associations have an effective role in protecting the environment?	3.99	.930	23
Q33	Do you think that there is a relation between the number of environmental societies in different countries and their efforts to protect the environment?	3.95	1.031	24
Q34	Is it possible to balance industrial development and environmental protection?	3.93	.990	25
Q22	Are you willing to financially support environmental activities and work?	3.91	.992	26
Q3	Do you think that official environmental administrators influence your environmental performance?	3.79	1.067	27
Q29	Do you think that the presence of different ethnic communities will affect the environmental awareness?	3.75	1.091	28
Q10	Do you think that technology has a role in distracting students away from environmental activities?	3.71	1.297	29
Q7	Do you think that parent education level influences the children's environmental mentality and attitudes?	3.70	1.429	30
Q23	Do you think that the financial status of a person affects his environmental participations or engagement?	3.67	1.306	31
Q5	Does your GPA influence your interest and willingness to be engaged in environmental activities?	3.62	1.323	32
Q30	Do you think that strict environmental laws and regulations force people to care about their environment?	3.57	1.306	33
Q37	Do you think that there is good coordination between NGOs and GOs?	3.44	1.119	34
Q24	Do you think that cultural and traditional determinants of students affect their attitude toward environmental performance?	3.42	1.397	35
Q25	Do you think that the environmental opinion of other people affect your own interests in environmental issues?	3.35	1.245	36
Q38	Do you think that environmental associations and societies in our region are just for socializing and not about their main objectives?	3.30	1.186	37
Q11	Do you like to surf the www looking for environmental websites?	3.23	1.220	38
Q39	Are you the kind of person who likes to be engaged with restricted environmental activities?	2.48	1.440	39
Attitude Total Scores		155.52	13.126	

Students believed that a heavy class load played a major role in isolating them from environmental work compared to TV. Participants also indicated that they believed in the effectiveness of environmental societies and associations in environmental protection; they also expressed the belief that more environmental societies were directly correlated with more efforts to protect the environment. Participants suggested that increasing environmental protection awareness may occur through balancing industrial development with environmental protection activities. They indicated that this balance could be reached or motivated through the financial support of communities coupled with the support of official environmental administrations.

Students expressed the opinion that the presence of different ethnic communities and technology advancement may affect environmental awareness either positively or negatively especially

when related to the parents' level of education. They also expressed the belief that a person's financial status affects attitudes towards environmental participation and engagement. Students indicated a belief that strict environmental laws and regulations could force people to care about their environment.

Participants reported that they were "not sure" if there is a good coordination between non-governmental and governmental organizations in protecting the environment. Moreover, they were "not sure" that cultural and traditional determinants affect their attitudes toward the environment or if they were affected by other people's opinions about the environment. Also, participants were "not sure" if the environmental associations and societies in this region achieve their own goals and objectives. It is clear from the responses that people in general are reluctant to be engaged with restricted environmental activities (i.e. overloaded by laws and regulations).

Table 3 represents the percentages and counts of responses to different items on the checklist portion of the survey. The high percentages reported in this table explain the occurrences of these practices in reality and can be used as indicators of what is used or practiced in reality towards the environment and in the promotion of environmental awareness. Survey responses demonstrated that students hold the following beliefs. They found apathy to be the main barrier (51.9%) that prevents students from participating in environmental activities, followed by the "lack of environmental workshops" (28.5%). They believed that the use of specially decorated cars that toured the country and distributed environmental pamphlets would greatly help (61.9%) increase awareness of the environment. They believed that organizing environmental competitions, conferences, and workshops (81.9%) was a particularly good way to build awareness. Students believed that their own participation in environmental work would be of great help (81.5%) in building an aware and educated generation, decreasing pollution, and enabling people to live in a healthy environment. More than half of the participants (53.8%) felt that the global earth day is an excellent occasion.

Respondents believe that media can play a good role (57.3%) in giving instructions on general hygienic and environmental issues and educating people through special TV programs. Other useful suggestions for environment protection may be conservation of water resources by decreasing water consumption, as well as increasing water treatment and recycling, and desalination activities. Municipalities also play a good role in the protection process through distributing trash cans in parks, separating waste at source for recycling, and organizing practical workshops on environment protection.

Participants in this study thought that a luxurious or materialistic lifestyle could lead to carelessness about the environment (43.8%). Negligence and inattention could result also from the lack of general education (26.2%) and the ignorance (25.4%). Environmental service learning has an impact on motivating students to do better in their classes (41.5%). From the participants' point-of-view, even religions instruct people to be clean and to care about the environment, but they get lazy (49.6%) to implement them or like to follow the instructions but the surroundings distractions act as a barrier (43.1%).

Table 3: Descriptive statistics of the checklist portion of the survey questions

No.	Checklist questions and their alternatives responses	N	%
Q40	<i>What are the barriers that prevent students from participation in environmental activities?</i>		
1	Lack of general awareness at school	26	10.0
2	Lack of environmental workshop	74	28.5
3	Lack of instruction/information on environmental activities	21	8.1
4	Apathy	135	51.9
5	All of the Above	4	1.5
Q41	<i>What do you think of specially decorated cars that tour the country and distribute environmental pamphlets?</i>		
1	It will not help promote environmental awareness	28	10.8
2	It will help to increase environmental awareness	161	61.9
3	I do not know	71	27.3
Q42	<i>How can we improve students' environmental awareness?</i>		
1	Organize environmental competitions	36	13.8
2	Organize conferences and workshops	11	4.2
3	All of the above mentioned	213	81.9
Q43	<i>What should be the outcome of student participation in environmental work?</i>		
1	Build an aware and educated generation	12	4.6
2	Decrease pollution	14	5.4
3	Enable people to live in a healthy environment	22	8.5
4	All of the above mentioned	212	81.5
Q44	<i>How do you feel about global earth day?</i>		
1	It is good	58	22.3
2	It is excellent	140	53.8
3	I do not know	33	12.7
4	It will not do any good; it is just one day	29	11.2
Q45	<i>What is the role of the Media in motivating people toward environmental work?</i>		
1	Give instructions on general hygienic & environmental issues	25	9.6
2	Educate audiences through special TV programs/journal articles	53	20.4
3	1+2	149	57.3
4	TV and Media distract people from paying attention to environment	33	12.7
Q46	<i>What do you suggest for conserving water resources?</i>		
1	Decrease water consumption	96	36.9
2	Increase water treatment and recycling	8	3.1
3	Increase desalination activities	27	10.4
4	All of the above	129	49.6

Q47 What is the role of municipalities in protecting the environment?		
1	Distribute trash cans in parks	10 3.8
2	Separate waste at source for recycling	29 11.2
3	Organize practical workshops on environmental protection	8 3.1
4	1+2+3	199 76.5
5	I do not know	14 5.4
Q48 Why do some students not care about the environment?		
1	Ignorance	66 25.4
2	Luxury or lifestyle which could lead to apathy	114 43.8
3	Lack of general education	68 26.2
4	All of the above	12 4.6
Q49 What are the impacts of environmental service learning on your school achievements?		
1	It motivates me to do much better in my classes	108 41.5
2	It makes me busy from the classes and the service-learning	70 26.9
3	It has no effect	82 31.5
Q50 If we suggest an additional environmental service learning program, what percent of students do you think will get involved?		
1	Less than 10%	30 11.5
2	Between 10% and 30%	71 27.3
3	between 30% and 50%	85 32.7
4	More than 50%	74 28.5
Q51 If religions instruct us to be clean and to care about the environment, then what causes environmental problems?		
1	Ignorance	19 7.3
2	People know those instructions but they get lazy	129 49.6
3	They like to follow the instructions, but the surrounding temptations and distractions act as a barrier	112 43.1
Q52 In your opinion, what are the obstacles to volunteer work?		
1	Lack of knowledge, and associated difficulties in understanding	18 6.9
2	There is no continuous encouragement from concerned people	35 13.5
3	Cultural issues & what people might think of the participant	18 6.9
4	No sufficient time to do such activities	21 8.1
5	Lack of belief that such activities will do anything	11 4.2
6	All of the above	157 60.4
Q53 How do you show strong commitment to volunteer work?		
1	By accomplishing the related assignments	29 11.2
2	By showing up early to accomplish tasks	3 1.2
3	By paying careful attention to the schedule of plan of action	11 4.2
4	By following the instructions of the team leader	6 2.3
5	All of the above	211 81.2

Lack of knowledge and related difficulties in understanding some facts, lack of encouragement from concerned people, cultural issues and what people might think of the participant, lack sufficient time to perform environmental activities, and lack of belief that such environmental activities will do anything together are the main obstacles to volunteer work (60.4%).

Participants highly agreed (81.2%) that they show strong commitment to volunteer work by accomplishing the related assignment, showing up early to accomplish tasks, paying careful attention to the schedule of plan of action, and following the instructions of the team leader.

Table 4: percentages of the checklist portion of the survey questions

No.	Checklist items of environment awareness	Yes	Some-	Don't	No
Q54	Do you think environmental organizations have a role in protection?	57.3	31.2	9.2	2.3
Q55	Do schools have a role in increasing environmental awareness?	59.2	27.7	7.3	5.8
Q56	Are there any recycling facilities or activities in your town or city?	81.9	0.0	0.0	18.1
Q57	Do you engage your friends in environmental works?	54.6	40.0	0.0	5.4
Q58	Do you think dedication is important in environmental service?	79.2	13.1	3.8	3.8
Q59	Do you think that car pooling can help reduce pollution?	63.8	21.9	4.6	9.6
Q60	Would you like to buy a small car that is environmentally friendly?	74.6	7.7	10.8	6.9

Table 4 represents the responses of the participants on additional items related to environmental awareness, its importance and existence. Respondents believed that environmental organizations (57.3%) and schools (59.2%) have a role in environmental awareness and protection.

The majority of participants (81.9%) reported that there were recycling facilities and activities in their own towns. Most of the participants reported engaging their friends in environmental works either frequently (54.9%) or occasionally (sometimes, 40.0%). Further, they had high positive attitudes (79.2%) that dedication is important in environmental service-learning. Moreover, most of the participants agreed that using car pooling t (63.8%) and small cars can reduce pollution to a good degree (74.6%).

The reported questionnaire results were supported by several interviews. Some respondents were hesitant to answer when were asked for their opinions about their awareness of the environmental problems that UAE and the region are confronting. However, the general input of the interviewees as to the solutions to the problem was mostly around the need for more involvement and technical solutions. The oral interviews indicated that the majority of the students were concerned about the environment. The majority of the randomly selected samples indicated “agree” that a heavy class load isolates them from environmental work, and the remainder indicated “strongly agree”. In relation to conservation of water resources, the majority of students suggested that an increase in desalination activities would solve the problem. Also the majority believed that service learning could increase environmental awareness.

Approximately 95% of the students responded positively to the survey and this project. The interviewees provided insights into why service learning activities are still poorly implemented:

- 1) The weak cooperation between governmental schools in the field of environmental awareness activities
- 2) Communication with the Ministry of Education is typically slow in response and follow up

- 3) The response to the proposed activities is mostly from non-local people
- 4) The bureaucratic procedures of educational departments in each Emirate,
- 5) Each Emirate has its own Educational Zone, which causes unnecessary duplication,
- 6) Environmental departments and organizations have individual cultures and are rarely able to integrate their efforts
- 7) Difficulties, sometimes, in obtaining official permits to carry out activities,
- 8) Dozens of nationalities with different educational levels make communication a difficult process
- 9) Mega exhibitions and multibillion dollar projects in UAE take attention away from environmental activities,
- 10) Limitation in expertise and funding
- 11) Lack of welcoming entities to coordinate national environmental activities.

The questionnaire therefore asked how the respondents felt about the environmental roles of NGOs and GOs. They felt that surveys and feedback from the public would be a useful means of assessing NGO and GO overall environmental performance. Finally, with regard to the environmental role of females in volunteer work, the interviewees felt that they do not do as well as they could and attributed this to cultural determinants and did not wish to discuss the issue in great depth. The interaction with respondents indicates that about 75% of program participants developed more favorable feelings toward the environment. Importantly, as time passes, these feelings are expected to grow stronger.

4. Discussion

To investigate whether biographical variables may affect attitudes toward the environment, advanced analyses were used. T-test, One-Way ANOVA, and Uni-ANOVA statistics were used to achieve and locate these differences. Table 5 explains the mean differences of the t-test statistic on the following variables: respondent type (instructed or not-instructed), gender (male or female), nationality (emirate or not-emirate), marital status (married or single), environmental activities involvement (participate or don't participate), and level of education (college or school). Figure 7 shows the distribution of responses over these variables. The findings revealed that there is no significant difference at $\alpha=0.05$ significant level on the respondent type, gender, marital status, and environmental activities involvement. Only two significant differences were found on the nationality and education variables. These differences are of great importance knowing the diversity of nationalities and educational levels in the UAE.

Table 5: T-Test analysis for several biographical variables on the environmental attitude scale.

Variables	Var. Levels	Mean	S D	t-value	df	Sig.
Respondent type						
Gender	Instructed	156.03	13.495	.386	258	.699
	Not Instructed	155.33	13.010			
Nationality	Male	156.28	14.611	.573	258	.567
	Female	155.23	12.540			
Marital Status	Emirates	156.88	12.421	2.694	258	.008*
	Others	152.05	14.291			
Activities involvement	Single	155.52	13.539	-.011	258	.991
	Married	155.55	9.705			
Education	Participate	155.70	13.063	.285	258	.776
	Do not Participate	155.22	13.290			
Education	College	156.90	11.787	2.667	258	.008*
	School	152.18	15.492			

Contrary to expectations, there was no significant difference between the instructed and non-instructed datasets, mainly because the questions measured attitude (Table 5). It seems that the answers were independent of the participation process. The answers were based on what the students think and believe and not based on first-hand knowledge. The differences in the responses of instructed and non-instructed were not clearly detected perhaps because most of the answers were on the positive side of the rating scale.

Further, the attitudes toward the environmental awareness do not seem to have been affected by the gender or marital status of the respondent, or with prior involvement in environmental activities. The t-test results of the mean differences between males and females revealed no significant differences and showed similar attitudes on the environmental measure. The same can be said about the married and single participants or those who participated in environmental activities from those who did not participate in such activities

The nationality variable and the education variable showed mean significant differences at ($\alpha=0.05$). Emiraiti citizens have higher positive attitudes toward the environment compared to residents of other nationalities. This may indicate that citizens play a larger role in serving the environment and protecting it than expatriates. Moreover, the higher the level of education, the higher the positive attitudes toward the environment and the related awareness of its importance. This suggests that education and environmental learning sessions could help reduce apathy and increase commitment toward the environmental protection.

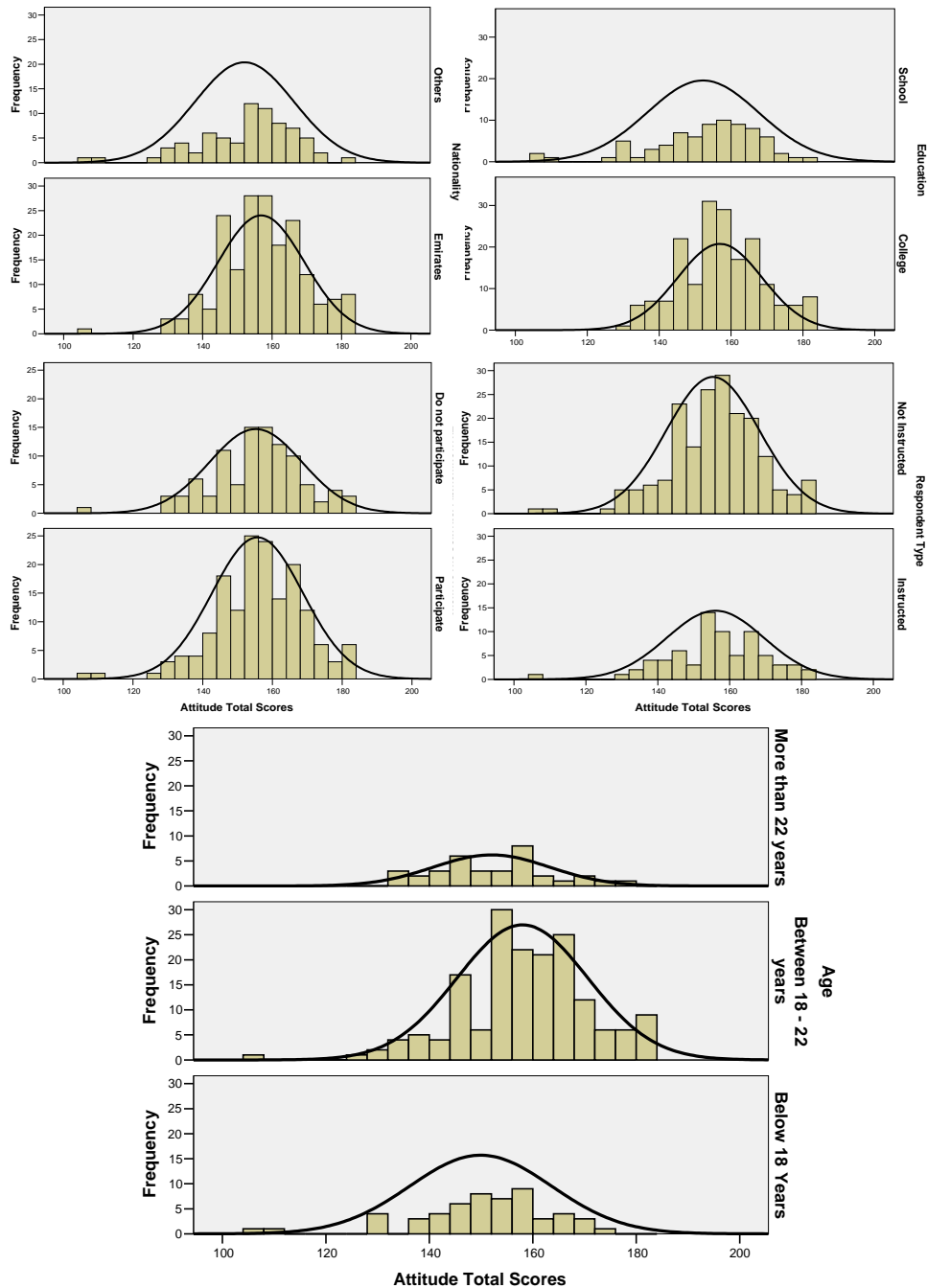


Fig. 7 distribution of the respondent responses in relation with biographical factors

Table 6 represents the results of the one-way analysis of variance on the remaining biographical variables that may be of significant influence on the participants' attitudes toward environmental awareness. There were significant differences found related to the age, city, and the major of the respondents. Meanwhile, the financial or income status was found to be of no significant

influence on the respondents' attitudes toward environmental protection. Despite the different financial levels, participants reported a similar mix of positive and negative attitudes toward the environment.

There was a significant difference between the answers of the different age groups; the Tukey post-hoc test (Table 7) revealed that the significant difference occurred between the age group "between 18-22 years" and the age group "below 18 years" in favor of the age group "between 18-22 years." Another significant difference occurred between the age group "between 18-22 years" and the age group "more than 22 years" in favor of the age group "between 18-22 years." This age group consists mainly of college students and further suggests that the t-test results on the college variable have true significant differences.

The one-way analysis of variance for the city variable revealed significant differences (Table 6). Two of these may be explained by the Tukey post-hoc test (Table 8). The first difference was between Abu Dhabi participants and Al Ain participants in favor of Abu Dhabi participants who had greater positive attitudes toward the environment. The other significant difference was found between Dubai-Sharjah participants and Al Ain participants in favor of Dubai-Sharjah participants. Dubai and Sharjah citizens have the greater attitudes toward the environment followed by Abu Dhabi citizens, but Al Ain citizens had lower attitudes compared with the other four cities.

Table 6: One-way ANOVA for several biographical variables on the environmental attitude scale.

Variance Source	Sum of Squares	df	Mean Square	F	Sig.
Age					
Between Groups	3173.192	2	1586.596	9.838	.000*
Within Groups	41447.669	257	161.275		
Total	44620.862	259			
Financial Status					
Between Groups	503.718	2	251.859	1.467	.232
Within Groups	44117.143	257	171.662		
Total	44620.862	259			
City					
Between Groups	3084.667	4	771.167	4.734	.001*
Within Groups	41536.195	255	162.887		
Total	44620.862	259			
Major					
Between Groups	2557.791	4	639.448	3.877	.004*
Within Groups	42063.071	255	164.953		
Total	44620.862	259			

Table 7: Tukey post-hoc test for the mean differences between the age groups

Age	Below 18 years		Between 18 - 22 years
	Means	149.93	158.01
Between 18 - 22 years	158.01	.000*	
More than 22 years	152.03	.726	.031*

Participants of low financial or income status seemed to indicate a low attitude compared to those of high financial status (e.g. those with income less than 2000 their attitude was less as indicated from the mean). However, because most of the answers were in the same interval or the same side of the scale, this difference was not statistically significant. The distributions of responses from that group were normally distributed and equal to similar to each other (Fig. 7).

Table 8: Tukey post-hoc test for the mean differences between the cities

City	Abu Dhabi		Dubai & Sharjah	Ajman, UAQ and RAK	Fujairah
	Means	161.30	162.94	156.64	156.30
Dubai & Sharjah	162.94	.993			
Ajman, UAQ and RAK	156.64	.480	.425		
Fujairah	156.30	.639	.531	1.000	
Al Ain	152.82	.006*	.024*	.366	.785

Occupational and education did impact the attitudes of the respondent; participant have higher attitude according to the following sequence: art > commerce > science > engineering. Only one significant difference can be related to the major variable found between the Scholars and Arts major in favor of the Arts participants who showed a high level of concern for the environment. Young students still did not demonstrate an equivalent awareness of the importance of environmental protection as undergraduate students do. College level students had a higher level of concern toward environmental services and protection. It is difficult to explain why the Arts students expressed more concern toward the environment, but it could be related to the nature of the discipline, which gives applies human and aesthetic dimensions to the natural environment.

Table 9: Tukey post-hoc test for the mean differences between the majors

Major	Schools		Arts	Science	Engineering
	Means	151.88	160.29	155.66	153.42
Arts	160.29	.005*			
Science	155.66	.327	.296		
Engineering	153.42	.990	.292	.959	
Commerce	158.94	.067	.991	.737	.574

4.1 Interaction between the variables of interest

ANOVA analysis with two between-subjects factors was carried out (Table 10). The main effect and the interaction were presented in tabular and graphical formats (Figures 8-11). There is a reliable main effect across gender and low financial status, ($F= 6.479$ $P< 0.002$; Fig. 8). A line graph can be useful for visually inspecting group differences, particularly if there is a reliable interaction effect. The absences of intersections between the lines indicate no interaction between groups. The opposite is true in the case of males with low income and females with low income. The difference is mainly in favor of females who still have positive attitudes toward the environment even their income is low. Inspecting the bar graphs and associated parameters given in Univariate Analysis of Variance Observations, three other significant differences appear between age and major, demographic distribution and financial status, and financial status and major. Age and major showed an interaction influence on the participants' attitudes toward environment. The results also showed that commerce students of the age 22 and up have low attitudes compared with the other age groups and major intersections (Figure 9). The demographic distribution and the financial status played a role in revealing significant interaction. Participants from Fujairah city with low income have low attitudes toward the environment compared to Dubai and Sharjah participants who get high income and higher positive attitudes toward the environment. The financial status and the major interacted in different combinations, and could have influenced attitudes toward the environment and environmental service.

Table10: Univariate Analysis of Variance Tests of Between-Subjects Effects

Source	Sum of Squares	df	Mean Square	F-ratio	Sig.
Corrected Model	18767.701(a)	71	264.334	1.922	.000
Intercept	210910.217	1	210910.217	1533.705	.000
Gender	491.654	1	491.654	3.575	.060
Age	1059.477	2	529.739	3.852	.023*
Financial status	11.039	2	5.519	.040	.961
City	2471.766	4	617.942	4.494	.002*
Major	1135.629	4	283.907	2.065	.087
Gender * Age	272.742	2	136.371	.992	.373
Gender * Financial status	1781.909	2	890.955	6.479	.002*
Gender * City	763.664	4	190.916	1.388	.240
Gender * Major	432.596	4	108.149	.786	.535
Age * Financial status	1017.692	4	254.423	1.850	.121
Age * City	1129.036	7	161.291	1.173	.320
Age * Major	2108.119	7	301.160	2.190	.037*
Financial status * City	2520.506	6	420.084	3.055	.007*
Financial status * Major	2373.080	7	339.011	2.465	.019*
City * Major	1220.848	14	87.203	.634	.834
Error	25853.160	188	137.517		
Total	6333352.000	260			

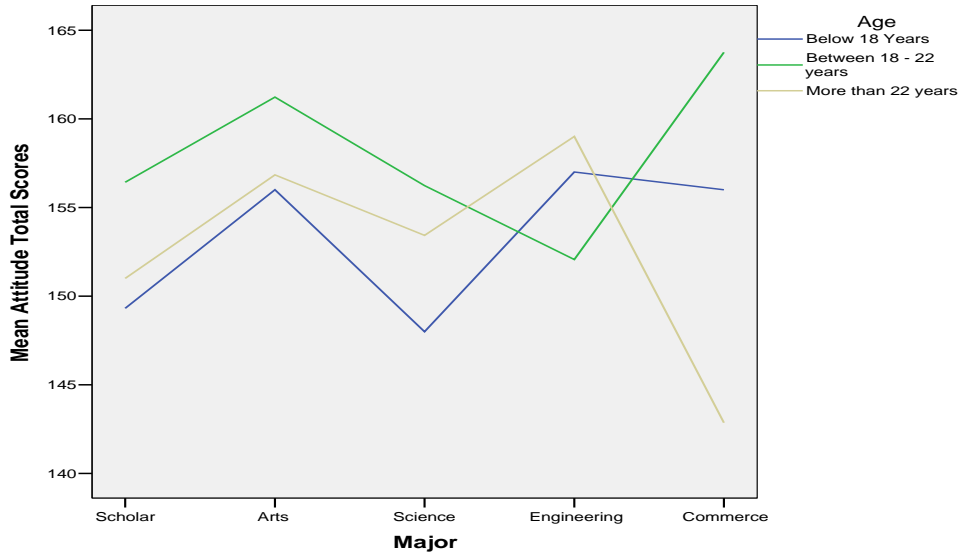


Figure 8: the interaction between gender and financial status

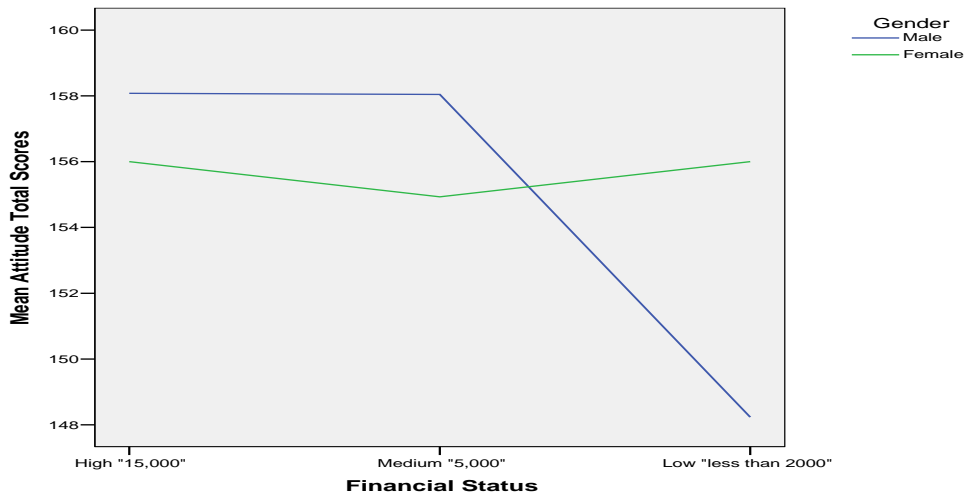


Figure 9: the interaction between the age and the major

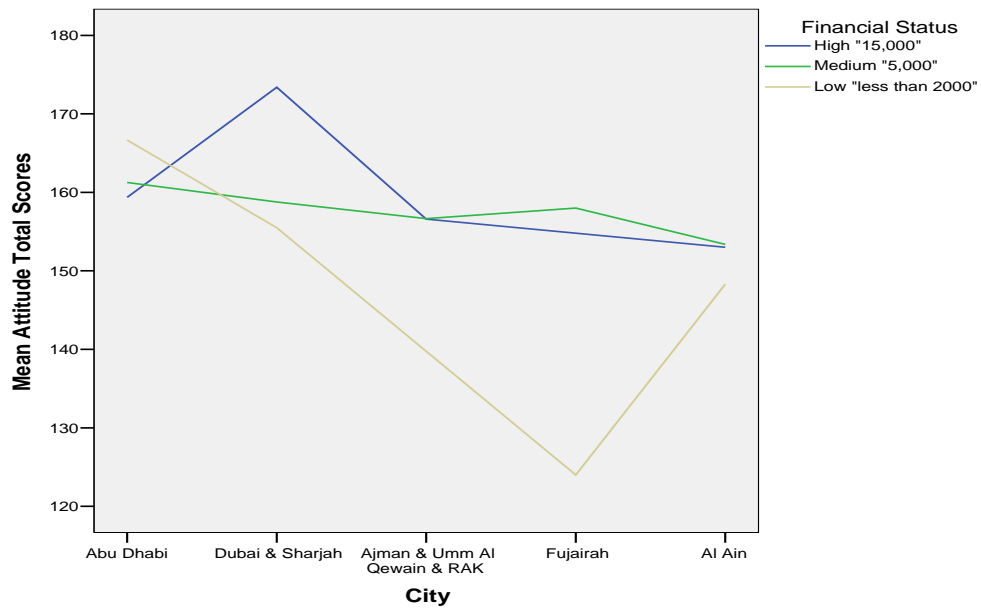


Figure 10: the interaction between the financial status and the city

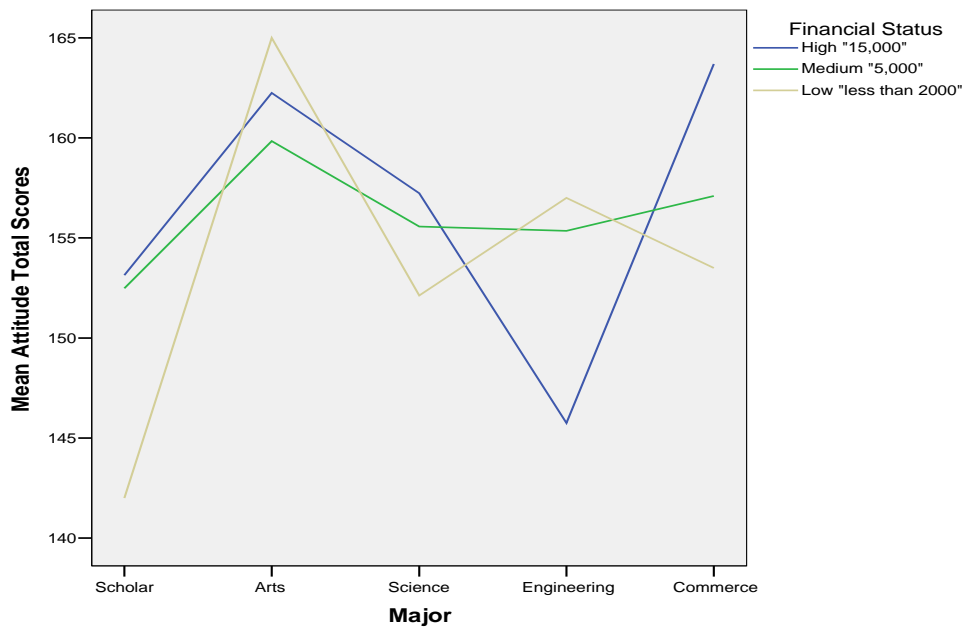


Figure 11: the interaction between the financial status and the major

4.2. Limitations

The small sample size of this study limits the transferability of the findings to larger populations. Not all of the participants answered each of the questions regarding gender, age, marital status and financial situations. Those who did not answer all of the forms were removed; this yielded a smaller sample (n=260). The numbers of participants were not equally distributed in each of the characteristics being analyzed, and this may have produced skewed results. The study was also limited by the characteristics of the students in the sample. Therefore, some of the information resulting from this study might not be generalized to a larger scale. The answers on the questions reflected attitude rather than knowledge. Also factors related to self-report bias, such as desirability and compliance could be limitations. For example, students who were "instructed" may have had prior knowledge of certain environmental issues or may have felt pressured to answer the question in a positive way.

4.3. Implications and Future Practice

The results from this study have implications for future practice and future research. The information gained can be used to support the Service-Learning Center, potential SL instructors, and civic responsibility program developments. Suggestions for future research may include comparing SL students with non-SL students, and conducting a long-term study that tracks civic responsibility development. Additionally, the findings could be used to support the efforts of future Service-Learning Centers in this part of the world. Environmental policies and environmental programs should give more attention to the various subgroups of students, especially those who did not have the chance to participate in previous environmental activities. Some modifications for the present education curriculum and the associate extracurricular activities in some schools and regions are recommended. Also environmental policies should account for student's characteristics, learner preference and overall benefits of environmental service learning (e.g. social and economical). Unified understanding of the positive impacts of service learning and civic engagement activities could bridge some demographic gaps in environmental attitudes. Local and regional environmental programs should be assessed continually considering the reported variables in this study to provide suggestions to environmental administrators and instructors. Teachers may be encouraged by this study to enhance environmental learning by integrating more field campaigns, real life cases, and practices into their classes. Other programs and countries can benefit from this study by paying attention to the specificity of mixed ethnicity in an educational environment and the possible gaps in understanding of the involved students. The reported results also have significant implications for the conceptualization of service in the academic environment and for the development of the service trajectory in terms of students' motivation and perception.

5. Conclusions

The impact of service learning on attitudes depends upon a course in which students can learn and, most importantly, on the way they feel about environmental issues. Attitudes toward environmental issues are most likely affected by biographical factors such as age, financial income, and demographic variables. Education level and age were also significantly associated with final attitude index scores. Participants aged 18-22 ($M=158$, $SD=12$) scored significantly higher ($p<.003$) than both those younger than 18 ($M=149$, $SD=13$) and those older than 22 ($M=152$, $SD=11$). A reliable main effect was observed across gender and low financial status ($F= 6.479$, $p< 0.002$), but there was no reliable main effect for gender and age. The outcomes of students who participated in service learning were not significantly different from those who did not participate. The study concluded that UAE citizens, or Emirati, ($M=156.88$, $SD=12.42$) were found to have a more positive attitude toward the environment than others ($M=152.05$, $SD=14.29$) ($t(258)=2.96$, $p=.008$). Responding to questions about environmental problems confronted by UAE and the larger region, many interviewees indicated that more involvement and technical solutions are needed. Interviewees also provided insights into why service learning activities are poorly implemented, attributing this to

1. The weak cooperation between governmental schools in the field of environmental awareness activities,
2. Communication with the Ministry of Education is typically slow in response and follow up
3. The response to the proposed activities is mostly from non-local people,
4. The bureaucratic procedure of Educational departments in each Emirate,
5. Each Emirate has its own Educational Zone causes unnecessary duplication,
6. Environmental department and organization have individual nature and are rarely able to integrate their efforts
7. Difficulties in obtaining official permits to carry out activities,
8. Dozens of nationalities with different educational levels make communication a difficult process
9. Mega exhibitions and multibillion dollar projects in UAE take attention away from environmental activities,
10. Limitation in expertise and funding
11. Lack of welcoming entities to coordinate national environmental activities.

The study concluded visiting natural sites strongly encourages enrollment in environmental activities and volunteer work. Students argued that that increasing environmental protection awareness may occur by balancing industrial development and environmental protection activities. The presence of different ethnic communities may affect environmental awareness either positively or negatively, especially when related to the parents' level of education and the subject's financial status. This may affect the attitudes towards the participation in the different environmental participation or engagement. Cultural and traditional determinants seem to have a slight impact on student attitudes toward the environment. Participants in this study think that luxury of lifestyle could lead to carelessness about the environment (43.8%). Apathy could also result from a lack of general education (26.2%) and ignorance (25.4%) about the environment. Environmental service learning has an impact on motivating students to do better in their classes

(41.5%). From the participants' point-of-view, even religions instruct people to be clean and to care about the environment, but they get lazy (49.6%) to implement change or like to follow the instructions but the surroundings temptations and destructions act as a barrier (43.1%). Most of the participants agreed that using car pooling (63.8%) and small cars can reduce pollution to a good degree (74.6%). The study found that apathy was the main barrier (51.9%) that prevents students from participating in environmental activities followed by the "lack of environmental workshops" (28.5%). Overall, the questionnaire data gave an overview of the controlling factors of service learning and its impact on attitude. Future investigations on large field scale or other areas in the region could be useful to generalize the findings.

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