The Environmental Awareness Of The Students In The College Of Agricultural Engineering Sciences In Duhok University, Kurdistan Region Of Iraq

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Abstract:
This study attempts to clarify the environmental awareness among students of the college of Agricultural Engineering Sciences at the University of Duhok,in Kurdistan region of Iraq and determine the association between the environmental awareness level and some personal characteristics. The sample of the research consist of (226) students representing 24 % of the total number of the study population. A scale of 42 items was prepared to measure the environmental awareness level of the respondents. A personal interview schedule was used for data collection and was applied during the academic year (2022-2023). the research found that there is no statistically significant relationship between the level of water awareness and each of (Age, Gender, Background, Academic year, Father's educational level ,Mother's educational level ,which community do you belong to, Current residence, number of family members, and Environmental information sources), Based on the results a number of the recommendations suggested .

Key words: Environmental awareness level, university students

Introduction:
The concept of development is no longer limited to achieving economic and social progress only, but the preservation and maintenance of the environment has become one of the important foundations within which the development process takes place, and the preservation of the environment has become one of the challenges facing developing countries when planning for comprehensive development(Zerouali,2021).

The world today is interested in consolidating the principles of preserving the environment and natural resources as a basic basis for sustainable development, and achieving sustainable development requires active popular participation at all social levels, in addition to government effort at the political, legislative and legal levels in order to secure a clean environment for communities while achieving the causes of sustainability (Habib,etal.2016).

In the Kurdistan Region and Iraq in general, the environment has been deteriorating since the seventies of the last century, and the percentage of pollutants has doubled due to the many wars that the country has been exposed to, the use of chemical weapons, the burning and destruction of villages and forests, the draining of marshes, the lack of interest in green spaces, the increase in desertification, the lack of efficient sanitation systems, and the old networks Liquefied water, water purification projects and complexes, and the lack of an integrated sanitary landfill for waste, in addition to the low environmental awareness and culture, and the poor environmental infrastructure in general.

(Rivard, 2003) confirms that environmental problems are complex problems that are difficult to regulate and deal with through legislation only, and because they are basically a behavioral issue, the best solution to confront them and preserve and protect the environment lies in the preparation of a person who understands his environment, aware of its conditions, aware of the problems it faces and able to contribute to its protection and maintenance out of desire and conviction.

Interest in environmental awareness began since the thirties of the last century. After the focus of attention on the environment focused on protecting the environment and its resources, specialists found that the idea of protection alone is not sufficient to solve environmental problems, especially after the exacerbation of those problems due to the excessive use of environmental resources and components, which prompted specialists In the environmental field, to go to education to help solve these problems and mitigate their severity, by improving the attitudes of individuals and their awareness towards the environment (Reddy , et al. 2007).

(Ardoin, etal.2020) indicated that the shortcomings in dealing with environmental problems often stem from the lack of environmental awareness of the individual and his lack of knowledge of the complex relationships that link him with his environment., and help him. In forming positive attitudes towards them, and providing them with the necessary skills to

behave in an environmentally friendly manner, and this will only be achieved through a systematic and integrated process in the entire educational process.

The university contributes to strengthening the values, attitudes and behaviors previously acquired by the student, as well as the acquisition of some new values and trends. Therefore, universities should bear their societal responsibilities in researching and studying problems that affect society by conducting research in the field of sustainable development and teaching and including these topics in courses. education for university students, and thus can raise awareness and create a culture of sustainability for students and workers in university institutions, in order to achieve the most sustainable and environmentally friendly practices, and accordingly, this achieves a more sustainable society (Disterheft,etal.2012).

Hence, the university had to work on developing what it offers of study programs for its students to expand their perceptions and increase their knowledge and awareness of how to deal with and preserve the environment as well as increase their awareness of the impact of various activities on the environment, those that affect its deterioration in particular, and then these students will be able to take Sound decisions when carrying out various activities after their involvement in work and society(Kamel,2020).

Since students constitute a large percentage of our society, it is very important for those in charge of the educational process to care about developing the skills and capabilities of students towards their environments to change behavioral patterns harmful to the environment, such as throwing waste in squares and public places and other bad behaviors because of the immediate and future problems they cause, and equipping them with Knowledge and respect for the relationships that bind man to his environment.

Due to the importance of the environment and the seriousness of its exposure to deterioration and pollution, the idea of this research emerged, which aims to determine the level of environmental awareness of the students in the College of Agricultural engineering sciences at the University of Duhok and identifying the factors that affect it then identify their knowledge of environmental problems, appreciation, maintenance of cleanliness, benefit from them and work to improve them.

Research objectives:
1- To identify the environmental awareness level of students in Agricultural engineering .
2- To identify the association between the environmental awareness level and each of the following independent variable(Age, Gender, Background, Academic year, Father's educational level ,Mother's educational level ,which community do you belong to, Current residence, number of family members, and Environmental information sources)

Research hypothesis:
1- There is no association between the Environmental awareness level of the students in Agricultural engineering science as a dependent variable and each of the following independent variable (Age, Gender, Background, Academic year, Father's educational level ,Mother's educational level ,which community do you belong to, Current residence, number of family members, and Environmental information sources).

Materials and Methods:
This Study deals with all the students in the college of Agricultural Engineering Sciences in Dohuk University in Kurdistan Region of Iraq , it consist of (9) scientific departments , (5) Departments were selected randomly . A sample of 246 was randomly selected representing 24% of the study population. A questionnaire was designed to collect the research data, it was consist of two parts , the first part included independents variables and the second part included a scale of (42) item to measure the environmental awareness level .To measure the reliability of the scale Kurder-Richardson-21 formula was used with value (0.843). The data was analyzed by using SPSS 18 Program and a number of statistical methods were used such as:(Kuder-Richardson21, Percentages from frequency, Range, chi-square, Coefficient of contingency(rc)).

Results & Discussion:
1: Identifying the environmental awareness level in general:
The results of table (1) show that only (117) respondents representing (51.7699%) have a high level of environment awareness. While (104) respondents representing (46.0177%) came with medium level of environment awareness. Moreover, (5) respondents came with low level of environment awarenesswhich representing (2.2124%).

Table (1) shows distribution of respondents according to their environment awareness level

Environmentawareness level	Frequency	Percentage
Low (4-16)	5	2.2124
Medium (17-29)	104	46.0177
High (30-42)	117	51.7699
Total	226	100%

From the table above, we can conclude that the largest percentage of students in the College of Agricultural Engineering Sciences at the University of Duhok belong to the category of high level of environmental awareness. The curricula aimed at enhancing the emotional and skillful aspects related to education and environmental awareness, which was reflected in the high level of environmental awareness among students of the College. This result is consistent with the study (Al-Zoghbi 2015).

1.1 To determine the environment awareness level in each items

Table (2) illustrate the environment awareness of respondents according to the mean of each item.

Items	Mean	Rank
Do you know what is the meaning of environment?	0.9156	1
Do you think that farmers should use a drip irrigation system to conserve water?	0.8938	2
Do you think we are facing a real warning from nature?	0.8761	3
Is planting trees a way to reduce environmental pollution?	0.854	4
Do you think that a slight leak in the faucet is a waste of water?	0.8363	5
Do you know what is meant by environmental pollution?	0.8319	6
Do you know what it meant by water pollution?	0.8142	7
Do you know what are the component of environment?	0.8053	8
Do you know the sources of air pollution?	0.7965	9
Does mechanical and biological control is better than chemical control?	0.7965	10
Do you know what are the sources of soil pollution?	0.7876	11
Do you know what it meant by air pollution?	0.7788	12
Do you know what the causes of water pollution are?	0.7655	13
Is using chemical pesticides reduce the naturally existing biological enemies of the pests?	0.7522	14
Are there another type of pollution (other than air, water, and soil)?	0.7422	15
Is spraying of crops with chemicals effects the soil microorganisms ?	0.7301	16
Do you know kind of environmental pollution?	0.7168	17
Does using bio fertilizer in agriculture is a mean to reduce the use of chemical fertilizers?	0.6991	18
Is burning agricultural wastes lead to air pollution?	0.6947	19
Do you think we are facing a shortage of water?	0.6903	20
Does biofertilizers lead to better soil fertility and it is environmentally friendly?	0.6858	21
Does herbicides and pesticide cause environmental pollution?	0.6770	22
Does overusing of fertilizers cause soil pollution?	0.6728	23
Does the use of household chemical cleaners cause water pollution?	0.6726	24
Does the amount of usable water affect the environment?	0.6681	25
Does burning household wastes reduce solid wastes and don't cause environmental pollution?	0.6549	26
Does leaving dead bodies without disposing it safely, from the causes of air pollution?	0.6460	27
Do you know what are the consequences of water pollution?	0.6416	28
Does using of chemical fertilizers is essential for enhancing productivity?	0.6400	29
Do you know the pollution levels?	0.6283	30.5
Do you know what are the consequences of soil pollution?	0.6283	30.5
Is urbanization is a form of environmental pollution?	0.6239	32
Is it impossible to not use the chemicals (pesticides, herbicide, and fertilizers) in agriculture?	0.5973	33
Is burning waste a safe and fast way to get rid of waste ?	0.5929	34.5
Does disposing of chemicals in water surfaces (lake, ponds, and rivers) is safe to environment?	0.5929	34.5
Do you know the consequences of air pollution?	0.5841	36
Does using compost for soil fertilizing harm the environment?	0.5752	37
Does using growth regulator's in agriculture is dangerous on environment?	0.5708	38
Does the use of sewage for irrigation replace the use of fertilizers?	0.5619	39
Is bare land is a form of environmental pollution?	0.5531	40
Does burning agricultural wastes enhance soil fertility?	0.5487	41
Does using of undegradable bio fertilizers enhance the blooms of harmful herbs?	0.5398	42

Regarding the respondents awareness level in each of the items of the awareness scale , Table (2) results indicate that the items occupied the first 5 places were ((Do you know what is the meaning of environment?,Do you think that farmers should use a drip irrigation system to conserve water?,Do you think we are facing a real warning from nature?,Is planting trees a way to reduce environmental pollution?, and Do you think that a slight leak in the faucet is a waste of water?) , this can be explained by the fact that the respondents have a good amount of knowledge and information related to these fields, which they may have acquired during the different Academic years of education on the one hand, in addition to the environmental activities carried out by the students on various occasions. Furthermore, the last five item were(Does using of undegradable bio fertilizers enhance the blooms of harmful herbs?,Does burning agricultural wastes enhance soil

fertility?,Is bare land is a form of environmental pollution?,Does the use of sewage for irrigation replace the use of fertilizers?,andDoes using growth regulator's in agriculture is dangerous on environment?) , This indicates that there is a weakness in the knowledge of students in the College of Agricultural Engineering Sciences in these areas, Which requires courses and programs aimed at activating the environmental awareness process in all these areas, and integrating the concepts of environmental education with all studied subjects.

2. To identify the association between the environmental awareness level and each of the following independent variable(Age, Gender, Background, Academic year, Father's educational level , Mother's educational level , which community do you belong to, Current residence, number of family members, and Environmental information sources).

2.1 Gender

Table (3) distribution of the respondents according to the gender .

Environmental awareness Level / Gender	(4-16) Low	%	(17-29) Medium	%	(30-42) High	%	X^2	rc
Female	5	2.212	67	29.646	73	32.301	3.614	**0.0083 N.S**
Male	0	0.000	37	16.372	44	19.469		
Table value of (rc):	1%=0.161994			5%=0.123607				

To find the relationship between the Environment awareness level of the respondents and their gender, the rc = (0.0083) was used. The Results indicate that the research hypothesis that (that there is no significant relationship between respondent's Environment awareness level and their gender) is accepted . This suggests that there is no significant relationship between Environment awareness level of the students and their gender. This result is in line with (Elgamoudi, etal. 2022). While the result is not in line with (Al-Zou'bi,2015)

2.2 Background

Table (4) distribution of the respondents according to their background

Environmental awareness Level / Background	(4-16) Low	%	(17-29) Medium	%	(30-42) High	%	X^2	rc
Rural	3	1.327	33	14.602	44	19.469	1.327	**0.005 N.S**
Urban	2	0.885	71	31.416	73	32.301		
Table value of (rc):	1%=0.161994			5%=0.123607				

The results show that the research hypothesis (H_0) that there is no significant relationship between the respondents environment awareness level and their Background is accepted (rc= 0.005). This suggests that there is no significant relationship between respondents' environment awareness level and their background. This result agree with (Saber,2018) study, and not agree with (Al-Adaily,2010) study.

2.3 Academic year

Table (5) distribution of the respondents according to their Academic year :

Environmental awareness Level / Academic year	(4-16) Low	%	(17-29) Medium	%	(30-42) High	%	X^2	Rc
Third	4	1.770	79	34.956	83	36.726	0.745	**0.004 N.S**
Fourth	1	0.442	25	11.062	34	15.044		
Table value of (rc):	1%=0.161994			5%=0.123607				

The results show that the research hypothesis (H_0) that there is no significant relationship between the respondents environment awareness level and their academic year is accepted (rc= 0.004). This suggests that there is no significant relationship between respondents' environment awareness level and their Academic year .This result of study not agree with (Saber,2018),

2.5 Mother's education level

Table (6) distribution of the respondents according to their mother's education level

Mother's educational Level \ Environmental awareness Level	(4-16) Low	%	(17-29) Medium	%	(30-42) High	%	X^2	rc
Illiteracy	2	0.885	71	31.416	75	33.186	1.4462	0.005 N.S
Primary	2	0.885	16	7.080	22	9.735		
High school	1	0.442	8	3.540	8	3.540		
Institute or College	0	0.000	9	3.982	12	5.310		
Table value of (rc): 1%=0.161994 5%=0.123607								

The results show that the research hypothesis (H_0) that there is no significant relationship between the respondents environment awareness level and Mother's Education level   is accepted (rc= 0.005). This suggests that there is no significant relationship between respondents' environment awareness level and Mother's Education level   variable .This result not in line with (Baddour,etal.2018) and (Azadani,etal.2013)

2.6 Father's education level

Table (7) distribution of the respondents according to their father's education level

Father's educational Level \ Environmental awareness Level	(4-16) Low	%	(17-29) Medium	%	(30-42) High	%	X^2	rc
Illiteracy	0	0	45	19.912	54	23.894	3.7310	0.008 N.S
Primary	3	1.327	27	11.947	30	13.274		
High school	2	0.885	15	6.637	15	6.637		
Institute or College	0	0.000	17	7.522	18	7.965		
Table value of (rc): 1%=0.161994 5%=0.123607								

The results show that the research hypothesis (H_0) that there is no significant relationship between the respondents environment awareness level and father's Education level   is accepted (rc= 0.008). This suggests that there is no significant relationship between respondents' environment awareness level and father's Education level   variable. This result is in line with (Shahi,etal.2021), and not agree with (Azadani,etal.2013) study.

2.7 Which community do you belong

Table (8) distribution of the respondents according to theirwhich community do you belong and its correlation with their environmental awareness level:

Environmental awareness Level Which community do you belong	(4-16) Low	%	(17-29) Medium	%	(30-42) High	%	X^2	rc
Citizen	5	2.212	88	38.938	102	45.133	4.2292	0.009 N.S
Internally displaced	0	0.000	8	3.540	10	4.425		
Refugee	0	0.000	2	0.885	3	1.327		
Outside country	0	0.000	6	2.655	2	0.885		
Table value of (rc): 1%=0.161994 5%=0.123607								

The research hypothesis "that there is no significant relationship between the environment awareness level of the respondent and which community do you belong "is accepted. This suggests that there is no significant relationship between environment awareness level and which community do you belong (rc = 0.009). The result of study agree with (Saber,2018)

2.8 Current residence

Table (9) distribution of the respondents according to their current residence :

Environmental awareness Level Type of place of residence	(4-16) Low	%	(17-29) Medium	%	(30-42) High	%	X^2	rc
City	2	0.885	68	30.088	78	34.513	2.7158	0.007 N.S
District	1	0.442	12	5.310	18	7.965		
Sub- District	2	0.885	15	6.637	13	5.752		
Village	0	0.000	9	3.982	8	3.540		
Table value of (rc): 1%=0.161994 5%=0.123607								

The research hypothesis "that there is no significant relationship between the environment awareness level of the respondent and Current residence "is accepted. This suggests that there is no significant relationship between environment awareness level and Current residence (rc = 0.007).The result of study not in line with (Saqar,2007)

2.9 Number of family members

Table (10) distribution of the respondents according to their number of family members:

Environmental awareness Level No. of Family member	(4-16) Low	%	(17-29) Medium	%	(30-42) High	%	X^2	rc
(2-6) Members	2	0.885	37	16.372	44	19.469	0.432	0.003 N.S
(7-11) Members	2	0.885	58	25.664	61	26.991		
(12-16) Members	1	0.442	9	3.982	12	5.310		
Table value of (rc): 1%=0.161994 5%=0.123607								

The research hypothesis that (there is no significant relationship between respondents number of family member and their level of environment awareness) is accepted (r= 0.003). This suggests that there is no significant relationship between respondent number of family member and level of environment awareness. The result of study not in line with (Al-Adaily, 2010) study.

2.10 Environmental   information sources

Table (11) distribution of the respondents according to their environmental information sources

Agr. information sources \\ Environmental awareness Level	(4-16) Low	%	(17-29) Medium	%	(30-42) High	%	X^2	rc
(12-19) Low	1	0.442	17	7.522	14	6.195	2.074	0.006 N.S
(20-27) Medium	4	1.770	70	30.973	77	34.071		
(28-35) High	0	0.000	17	7.522	26	11.504		
Table value of (rc):	1%=0.161994			5%=0.123607				

The research hypothesis that (there is no significant relationship between respondents Environmental information sources and their level of environment awareness) is accepted (r= 0.006). This suggests that there is no significant relationship between respondent Environmental information sources and level of environment awareness. The result not agree with (Shahi, etal.2021) study.

Conclusion:
1- From the study results we can conclude that the largest percentage of students in the College of Agricultural Engineering Sciences at the University of Duhok belong to the category of high level of environmental awareness. This confirms the impact of environmental curricula and activities on developing awareness of environmental problems.
2- The variables (Gender, Background, Academic year, Mother's Education level, father's Education level, Which Community do you belong, Current residence, Number of family members, Environment information source) were not related significantly with the Environment awareness level of the respondent. The researchers believe that this result may be attributed to the fact that the vast majority of students have drawn their environmental culture from the same source, whether in unintentional environmental education (friends, family, media) or in intended environmental education through Education curricula.

Recommendation:
Depending on the research findings the researchers recommend organizing courses and programs aimed at activating the process of environmental awareness in all Scientific departments , and integrating the concepts of environmental education with all academic subjects through the integrated approach. It also recommends conducting studies that include other variables such as the relationship of environmental awareness to environmental trends or environmental culture.

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