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Environmental Management's Values and Ethics Among Jadara University Students in Jordan

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Abstract
This paper aims at examining the acquired level of environmental values and ethics (EVEs) regarding Environmental Management (EM) by students in the social science faculty at Jadara University (JU) in Jordan. For achieving the purpose of this study, the random sample consisted of (44) male, and (56) female students. To gain the results, the researcher used a test of multiple choices with (30) questions. Means, standard deviations, percentages, and t-Tests were used to analyze data. The results revealed a good level(70.4%) of students' awareness and the acquired EVEs, but it is not catch the requested criteria level (80%). The results revealed also statistical differences in acquiring EVEs for the benefit of rural, while there are no statistical differences ascribed to students' sex. In the light of the results, the researcher recommended and suggested a number of recommendations and suggestions.
Keywords: environmental management values, Jadara University, environment, students' awareness and ethics.

1. Introduction

Throughout studying the relationship between the human being, science and environment from the social perspective, Brake (1997) states that with man's ability to think, he has learned to care for his environment. However, of late, man has finally recognized the damage he has created by his greed and neglect. This damage is represented by several kinds of problems at the national and international levels that have been taken a global character as environmental issues, .e.g., land degradation, overexploiting of surface and underground water, deforestation, water and air pollution, and the depletion of ozone layers(UN 1993).

Dealing with the pollution, Subbarini (1990) suggested, it would require cooperative efforts at the national, regional, and international levels**.** He added, the most serious problem of pollution today is concentrated on abuse of our natural resources of ground and underground water, increasing the emission of carbon dioxides that resulted to a global warming issue, and depleting of primary components of the environment. Okour(2008) proposed for applying Sustainable Development(SD) as a proper strategy to prevent future problems and to protect the vulnerability of the earth. Okour (2012) points out for an ethical measurement in dealing with environmental problems. She underpins what had been written in the World Conference's (1988) document on the *Changing Atmosphere*. Its declaration is focused on a new holistic ethics to grab with environmental problems. This ethics is needed, in which economic growth and environmental protection go hand in hand around the world. The World Commission Strategy(WCS) (1987) asked for raising SD to global ethics.

Many environmental educationists like Blate (1992), Brown (1994), Subbarini (1998), Palmer (1998), and Palmer and Neal(1994) assert in their studies and articles the role of Environmental Education(EE) in protecting ecological systems from the continuous degradation and deterioration. Blate (1992) and Brown (1994) indicate that EE could create a positive relationship between humans and their environment, thus, the idea of environmental responsibility will not be achieved without applying the strategy of EE. Others such as Subbarini (1998), Palmer (1998), and Palmer and Neal(1994) argue that EE is built upon a variety of elements of curriculum and the three essentials of teaching and learning (study in the environment, study about the environment and study for the environment). Their request for implementing EE in schools' curricula is because of its role in increasing awareness and acquiring EVEs to diminish the negative impact of environmental problems. All of them indicate that EE constitutes one of the main pillars for protecting the environment when dealing with SD strategy to be a new thread of education called SD Education (SDE). Therefore, UNESCO(1996) emphasizes SDE as a new strategy to be applied instead of scientific education. This strategy could adjust education from teacher-centered approach to student-centered one and from objectivism to constructivism.

Regarding Environmental Values and Ethics (EVEs), Sterling (1996) asked for individual and social responsibility towards environment. He called for promoting a positive attitude towards nature and its ecosystems. Sterling (1996) continues that SDE could deal with the two conflicting qualities of life–protecting the environment and, concurrently, allowing some development.

Des Jardins (1997) indicates that society should be turned towards sustainability by adopting SDE. Studying ethics could not only limit our negative actions, but also replaced them positively. Des Jardins (1997:85) states, "some of the most pressing environmental challenges are to consider in detail the ethical effects of our action on people in the future. Yet, this issue was often ignored in much traditional philosophy."

Environmental ethics had been taken into consideration by many ethicists, such as Rolston (1988) and Callicott (1989, 1995). They had put three theories for environmental ethics within three approaches; academic, philosophical, and psychological. The academic approach could be achieved by EE and SDE in a life-long process. The philosophical approach focused on analyzing the academic approach, in addition to comparing various views on ethical perspectives, and, finally, psychological, to reflect the social side by developing new methods for examining EVE in empirical studies. They placed their ideas perspectives, views and paradigms into ethical theories. These theories could be used for resulting environmental citizens.

A number of studies were carried out dealing with awareness and EVEs, such as the studies of (Szagen & Pavlov1992; Abdullah 1992; Fong 1993; Zimmerman 1996; Meyers 2002). In Jordan, seldom studies have been written regarding environmental values and ethics such as Okour 2002, 2008, 2012). These studies aimed at identifying the acquired environmental values of the studies' subjects. Meyers's study (2002) aimed at developing EV's typologies to close the gap between EVs and psychological values, and to measure adult's values and willingness towards their environment.

The results of these studies were various according to their objectives. A number of studies resulted a list and system of environmental values typologies such as (Meyers 2002). The results of (Okour 2002;Fong 1993; Szegun & Pavlov 1992) were positive in acquiring EVEs. On the contrary, the studies of Okour (2008, 2012) revealed an accept level for environmental EVEs that did not match the criteria level (80%). Regarding to sex, the results of some studies revealed the effect of sex, the females have got higher level than males, e.g., (Fong 1993; Szegun & Pavlov 1992; Okour 2002), while the study of Zimmerman (1996) showed the higher level for male students. On the other hand, there were no statistical differences between male and female in the study of Okour (2008, 2012) and Abdullah (1992).

At the state level, many studies were written and articles were published dealing with environmental issues at various universities in Jordan. A number of studies were carried out at Yarmouk University (YU) aimed at identifying the level of subjects' attitudes towards their environment (Khataybeh & Qaood 2000). Several of them measured the level of students environmental knowledge (Subbarini, 1991; Al Nahari 1997; Khataybeh & Qaood 2000). Some results show the weak level of students' knowledge and attitudes, and revealed a weak linkage between them (Khataybeh & Qaood 2000; Al Nahari 1997), while Subbarini (1991) revealed a higher level of knowledge and attitudes for those who studied EE course than those who were not.

At national level, environmental awareness is reflected by many educators at YU, Reid and Sa'adi (1997), Subbarini (1990a, 1991, 1998) called for ignoring the traditional teacher-centered approach to a student-centered approach within EE, which matches the constructivism strategy. Today, educators believe that EE as an interdisciplinary approach that must be emphasized at the Jordanian schools in response to the global thinking that EE can mold environmental ethics. Okour (2008) underpins Subbarini's views in promoting outdoor activities, teamwork and critical thinking to make students more approachable and responsible. These activities instill in them a good judgment about their environment. This study intends to investigate the effectiveness of EVEs by assessing the levels of these values acquired by the students of JU.

1.1 Statement of the Problem

Environment at national and regional levels has suffered from a lack of environmental ethical researchers and studies. The problem is represented in ignoring the ethics theoretically and practically, locally and globally. In Jordan as Okour (2008) indicates, a number of studies have been conducted dealing with environmental policy in one hand. On the other hand, some of them concerned with environmental attitudes and concepts such as Al Nahari (1997), Khataybeh, and Qaood (2000). A problem is that EVEs still in its childhood at all the universities in Jordan. By the researcher knowledge, the lack of evaluation process is referred to the severe need of measured tools. Those tools are ignored and have not been created yet. Thus, the breakable state of practical environmental ethics stimulated the researcher interest to carry out a series of studies and their tools within this field. The present study is another attempt to bridge the gap that is ignored by other researchers. The researcher intends to delve into this rare subject to assess the students' acquisition of EVEs at YU and other Jordanian universities.

1.2 Objectives of the Study

This study aims to assess the level of EVEs acquired students. The specific objectives are summarized as follows:

- To examine the level of EVEs acquired by social faculty's students.
- Study the effect of gender and resident variables.

1. 3 Questions of the Study

To achieve the previous objectives, the following questions are set up:

1. What is the level of acquired environmental management values and ethics by the social faculty students at JU in Jordan?
2. Are there any statistical differences in environmental management values and ethics acquired by sex (male and female)?

3. Are there any statistical differences in environmental management values and ethics acquired by resident(rural and urban)?

1.4 Operational Definitions

The following terms are defined below:

Environmental Education (EE) is an educational approach for developing the relationship between humans and nature. EE strategy can stimulate active responsibility, raise environmental awareness, and acquire commitment towards nature and its components. In other words, it is SDE.

Sustainable Development (SD) is a development that meets the needs of the present generation without compromising the ability of future generations to meet their basic life while living within the carrying capacity of the supporting ecosystem" (UN 1993).

Jadara University (JU) is a private university in Irbid city in the north of Jordan. It has the faculties of science, engineering, law, economics, education, arts, social sciences, and information technology. Students from the department of social science were evaluated.

Environmental Management's (EM) EVEs are the positive values and ethics that are compatible with religious beliefs. Committing these values and ethics could encourage positive behaviors towards planning for natural and artificial environment. A code of EVEs were set up to manage the natural resources in an efficient and far-sighted way at individual and social levels(Okour 2008).

Criteria Degree is the level of EVE acquired by the students. A committed student should score above 80 percent.

1.5 Significance of the Study

This study is the first attempt, which dealt with EVEs within EM plans at JU in Jordan. As no previous studies have attempted to answer the questions posed in the present study at JU. The results may help in molding the future vision for EE and SDE within educational and management development processes. The results of this study may pave the way for scholars, decision makers, and ecologists who interest in handling environmental management and ecological ethics. For the next researchers, it is hoped that this study can help in studying and analyzing EVEs with all types. Regarding the researcher view, this study will benefit postgraduate students and scholars in conducting similar researches.

1.6. Limitations of the Study

The study is limited by the following:

- The social science faculty students at JU were chosen. The size of the sample is not large enough and sufficient to validate the findings for other universities in Jordan.
- The instrument is limited to 30 EVEs taken from analyzing ethics of environmental theories and SD that are compatible with Islamic environmental values.

2. Methods and Procedures

2.1 The Students' Population and Sample

They are all students of the social science faculty that includes (400)male and female students. They were enrolled in the first semester (2012-2013) at JU. The random sample of 100 students was selected with 44 males and 56 females. Regarding the resident, the sample was distributed as 62 rural and 38 urban students.

2.2 Study's Instruments

The study's instruments consist of the following:

2.2.1 The Basic List of EVEs

It is a list of EVEs that was built by the researcher, Okour (2008), to construct the students' test. This list was validated and its reliability was achieved by a "panel of judges" at Yarmouk University and a number of Malaysian Universities in Malaysia. The items of the list were elucidated from the international values of SD and its agenda 21 that are compatible with Islamic ethics. Appendix A shows this list.

2.2.2 The Students' Test

Depending on the previous list, the researcher considered the EVEs items in the basic list above. The multiple choice test with 30 items was used, it is distinguished with flexibility and capability to measure educational outcomes of values and attitudes-related to the items in the previous list of EVEs (Odeh & Malkawi 1991). The validity and reliability of the test were previously measured by the researcher in her previous studies, e.g., Okour (2008; 2010). To confirm more validity and reliability, the test was applied on 10 students outside the sample. After a month, "re test" was applied on the same students. The correlation coefficient was computed by using "Pearson Equation" that was 0.9. Appendix B shows this test. The form of key answers (a, b, c, d) was attached as in Appendix C.

2.3 Research Framework and Variables

EVEs are considered a branch of other values .What is said about values could also be applied on EVEs. The researcher is adopting Khrathwol's classification for environmental values. This classification is considered the most popular one within the educational fields. The following two levels of values are likely to be mentioned here as they are taken into account:

2.3.1 Before value's formative levels

- Receiving Attending (awareness)

2.3.2 Valuing levels

- Acceptance
- Preference of value
- Commitment; that is adopted according to this thesis, but regarding (acceptance and preference) levels, they are considered above the awareness level.

The study suggests criteria of three levels. *Before value' formative level* is considered, in this study, the surface level of awareness. The second level *valuing* is considered highly awareness if it is placed within the acceptance and preference levels, and above that it will be considered in the commitment level (obligation, above 80%). Table 1 exhibits the criteria of these levels. Above 80 percent is for committing and acquiring EVEs, above 70 percent is for the highly awareness level. Whereas, below 60 percent is for the surface (low) level of awareness.

2.3.1 Study's Variables

The study dealt with the following variables:

a. Independent variables:

- Sex (male and female).
- Residence (rural and urban).

b. Dependent variable: The students' level in acquiring EVEs.

2.4 Statistical and Analytical Methods

For analyzing data, the researcher used the following statistical methods:

- For answering the 1st question, the researcher used frequencies, percentages, ranks, and means.
- For answering the and the 2nd and 3rd questions, the researcher used *t*-Test.

3. Findings and Discussions

The study shows the following results:

3.1. Findings Related to Q1: What is the level of acquired environmental management values and ethics by the students at JU?

As the result, the students' commitment to the environment scored 70.4 percent, it is under the criteria level (80%). On the other hand, their awareness of EVEs matches the preference level 70 percent. It seems that the students have feeling towards their environment, but they have not very much responsibility towards it. Table 2 and 3 show the responses by the students in acquiring EVEs regarding Environmental Management (EM). The responses are categorized into two aspect. The first aspect is Environmental Management Planning(EMP) as in table 2. The second aspect is Environmental Protection(EP) as shown in table 3.

The sector on EMP was scored the 2nd level with a mean score of 1.39 and 69.56 percent. Only two EVEs (14, 15) scored above 80 percent. The highest was for the item (14) "investing in waste disposal" with mean score 1.68 and 84.0 percent. The *value* "Investing in bio energy" has achieved 1.67 with 83.5 percent. It is a good result for these values as nowadays, the world focuses on how to extract energy from wastes and natural bio energy. Methane can be converted to the liquid fuel methanol, and ethanol can be produced from crops such as sugar cane and sorghum. Furthermore, bio energy is really important and useful, it consists from producing energy by using products of biomass.

The lowest score in table 2 is for the item (17) "Investing in water desalinization" that has achieved 1.0 mean score with 50 percent. The ignorance of this value may be ascribed to the Jordanian environment, as Jordan suffers from the lack of natural water resource like *oceans* and *seas*. Water desalination has several positive impacts on the environment, such as increasing water availability and recycling poor-quality water. The experts recommended that desalination programs should be integrated with water resources management, with application of best practices for water management and selection of appropriate salt-tolerant crops. This EVE must achieve more than this percent. The Middle East region is known by its abundance of oil rather than for its shortage of water. It is the driest region in the world as defined by the World Health Organization (WHO). The shortage of water is becoming an increasingly common problem across much of the world. This can be attributed to a number of causes, e.g., growing populations, frequent droughts, increasing per-capita water demand, and industrial development. These factors come together to create a horrible need for water of good quality as a reliable source for the future.

The EVEs (4, 5, 6, 7, 8, 9, and 10) focus on the *rational use* of natural resources. These values have achieved the mean score of about 70 percent. Most of the rational EVEs occupy the high level such "Rationalizing the consumption of food" that ranked the third level with the mean score of 1.56 and 78.0 percent, followed by the value "Rationalizing the consumption of marine resources" and "Rationalizing the consumption of raw materials" that are ranked the fourth levels. The high level for reducing the food consumption, ascribed to students' knowledge, the excess calories for the body's need stored as fat and thus lead to weight gain. A good food is not just plug hunger, but eating a variety of foods rich in essential elements necessary for the body. Thus, planning the balanced meals should be provided. Regarding the value "Rationalizing the use of electricity" has scored only 1.22 with 61.0 percent. It is not fair result for this value. All of the Jordanian should rationalize the consumption of electricity, as it depends on fossil fuels, which is not available in Jordan, in addition, electricity is too expensive.

Table 3 shows the second sector on Environmental Protection (EP). It scores the 1st level with a mean score of 1.43 and 71.4 percent. The two highest EVEs (9, 10) are scored above 80 percent. The highest is the item (9) "keeping animals and plants in health" with the mean score 1.64 and 82.0 percent. The 2nd rank is for the item (10) "Keeping entertainment and healthy places in Jordan" that scores 1.63 with 81.5 percent. The lowest mean scores are for the EVEs "Protecting food from pollution" with mean score 1.46 and 60.5 percent, followed by the item (5) "Protecting plants from pollution" with 1.03 mean score and 51.5 percent.

Most of the highest values are scored for the *healthy and aesthetic* subjects, e.g., the EVEs (8, 9, 10, 11, 12, 13). Their mean score is 77 percent. This reflects the students' love for natural and artificial components. The awareness of these EVEs can be ascribed to the students' environmental knowledge gained from science textbooks, and from their Islamic and religious beliefs. Regarding the highest responses for the EVE "Keeping animals and plants in health" are actually referred to TV programs that focus on the protected areas in Jordan, e.g., Dana and Al Azraq reserves. On the other hand, the high level reflects students' beliefs in Islam that are taken from Holy verses and Sunna. Islam does not ignore these values, it sets up environmental law that forbidding hunting animals, and harvesting of plants in the months of Ihram "*O, you who believe! Kill not the game while you are in a state of Ihram"* (Surah 5: 95). Islam has not only cared with sensitive animals, but also with non-sensitive ones like *ant* and *bee*.

On contrary, The EVEs that concern with pollution, e.g., (1,2,3,4,5,6,7) score 66.6 percent. Some of them occupy the highest ranks such as "Limiting noise pollution" that scores 1.53 with 76.5 percent, followed by "Protecting air from pollution" and "Protecting the soil from pollution" that mean score for each value is 73.5 percent. On the other side, protecting 'plants' and 'food' from pollution have scored from the lowest percents, it may refer to lack of practical knowledge regarding these values despite the vast theoretical concern at the national level of such subjects. Thus, the responsibility in ignoring this branch of pollution is shouldered upon the government and the universities. The lowest score here was for the item (5) "protecting plants from pollution" may be due to the background of the respondents. In spite of the fact that the majority are from rural areas, but it seems that they have little interest in agriculture and its problems.

These results of acquiring EVEs agree with Okour's (2008) result that revealed also a preference level of students in acquiring EVEs. These results also agree with Khataybeh and Qao'od (2000) who attempted to assess students' knowledge and attitudes towards the environment at YU. Their result does not reach the validated level (80%), while this study has achieved high level of awareness. On the other hand, these results differ from Zimmerman's (1996) who attempted to identify the environmental values held by students at the University of Mexico in USA. He found a positive level for students in acquiring EV. The result also disagrees with those of Szegun and Pavlov (1992) who tried to assess EVEs in Russian and German students, and find out their preparedness to protect their environment themselves. They also found positive level for their students in acquiring EVEs.

3.2 Findings Related to Q2: Are there any statistical differences in EVEs acquired by sex (male and female)?

For answering the questions, means and frequencies were computed. For comparing sex difference in acquiring EVEs, *t*-test was also used.

Table 5 shows no significant difference between the mean scores of male and female students in acquiring EVEs. The computed *t* is 1.02, while the critical t, at (α =0.05) level is 1.66. This was not surprising as both sexes now have the same rights in all aspects of life, no longer the male-centric society of the past. Both are obligated to study in their formative years, during which they have the same opportunities in education. With similar education, the environmental programs on TV could inspired both in their acquisition of EVEs. These results agree with Abdullah (1992), Subbarini (1991) and Okour (2008) that found no differences between males and females in acquiring environmental awareness or ethics. In comparison, the present study disagrees with

Zimmerman (1996) who found a difference for the benefit of males, while the result of Szegun and Pavlov (1992) study found females in Europe to be better in acquiring EVEs than males.

3.3 Findings Related to Q3: Are there any statistical differences in EVEs acquired by resident (urban and rural)?

Table 5 shows a significant difference between the mean scores for urban and rural students in acquiring EVEs for the benefit of rural students. The computed *t* is 1.83, while the critical is t at(α =0.05) is 1.66.

It could be noticed that the rural student got higher degree than the urban students. Rural students live in an environment surrounded by green areas, they feel more sensitive towards their natural systems. This result disagrees with the study's of Zimmarman (1996) and Okour (2008) which revealed no differences between the rural and urban citizens.

4. Recommendations and Suggestions

In the context of increasing contribution in EVEs, the researcher recommends for issuing independent EE textbooks, focuses on outdoor activities to be taught as compulsory courses for all faculties at JU and other Jordanian universities. It is also recommended for initiating EE Departments at education faculties at all Jordanian universities. Moreover, the researcher suggests the increasing of practical environmental researches focusing on students' awareness. In addition to analyzing the science textbooks, and their impact in students' EVEs.

5. Conclusion

Environmental ethics has to be directed to the management of the healthy and the degraded environment. The collaborative efforts must be taken by the government to manage natural resources in an efficient and far sightedness. Social systems, in its role, make humans behave as they do toward their environment. Their environmental ethics and action must be taken to perform green politics that could guarantee an optimal sympathy between a people and their environment with its ecosystems, e.g., fauna, flora, species, ecosystems, or present and future generations. If SD applied by developed and developing countries, it will be used as an ethical plan that could reconcile the three dimensions of economics, environment, and the society. It could rescue the environment from its present threat of degradation.

The present research dealt with EVEs that could play an important role in EM issues. As any policy in EM cannot be formulated without certain positive values available to scientific information. The study used a multiple choice test for testing the random sample of social science students in acquiring EVEs at JU in Jordan. The result revealed a preference level of acquiring EVEs with high awareness level. It did not catch the criteria level (80%) of committing EVEs. The findings disclosed also no statistical differences between males and females, whereas there were statistical differences between urban and rural students for the benefit of rural students.

Although this study has not managed to examine all JU students, the examination and evaluation done have been indicative and suggestive. While there remain yet many fields that need further examined, I hope that this study has made at least a small contribution to the vast field of EVEs. As it creates a bridge between ethical theories and practices. Actually, this study could fill a bit of the gap that is ignored and left.

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Table 1: Students Levels Criteria in Acquiring EVEs

The levels of EVEs	Mean score	%
Commitment(2)	Above 1.6	Above 80
Preference(1.5)	1.4- 1.598	70 -79.9
Acceptance(1)	1.2- 1.398	60 -69.9
Before value' level (.5)	1.0- 1.198	50 -59.9

Table 2: Levels of EVEs Acquired by Students at JU in Environmental Management Planning Field (n = 100).

No	EVE	Mean	%	Sd.D	R
1	Planning before large projects	1.42	71.0	.6143	7
2	Planning for treating pollution	1.30	65.0	.4606	12
3	Planning for using environmental technologies	1.40	70.0	.4264	8
4	Rationalizing the use of fossil fuels	1.23	61.5	.6832	14
5	Rationalizing the use of water	1.51	75.5	.6071	6
6	Rationalizing the consumption of natural resources	1.21	60.5	.4933	16
7	Rationalizing the use of electricity	1.22	61.0	.5427	15
8	Rationalizing the consumption of food	1.56	78.0	.4887	3
9	Rationalizing the consumption of raw materials	1.53	76.5	.4541	4
10	Rationalizing the consumption of marine resources	1.53	76.5	.5633	4
11	Investing in solar energy	1.32	66.0	.4115	11
12	Investing in rain water	1.30	65.0	.5025	12
13	Investing in marine resources	1.37	68.5	.4904	10
14	Investing in waste disposal	1.68	84.0	.4899	1
15	Investing in bio energy	1.67	83.5	.3569	2
16	Reusing waste materials	1.40	70.0	.4820	8
17	Investing in water desalinization	1.00	50.0	.4264	17
Mean for 17 Q		1.39	69.56	8.896	2nd

Table 3: Levels of EVEs Acquired by Students at JU in Environmental Protection Field (n = 100).

No	EVE	Mean	Sd.D	%	R
1	Protecting air from pollution	1.46	.5397	73.0	7
2	Protecting the seas and oceans from pollution	1.36	.4499	68.0	9
3	Protecting the soil from pollution	1.46	.6017	73.0	7
4	Protecting food from pollution	1.21	.4829	60.5	12
5	Protecting plants from pollution	1.03	.5262	51.5	13
6	Limiting noise pollution	1.53	.4650	76.5	5
7	Keeping forest wealth	1.28	.4940	64.0	11
8	Keeping aesthetic elements in Jordanian environment	1.49	.5364	74.5	6
9	Keeping animals and plants in health	1.64	.5226	82.0	1
10	Keeping entertainment and healthy places in Jordan	1.63	.4241	81.5	2
11	Increasing green areas	1.57	.4925	78.5	3
12	Fighting bad environmental behavior	1.35	.5618	67.5	10
13	Keeping human beings well and happiness	1.56	.5089	78.0	4
Mean for 13 Q		1.43	8.876	71.4	1st
Q All for 30 Q		1.41	7.465	70.4	-

Table 4: T-test for Comparing Between Males and Females in Acquiring EVEs (n=100)

Sex	n	Mean	%	Std. D	t	df	Sig
Male	44	41.70	69.51	8.47	1.02	98	.05
Female	56	42.63	71.04	6.57			
Total	100	42.22	70.4	7.47			

Table 5: T-Test for Comparing Between Rural and Urban Students in Acquiring EVEs (n=100)

Resid	N	Mean	%	Std. D	t	df	Sig
Rural	62	42.85	71.42	5.4	1.83	98	.05
Urban	38	41.18	68.64	9.8			
Total	100	42.22	70.40	7.47			

Appendix A

The list of Management Environmental Values and Ethics

1	Planning before large projects
2	Planning for treating pollution problems
3	*Using environmental technologies*
4	Rationalizing the use of fossil fuels
5	Rationalizing the use of water
6	Rationalizing the consumption of natural resources
7	Rationalizing the use of electricity
8	Rationalizing the consumption of food
9	Rationalizing the consumption of materials
10	Rationalizing the consumption of marine resources
11	Investing in solar energy
12	Investing in rain water
13	Investing in marine resources
14	Investing in wastes disposal
15	Investing in biological energy
16	Reusing waste materials
17	Investing water wealth by desalinization
18	Protecting air from pollution
19	Protecting the seas from pollution
20	Protecting the soil from natural pollution
21	Protecting food from pollution
22	Protecting plants from pollution
23	Limiting noise pollution
24	Keeping forests wealth
25	Keeping aesthetic elements in Jordanian environment
26	Keeping animals and plants in health
27	Keeping entertainment and healthy places in Jordan
28	Increasing the local green areas
29	Fighting bad environmental behavior (smoking)
30	Keeping human being well

Appendix B
The Students EVEs' Test

Dear student
In your hands 30-items test for measuring the range of your commitment towards environmental components, you are asked to answer all those items by drawing a circle around the suitable option that you believe for each item (question).
Your answers in this test will be processed under perfect privacy and in a case that you want to look through the results of this study; you can contact the researcher at the following e-mail:
okornawal@yahoo.com
Your consideration is highly appreciated.

First section: General information:

1. Sex: Male ☐ Female ☐

2. Resident: Rural ☐ Urban ☐

1.Establishing the medical, economic and developmental projects is considered as an indicator for the scientific and economic development inside the country, so that:

a) It is very necessary to build factories and hospitals closed to cities in order to facilitate the transportation movement.
b) It is preferable ,sometimes, to build them far away from cities.
c) It is very necessary always to build them far away from cities.
d) It makes me sad when building them in rural because of their negative effects on air.

2. For getting rid of chemical and physical pollution in underground water, government undertakes treating it by different ways, what is your position towards this commitment?

a) I feel happy when using the biological treatment.
b) Sometimes ,I prefer using it because it doesn't have side effects.
c) Using it always because it doesn't have side effects.
d) No need to treat this pollution.

3.The electric energy is considered as a non-renewable resource , to decrease its consumption, there are washing machines that save 35% of the electric energy, consequently what shall you do?

a) I prefer using these machines if they are compatible with their prices.
b) I use them neglecting their prices.
c) I refuse using them because of their high prices.
d) I encourage the others to use them.

4. The need for using energy in all life aspects is increasing as a result of the industrial development and the developing of transportation in developed and developing countries. A lot of environmentalists urge into utilizing its consumption, so that:

a) Using the public transportation like buses makes me happy.
b) Using private cars makes me sad ,sometimes.
c) I commit of using public transportation.
d) I commit of using my private car because of easy movement.

5. The good drinking water is considered an important natural source .In Jordan, it depends on rain and underground water, so that:

a) I don't feel sad when increasing the cost of water in the country.
b) Decreasing the water consumption, following the eco- economic ways.
c) I encourage avoiding the flowing of water from the tap while cleaning your teeth or shaving.
d) Don't avoid the flowing of water from the tap to keep the washing place clean.

6. Jordan is extracting the metal of quartz from its resources that are highly available in the country to be used in industry, so that:

a) It is very necessary to extract and use it in the industry.
b) It is necessary to decrease its extraction to leave part of it to future.

c) I encourage the environmental campaigns that urge into reducing its consumption.
d) I prefer contributing in these campaigns.
7. Housewife is drying clothes by using dryer while turning on the electrical washing machine, what is your position from that?
a) I prefer using it ,sometimes, it saves efforts.
b) I feel worried when using it for small amounts.
c) I commit of putting washed clothes under sun rays if it is lighting.
d) I use it always even I have one piece of clothes.
8. Our God says: " eat and drink but without extroversion". This verse is representing an exposed invitation for urging into fair consumption of food, so that:
a) Sometimes, I prefer eating three meals regularly within family boundary.
b) I feel worried when eating food individually.
c) I commit buying only what I need of food ,besides, being regular in eating meals.
d) I feel happy when buying large amounts of food regardless their nutrition benefit.
9. For reducing the consumption of unlivable resources like paper, do the following;
a) Use internet and the floppy disks sometimes.
b) Buy the books without using the library.
c) Use the library without buying the books.
d) Prefer using the library without buying the books.
10. If you are an authorized person, what will you commit for enabling present and future generations to get interest of marine wealth ?
a) Reducing the overexploiting of coral from seas if possible.
b) Encouraging the improvement of life level for coastal people.
c) Committing of extracting coral for its beauty and economic value.
d) Issuing environmental laws for avoiding hyper utilizing of this wealth to preserve it for next generations.
11. Environmentalists ask into searching for renewable energy resources (solar energy, methanol and hydrogen) and for saving other energy types, what is your position from that?
a) I feel happy when using alternative energy like solar batteries and hydrogen energy in transportation.
b) I appreciate using the energy of fossil fuel for its cheap price.
c) I prefer ,sometimes, using solar energy in heating water and other purposes.
d) I commit always of using solar energy in spite of the expensive costs of its devices.
12 .For long lasting usage of drinking water resulted from rain, I will commit of the following:
a) Digging houses' wells and fill them by buying underground water .
b) Encouraging digging houses' wells and trying to facilitate bringing rain water into them.
c) Committing of digging houses' wells and filling them by rain water.
d) Being far away from digging them for its highly economic cost.
13. The global cries have been increased in order to use the energy of water in coastal countries for generating electrical energy. What is your position from those cries?
a) I feel worried toward using this energy because of its dangerous effect.
b) Committing of utilizing this energy for generating electricity in coastal countries.
c) I encourage utilizing it .
d) I feel worried toward avoiding using this energy.
14. Wastes are considered one of the local environmental problems in the country, so that:
a) I encourage planning for collecting wastes and leaving them to be decomposed by themselves.
b) Getting out the natural fertilizer for plants.
c) Using the energy of wastes in generating electricity and extracting methane gas.
d) No need to treat the wastes, because no economic benefit from them.
15. Environmentalists ask for getting benefit from biological energy for reducing pollution and rationalizing energy consumption, so that:
a) I prefer using modern clipper because it saves effort and time.
b) Using animals in spite of its extra effort in clipping ground is a necessary issue.
c) I encourage using it in clipping ground because it saves energy.

d) I feel happy when I see them clip the garden.
16.A lot of water is being consumed as a result of house usage in urban and rural in Jordan, what is your position towards this?
a) I feel worried about avoiding reusing this water.
b) I feel worried about reusing this water because it is no longer good for drinking.
c) I encourage sometimes making special pools at garden for getting benefit from this water in irrigating .
d) I commit of making internal pipes in order to reuse water in bathrooms and other purposes.
17 .For the lack of good drinking water in Jordan and for the increasing demands on the underground water, the government is making desalinization for the water of the Aqapa Gulf, so that:
a) I feel happy towards this orient.
b) I prefer what the government did although this work is costly.
c) This work is good, it supplies the region of water needs at least.
d) The desalination of sea water is a costly process, therefore, Jordan couldn't do it.
18. Air is considered from the important natural resources for human and other creatures, nevertheless, it is the life. So that, it must be protected from pollution by:

a)Using the cheap benzene of lead metal in the engines of cars and vehicles.
a) Avoiding using this benzene, because it harmed the vehicles.
b)
c) Avoiding using this benzene, because it pollutes the air which is the life of all creatures.
d) I don't prefer using this benzene as the car is new.
19. Oceans and seas are from the renewable natural resources ,they are blesses from our God , in order to protect them, so that:
a) Avoid throwing the industrial pollutants without taking a permission from the government.
b) Throwing these pollutants doesn't affect the ecological systems there.
c) It is necessary to avoid throwing them because they erode the nutrient chains.
d) I feel sad when I hear about the sea's pollution.
20. When farmers use sewage water in irrigating farms, that will lead into increasing production, so that:
a) I feel sad when using it sometimes even though no water.
b) I encourage avoiding using it.
c) I don't use it at all because it pollutes the soil.
d) We should use it for rationalizing water consumption.
21. The recent wars in Iraq led to pollute the water of Arabian Gulf with a lot of harmful pollutants. How can you behave towards this issue?
a) I don't prefer eating fishes from this water.
b) I don't buy these fishes.
c) No need for objection, because they are not affected by the water pollution.
d) I feel sad when I heard about its pollution.
22. To get rid of bad insects, which harm fruits and vegetables, we use the pesticides to get good crops. What is your position from this?
a) I ensure on using the pesticides to get rid of the bad insects.
b) I don't prefer using pesticides.
c) I don't use pesticides even the crop will be damaged.
d) I will try to search about the biological pesticides.
23. Noise is considered nowadays from the types of physical pollution. To stop this noise in the house, we must do the following:
a) Resisting the housing noise by reducing the voices of radio and TV.
b) No need to make problems with neighbors to reduce the voices of their radio and TV.
c) I feel proud when I see my brother and sister commit of reducing the high voices for the benefit of neighbors and family.
d) Reducing the high voices of radio and TV is very necessary.
24. Forests are considered one from the global natural wealth that keep the integrated biodiversity, so:
a) Protecting the forests by avoiding cutting its trees and avoiding hunting its nice birds makes me happy.

b) Protecting the animals of the forest that are threatened and its unique trees is an national obligation.
c) Protecting the forest and it biodiversity is an ethical responsibility.
d)This wealth must be utilized regarding the economic aspects.
25. Forests are considered from the natural wealth regarding an economic, entertaining, beautiful and social aspects in which human can keep these resources and utilize them at the same time as an alternative resource, what is your opinion?
a) Clipping trees and get use of their woods in making fuel.
b) Cutting the old trees and use them in the housing industry.
c) Building parks and governmental gardens and utilize their natural beauty.
d) I feel happy when I look into their beauty.
26. Every year the Newcastle disease that attacks animals ,especially birds is spreading, so what shall you do towards your housing birds?
a) I don't feel sad because they are animals that don't feel of pain.
b) I feel happy if they exit from this disease safely without any effort from me.
c) I buy the drug and prepare it at home because they are not important like humans.
d) I buy the drug and prepare it after taking the consultation of the doctor.
27. Your commitment as a university student towards the public places in your university:
a) I don't commit of the positive behavior towards them because it is public for all students.
b) I commit of the positive behavior towards them and I don't care of the others' behavior.
c) I write advertisements asking students into the positive behavior towards them.
d) I feel happy when I see them clean.
28. You have a piece of land around your house, what is the best you can do for?
a) Clip it to permit only the wild plants' growing.
b) I prefer planting it sometimes ,with vegetables and some olive trees.
c) I encourage planting it with long term trees.
d) Committing of planting it with long term trees and vegetables without leaving them.
29. Usually it is written on the cigarette's packet (warning: smoking is the main cause for the lung diseases), so:
a) I am satisfied when I read this sentence.
b) I don't prefer smoking ,especially in the public places.
c) I commit avoiding smoking and ask others for doing that.
d) Smoking is necessary only during anger.
30. The developed and developing countries concern of health care of kids and adults that leads into spreading the private health centers. What shall you do if you heard about a campaign for grafting against diseases?
a) I prefer going to governmental grafting centers only because they are cheap.
b) I encourage people into grafting themselves against diseases.
c) I go to be grafted in any center regardless its type according to the dangerous situation.
d) I don't take any vaccine and run away from diagnosed sick people

Appendix C
Key Answer for EVEs Levels

Q1	c	b	d	a
Q2	c	b	a	b
Q3	b	a	d	c
Q4	c	a	b	d
Q5	b	c	a	d
Q6	b	d	c	a
Q7	c	b	a	d
Q8	c	a	b	d
Q9	c	a	d	b
Q10	d	a	b	c
Q11	d	c	a	b
Q12	c	a	b	d
Q13	b	c	d	a
Q14	c	b	a	d
Q15	b	c	d	a
Q16	d	c	a	b
Q17	c	b	a	d
Q18	a	d	c	a
Q19	c	a	d	b
Q20	c	b	a	d
Q21	b	a	d	c
Q22	c	d	b	a
Q23	d	a	c	b
Q24	a	c	b	d
Q25	c	d	a	b
Q26	d	c	b	a
Q27	c	b	d	a
Q28	d	c	b	a
Q29	c	b	a	d
Q30	c	b	a	d

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