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Measuring the Awareness of University Students Towards Environmental Pollution: A Case Study of Khorfakkan University Students

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Abstract: The study aimed to measure the towards the environment pollution among university students, and in this a measure was prepared that contains students' knowledge of environmental pollution and its effects, and students' participation in facing environmental problems. The study relied on the sample social survey method by designing a sample representative of the study community consisting of 300 students at the University of Khorfakkan. A scale was designed to measure students' awareness of the environment. To design the scale, a guiding program was relied upon to determine measurement criteria in modifying students' behavior towards the environment. This program is composed of reinforcement strategies for self-motivation, education, change and support of positive attitudes, participation, persuasion and knowledge building. The study achieved several results, including a high rate of knowledge among university students, and students' awareness of the effects of environmental pollution. On the other hand, there is a decrease in the rate of awareness of environmental issues and the rate of students' participation in facing environmental problems.

Keywords: Social work, environment, environmental pollution, environmental behaviors, university students, United Arab Emirates.

1 Introduction

There is a need to raise awareness and enhance the participation of university students in activities of environmental problems, especially in the issue of environmental pollution and sustainability activities, university students should be well aware of environmental problems [1].

Universities and their students and graduates have an important role in building awareness of environmental pollution. This awareness, according to Roman Novotný et al. [2] may vary depending on the students' specialization. Hafiz, M, et al. [3], They indicated to the level of environmental awareness, environmental concern and environmental behavior of university students were found significantly high. Students in universities being an important part of responses to reduce environmental problems responsibilities to increase the awareness on environmentally sustainable future [4,5].

This paper study aims to determine the awareness and knowledge of environmental issues among university students, by measuring their environmental behavior. This will be done based on a social program designed to modify wrong environmental behaviors among them.

The main objective of this study is to measure the awareness of university students about environmental pollution in order to measure the knowledge of university students about environmental pollution and the participation of university students in facing environmental problems.

The human relationship with the environment has become one of the urgent contemporary issues after this relationship reached a great degree of deterioration and imbalance and the resulting serious environmental problems that threaten humanity.

Many under development countries suffer from deterioration of the basic environment and the random growth of underdeveloped neighborhoods, which reflects the underdevelopment of the basic environment, ecological system, social structure, the emergence of poverty, unemployment and economic crises, as well as the failure of social and economic policies to keep pace with the restrictions of economic dependence, such as external loans and debts, as creditor countries impose on debtor countries to use the trade surplus to service debts, and they resort to withdrawing extensively from resources.

The profession of social service is one of the professions concerned with preserving and protecting the environment. This is due to the fact that the environment has taken on a social dimension, which has made the environment the responsibility of everyone, to work on creating a supportive and effective environmental movement in all institutions of society to educate

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citizens about environmental problems, which have become a threat to the future of man.

The role of the social worker is the planning and implementing of programs and projects aimed at preserving the environment and preserving it by creating adaptation and balance between man and his environment, as well as providing the individual with an understanding of the causes of environmental problems while defining his role by assuming responsibility and providing him with skills related to solving the problem, which is called the development of environmental awareness.

2 Research Questions

This study seeks to achieve its objectives by answering the following main question:

What is the measurement of wrong environmental pollution behaviors among university students?

The following sub-questions emerge from this:

1- To what extent do university students know the manifestations of environmental pollution?

2- To what extent are university students aware of the effects of environmental pollution?

3- What is the extent of university students' participation in facing environmental problems?

3 Methodology

The study relied on the sample social survey method by designing a sample representative of the study community consisting of 1500 students at Khorfakkan University. The research sample was calculated by applying the equation Yamani for sample calculation:

n=N/(1+Ne^2) which reached the size of 300 students. The sample selected randomly and systematically by 20% of the total number of 1,500 students participating in green life activities in community.

A scale was designed to measure students' awareness towards the environment that includes knowledge of the manifestations of environmental pollution and its effects, and students' participation in facing the social problem. The scale relied on an indicative program to define measurement criteria in modifying students' behavior towards the environment, and this program is composed of strategies to reinforce self-motivation, education, change, as well as to support positive attitudes, participation, persuasion and knowledge building. The extension program relied on data collection methods, which are group discussion, role-playing, seminars, and field visits to the local environment.

The scale was presented to a number of arbitrators (12), academics and experts in the field of environment. The scale was corrected by giving 3 degrees for answering the scale phrases with a yes, 2 degrees for answering the scale phrases in our times, and one point for answering the scale phrases with a no.

To measure the validity of the internal consistency, a set of statistical measures were used to measure the counseling program as follows:

Table 1: Correlation coefficients between the score of each statement of the knowledge dimension and the total score of the dimension

Phrase number	Correlation coefficient value	Significance level	Phrase number	Correlation coefficient value	Significance level
7	0.19	0.05	25	0.25	0.01
11	0.32	0.01	26	0.31	0.01
12	0.35	0.01	28	0.17	0.05
13	0.26	0.01	33	0.17	0.05
19	0.23	0.01	34	0.37	0.01
21	0.31	0.01	38	0.54	0.01
23	0.33	0.01	41	0.38	0.01
24	0.33	0.01			

It is clear from the previous table that there is consistency between the expressions and the first dimension, which is the knowledge of the university students about the manifestations of environmental pollution, at a significant level (0.01), except for the expressions (8, 27, 33), and there is significance between them and the first dimension at a significant level (0.05).

Table 2: Correlation coefficients between the score of each statement of the perception dimension and the total score of the dimension

Phrase number	Correlation coefficient value	Significance level	Phrase number	Correlation coefficient value	Significance level
2	0.30	0.01	27	0.31	0.01
5	0.55	0.01	29	0.19	0.05
8	0.44	0.01	30	0.20	0.05
14	0.35	0.01	31	0.40	0.01
15	0.45	0.01	32	0.22	0.01
16	0.31	0.01	35	0.49	0.01
20	0.18	0.05	42	0.43	0.01
22	0.21	0.05			

It is clear from the previous table that there is consistency between the expressions and the second dimension, which is the awareness of university students of the effects of environmental pollution, at a significant level (0.01), except for expressions (20, 22, 29, 30), between which there is significance and the second dimension at a significant level (0.05).

Table 3: Correlation coefficients between the score of each of the expressions of the participation dimension and the total score of the dimension

Phrase number	Correlation coefficient value	Significance level	Phrase number	Correlation coefficient value	Significance level
1	0.20	0.05	36	0.63	0.01
3	0.33	0.01	37	0.44	0.01
4	0.37	0.01	39	051	0.01
6	0.38	0.01	40	0.66	0.01
9	0.37	0.01	43	051	0.01
10	0.54	0.01	44	0.71	0.01
17	0.59	0.01	45	0.58	0.01
18	0.19	0.05			

It is clear from the previous table that there is consistency between the expressions and the third dimension, which is the participation of university students in facing environmental problems, at a significant level (0.01), except for expressions (1, 18) that have significance between them and the first dimension at a significant level (0.05).

Table 4: Correlation coefficients between the sum of the scores for each dimension of the environmental awareness scale and the total score of the scale.

Scale dimensions	Total marks	Significance level
Knowledge	0.58	0.01
Perception	0.66	0.01
participation	0.89	0.01

It is clear from Table 1 that the correlation coefficients between the dimensions of the scale and the total score are statistically significant at the level of 0.01, using the Pearson correlation coefficient, which indicates the internal consistency of the scale, and thus confirms its validity.

This indicates that there is a relationship between the first dimension, which is knowledge of environmental pollution manifestations and the total score of the scale, as well as between the second dimension, which is awareness of the effects of environmental pollution manifestations and the total score of the scale, and finally the third dimension, which is participation in confronting environmental problems and the total score of the scale, at a significant level (0.01). This confirms the existence of a strong relationship between the dimensions of the scale and the degree of the overall scale.

Table 5: Shows the stability coefficient of the scale.

Variable	Correlation coefficient	Indication
1- To acquaint students with the manifestations of environmental pollution	0.89	Function
2- To make students aware of the dangers of environmental pollution	0.92	Function
3- Student participation in facing environmental problems	0.87	Function
Scale as a whole	0.85	Function

It is clear from the previous table that the correlation coefficients between the dimensions of the scale and the total score of the scale has a statistical significance at the level (0.01).

Table 6: The self-validity coefficient of the scale is shown.

Variable	Subjective validity coefficient	Indication
1- To acquaint students with the manifestations of environmental pollution	0.94	Function
2- Students' awareness of the dangers of environmental pollution	0.96	Function
3- Student participation in facing environmental problems	0.93	Function
Scale as a whole	0.92	Function

It is clear from the previous table that the subjective validity coefficient between the dimensions of the scale and the total score of the scale has a statistical significance at the level (0.01), which indicates the validity of the scale.

4 Brief Literature Review

Martin Whiteman et al. et al. [6], explained that pollution affects the environment work and leads to many diseases, such as chest and pulmonary diseases, as a result of noise. They emphasized the need to provide environmental awareness programs to counter the effects of pollution, which results in increased production.

In her study, Katherine McMain Park, [7] indicated the importance of developing environmental awareness among individuals by liberating human energy to confront environmental problems. The study emphasized the role of the social work profession in achieving environmental awareness.

Schmitz, CL. et al.[8], sought in their study to identify the distinction of a model of environmental social work in the context of interdisciplinary practice with peace and conflict workers, and through the integration of comprehensive models of economic development, considering that the focus on cross-disciplinary collaboration provides leadership in the field of environmental studies and leads to distortion in the collaborative, creative, and interactive processes required for environmental practice.

In their article, Coates, J., Gray, M. [9] provide an overview and analysis of social work's engagement with the modern environmental movement by discussing key trends and themes in environmental social work and the importance of interdisciplinarity in order to respond effectively to the many dimensions of climate change and environmental degradation.

Etch studies have concluded that interest in general issues in society, including environmental issues, may have decreased interest in them during COVID 19. [10,11,12].

Sylvia Ramsay and Jennifer Boddy, [13] aimed to identify the attributes and characteristics of environmental social work, and to develop an operational definition using a case study to describe an approach to social work practice that is grounded in environmental justice principles. This study also showed that the applications of the practice of environmental social work are scarce, and there are different terms and a set of interpretations for this existing practice.

The relationship between the rapid growth of some societies and the impact of this growth on the well-being of the individual and society is one of the important issues, and this is indicated by the study of Kathryn J. Brasier et al. [14], which indicated differences in perceptions of the impact of energy development on the local community in Pennsylvania, where it concluded that in sparsely populated areas, higher levels of development lead to a broader awareness of the impacts of energy development, both positive and negative, and the need to track these perceptions during development.

There are many studies and research articles on how people learn to think about sustainability, and how this directs their behavioral intentions and behaviors as local and global citizens. For example, Wright, Wilton [15], found through in-depth interviews with 37 facilities management managers in Canadian universities that almost all participants felt that environmental sustainability was a vital part of sustainable development, and they often mentioned the use of resources and the reduction of waste. Wachholz, S. et al, [16] also show that most college students express environmental concern about climate change. Yet students still have common misconceptions about the underlying causes and consequences of climate change.

Tai-Yi Yu, ai-Kuei Yu, show that personality traits may present some barriers to promoting a pro-environmental attitude for undergraduates and could serve as a useful framework for further investigations. Green education can improve undergraduates' interest in a pro-environmental attitude and relationship with the planet, and they may behave in a more environmentally friendly manner [17].

Some studies, such as the study of Arminda Paço and Tânia Lavrador, focused on characterizing the definition of an environmentally friendly consumer, and applying the relationship between knowledge, attitudes, and behavior to this end. The results of their study indicated that there is no relationship between knowledge and attitudes, and between knowledge and behavior, and the weakness of the relationship between attitudes and behavior only [18]. It was also found that males and older students studying engineering, social sciences, and humanities report higher levels of environmental knowledge. However, when it comes to attitudes and behaviors, females seem to show greater awareness about these issues.

5 Discussions & Results

Table 7: Shows the value of the Chi-Square of the three dimensions of the scale, the total score and its level of significance.

Scale dimensions	Knowledge	Perception	Participation	Total marks
Ca2 value	71.6	62.3	58.1	54.2
Significance level	0.01	0.01	0.01	0.01

It is clear from Table 7 that students have an increased knowledge of environmental pollution manifestations, as the value of Ca2 = 71.6, while their awareness of the effects of environmental pollution manifestations decreases, as the value of Ca2 = 62.3. Also, their participation in facing environmental problems decreases, as the value of Ca2 = 58.1, while the value of Ca2 = 58.1 decreased. Ca2, in the total score of environmental awareness, reached 54.2.

This indicates a high rate of knowledge among university students about the manifestations of environmental pollution, which confirms the existence of ideas and beliefs they have in these manifestations, but their awareness of the effects of these manifestations decreases, which is their sense of the importance of these manifestations and the negative effects of them. Then their participation rate in facing environmental problems decreases, which led to a decrease in the degree College to measure students' environmental awareness.

Table 8: Shows the results of the analysis of variance (ANOVA) for students' knowledge of environmental pollution.

Variable	Source of contrast	Sum of squares	Degrees of freedom	Mean of squares	Value "f"	Significance level
Knowledge	Between groups	7	3	2.33	0.41	Non-function
	Within groups	817	144	5.67		

It is clear from Table 8 that there are no statistically significant differences between students in knowledge of environmental awareness, where the value of "F" = 0.41, which is not statistically significant.

This indicates that the students did not have any statistically significant differences in the first dimension of the scale, which is knowledge of the manifestations of environmental pollution.

This indicates that students have knowledge of the manifestations of environmental pollution, but they do not exploit this knowledge to reach awareness, behavior and participation.

Table 9: Shows the results of the analysis of variance (ANOVA) for students' perception of the effects of environmental pollution.

Variable	Source of contrast	Sum of squares	Degrees of freedom	Mean of squares	Value "f"	Significance level
Knowledge	Between groups	43.5	3	14.5	2.67	0.05
	Within groups	782.4	144	5.43		

It is clear from Table 9 that there are statistically significant differences among students in their awareness of the effects of environmental pollution, where the value of "F" = 2.67, which is statistically significant at the level of 0.05.

This confirms the existence of statistically significant differences between students in their perception of the effects of environmental pollution, which is the second dimension in the scale, and this indicates that students do not have an awareness of the effects resulting from environmental pollution. Studies on the need to come up with a program for developing environmental awareness to modify individuals' perception of environmental problems.

Table 10: Shows the results of the analysis of variance (ANOVA) for students' participation in facing environmental problems.

Variable	Source of contrast	Sum of squares	Degrees of freedom	Mean of squares	Value "f"	Significance level
Knowledge	Between groups	381.3	3	127.1	5.55	0.01
	Within groups	3297.6	144	22.9		

It is clear from Table 10 that there are statistically significant differences between students in their participation in environmental awareness, where the value of "F" = 5.55, which is statistically significant at the level of 0.01.

This shows that there are statistically-significant differences among the students in the second dimension of the scale, which is their participation in facing environmental problems, and this indicates that the educational level of the individual leads to an increase in participation in facing the problem.

This result agreed with the results of other studies that confirmed that the high educational level of workers in the factory led to an increase in their awareness of environmental problems, and thus increased their participation in facing these problems.

Table 11: Shows the results of the analysis of variance (ANOVA) for the total score of the environmental awareness scale for students.

Variable	Source of contrast	Sum of squares	Degrees of freedom	Mean of squares	Value "f"	Significance level
Knowledge	Between groups	773.5	3	257.8	5.13	0.01
	Within groups	7240.8	144	50.3		

It is clear from Table 11 that there are statistically significant differences between students in the total score of the environmental awareness scale, where the value of "F" = 5.13, which is statistically significant at the level of 0.01.

Hence, this indicates that there are statistically significant differences in the degree of the environmental awareness scale among students, and the low score of the scale, which confirms the university students' need for social, environmental and educational programs and environmental activities to strengthen environmental awareness and strengthen social aspects and positive environmental behavior. This result is consistent with the results of Liu's study [19].

6 Conclusion

• It is clear from the results of the study that the first sub-question was rejected, as the study confirmed the high rate of knowledge among university students.

• As for the second dimension, which is students' awareness of the effects of environmental pollution, there is a decrease in the perception rate among university students, which confirms the agree the second sub-question.

• Despite students' awareness of issues related to environmental problems, there is a decrease in the actual participation of university students in community activities aimed at green living

• As for the scale as a whole, the value of Ka2 decreased, this confirms the low rate of actual participation of students in community activities related to environmental issues compared to their awareness of the seriousness of environmental pollution

Conflict of interest: The authors declare that there is no conflict regarding the publication of this paper.

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