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Environmental Awareness Among School-Age Children in Gaza - Palestine

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Environmental Awareness Among School-Age Children in Gaza - Palestine

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بسم الله الرحمن الرحيم

﴿ اللهُ نور السماوات والأرض، مثلُ نورِه كمشكاة فيهـا مصـباح المصباح في زجاجة الزجاجةُ كأنها كوكب دري يوقَد من شجرة مباركة زيتونة لا شرقية ولا غربية يكاد زيتها يضـيءُ ولـو لـم تمسسه نار نور على نورٍ يهدي الله لنورِه من يشـاءُ ويضـرِب اللهُ الأمثالَ للناسِ والله بكلِ شيءٍ عليم ﴾

صدق الله العظيم

سورة النور الآية "35"

الإهـداء

قال رسولنا الكريم: "من سلك طريقاً يلتمس فيه علماً سهلَ الله له به طريقاً إلى الجنَة".

صدق رسولنا الكريم.

كلماتي أقزام ومشاعري عملاقة.....

أحبائي

أهلي

وأصدقائي

اسمحوا لي أن أتقدم بكُل تواضعٍ مني وفَخراً بوالدي ولكل من له حقُ علَي ومن كـان نبراساً لمسيرة دربي، بإهداء هذا الجهد المتواضع والذي آمل من الله العلي القـدير أن يبلغَني وإياكم وكلَ من التمس طريقاً إلى العلم ، النُور و التوفيق وأن يكون ثمـرةَ مـا اجتهدتُ للوصول إليه طريقاً إلى كل ما فيه خدمةً للعلم والوطن والدين.

والله ولي التوفيق

أمل خليل صرصور

Declaration

I certify that this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged, and that this thesis (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed ……..

Amal Khalil Ibrahim Srasour

Date : December / 2006

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Abstract

Nurturing and science education play a significant role in developing a positive attitude toward the environment. Several researchers have shown that there is an important link between environmental science education and environmental awareness and attitude. According to this importance, the Ministry of Education and Higher education conducted the first Palestinian Environment and Health curriculum for males only in the high basic school in Gaza Strip and West Bank since the educational year 2001/2002.

The purpose of this study is to determine the level of environmental awareness and attitude among students of class 9 in the governmental high basic school in Gaza city, and their relationships with gender, residential area and grade of students' scores achievement at school. Also, to investigate the relation between environmental awareness and attitude. The researcher constructed a questionnaire composed of two sections, the first section was to measure students' environmental awareness by applying multiple choice questions test, and the second section was a tool to measure the attitudes of students' toward their environment.

The study was applied in eight governmental high basic schools selected in a stratified random way from four areas of Gaza city according to Gaza municipality distribution, with four male schools and four female schools. The questionnaire was completed by 400 students of class 9 in the governmental high basic school children in Gaza city for the educational year 2005 – 2006 with equal numbers of male and female students in the study sample. SPSS (Statistical Package for Social Science) software version 11.5 was used to process the data. The results indicated that the study students' have a relatively moderate level of environmental awareness, with a mean score of 16.85 (total : 24 score) and percentage of their environmental awareness level was 70.2%. While their positive

attitude toward the environment was low with a mean of 19.30 scores (total: 30 score) with a percentage of about 64.33%. There are significant differences in the level of environmental awareness and attitude based on gender. One of the most interesting results is that, males have a significantly higher environmental awareness than females, while females have shown more positive attitude toward environment than males. In addition, significant differences are found in the students' environmental awareness and attitude based on students' place of residence favoring resident area, that the level of environmental awareness and attitude among students of this area was higher than those of other three areas in Gaza city (popular area, recent area and agricultural area). Also, significant differences are found in the students' environmental awareness and attitude according to grade of students' study achievement at school favoring students whose grades were higher than 90 %, which indicates that there is a direct proportional relation between the level of environmental awareness and attitude with students' grade. The results show that there is a positive significant relationship between environmental awareness and attitude among the study population. According to this result, it can be postulated that good background in environmental knowledge could eventually lead to development of positive attitude toward the environment. Therefore, it is important to enrich our students' background in environmental knowledge and awareness, especially for the female students who do not have the opportunity to learn about environment through environmental curriculum in their school which was conducted on males only until the date of conducting this study. The findings of this study may be useful it accentuate the importance of improving our students' environmental awareness and attitude to insure protecting our Palestinian environment from further deterioration.

الخلاصة

تلعب التربية والتعليم دوراً هاما في زيادة وتنمية اكتساب التوجهات الايجابية نحو البيئة. حيث أكد العديد من الباحثين وجود ارتباط بين التعليم البيئي وزيادة درجة الوعي والتوجه نحو البيئة. بناءً على ذلك قامت وزارة التربية والتعليم العالي بتطبيق منهاج الصحة والبيئة على طلاب المرحلة الأساسية العليا في المدارس الحكومية في قطاع غزة والضفة الغربية وذلك في بداية العام الدراسي 2001-2002 م.

تهدف هذه الدراسة إلى وصف مستوى الوعي البيئي والتوجه نحو البيئة لدى طلبة الصف التاسع من المرحلة الأساسية العليا في المدارس الحكومية لمدينة غزة، ودراسة علاقة مستوى الوعي والتوجه نحو البيئة ببعض المتغيرات كمتغير الجنس، مكان السكن والمستوى التحصيلي للطالب في المدرسة. إضافة إلى دراسة العلاقة بين درجة الوعي البيئي لدى الطلبة ودرجة توجهاتهم نحو البيئة. لتحقيق هذا الهدف، قامت الباحثة بإعداد استبانه مكونة من قسمين، القسم الأول عبارة عن اختبار من نوع الاختيار من متعدد لقياس مستوى الوعي البيئي، و القسم الثاني عبارة عن أداة قياس لتحديد توجهات الطلبة نحو البيئة.

تم تطبيق الدراسة في ثمان مدارس حكومية من المرحلة الأساسية العليا والتي تم اختيارها بطريقة الطبقات العشوائية لتكون موزعة على أربع مناطق سكنية في مدينة غزة بناءً على تقسيم بلدية غزة للمدينة، بحيث اشتملت العينة على أربع مدارس للذكور و أربع مدارس للإناث، وقام بالإجابة على أسئلة الاستبانة 400 طالب وطالبة بالتساوي من الصف التاسع للمرحلة الأساسية العليا في مدينة غزة للعام الدراسي 2005- 2006 . تم تحليل نتائج الدراسة باستخدام برنامج الحاسوب الإحصائي SPSS . version. 11.5

أظهرت نتائج الدراسة أن مستوى الوعي البيئي للطلبة (عينة الدراسة) كان متوسط نسبيا ، حيث بلغ المتوسط الحسابي لإجابات الطلبة على فقرات الاستبانة الخاصة بقياس درجة الوعي البيئي لديهم على 16.85 من الدرجة الكلية والبالغة 24 درجة ونسبة الوعي البيئي لدى الطلبة 70.2%. بينما اتسمت توجهات طلاب عينة الدراسة نحو البيئة بأنها منخفضة (متدنية) نسبيا، حيث بلغ متوسط إجابات الطلبة التي تعكس توجهاتهم نحو البيئة 19.33 درجة من الدرجة الكلية والبالغة 30 درجة وبنسبة 64.33%. كما أظهرت النتائج وجود فروق ذات دلالة إحصائية في مستوى الوعي البيئي و التوجهات نحو البيئية لدى الطبة يعود لمتغير الجنس. الجدير بالاهتمام في هذه النتيجة أنه بينما أظهرت النتائج أن مستوى الوعي البيئي لدى الطلاب أعلى منه لدى الطالبات ، أظهرت النتائج أن مستوى التوجه الايجابي لدى الطالبات نحو البيئة أعلى منه لدى الطلاب.

كما أظهرت النتائج وجود فروق ذات دلالة إحصائية في مستوى الوعي البيئي والتوجه نحو البيئة تعزى لمنطقة السكن، حيث بلغت نسبة الوعي البيئي والتوجه نحو البيئة بين طلبة المنطقة السكنية أعلى من النسبة بين طلبة المناطق الثلاثة الأخرى في مدينة غزة (المنطقة الشعبية، المنطقة الجديدة، والمنطقة الزراعية). أظهرت النتائج وجود فروق ذات دلالة إحصائية في مستوى الوعي البيئي والتوجهات نحو البيئة بين الطلبة يعزى لمستوى التحصيل العلمي في درجات الطالب في المدرسة، فقد كانت نسبة الوعي البيئي والتوجه نحو البيئة أعلى بين الطلبة الذين حصلوا على درجات أعلى من 90% ، حيث أظهرت النتائج وجود علاقة طردية بين درجة الوعي والتوجه نحو البيئة مع درجة التحصيل العلمي لدى الطالب في المدرسة. أما فيما يتعلق بدرجة ارتباط مستوى الوعي البيئي مع التوجه نحو البيئية فأظهرت النتائج وجود ارتباط موجب ودال إحصائيا بين مستوى الوعي البيئي والتوجه نحو البيئية لدى طلاب الصف التاسع الذين اشتملت عليهم الدراسة.

بناءً على ذلك توصي الباحثة بزيادة الاهتمام برفع مستوى المعرفة و الوعي البيئي لدى أبنائنا الطلبة خصوصا الطالبات اللواتي لم يحصلن على نفس الفرصة التي حصل عليها الطلاب في تعلم المفاهيم

البيئية من خلال المنهاج المطبق عليهم في المدارس الحكومية للمرحلة الأساسية العليا دون الطالبات وذلك حتى تاريخ إجراء هذه الدراسة.

نتائج الدراسة قد تكون فرصة لتسليط الضوء وإبراز مدى أهمية تحسين ورفع مستوى الوعي البيئي و تعزيز التوجه نحو البيئة لدى طلابنا وطالباتنا لضمان حماية بيئتنا الفلسطينية والحفاظ عليها ووقف المزيد من تدهورها.

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List of abbreviations

ALESCO	Arab League Educational, Scientific and cultural Organization
ANOVA	Analysis Of Variance
CAMRE	The council of Arab Ministers Responsible for the Environment
DF	Degree of Freedom
EAQ	Environmental Awareness Questionnaire
EAS	Environmental Attitude Scale
EE	Environmental Education
SPSS	Statistical Package for Social Science
UK	United Kingdom
UNEP	United Nations Environment Program
UNESCO	United Nations Education, Scientific, and Cultural Organization
UNRWA	United Nations Refugee and Works Agency

Terms definition

Knowledge is what is known. Also, knowledge acquisition involves complex cognitive processes: perception, learning, communication, association, and reasoning. The term knowledge is also used to mean the confident understanding of a subject, potentially with the ability to use it for a specific purpose (Wikipedia, 2006).

Awareness describes a human or animal's perception and cognitive reaction to a condition or event. Awareness does not necessarily imply understanding, just an ability to be conscious of, feel or perceive (Wikipedia, 2006)

Awareness is a relative concept. An animal may be partially aware, may be subconsciously aware, or may be acutely aware of an event. Awareness may be focused on an internal state, such as a visceral feeling, or on external events by way of sensory perception. Also, awareness provides the raw material from which animals develop subjective ideas about their experience (Wikipedia, 2006).

Attitude is a concept in psychology. Attitudes are positive, negative or neutral views of an "attitude object": i.e. a person, behavior or event. People can also be "ambivalent" towards a target, meaning that they simultaneously possess a positive and a negative bias towards the attitude in question (Jung, 1966).

Pollution is the term which carries with it a sense of an impurity, and can be defined as a chemical or physical agent in an inappropriate location or concentration (Beychok, 2005).

Air pollution is the presence of any chemical, physical (e.g. particulate matter), or biological agent that modifies the natural characteristics of the atmosphere (Beychok, 2005).

Noise pollution is environmental noise that is annoying, distracting, or physically harmful. Also called sound pollution (Schultz, 1978).

Solid waste: A simplified definition of solid waste would include garbage, trash, recyclable materials, yard waste, and waste from industrial and commercial sources. It does not include hazardous waste from businesses. Solid waste is any garbage, refuse, sludge, or other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, or agricultural operations or from community activities (Wikipedia, 2006).

Wastewater is any water that has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, industry, and/or agriculture and can encompass a wide range of potential contaminants and concentrations. In the most common usage, it refers to the municipal wastewater that contains a broad spectrum of contaminants resulting from the mixing of wastewaters from different sources (Beychok, 1967).

Biodiversity: the most straightforward definition is "variation of life at all levels of biological organization" (Wikipedia, 2006).

A second definition holds that biodiversity is a measure of the relative diversity among organisms present in different ecosystems. "Diversity" in this definition includes diversity within a species and among species, and comparative diversity among ecosystems (Wikipedia, 2006).

A third definition that is often used by ecologists is the "totality of genes, species, and ecosystems of a region". An advantage of this definition is that it seems to describe most circumstances and present a unified view of the traditional three levels at which biodiversity has been identified (Wikipedia, 2006).

Natural resources are naturally occurring substances that are considered valuable in their relatively unmodified state of structure(Wikipedia, 2006).

Natural resources are often classified into renewable and non-renewable resources:

Renewable resources are generally living resources (fish, coffee, and forests, for example), which can restock (renew) themselves if they are not over harvested. Renewable resources can restock themselves and be used indefinitely if they are used sustainably (Wikipedia, 2006).

Non-renewable resource is a natural resource that cannot be re-made or re-grown. Often fossil fuels, such as coal, petroleum and natural gas are considered non-renewable resources, as they do not naturally re-form at a rate that makes the way we use them sustainable (Wikipedia, 2006).

Renewable energy is energy which can be replenished at the same rate it is used. The prime source of renewable energy is solar radiation, i.e. sunlight (Wikipedia, 2006).

Chapter One

Introduction

Chapter one

Introduction

1.1. Background

Environment has become one of the hot topics for discussion these days among most sectors of society. In recent decades, many studies have reported the general deterioration of environmental conditions (Nunez, 2000). Escalating environmental degradation includes deforestation, desertification, loss of biodiversity, ozone depletion, global climate change, pollution and over consumption of natural resources which directly impact our ability to develop economically while at the same time sustaining the health of people as well as plants and animals (Kibert, 2000, Vadala, 2004). Along with exponential population growth, these problems are especially significant in developing countries (Vadala, 2004). For example, our Palestinian environment is facing serious threats, such as: alarming population growth, limited land resources, long term isolation as a result of the regional political circumstance and the underdeveloped environmental protection system which caused serious deterioration, fast depletion and contamination of our environmental resources that, in its turn, lead to health risk among citizens (UNEP, 2003).

As far back as the 1972 United Nations Conference of the environment held in Stockholm, environmental awareness has been a priority of the international community who recognized that economic security and development is directly tied to the health of environment (Kibert, 2000). In order to ensure that our common future will be ecologically, socially and economically sustainable, the commitment to raising public environmental awareness was renewed in 1992 at the Earth Summit in Rio de Janeiro and is manifested in chapter 36 of Agenda 21 (Sheila, 2004). Since this conference, the theme

of environmental education has shifted from ecological studies to an integration of social, economic and environmental studies and the importance of lifestyle became some of the main tasks concerning environmental education (Sheila, 2004).

Educating individuals about environmental issues should enable people to develop the knowledge, attitude and skills that increase the chance that they will be good environmental citizens (Vadala, 2004).

According to Abu Safieh (2006), environmental awareness and education are important means for preserving and protecting the environment, based on adjusting attitude and supporting positive behaviors toward the environment. She attributed that, the environment is a major source of living for Palestinians, and thus source of living to protect it becomes inevitable. Abu Safieh added that, nevertheless environment in the occupied Palestinian territory is vulnerable, taking into consideration the exposure to the occupation measures: confiscation of land, intensification of the unjust distribution of resources between Palestinian and Israelis, and as many reports indicate dumping the Palestinian areas with settlements' solid waste and liquid wastes. The pollution and rapid urbanization of Palestinians cities, mainly due to restriction on normal growth of Palestinian urban areas and lack of law enforcement in the Palestinian Jurisdictions, importantly justify the pressing need for environmental awareness within the Palestinian society.

According to the above mentioned, it is important to highlight that the environmental damage already inflicted cannot be reversed unless a collective thinking and efforts are made by coordination among different institutions concerned with the environmental health protection. It is only possible through environmental education and fostering of environmental ethics. On the other hand, in view of the needs of the present and future

generations; education at schools, colleges and at the various society levels is imperative. Moreover, public awareness and community participation can help achieve a change in attitude preventing further damage to the environment.

Based on this background, efforts were made in order to create an awareness program among school children, mobilize them towards environmental issues and create an understanding about degradation and pollution of our environment and its associated impact on the health. Tayseir El Shorafa (October 2005, personal interview), the deputy director general of school health department in the Ministry of Education and Higher Education in Gaza city, stated that: The Ministry of Education and Higher Education conducted the first Palestinian environmental health curriculum for males only in the high basic school in Gaza Strip and West bank, starting with class 7 in the year of 2001–2002, then in the next year applied part two of this curriculum on class 8, followed by third part on class 9, and finally the part four of environmental health curriculum has been applied on students of class 10 in the studying year of 2004 – 2005. He added that, the entire environmental concepts of this curriculum has been designed in a way that the themes for all exhibits are involved in curriculum and thus act as guidelines for the school children in increasing their ability to well understand the environmental concepts.

1.2. Problem statement

The Ministry of Education and Higher Education conducted the first Palestinian environmental health for males only in the high basic school in Gaza strip and West bank. Measuring the level of environmental awareness and attitude among high basic school children can be considered as the key indicator in evaluating the present status of environmental awareness and attitude among our school children in Gaza city. So, the

study findings might help in determining the level of environmental awareness and attitude among our school children among males and females, and conducting suitable solution to develop their awareness and attitude toward the environment.

1.3. Justifications of the study

There are different ways to improve environmental awareness among citizens. This includes participation of governmental and non- governmental organizations and institutions. These institutions target the "early adopters"; in other word, "school children". In this study, the researcher focused on the environmental awareness and attitude of local class 9 students in the governmental high basic school children in Gaza city as they are the master of the future, and they will be the scientist policy makers, consumers, and voters in the next decade and will be responsible for fixing the environment, and the ones who must be persuaded to adopt and pay the cost of future environmental policy (Sheila, 2004). By the time they reach adolescence, many have acquired some level of environmental understanding of issues such as ecology, technology and economics and can formulate their own views on how each influence environmental concern and policy (Ramzy and Rickson, 1976; and Bryant and Hungerford, 1977). Therefore it is important to understand the development process of students' environmental awareness and attitude. This a step forward in educating the community as a whole and protecting the environment for future generation. Children can be triggers for chain reaction, making difference at the local and community level which may, in the long run, lead to awareness at city, state, country and global level. In addition to this, some other findings assumed that increased knowledge and awareness about the environment promote positive attitude (Arcury, 1990), and other researchers reported that junior high and high school students exposed to environmental

courses demonstrated an increase in responsible environmental behavior and an increased awareness of environmental issues (Ramzy and Rickson, 1976; Jaus, 1984).

This study will help to identify an appropriate intervention plan to improve the environmental awareness among these children. This will eventually bring changes on the society way of thinking on the environmental issues; consequently, creating a more socially and ecologically sustainable society.

1.4. Aim of the study

The aim of the study is to determine the environmental awareness and attitude levels and their relationships among class 9 students in the governmental high basic school in Gaza city.

1.4.1. Objectives of the study:

1. To evaluate the environmental awareness and attitude among class nine students in the governmental high basic school children in Gaza.
2. To evaluate the relationship between the environmental awareness and attitude of the students.
3. To explore the relationship between the students environmental awareness and attitude and socio demographic variables such as gender, place of residency, grade of students' scores achievement at school.
4. To test the hypothesis that males are aware more than females about the environment.
5. To suggest recommendation which help to improve the environmental awareness among these school children.

1.5. Study questions

The main question addressed in this study is:

What is the level of environmental awareness among school age children in Gaza – Palestine.

This main question is divided into the following sub questions:

Q1: What is the level of environmental awareness and attitude among the class 9 students in the governmental high basic school children in Gaza City?

Q2: Is there any relationship between the environmental awareness and attitude of students and their gender, place of residency and grade of their scores achievement at school.

Q3: Is there any relationship between the environmental awareness and attitudes of the class 9 students in the governmental high basic school children in Gaza.

1.6. Study hypotheses

1. There is a statistically significant difference in the level of environmental awareness and attitude among students of class nine in the governmental high basic school children in Gaza city attributed to their gender toward males.

2. There is a statistically significant difference at $P< 0.05$ in the level of environmental awareness and attitude among high basic school children due to their place of residency.

3. There is a statistically significant differences at $P< 0.05$ in the level of environmental awareness and attitude among high basic school children due to their grade of scores achievement at school.

4. There is a statistically significant relationship between the level of environmental awareness among class 9 students in the governmental high basic school children in Gaza city and their attitude toward environment.

1.7. Value of the study

Educating individuals about environmental issues should enable people to develop their knowledge, awareness, attitude and skills that increase the chances that they will be good environmental citizens (vadala, 2004).

Environmental health guideline included within high basic school curriculum as separate curricula in the year of 2001-2002, started from class 7 of high basic stage, then in the next year part two conducted on class 8, then class 9 and class 10 of high basic stage. This curriculum has been conducted on male students only and not females. Therefore, if the researcher in her study identifies significant differences in the level of environmental awareness among our students based on gender, these results may provide insight for the development and modification of the environmental education curriculum in the future.

1.8. General review of the study chapters:

The researcher will present her study about environmental awareness among school age children in Gaza, in seven chapters starting with chapter one which includes introduction about the importance of environmental awareness universally, and it's particularity and necessity in Palestine, problem statement, justification of implementing this study, study aim and objectives, study questions, and value of the study .

In chapter two, the researcher will highlight the history of educational development, review the main studies emphasized the importance of environmental awareness and environmental education, the efficacy of environmental education and awareness programs whether in the formal or informal ways, gender and it's effect on the level of environmental awareness and attitude, and finally correlation between environmental awareness and attitude.

In chapter three which concern with the conceptual frame work, the researcher will display the main part of this study which involve description of environmental education, awareness and attitude.

Through chapter four of this study, the researcher will describe the main methodological parts in her study, which include: Study design, study sample (study population, sample size, sampling process) study place, ethical consideration, study instruments (description of both environmental awareness and environmental attitude measurement tools), pilot study , data collection, processing and analyzing the data, and limitation of the study.

In chapter five the researcher will present the main study results based on the results of the statistical analysis, which involves distribution of the study population according to the Gaza municipality distribution, the results of the study questions and hypotheses.

The study results will be discussed in chapter sex, then based on the study results, the researcher in chapter seven, will suggest recommendations and further researches.

Chapter 2

Literature Review

Chapter two

Literature review

2.1. Introduction

This chapter is divided into different sections. It begins with a definition of environmental education and its types and history, followed by categories of environmental education objectives according to Tbilisi conference, 1977 which implies, environmental awareness, environmental knowledge and environmental attitude. Then it highlights on the importance of environmental awareness and education, and studies that have been done to determine the efficacy of environmental education and informal awareness programs. The level of environmental knowledge, awareness and attitude and their relationship with gender will also be discussed. Literature concerning the relationship between environmental awareness and environmental attitude is reviewed.

2.2. History of environmental education development

During the 1960s and 1970s, environmental issues began receiving more national attention, and environmental education seemed to have a very promising future as laws and programs began to be created in support of the subject area (Hengar, 2005).

In 1970 the first international workshop on environmental education in Carson City, Nevada, , developed the first definition of environmental education, and set out to address concerns about its implementation, and its implications in regards to environmental conservation (Flynn, 2002). As early as the 1972 United Nations Conference of the Environment held in Stockholm, environmental awareness has been a priority of the international community who recognized that economic security and development is directly tied to the health of the environment (Kibert, 2000).

As a result of directives from the Stockholm Conference, from which the declaration of the United Nations Conference of the Human Environment was created, the Intergovernmental Conference on Environmental Education was held in Tbilisi, Georgia in 1977 where the Tbilisi Declaration was adopted. The critical objectives of the Tbilisi Declaration included heightening people's environmental awareness, sensitivity, attitude and concern for the environment, skills and motivation to act for environmental improvement and protection, and participation in solving environmental problems (Knapp, 2000). As environmental education developed over the years, a need for specific guidelines explaining what individuals should know and be capable of doing after their education was growing.

Ten years later, in 1987, UNESCO and UNEP organized an International Congress in Moscow, in order to determine an international strategy for action in environmental education and training for the 1990s (UNESCO and UNEP, 1995). Five years later, the United Nations organized "Earth Summit" in Rio de Janeiro, 1992 on Environment and

Development, to assess 20 years of work in the field of environment following the 1972 Stockholm conference. The specific outcomes of the summit on education were crystallized in Agenda 21, Chapter 36, entitled "Promoting Education, Public Awareness and Training", which established the basis for action in environmental education for sustainable development for the years to come(UNESCO and UNEP, 1995).

Ten years later, in September 2002, in order to assess progress made in this direction on a worldwide basis, the UN organized the World Summit on Sustainable Development in Johannesburg, South Africa (Hengar, 2005).

2.3. Importance of environmental awareness and education

According to Agenda 21, scientific literacy is one of the most relevant goals in schools in many nations. This literacy is an urgent need to improve the education system. Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues (Nunez, 2000). Through scientific literacy in the education environmental field, people can interact more effectively in the enhancement of a new and more harmonic relationship with our habitat. Environmental literacy is a recent interdisciplinary curricular goal in our schools, and according to Nunez, (2000), it is the organized way to think about the environment. Cultural, gender, economic and other kinds of social and cultural differences are reported to be related to grade of awareness and amount of environmental concern (Blum, 1987; Arcury, 1990).

The lack of knowledge of the public and students in ecological topics has motivated many educators and institutions to improve environmental literacy (Nunez, 2000). Scientists are convinced that more knowledge is an important element to develop positive attitude in many fields (Arcury, 1990; Zimmerman, 1996). This idea is treated in many studies, which indicated that the role played by environmental education to the individual, societies

and peoples' lives is increasingly recognized . This is a result of man's misbehavior towards the environment (CAMRE & UNEP , 1996).

Different conferences have emphasized that protecting the environment is a complicated problem that cannot be ensured through laws only. Laws alone cannot change or develop the individuals' awareness, consciousness, attitudes and actions. Appropriate education inside and outside the school can play a major role in changing environmental attitudes and promoting awareness and skills for the protection of the environment and the rational use of natural resources (CAMRE & UNEP , 1996).

Environmental education aids in creating deeper understanding, investigation, and decision-making skills among students. The goal of environmental education is to lead students to become effective environmental stewards. Also, the goal of environmental education is to develop a population that is aware of, and concerned about, the environment and its associated problems, and that has the knowledge, skills, attitudes, motivation and commitment to work individually and collectively toward solutions of current problems and the prevention of future ones. (Flannery et al, 2003) .

Mikami, (1999), In his study focuses on the importance of environmental education which can play a significant role as an effective means to change people awareness and behavior for their surrounding environment. He also indicated that the environmental pollution caused many people to injure their health, so environmental education is needed to increase awareness of people about their important sharing in protecting and improving their environment (Mikami, 1999).

In 2001 Rickenson supported the idea that in view of increasing population growth and diversification, there is an important need for work focused on making sense of and

critically analyzing the field of environmental education research. Furthermore, in light of the tendency of previous reviews of the field to focus on methodological trends more than research findings, it is argued that there is a need for such analyses to approach the field as an evidence base: that is, to focus specifically on the nature and quality of the empirical evidence that has been generated within the field. (Rickenson, 2001).

In 2002, Swartz, indicated that the last few years have seen a dramatic increase in awareness of the simple fact that children may be harmed by a wide range of environmental toxicants, often in ways quite dissimilar to adults. According to this he suggested that there is much more needs to be done in educating the public, changing behavior, amending policies, and gaining more information to meet the challenge of providing a healthy environment and protecting children from environmental risk.

Since, the environment is a major source of living for Palestinians, thus practicing how to protect it becomes inevitable (Abu Safieh, 2006). In her study, Abu Safieh focused on the importance of environmental awareness, and education in preserving and protecting the environment, based on adjusting attitudes and supporting positive behaviors toward the environment. According to many key informants, environment in the Palestinian society, as a concept, is integrated within reticulation of social, health, and economic perceptions that embrace different aspects of life, and hence, environmental awareness and education for environment protection need to be approached through such channels (Abu Safieh, 2006).

2.4. The efficacy of environmental education program

Many studies have investigated learning outcomes that result from environmental education programs. Environmental education aims to extend students' knowledge about the environment, challenge the attitudes and behaviors that form the basis of environmental citizenship and develop skills to enable them to take action for the environment (Ballantyne et al, 2005). However, reviews of environmental education research (Leeming, et al, 1993; Rickinson, 2001) indicated that a considerable number of studies have only examined changes in learners' knowledge and attitudes after conducting environmental education programs whether it's formal education or non-formal education. While other studies have examined learners' knowledge and attitudes, and the relationships among cognitive, affective and behavioral variables (Hart & Nolan, 1999; Leeming et al., 1993; Rickinson, 2001).

The majority of these studies have employed some form of quasi-experimental pre-test / post-test design to measure the effects of educational programs on students' environmental learning (Rickinson, 2001). These types of studies typically use a fixed-response questionnaire design comprising multiple choice and/or Lickert scale questions as the primary data collection instrument (Bryant and Hungerford, 1977; Deluca et al, 1978; Jaus 1982; El Said 1984; Cullingford 1994; Gigliotti 1994; Connell et al, 1998; Bonnett & Williams, 1998; Kwan and Miles, 1998; Dettmann et al, 1999; Culen and Volk 2000; Mohsen 2000; Volk and Cheak 2003). For example, Volk and Cheak (2003) used two multiple choice instruments to measure environmental literacy and critical thinking. Connell et al, (1998) employed multiple choice instruments to measure high school students' environmental knowledge and attitudes, and personal commitment to environmental action. While Culen and Volk (2000) used five scales to measure the

effects of an educational intervention on ecological knowledge, attitudes, perceptions of action skills and environmental behavior. Many of these instruments are difficult to use with young learners as they depend on the ability to reflect “abstractly” on their learning experiences.

Experimental research conducted by Bryant and Hungerford (1977), evaluated a kindergarten unit which focused on understanding the term "environment" and associated pollution problems and their remediation. The researchers analyzed the effects of two classes of kindergarten. Bryant simultaneously taught two classes a one week introductory unit on basic environmental concepts. For three weeks thereafter, the experimental group received activity-oriented instruction on pollution and solid waste. The conventional curriculum taught to the control group did not involve environmental issues. The treatment were then reversed. Each child participated in an interview consisting of four knowledge and opinion questions asked before and after the treatment. The researcher reported significant change, the results indicated that kindergarten children can form concepts concerning environmental issues and citizenship responsibility with respect to those issues. Not only were these children able to identify actions which they themselves could take, but also many of the children were able to identify actions which adults could take.

According to the above mentioned results the researchers suggested that, environmental education at the kindergarten level can result in some fairly sophisticated conceptual behavior on the part of the children involved.

The effectiveness of a project designed to enhance awareness of environmental issues was researched by DeLuca, Kiser, and Frazer (1978), 75 males and 75 females from each grade level from 10 through 12, and 100 males and 100 females from each grade level from 4 through 9, were randomly selected to participate in the study. A nearby school

without a similar program served as the control group. Environmental knowledge and attitude tests were administered at all grade levels following instruction. The results showed statistically significant differences in the level of environmental knowledge and attitude achievement between groups of pretest and post test after applying environmental awareness project favoring the experimental group.

Jaus (1982), reported the results of an experiment on 53 children of the fifth grade. One class was given 40 minutes of environmental education instruction for 15 consecutive school days. Each lesson included lecture, discussion, laboratory activities and homework. The control class at another school did not receive any environmental instructions. A 20 item of Lickert scale instrument, developed by the investigator was used to measure environmental attitudes. The experimental group expressed 22% more positive environmental attitudes than the control group.

In study by El Said (1984), which was carried out pretest-post test design measuring the effects of environmental education program for students of agricultural secondary school in Egypt, and he measured the efficacy of this program by implementing one unit of this program which was concern with insects pesticides. This study was conducted on students of three classes in the second grade of Qastered secondary school, and the study population size was 105 students, 70 of them were males, and 35 females. The results showed significant differences in the level of students' environmental knowledge and attitude before and after implementing the program, which means that the program was efficient enough to improve student's knowledge and attitude toward protecting the environment.

Smith, et al, (1997) in their study assessed the effectiveness of a short duration recycling education program that attempted to link specific environmental knowledge and attitudes

towards paper recycling with the paper recycling behavior of grade school children. The researchers carried out a Pretest-posttest design measuring the effects of two versions of a paper recycling education program on knowledge, attitudes and behaviors of third, fourth, fifth, and sixth graders from private and public schools. Results indicate that the program improved children's knowledge, attitudes, and behavior toward paper recycling, with greater improvements occurring in private schools and with older grade school children.

In a study by Mohsen (2000), pretest and post test was applied before and after applying a suggested unit of education for the fifth perpetratory class in Gaza strip, which aimed to develop the children acquirement of environmental concepts, and develop their environmental attitude and behavior. The results emphasized the presence of statistical significance differences between pretest and post-test, in favor to post test.

According to these results the researcher in recommended on the establishing of an environmental concepts list with particular standards for the Palestinian children of the fifth grade of the perpetratory schools in Gaza strip.

Reviewed to the above mention studies in different countries, the researcher concluded that different environmental education programs were conducted, and different pre test and post test measurement tools were used to measure the efficacy of these programs on children's environmental knowledge, attitude and behavior. All of these studies were consistent in their findings that there were statistically significant differences in the level of environmental knowledge, attitude and behavior achievement between groups of pretest and post test after applying environmental awareness projects in favor of the post test.

2.5. The efficacy of informal environmental awareness programs

The goal of many outdoor or informal environmental education programs is to promote environmental sustainability (Ballantyne et al, 2005). According to this goal, many researchers developed a measurement tool that addresses the effect of these programs on the level of students' environmental knowledge, attitude and behavior (Disinger 1985; Samaan 1988; Gayford 1996; Mohsen 2003).

Case's study,(1979) cited in Disinger (1985), was carried to determine the effect of an integrated eight-week environmental education curriculum integrated into the regular school curriculum revealed opposite findings. However, in his study, sixth-grade students of a Seventh Day Adventist school were randomly selected and assigned to three groups. Group A was treated with an integrated curriculum for five weeks, one week of a resident field experience, and an additional two weeks of integrated classroom curriculum. Group B was treated with only the integrated curriculum for eight weeks; Group C acted as a control, receiving no environmental curriculum activities. A test was constructed to measure environmental knowledge. Statistically significant differences in the knowledge test favoring the B group were found in comparisons with Groups A and C.

Samaan, (1988) carried out a study which measured the effect of environmental summer camps on improving students awareness about their environmental importance, and problems solution. A group of 144 students of the secondary schools and university were chose from 4 summer camps in El Jeezah governorate to be examined in this study. The results emphasized partial improvement in the level of student's environmental awareness, and the researcher attributed these results to the short period of these camps to improve students awareness about different environmental issues. All of the four camps did not

reach the accepted level or success in improving students awareness about population problem, and the fourth camps only attained increasing in students awareness about male nutrition.

A study of Gayford (1996) involved an alternative approach to environmental education with students of 11 to 18 years. The focus of the work was outside the timetabled curriculum using the school buildings and grounds as a model for environmentally responsible management and behavior. Emphasis was on adopting criteria which were thought to lead to long-term attitudinal and behavioral change and also those which cast the researcher in a different role and gave a greater sense of "ownership" and control to the participants. According to this findings, the researcher suggested that this approach has a good deal to offer in a context where it is becoming increasingly difficult to influence the timetabled curriculum yet where teachers and students feel that the environment is of great importance.

The goal of Mohsen (2003), in her study was to suggest a program in environmental education for adults and measuring its reliability in Palestine. The validity of the program has been measured through the application of Israeli violation unit on the Palestinian environment which was the first unit of the program suggested. The results emphasized success of the experimental study in developing the adults acquirements and achieving the goal of the study, and that was clear in the presence of statistical significance difference between pretest and post test results in favor to post test. According to the above mentioned results, The researcher recommended to develop environmental programs for adults to increase their level of environmental awareness and their attitude toward environment.

The previous reviewed studies showed that, the researchers applied different informal environmental awareness programs on students in different countries, and then they conducted different measurement tools to assess the efficacy of these programs in improving the students environmental awareness, attitude and behavior. The results emphasized variation in the range of these programs efficacy. This finding can be explained as that; measuring learning outcomes in informal learning settings is notoriously difficult for a number of reasons (Ballantyne et al, 2005). There are usually no formal curricula or assessment procedures; learning involves affective as well as cognitive and behavioral outcomes; and the learning experience often varies widely from student to student. As a partial solution to this problem Griffin (1999) suggested that in informal settings, it may be appropriate to observe how students are learning (the learning process) as well as measuring what they have learned (the product).

2.6. Level of environmental knowledge and awareness

It was suggested that young students should be equipped with a fundamental knowledge of basic environmental concepts and processes in order to make informed decisions on environmental questions in the future (Gambro & Switzky, 1996), and students are likely to have considerable knowledge about the science of environmental issues developed through `informal sources such as personal observations and the media'. However, when compared with other curriculum topics in science, this knowledge may be `rather rigid and full of erroneous interpretation and models' (Boyes & Stanisstreet, 1996). Therefore, the awareness of nature, underlying patterns and origins of such pre-existing ideas could be helpful in designing more effective teaching strategies.

Various studies were conducted across different countries to measure the level of knowledge and awareness among students about environmental concepts and problems. In 1975, there was an attempt to describe what students know, think and feel regarding ecology and pollution (Maloney, Ward and Braucht, 1975). A survey conducted by Fortner (1978), aimed to measure knowledge and attitudes of tenth grade students and related those attributes to the students' marine experiences. She used three types of survey covering 63 items to measure both knowledge and attitude. The 787 students who participated in this study demonstrated a knowledge level of fifty percent (50%). The results also indicated that their attitudes toward marine issues were moderately positive.

In his study " Students' knowledge and believes concerning environmental issues in four countries". Blum (1987) found that high school students possessed low levels of environmental knowledge. He compared four surveys conducted in the United States, Australia, England, and Israel that assessed environmental knowledge and believes of 9th-grade and 10th-grade students. The surveys shared several items that assessed students' knowledge of environmental facts (e.g., sun as a major energy source in future) and concepts (e.g., living creatures are interdependent). Results indicated that the students' believes in environmental causes were generally stronger than their factual and conceptual knowledge. This finding agree with several studies which reported generally low level of students' knowledge and awareness, such as study of Sabbariny and Odah (1988), which was conducted on 630 males and females students from different years of study and colleges at Yarmook university in the kingdom of Jordan. The study aimed to examine the level of environmental knowledge among the students of the study population.

According to a study of over 1800 high school students in US, it is reported that "disappointing levels of knowledge" were found, only 36.3% of those students could answer five or more of the seven questions (Gambro & Switzky, 1996).

In a recent study over 9000 Dutch secondary school students, Kuhlemeier et al. (1999) reported that 'the environmental knowledge of many students left much to be desired'. Similar kinds of findings are reported for young people in Spain (Membiela et al., 1993), Australia (Clarke, 1996; Connell *et al*., 1998) and the UK (Lyons & Breakwell, 1994).

The study of Abu Jahjoh (1999), aimed to detect the environmental concepts values which preferred to be involved in science curricula of the elementary school in Gaza Strip. Also in his study he measured the level of children knowledge scores about the environmental values among the children of grade nine in the elementary school. The study population selection was depend through random clustered method from 10 classes of grade nine, and 424 male and female children were selected according to this type of sampling. The results revealed that the percentage level of grade nine children knowledge about environmental value was about 66.91% only, and there was significance differences in the level of environmental knowledge according to gender variable in favor to female.

Naser, A., and Naser, F. (2000), evaluated the students level of environmental awareness. This study was carried out in the Arab region which still under Israeli occupation since 1948. It aimed to compare between students of the elementary school and students of academic institution for preparing Arab teachers. The results of this study showed that the level of awareness about different environmental issues among students of the academic institution for preparing Arab teacher was higher than that among children of grade nine.

According to the researchers point of view and attribution, this result was expected due to age differences, number of studying years and learning about environmental awareness. In spite of this results the level of environmental awareness among both groups of the study population was very low, it was about 50% among students of preparing teachers institution, while it was about 37% among students of grade nine in the elementary school.

Affifi (2000), conducted a study to find out the environmental enlightenment level of sixth grade children in Rafah governorate and its relation with some variables. The researcher has studied many factors, such as, type of school, governmental or UNRWA, gender, children's level achievement and place of residency. The study was conducted on 400 children. The study results showed that the average children's marks was (65.3%) which was below the accepted standard of the established study which is (80%). This result indicated that the level of the environmental enlightenment of the children below the accepted standard. There was a statistically significant differences between UNRWA and governmental schools toward UNRWA schools. While there was no statistical significance differences related to the place of residency (camp, town) through out Rafah governorate on the environmental enlightenment level, A strong relation was found with academic level achievement of the students in favor to excellent achievers, where the excellent achiever students have more environmental enlightenment level than other students.

A study of Salmi and Mekhlafy (2003), aimed to recognize the level of environmental awareness among students of the elementary school in Oman sultanate**.** The study sample was 3517 students, (50% of males and 50% females) of the 8^{th} and 9^{th} classes of the elementary school selected from 16 schools which were randomly chosen from 5

educational area in the sultanate. Multiple choice question were used to examine the level of environmental awareness. The researchers findings revealed low level of environmental awareness among students, with percentage of about 51.62% only. There was a significance difference in the level of environmental awareness between males and females favoring females, and statistically significant differences favoring the students of class 9 of the study sample. And according to the type of educational area their was significant differences favoring El Thahra area, then El Batna area compared to other areas, while there wasn't any significant differences among the other three areas, El dakliah, Eastern and Msaquat areas.

Sheila, (2004), in her study investigated the environmental knowledge and attitudes of the third class students of the secondary school. The researcher constructed a three section questionnaire to measure students environmental knowledge. The questionnaires were completed by 158 students of the third class from 4 secondary schools in Hong Kong.
The results indicated that these students' had low level of environmental knowledge, and their knowledge bases were not strong with the average knowledge score of 3.54 (Total: 8 marks). Similar finding was of Iran study, which reported that, the level of environmental knowledge of Yazd university of medical science in Iran, was not appropriate (Ehrampoush, and Moghadam, 2005).

However, several other national and international wide environmental studies reported that the mean of environmental awareness and knowledge scores of the study population was higher than those reported in the above mentioned studies, such as, a study of Geok Chin, et al (1998), whose purpose was to gather baseline data on the level of environmental knowledge of secondary and junior college students in Singapore. A sample of 1256

secondary from three classes of grade 9, and junior college one class of grade11 students. The students' mean environmental knowledge score was 70.9%.

In their study, Hsu and Roth(1996), aimed to measure the level of environmental knowledge according to the study different variables. Multiple choice questions tool was developed to measure the level of environmental knowledge. Main results of the study emphasized that the level of environmental knowledge among the study population was 75.9%, and environmental attitude was 80%. Similar finding was In Hong Kong, which reported that, high levels of factual environmental knowledge are found amongst a sample of 1032 students (Chan, 1998).

Dadah (2002), in her study aimed at investigating the role played by the media in developing environmental awareness amongst university students in Ramallah and El-Bireh governorate. The study was conducted on a sample consisting of 745 students (331 from males and 414 from females). Two research methods were used in this study, Qualitative and Quantitative method. In qualitative method, number of newspaper articles about environmental issues from their major newspapers in Palestine (Al Quads, Al Ayam, Al Hayatt Al Jadidah) were both consulted and analyzed. Also, environmental programs presented by the Palestinian broadcasting corporation and Palestine television station were analyzed. The quantitative method conducted by using a study instrument, which was a survey measuring environmental awareness among university students in Ramallah and Al- Bireh, and the role of the media in developing that awareness. The results revealed that the environmental awareness of the students appears to fall into the moderate range based on the survey result. The researcher mentioned that there were no statistically significant differences in the environmental awareness among students based

on sex, high school specialization or residential location, while there were statistically significant differences among educational institutions, particularly Ramallah Men's Teaching College.

2.7. Gender and environmental awareness

Several studies have found that knowledge and awareness level can vary considerably between different topics and students' environmental awareness was affected by several factors, such as gender (Sheila, 2004). On the gender issue, diverging results have been found. Many studies revealed that males reflected higher level of awareness about environmental issues than females. Gifford et al. (1982) found in their study of undergraduates that males scored higher in environmental knowledge than females. Hausbeck, and Likewise (1992), reported that males had slightly more environmental knowledge than females. In their study concerned with `specific facts and concepts' about `acid rain, the greenhouse effect and future sources of energy', Gambro and Switzky (1999) reported finding that male students had significant higher levels of environmental knowledge than female students and the relationship remained significant when the number of science classes taken by students was controlled.

Similar finding also appeared in a study of over 700 English secondary students' ideas about the environmental impacts of cars, it was also reported that 'males tend to be more aware of issues which are longer term, of a wider dimension, but rather abstract.
Females, in contrast, may be more concerned with immediate, local problems, perhaps impinging on human health (Myers et al. 1999).

Local study of Mohsen (2003) emphasized significant differences between the mean of males and females acquirement of environmental concepts test scores in favor to males. Also, Ehrampoush and Moghadam (2005), in their study in Yazd university in Iran, reported that, the mean grade of knowledge of men and women was 13.53 and 12.38, of 20, respectively. The difference between the knowledge of males and females was significant favoring males.

In contrast to the findings of reviewed studies, In a survey of over 2000 young people in the US (Roper Starch Worldwide, 1994), it is found that female students reported greater knowledge than males in relation to recycling, trash disposal and endangered species, while more boys than girls felt themselves to be knowledgeable about rainforest destruction.

Local study of Affifi (2000) found that the students of the sixth grade in Rafah governorate, proved that gender has some statistical significant differences on the level of the environmental enlightenment towards females who have got higher scores than males . This finding agree with Salmi and Mekhlafy (2003) in Oman Sultanate, and Sheila (2004) in Hong Kong which emphasized that female students were more likely to have higher environmental knowledge than male students.

On the other side, no significant relationships between gender and environmental awareness level have been reported in different studies across countries. Sabbariny and Odah (1988) at Yarmook university in Jordan Kingdom, had revealed that there wasn't any significant difference in the means of environmental knowledge due to gender (males and females). The local study of Dadah (2002), also reported that there was no significant

differences in the level of environmental awareness among her study population in Ramallah and El Bireh governorate in West Bank.

2.8. Environmental attitude

Young people's environmental attitudes are particularly important because young people ultimately will be affected by and will need to provide solutions to environmental problems arising from present-day actions. To effectively confront the growing environmental problems and make informed decisions about them, the citizenry must be equipped with a fundamental knowledge of the problems that face the environment (Gambro and Switzky, 1999).

Based on various studies (Khazy, 1988 in Syria; Lyons and Brekwell, 1994 in UK; Chan, 1998 in Hong Kong; Ivy et al. 1998 in Singapore; Chonell et al. 1998 in Australia; Naser, A., and Naser.F., 2000 in the occupied Arab region since 1948 in Palestinian areas, and Sheila 2004 in Hong Kong), a high positive environmental attitude were found across different countries.

A study of Khazy (1988), focused on analyzing biology curricula in the secondary school to identify the level of environmental attitude of the third class students in the secondary stage school. A group of 354 male and female students were selected randomly from Damascus city and rural area. The study findings showed an increase in the percentage of environmental education concepts involved in the biology curricula of 1985 more than those of biology curricula of 1967. this indicates that there is an improvement in preparing the curricula concerned with environmental issues. The percentage of student's scores mean was above 80%.

In Hong Kong study, Chan (1998) found that the respondents showed overwhelmingly positive environmental attitudes with the mean scores of 992 secondary school students in Hong Kong ranged from 2.69 to 4.13 on a five-point scale.

Naser and Naser (2000) emphasized a high level of environmental attitude toward environment among the students of the elementary school and students of academic institution for preparing Arab teachers, and there was not any significant difference between them in spite of age differences and number of years of education.

Sheila (2004) in her study reported a generally high positive environmental attitude among Hong Kong secondary third class students. This was consistent with the findings of a survey of 447 students from 9 secondary schools in Hong Kong (Stimpson 2002).

In contrast to the previous studies results, there are studies across different countries that revealed a low level in the students attitude toward their environment. (Geok Chin 1998 in Singapore; Nashwan 1997 in Gaza; Salmi and Mekhlafy (2003) in Oman Sultanate).

A study of Geok Chin et al. (1998) in Singapore, reported that, the mean environmental attitude and behavior scores were 66%, which are considered as low level. This finding was consistent with local study of Nashwan (1997) which aimed at estimating the level of positive attitude of the elementary school students in Gaza Strip toward their environment. The study population was 1590 male and female students selected from 3 levels of the elementary stage (7,8,9 grade of the preparatory stage) from different schools distributed along Gaza Strip. The main results of this study showed that above 50% only of the study

population have got positive attitude toward environment. Salmi and Mekhlafy (2003) in Oman Sultanate emphasized similar results.

2.9. Gender and environmental attitude

After reviewing several studies it seems that there is a significant relationship between gender and environmental attitude. Most of them indicated that females were more likely than males to be environmentally concerned and/or willing to undertake behavior for the environment. As reported by Chan 1998, gender was significant in relation to environmental concern level favoring females among the secondary school students in Hong Kong.

Chonnell et al, (1998) found a consistent difference between males and females across several parameters were found which including views more consistently aligned with an-environmental paradigm, and belief in the possibility of having both a prosperous economy and a healthy environment. This was supported by similar findings reported by two other Australian studies (Clarke,1996; Hampel et al, 1996). Also, Salmi and Mekhlafy (2003) in Oman Sultanate study, revealed significant differences in the level of environmental attitude among the study population favoring females.

However, contrasting results are found in the study of Ebrahim and Dusoky (1985), they aimed in their study to determine the level of environmental attitude among students of educational college in Egypt. The researchers studied the relation between environmental attitude as independent variable, and gender as dependent variable. The study population was selected from males and females students of educational colleges in El Zakazeek, Egypt and from different departments, Arabic language, geography, biology, physics,

chemistry, philosophy, and English department. The results emphasized a statistically significant difference in the level of environmental attitude between males and females students favoring males. This finding was consistent with Mohsen study 2003, which revealed that males environmental concern and attitude toward environment was more than that of females.

On the other hand , different findings were reported across different countries, that there were no significant differences in the level of environmental attitude based on gender, (Nashwan (1997) in Gaza strip; Nunez (2000) in Venezuela; Sheila (2004) in Hong, and Kazy (1988) in Syria).

2.10. Correlation between environmental awareness and attitude

According to Roth and Perez (1989), there is a substantial correlation between students' knowledge and awareness of environmental issues and their attitudes toward the environment. They suggested that a good background in environmental knowledge could eventually lead to the development of positive attitudes toward the environment. Further more in a study of a comparison of French and American environmental behaviors, and attitude, Arbuthnot and Lingg (1975) found that the Americans' environmental attitudes were more likely to be related to environmental behavior and knowledge. All these findings suggested that knowledge might act as a mediating variable between attitude and behavior. Similar finding was also appeared in Iozzi (l984) study in which the strength and nature of attitudes relating to concepts were found to be related to previous knowledge of issues, with peer's attitudes and amounts of exposure to information. Evidence from Schahn and Holzer (1990) further supported that knowledge played a significant role in responsible behavior.

In contrast to this, researchers have shown that students' knowledge about environmental problems is not in accord with their concern. In some cases knowledge is low and concern is low as occurred in students of Dominican Republic (Betchel et al,1999). In other cases students' knowledge is low and level of concern is high (Blum, 1987), (Brody, 1994). At the same time, their attitudes and concern do not show a clear pattern of rejection or approval related to the traditional or modern ways of living with its consequent detrimental effort against environment preservation.

Another study indicated that young people are concerned about the environment but this concern is insufficient for understanding the consequences of environmental problems, or proposing adequate solutions (Gambro and Switzky, 1996).

Recent research of environmental knowledge, attitudes, and behavior, determined that the Dutch secondary students' knowledge about environmental problems was fragmentary and often incorrect. The relation between environmental knowledge and environmental attitudes and behavior proved to be very weak. Large groups of students lacked knowledge regarding environmental topics such as energy usage, soil, air, water pollution; recycling; agricultural activities; tourism; transportation; and recreation (Kuhlemeier, van den Bergh, and Lagerweij, 1999). This result is supported by other experiments mentioned in different studies across countries where knowledge and attitude had a weak to moderate relationship in theses countries (Bradley et al. 1999; Mangas and Martinez 1997; Kaiser et al. 1999; Petrzelka and Korsching 1996; Zimmerman 1996; and Kibert 2000).

2.11. Summery

The literature reviewed has shown the importance of improving environmental awareness and attitude among citizen through different ways. These ways include conducting knowledge of environmental issues using approaches such as interdisciplinary models by providing environmental concept in the environmental educational curriculum, or through non disciplinary way which is provided to students out of their schools during home visits or summer camps in order to facilitate teaching and improving environmental concepts in interesting ways. Different studies across countries support the efficacy of environmental education to improve the level of environmental awareness and attitude, while there was a large variation in the results of the studies conducted to measure the range of the informal environmental awareness programs efficacy. This can be explained according to Ballantyne et al. 2005, that measuring learning outcomes in informal learning setting is notoriously difficult. They attributed that to the fact that, there are usually no formal curricula or assessment procedures; and the learning experience often varies widely from student to student. Studies shows a variation in the level of environmental knowledge and awareness and attitude across countries. Also, several studies have found that awareness and attitude levels can vary considerably between different environmental topics and students' awareness and attitude according to gender. Different researches support positive relationship between students' knowledge and awareness about environmental issues and their attitudes toward the environment. In contrast, another researches reported that the relationship between environmental awareness and attitude proved to be very week, while from the other hand, different studies have shown that students' knowledge about environmental problems is not in accord with their attitude. In some cases knowledge is low and concern is low, in other cases students' knowledge is low and level of attitude is high.

Chapter Three

Conceptual Framework

3.1. Definition of environmental education

Many people may think that environmental education is the teaching of knowledge about the environment. Others may think that it should be learnt through outdoor activities, like field trips (Sheila, 2004). In the late 1969, the word "environmental education" was first defined as it aimed at producing a citizenry knowledgeable concerning the biophysical environment and its associated problem, aware of how to help solve the problem, and motivated to work toward their solution (Henegar,2005).

In the early to mid 1970, there was an increased perception of need for environmental education due to the rapid growth of world population, causing a sharp increase in energy consumption and pollution problem. According to Tbilisi Declaration,1977, "Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action". (UNESCO and UNEP, 1990).

In the late 1980 and 1990, environmental education was changed from "environmental education for the environment" to the "Education for the sustainable development" and school programs became an important element of public education as it helps students to develop an ethic of respect and responsibility for the environment and develop attitudes and skills that will enable them to participate in protecting and improving the environment (Hong Kong Education Department, 1992).

Braus (1995), defined environmental education as the education to acquire awareness, knowledge, attitudes, skills and participation toward the resolution of environmental problems.

3.2. Types of environmental education

Environmental education is interdisciplinary in nature, involving subject matter from both the natural and social sciences. Within the realm of environmental education, there are many types of programs. All of these programs, however, can be defined as formal education, non-formal education, and sometimes a mixture of the two.

3.2.1. Formal environmental education:

While there are many places where environmental education is implemented, the most common locations are schools and centers/institutions. Schools play a vital role in the process of helping children learn environmental awareness. In schools, it is targeted on specific student-teacher relationships and often is designed to fit within state school regulations regarding curriculum content. A study done by Laura Barraza showed that the school was the place where children most commonly reported learning environmental concepts and issues (Barraza 2004).

3.2.2. Non-formal environmental education:

Non- formal system is less definitive and structured and is typically directed at the public at large, or particular segments of the general public (Troost 1972). It normally takes place at environmental education institutes and summer camps, non-profit environmental organizations, or other environmental groups that aim at educating the public on environmental issues. Utilizing outdoor classrooms is also a method that is common in environmental education. By exposing children to the environment outside their classroom and homes, they can become more aware of and comfortable with the natural world around them. One of the main purposes of outdoor learning centers is to provide science activities that will enable students to construct greater knowledge and appreciation for their

immediate environment. Carin says outdoor science extends the classroom walls. Students can "enlarge their science studies by taking nature walks, doing data collection and scientific analysis in the real world, and feeling that science is not something relegated to a schoolroom" (Carin 2001).

3.3 Definition of environmental awareness, knowledge and attitude according to Tbilisi conference, 1977:

According to Tbilisi Conference 1977, environmental education objectives categorized into different categories such as, environmental awareness, environmental knowledge and environmental attitude which the researcher will focus on in the study.

3.3.1. Environmental Awareness:

Referring to Tbilisi declaration, 1977, environmental awareness is defined as the way to help social group and individuals acquire an awareness and sensitivity to the total environment and its allied problems (UNESCO and UNEP, 1990).

Environmental awareness is the attitude of having consciousness about the consequences of the human intervention on the environment and the performances of appropriate behavior to reduce negative effects (Nunez, 200).

3.3.2. Environmental knowledge:

Tbilisi Declaration, 1977 defined environmental knowledge as, to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of , the environment and its associated problems (UNESCO and UNEP,1990). The term knowledge can refer to anything from general principles knowledge to specific skill knowledge or all types of knowledge combined into one component (Kibert,2000).

Also, environmental knowledge has been defined as a student's ability to understand and evaluate the impact of society on the ecosystem. This knowledge may be demonstrated by recognizing environmental problems as well as by comprehending the origins, implications, and consequences of those problems (Gambro & Switzky, 1996). In referring to Rickinson, (2001), environmental knowledge can be studied by examining the students' factual knowledge of the environmental phenomena, their understanding (and misunderstanding) of environmental phenomena and the sources of students' environmental information.

3.3.2.1 Sources of environmental Knowledge

After reviewing several studies, there are different sources of students' knowledge awareness, such as school , media, family and environmental clubs.

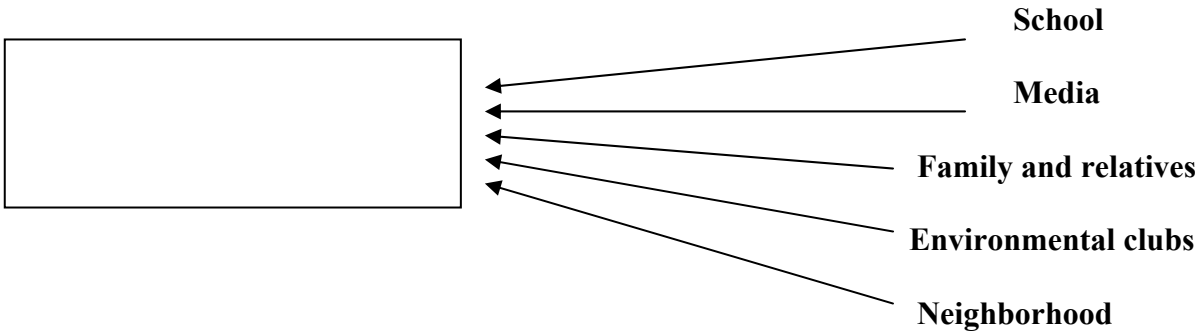

Figure 3.1. Different sources of environmental knowledge.

3.3.3. Environmental attitude

Tbilisi Declaration, 1977 defined environmental attitude as, the way to help social groups and individuals acquire a set values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection. (UNESCO and UNEP,1990). Students' environmental attitudes are 'the extent to which young people are concerned or indifferent in relation to the environment and/or environmental issues, and the extent to which students are willing to make sacrifices for the environment, such as willingness to conserve resources' (Rickson, 2001).

3.4. Theoretical framework

From the evidence of literature reviewed, environmental awareness and attitude may be influenced by environmental knowledge. Moreover, all these may be also influenced by gender, place of residency, and grade of students scores at school as hypothesized in the study.

Reviewing the different previous literature, the researcher has designed the theoretical framework in the following figure.

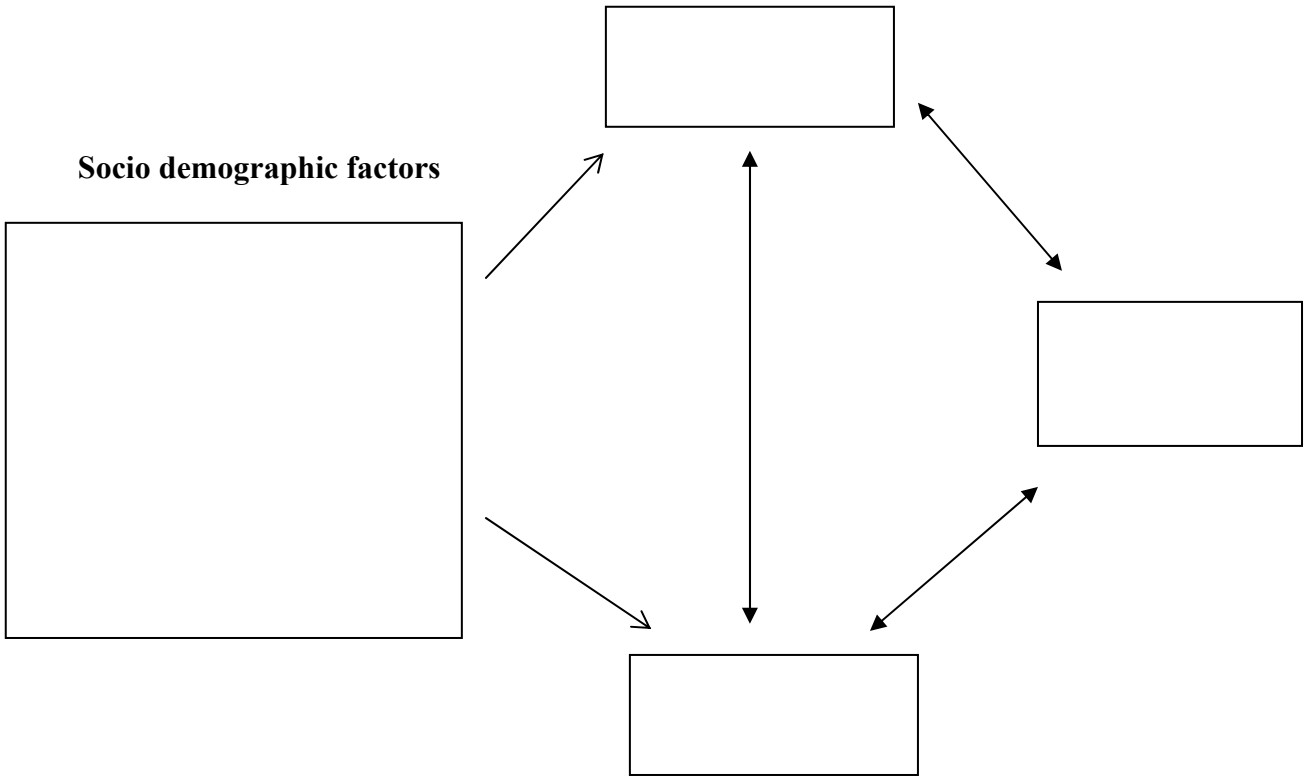

Fig. 3.2. The relationship between environmental education, awareness and attitudes of students, with different socio demographic factors such as: gender, place of residency, grade of students scores, media, family background and socio economic factors.

Chapter Four

Methodology

Chapter Four

Methodology

4.1. Introduction

The aim of this study is to investigate the level of environmental awareness and attitude of class 9 students in the governmental high basic school in Gaza, and the possible factors influencing awareness and attitude such as, gender, residential area and grade of students scores achievement at school, in addition to the study of the correlation between environmental awareness and attitude.

To implement this study, the researcher to followed the appropriate steps of the methodology mentioned in the thesis preparing guideline for students of high studies (first edition ,2005) in Al Quads University, which includes the study design, the study sample, the study instrument (description of both environmental awareness and environmental attitude measurement tools), pilot study, data collection, and data processing and analysis.
A pilot test was carried out on a sample of 10 students who have been selected randomly, and not included in the study sample. A cover page was provided to give instructions for completing the questionnaire to ensure the questionnaire is a self administered one, and verbal explanation was also given to the students. The survey progress was standardized in all study population of class 9 students in the eight governmental high basic school in Gaza.
The researcher applied the study questionnaire after receiving an official approval letter from " Helsinki Committee" in the ministry of Health and another aaproval letter from the Ministry of Education and Higher Education allowing the researcher to carry out the study on students of class nine in the governmental high basic school children in Gaza city (Annexes 2 and 3).

4.2. Study design

A quantitative analytical descriptive method was used in this study to describe the present status of the level of environmental awareness among school age children in Gaza.

The dependent variables include environmental awareness and attitude; where the independent variables include socio demographic factors including sex of student place of residency, grade of student score achievement at school.

4.3. Study sample

4.3.1. Study population:

The study population include all students of class nine in the governmental high basic school children in Gaza city.

4.3.2. Sample size:

The targeted students were selected from eight governmental high basic school children in Gaza city. The sample size was 400 students representing about 6% of total study population (6628 students) of class 9 in the governmental high basic school children in Gaza city for the educational year 2005 – 2006, according to the Ministry of Education and Higher Education records (Tayseir El Shorafa, October, 2005, personal interview).

4.3.3. Sampling process:

According to Gaza municipality, Gaza city is divided into four areas, popular area, agricultural area ,residential area and recent area (Annex 1).

As previously mentioned, the researcher aimed to examine the relationship between level of environmental awareness and attitude as independent variables with socio demographic factors such as sex of student and place of residence of students in the study population.

So a stratified random sample was conducted according to sex and place of residence. Eight governmental high basic schools from these four areas, two governmental high basic schools were selected from each area , one for males and the other for females. From each area , one hundred students were selected; fifty students from each school. Selection of class nine with fifty students was depend through random clustered methods and purposively from each school to avoid any disturbance for the other classes in the same school. However, as the participation of students in this study was voluntary, some students had refused to participate which lead to the completion of the sample from volunteer students of the other classes at the same school.

4.4. Study place

This study was applied on eight governmental high basic schools selected randomly from four areas of Gaza city according to Gaza municipality distribution. The following table explains sample distribution according to Gaza city areas, name of schools and sex of students.

Table (4.1)

Sample distribution according to Gaza city areas, name of school and child gender

Area	Name of School	Child Gender	Sample Size	Percent
Popular area	el fahd elahmad	male	50	12.5
	mosa ben nosair	female	50	12.5
Agricultural area	el hureia	male	50	12.5
	Elmagdal	female	50	12.5
Recent area	Anas ben malek	male	50	12.5
	el sheikh egleen	female	50	12.5
Resident area	el zahawi	male	50	12.5
	Elmagda waseelah	female	50	12.5
4	8	-	400	100

4.5. Ethical considerations and procedures

An official letter was obtained from " Helsinki committee" at Ministry of health on 30th of October 2005 which permitted the researcher to carry out the study on students of class nine in the governmental high basic school children in Gaza city (Annex 2). Also, an official letter obtained from the Ministry of Education and Higher Education on the 10th of November 2005 to facilitate the process of data collection (Annex 3). A cover page was added to each questionnaire to explain the study objectives and purpose (Annex 5). Also, verbal explanation about the procedure of completing the questionnaire was given to all students before responding to the questions. The participation of students in this study was voluntary, and they were free to write their names.

4.6. Study instrument

A questionnaire in Arabic was designed to accomplish the objective of this research to investigate the students' environmental awareness and attitudes in respect to their relationship with gender, area of residence, grade of student scores achievement at school variables. This design of the questionnaire was based on previously reviewed researches about education and how to measure the level of environmental awareness and attitude, textbooks and environmental health curriculum conducted on males students only in 3 classes of high basic stage (7,8,and 9 classes) since the educational year 2001 -2002. A reference table was designed to guide the researcher to design the questions of the questionnaire. The researcher concentrated on the variety of questions included in the questionnaire about different environmental issues included in the environmental health curriculum of the three classes of the governmental high basic school (7,8,9 class). This means that the student of class nine who participated in this study have been exposed to these issues during these three classes of the preparatory school. The questionnaire consists of 54 questions divided into two sections as explained below. Many environmental experts checked it to insure it's validity (Annex 4).

4.6.1. Environmental awareness questionnaire (EAQ):

The first section referred to environmental awareness. The content of this part was based on multiple choice question on different environmental issues to measure the level of students awareness about these issues, with one point for the right answer.

The researcher divided the questions of this part into different items covering different environmental topics, the 24 questions covered four environmental items.

1. Awareness about different components of environment: this item consist of 5 questions (1,2,3,11and 22).
2. Awareness about the types of environmental pollution: this item consists of 7 questions (4,8,14,16,19,23 and 24).
3. Awareness about the sources of environmental pollution: this item consist of 7 questions (5,9,12, 13,17,18 and 20).
4. Awareness about different methods of pollution control and mitigation: this item consists of 5 questions (6,7,10,15 and 21).

4.6.2. Environmental attitude scale (EAS):

The second part of the questionnaire includes an attitude measurement scale consisting of 30 questions rated on a Likert type scale. The researcher scaled the responses to each statement into 3 possible responses, A (pro-environment) =1, B (against environment) =2, C (not sure)= Zero.

These statements were the second part of the instrument described above and it was developed and designed on the basis of reviewed related literature. To examine the level of environmental attitude toward different environmental issues among the study population, the researcher divided the questions of this part into different items, the 30 questions covered five items that reflects the level of environmental attitudes toward different environmental issues:

1. Attitude toward refusal and prevention of activities and sources which cause air pollution: This item consists of 4 questions (6,7,16 and 17).
2. Attitude toward waste water problem: This item consists of 5 questions (2,12,14,15 and 24).

3. Attitude toward solid waste problem solving: This item consists of 7 questions (3,4,10,13,18,26 and 29).
4. Attitude toward protecting biodiversity: This item contain 8 questions (19,20,21,22,23,25,28 and 30).
5. Attitude toward general environmental issues: This item consists of 6 questions (1,5,8,9,11 and 27).

4.7. Content validity

The researcher prepared a list of main environmental concepts covered in the environmental health curriculum conducted on class 7,8,9 of the governmental high basic school children. According to this list and after reviewing many studies related to the subject, the researcher designed the study questionnaire to measure the level of environmental awareness and attitude among the students of class 9 in the high basic school children.

The validity of the scale has been examined by sending the constructed questionnaire with enclosed covering letter about the objective of the study to 10 experts working in the same field in order to give their views on the dimensions of the statements of the questionnaire (Annex 4).

In addition to the questionnaire, the researcher enclosed a list of main topics covered in the curriculum that guided the researcher to conduct this questionnaire. Seven of them have responded and send their suggestions and comments (Annex 11).

According to their suggestions and advice, the researcher changed some of the questions and put another which was more suitable.

4.8. Pilot study

A pilot test was carried out prior to the questionnaire distribution to check for any ambiguity or confusion in the question statement. Ten students of class nine were selected conveniently and requested to complete the test, as the pilot test could be done with a limited number of individuals, usually five to ten similar to intended respondents (Wieresma, 1995). And these students were not included in the sample during the formal survey to avoid prior test effects (Neuman,1997).

A cover page was also provided to give instructions for completing the questionnaire to ensure the questionnaire is a self administered one, and verbal explanation was also given to the students before starting. The questionnaire took 25-30 minutes for each participant to finish.

4.9. Data collection

Data collection was accomplished through using a questionnaire of two measurement tools, the first tool for environmental awareness measurement, and the second tool for environmental attitude measurement, in addition to the attached cover which consists of two parts. The first part is related to personal information, name of student, name of school, sex of student, and grade of student scores achievement at school. This information was used in the study to examine the relationship between environmental awareness and attitude as dependent variables with gender, place of residency and score achievement at school as independent variables. The second part informs the students about the instructions for completing the questionnaire. They were told that all the data obtained will be used for research purposes and they were asked to answer the questionnaire as honestly as possible. According to the pilot test, the survey took 25

minutes. Data collection process took two weeks duration and started from the first of January 2006.

4.10. Data entry and analysis

Data were carefully checked to screen out any incompletely answered questions. Four hundred questionnaires were processed and entered by the researcher after designing an entry model using the computer software Statistical Package for the Social Science (SPSS) version 11.5. In the study, the dependent variables were environmental awareness and environmental attitude of the respondent students, and the independent variables were gender, residential area and grade of students scores achievement at school.

In reporting the results of the study population distribution, descriptive statistics in term of means, percentage were measured for each dependent and independent variables. Further to this, tables and bar charts were used to present the data in an organized way and easier for readers to understand. The researcher conducted Independent sample T-Test, and one way ANOVA to test differences between environmental awareness and attitude scores as dependent variables, and sociodemographic factors as independent variables. A chi-square test was used to test the relation among data grouping. A Pearson's correlation coefficient was used to investigate the correlation between environmental awareness and environmental attitude.

4.11 Environmental awareness categorization

The researcher classified the students' environmental awareness into two categories according to their scores reflecting their environmental awareness level. From the total 24 scores reflecting the level of environmental awareness, the mean of the scores was

16.85. According to this mean, the researcher classified the student's scores into two levels, students who have got lower than 16 which can be considered as relatively low scores and reflect low level of environmental awareness, and students who have got higher than 17, which can be considered as high level of environmental awareness.

4.12.Environmental attitude categorization

The student's scores which reflects the level of their positive attitude toward the environment were categorized into two categories according to their scores mean which was 19.30. The first category was of students who have got lower than 19, which can be considered as low level of positive attitude toward the environment, and the second was students' who have got higher than 20, which can be considered relatively as high level of positive attitude toward the environment.

4.13.Limitations of the study

The researcher faced some limitations during implementing this study such as:

1. This study conducted only on the governmental school in Gaza city, not UNRWA, or Private schools, so the results can be generalized on this sector only.
2. A questionnaire was used in this quantitative study to collect data from a sample in order to make generalization about local population but could not probe responses and clarify answers.
3. The data collected were students' self reported type. It was assumed that their responses were honest and it was difficult to verify. According to data collector report about data collection, some students were not cooperative enough in answering the questions seriously, in addition to the presence of some disturbance

from other students during answering this questionnaire, which might affect their concentration and correct answers.

4. All correlations investigated were based on the responses for the questions in the questionnaire.
5. Lack of local literature written in English language, so, the researcher translated this literature from Arabic to English language to be consistent with the language of this study. The researcher has to follow the steps of documenting references mentioned in thesis preparing guideline for student of high studies (first edition, 2005) in Al Quads University, which requires documenting the references in the text style in the same language of the study. However, the researcher documented it in the references table in Arabic language according to the original resources of these references.

Chapter Five

Results

Chapter Five

Results

5.1. Introduction

In this chapter, the researcher will present the main study results based on the results of the statistical analysis. The first part of the results relates to the distribution of the study population. Frequency distribution of the items and descriptive statistics were used to present the data. The second part relates to the results of the study questions and hypotheses.

Environmental awareness and attitude factors were dependent variables, while sociodemographic factors such as sex, place of residence and grade according to the student scores at school were independent variables.

From the total score of environmental awareness, the students of the study population were classified into two categories, students with low level of environmental awareness and students with high level of environmental awareness, also from the total score of environmental attitude, students with low level of environmental attitude, and students with high level of environmental attitude.

The researcher conducted an independent sample T-Test, and one way ANOVA to test the differences between environmental awareness and attitude as dependent variables, and sociodemographic factors as independent variables. Pearson's correlation was used to explain the relationship between environmental awareness and environmental attitude.

5.2. Results of Demographic data

5.2.1. Sample distribution according to Gaza City areas, Name of School and Child Gender:

Table (5.1)

Sample Distribution According To Gaza City Areas, Name Of School And Child Gender.

Place of residence	Name of School	Child Gender	Sample Size	Percent
Popular area	El fahd elahmad	male	50	12.5
	Mosa ben nosair	female	50	12.5
Agricultural area	El hureia	male	50	12.5
	Elmagdal	female	50	12.5
Recent area	Anas ben malek	male	50	12.5
	El sheikh egleen	female	50	12.5
Resident area	El zahawi	male	50	12.5
	Elmagda waseelah	female	50	12.5
4 Areas	8 Schools	-	400	100

Table (5.1) show's that according to Gaza municipality, Gaza city is distributed into four areas, popular area, agricultural area ,residential area and recent area. Eight governmental high basic schools were selected from these four areas, from each area tow governmental high basic schools of grade nine students were selected, one for males and the other for females. The selection considered equal number of males and females accordingly. From each area , one hundred students were selected, fifty students with 12.5% ratio from male schools and fifty student with 12.5 % ratio from female schools.

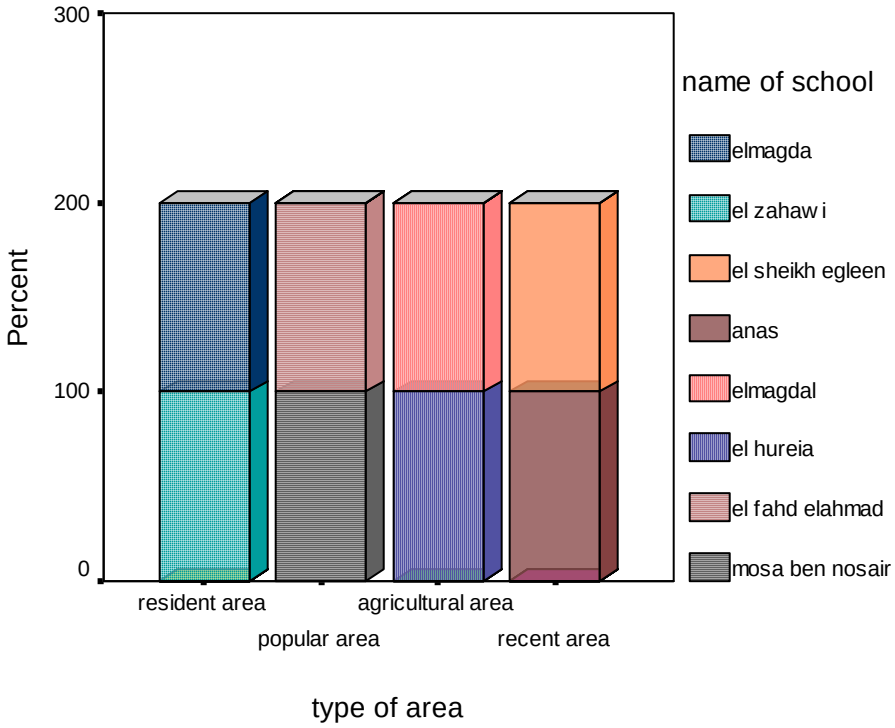

Figure (5.1) Distribution Of Schools According To The Place Of Residence In Gaza City.

The figure show's that tow schools were selected from each area, one for male and the other for female.

5.3. Results of study questions and hypothesis

53.1. Level of environmental awareness:

To determine the level of environmental awareness among students of class nine in the governmental high basic school children in Gaza_ Palestine, descriptive statistics including measures of mean, standard deviation and percentage of correct answers scores reflecting the level of students' environmental awareness were developed to show the current level of environmental awareness of these students.

Table (5.2)

Mean ,Standard Deviation And Percentage Of The Level of Environmental Awareness Among School Age Children In Gaza City.

Item	N	Mean	Standard deviation	%
Environmental Awareness	400	16.85	3.775	70.2

The first part of the questionnaire contained 24 questions on environmental awareness. For each correct answer, 1 mark was awarded, and no marks were awarded or deducted for wrong answer. As shown in table 5.2, out of the 24 points reflecting the level of environmental awareness among school children, the mean of the score was 16.85 with standard deviation of 3.77 and percentage of students' scores of correct answers which reflects their level of environmental awareness was 70.2%. This results indicate that the level of environmental awareness among the governmental high basic schools children of class nine in Gaza city was relatively moderate.

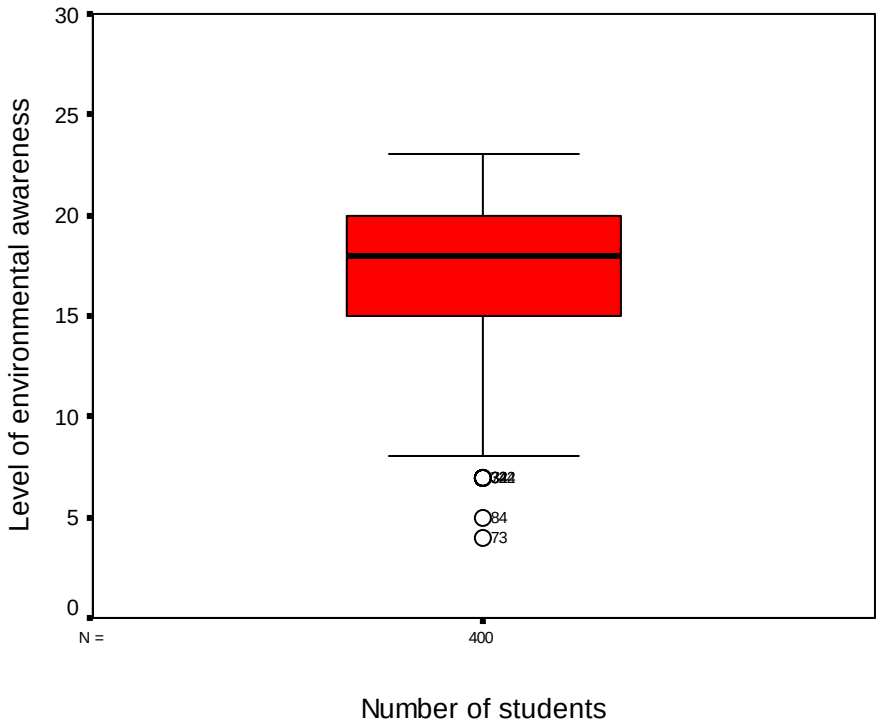

Figure (5.2) Level Of Environmental Awareness Among School Age Children In Gaza City.

The figure show's that the median of environmental awareness among students of class nine in high basic school children was about 18 which can be considered as high level of awareness, but there was a variation in the range of environmental awareness scores among school children between 4 points to 23 points. Also about three school children have got below 8 of 24 points. These results indicate that while there were students with very low level of environmental awareness, and students with very high level of environmental awareness, most of the scores were concentrated between 15 and 20 points of 24.

5.3.2 Environmental awareness categories:

In this study the students were classified into two categories according to their scores, as mentioned in chapter 4. From the total 24 scores reflecting the level of environmental awareness, there were students with relatively low scores who have got 16 and less, in addition to students with relatively high scores who have got 17 and above.

Table (5.3)

Number And Percentage Of Students According To The Level Of Environmental Awareness Categories.

Item	Categories	Frequency	%
Level of environmental awareness categories	**Low**	152	38.0
	High	248	62.0
	Total	400	100.0

As shown in table (5.3), the number of students who have got 17 and above was about 248 of 400 school children with percentage of 62%, while there were 152 of 400 school children with percentage of 38% only have got 16 and below on the scale for environmental awareness. These results indicate that, according to the above mentioned categorization, the number of students who have got relatively high scores in the level of environmental awareness was more than those who have got relatively low scores.

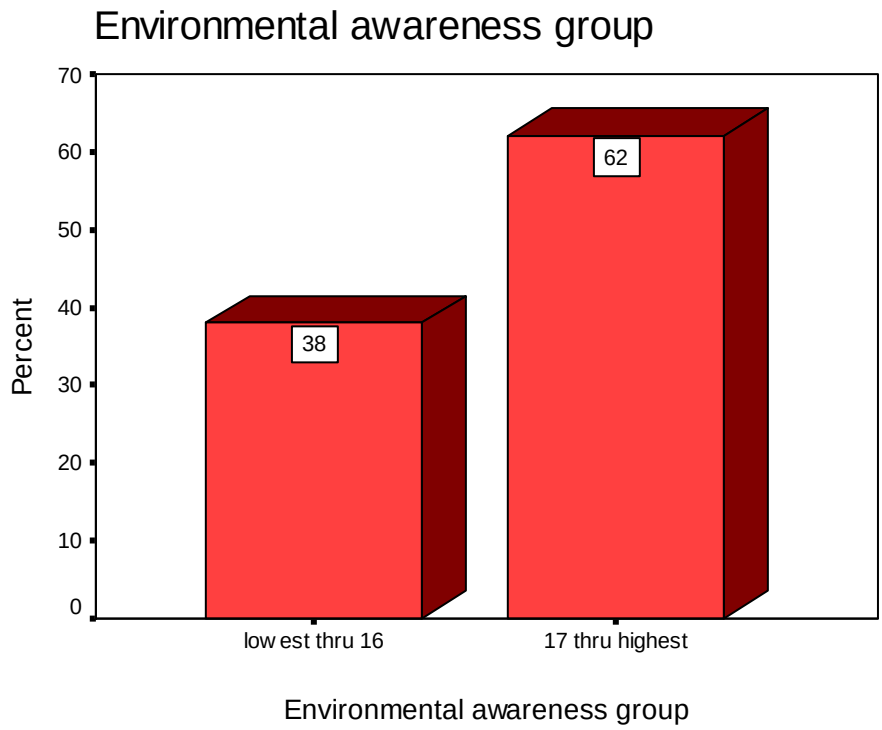

Figure (5.3) Environmental Awareness Groups Among Class 9 Students In Gaza City.

5.3.3. Level of awareness about different environmental items:

To examine the level of environmental awareness about different environmental issues among the study population, the researcher divided the questions of this part into different items covering different environmental topics. The 24 questions cover four items which reflect the level of environmental awareness about different environmental issues.

The first item consists of five questions which reflect the level of awareness about different components of the environment, while the second item consists of seven questions reflecting the level of awareness about types of environmental pollution. Also, the third item consists of seven questions reflecting the level of awareness about the sources of environmental pollution, and the last item contains five question reflecting the level of awareness about different methods of environmental pollution control or mitigation.

The Mean, standard deviation and percentage of students' scores reflecting the level of their awareness about different environmental items were calculated.

Table (5.4)

Mean, Standard Deviation And Percentage Of The Level Of Environmental Awareness Items Among School Age Children In Gaza City.

Item	N	No. of item questions	Mean	Std. Deviation	%	Rank
Components of the environment	400	5	3.93	1.06	78.4	1
Methods of environmental pollution control or mitigation	400	5	3.90	1.21	78	2
Resources of environmental pollution	400	7	4.75	1.41	67.6	3
Types of environmental pollution	400	7	4.27	1.28	60.9	4
Over all	400	24	16.85	3.77	70.2	

According to the results in table (5.4), there is a variation among the study population in the level of awareness about different environmental items.

The first rank among the environmental items of this study was the item reflecting the level of awareness about different resources of environment, and out of the 5 scores to this item the mean of awareness was 3.93 with standard deviation 1.06 and percentage of about 78.4% which mean that the children were aware about the resources of environment more than other environmental items. The second rank of categorization was the item reflecting awareness about the methods of environmental pollution control or mitigation, and out of 5 scores to this item the mean of awareness was 3.9,and standard. deviation 1.21 and the percentage was 78%. The third rank of awareness items among school children was their awareness about the sources of environmental pollution, out of 7 scores to this item the mean of awareness was 4.75 with standard deviation 1.41 with a percentage 67.6%. The fourth rank of awareness items among school children was there awareness about the types of environmental pollution which with a mean of 4.27 of 7 scores with standard deviation 1.28 and a percentage of about 60.9%.

5.3.4. Level of environmental awareness and gender:

To measure the differences in the level of environmental awareness among students of class nine in the governmental high basic school children in Gaza due to their gender (male, female), The mean, standard deviation, independent T-Test, and percentage were used.

Table (5.5)

Mean, Standard Deviation, Independent T-Test, And Percentage Of The Level Of Environmental Awareness Among High Basic School Children According To Their Gender.

Item	sex of child	N	Mean	Std. Deviation	%
Environmental Awareness Score	Male	200	17.36	3.799	72.34
	Female	200	16.34	3.691	68.1

T- Test = 2.72 **P= 0.007**

Table (5.5) shows that, out of the 24 scores reflecting the level of environmental awareness among school children, the mean of environmental awareness among males was 17.36,with a percentage of 72.34%, while it was among females16.34, with percentage of 68.1%. This indicates that the level of environmental awareness among males of the governmental high basic school children of class nine in Gaza city is higher than of females.

Independent - Sample T-Test was used to study the differences in the level of environmental awareness as dependent variable and gender factor (male, female) as an independent variable. According to the results, T value was 2.72, and there was statistical

significant difference in the level of environmental awareness among the students of class nine in the governmental high basic school age children in Gaza city attributed to their gender towards male (P= 0.007). So, this results satisfies the first alternative hypothesis, which proposed that there is a statistically significant difference at P< 0.05 in the level of environmental awareness among high basic school children due to their gender.

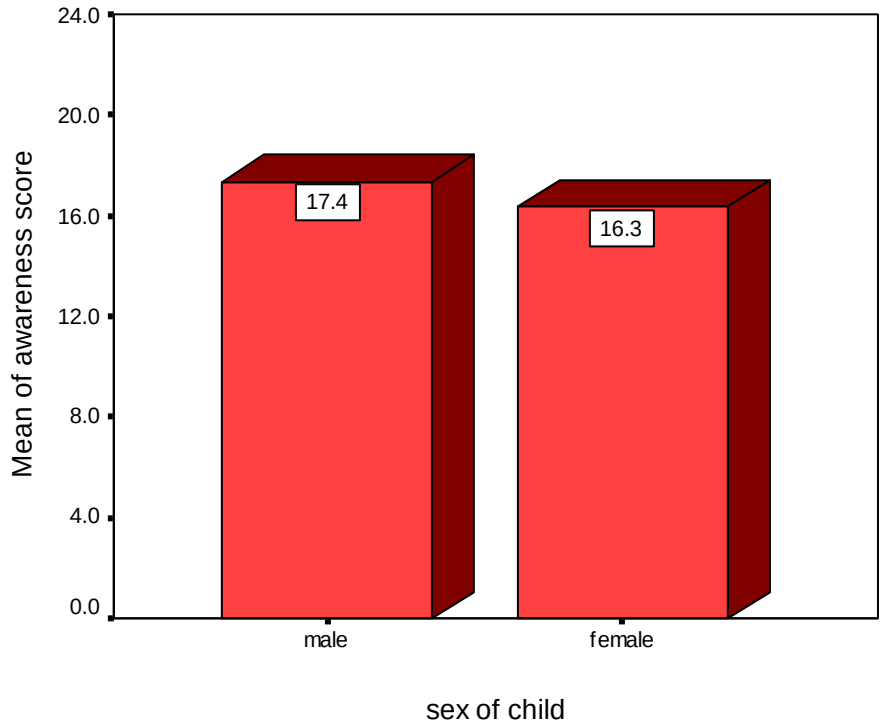

Figure (5.4): Level Of Environmental Awareness And Gender

5.3.5. Environmental awareness categories and gender:

As explained previously, school children's were classified into two categories according to their scores of the questions reflecting the level of environmental awareness, from the total 24 scores, there were students with relatively low scores who have got 16 and less, in addition to students with relatively high scores who have got 17 and above. Cross tabulation was performed to identify if there was a difference between males and female according to this categorization.

Table (5.6)

Environmental awareness categories according to the study population gender.

Sex of student	Environmental awareness categories				Chi Square	P
	low		High			
	N	%	N	%		
Male	65	32.5	135	67.5	5.136	.02
Female	87	43.5	113	56.5		

As shown in table (5.6), there is a difference between males and females in the level of environmental awareness categories. The results show that there was about 135 of 200 male school children with percentage of 67.5% have got 17 points and above, and 65 of 200 male school children with percentage of 32.5% only have got below 16 points on environmental awareness. While 113 of 200 female school children with percentage of 56.5% only have got 17 and above level of environmental awareness, and 87 with percentage of 43.5% have got 16 and less level of environmental awareness. This means that males of class nine in the governmental high basic school children in Gaza were more aware about environment than females, and most of the males have got a high level of environmental awareness than females. The differences between the tow groups (males and females) is statistically significant, and Chi square value was 5.136, and P =0.02.

5.3.6. Gender and awareness about different environmental items:

Independent – Sample T-Test was used to study the differences between males and females of the study population as dependent variable and the level of their awareness about different environmental items as independent variables.

Table (5.7)

Independent – Sample T-Test of environmental awareness items and gender

Item	Gender	N	Mean	Std. Deviation	(T) value	P - Value
Components of Environment	M	200	4.0	1.06	1.46	.14
	F	200	3.85	1.05		
Types of pollution	M	200	4.29	1.27	.46	.64
	F	200	4.23	1.31		
Sources of pollution	M	200	5.03	1.43	3.96	.00
	F	200	4.48	1.33		
Pollution Control	M	200	4.03	1.17	2.11	.03
	F	200	3.77	1.23		
Environmental Awareness	M	200	17.36	3.79	2.72	.007
	F	200	16.34	3.69		

According to table (5.7), the results indicate that there is no statistical significant difference in the level of environmental awareness about sources of environment due to gender ($p=0.14$) . So, the first alternative hypothesis is rejected, also there is no statistical significant difference in the level of environmental awareness about types of environmental pollution due to gender ($p=.64$). So, the first alternative hypothesis is rejected, while the level of environmental awareness about different sources of environmental pollution among males was higher than females, and there was statistical significant differences at ($p<0.001$). So, the first alternative hypothesis is accepted, in addition the level of environmental awareness about different methods of environmental

pollution control or mitigation among males was higher than females and there was statistical significant differences (p=.03).

5.3.7. Level of environmental awareness and type of place of residency:

According to Gaza municipality, Gaza city is divided into four areas, popular area, agricultural area ,residential area and recent area. Eight governmental high basic schools were selected from these four areas, from each area two governmental high basic schools of class nine students were selected, one for males and the other for females. The selection considered equal number of males and females accordingly**.**

The mean, standard deviation , percentage, and One – way ANOVA test were used to explore if the level of environmental awareness among the students of class nine in the governmental high basic school children in Gaza differs due to the place of residence.

Table (5.8)

Mean , Standard Deviation And Percentage, Of The Level Of Environmental Awareness Among High Basic School Children According To Their Place Of Residence.

type of area	N	Mean	Std. Deviation	Rank
resident area	100	19.00	2.035	1
popular area	100	17.12	4.053	2
recent area	100	15.98	3.808	3
Agricultural area	100	15.30	3.799	4
Total	400	16.85	3.775	

F= 21.153 **P< 0.001**

As shown in table (5.8), the results reflect a difference in the mean of the level of environmental awareness among school children according to the area, and out of the 24 points reflecting the level of environment awareness among the study population. The highest (19) was for school children in the residential, while the lowest (15.3) was for agricultural area. The second rank was for popular area (17.2), and the third rank was the recent area of mean value equal (15.98).

In order to study the differences between level of environmental awareness among high basic school children as independent variable and type of area in Gaza city as dependant variable, one way analysis of variance (ANOVA) was used. According to test results, F=21.153, and the results indicate that there is a statistical significant difference in the level of environmental awareness among school children due to the place of residence ($P< 0.001$). So, the study alternative hypothesis that there is a statistically significant differences at ($P< 0.001$) in the level of environmental awareness among high basic school children due to the type of their area is accepted.

To identify the significant differences in this total environmental awareness, shceffe post test was used and table (5.9) clarifies that.

Table(5.9)

Scheffe Post Test For Environmental Awareness And Types Of Place Of Residence In Gaza City.

Dependent Variable	(I) type of area	(J) type of area	Mean Difference (I-J)	Std. Error	Sig.
awareness score	resident area	popular area	1.88(*)	.498	.003
		agricultural area	3.70(*)	.498	.000
		recent area	3.02(*)	.498	.000
	popular area	resident area	-1.88(*)	.498	.003
		agricultural area	1.82(*)	.498	.004
		recent area	1.14	.498	.156
	recent area	resident area	-3.02(*)	.498	.000
		popular area	-1.14	.498	.156
		agricultural area	.68	.498	.601
	agricultural area	resident area	-3.70(*)	.498	.000
		popular area	-1.82(*)	.498	.004
		recent area	-.68	.498	.601

According to table (5.9), scheffe post test clarifies that there is a statistically significant difference at ($P< 0.001$) in the level of environmental awareness among high basic school children in resident area and other three areas, popular area, agricultural area and recent area. Also, there is a significant difference between popular area and both resident area and agricultural area while there is no any significant differences in the level of environmental awareness between popular area and recent area. In addition there is a statistically significant difference in the level of environmental awareness among school children in agricultural area and both resident area and popular area, while there is no any significant differences with recent area. There is a statistically significant differences in the level of environmental awareness among high basic school children in recent area and resident area only, while there is no any significant differences with other areas.

From the above findings, it is clear that there is a statistical significant difference in the level of environmental awareness according to type of area, and this difference is positively toward the residential area where the level of environmental awareness is the highest among the other areas, followed by the popular area, recent area, and then the lowest level of environmental awareness is among agricultural area.

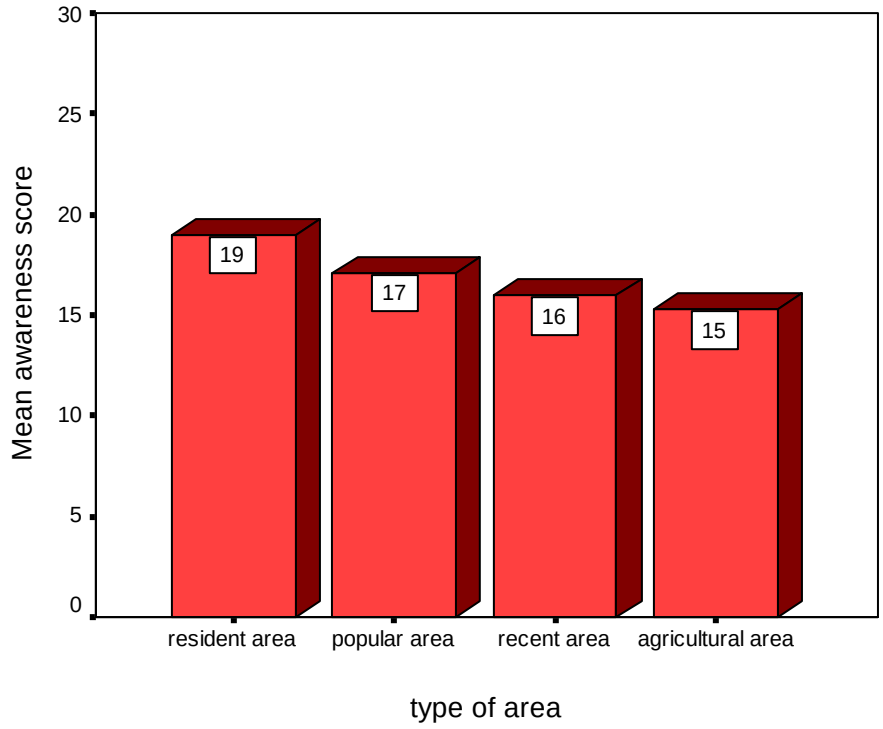

Figure (5.5) : Level Of Environmental Awareness According To Type Of Area.

5.3.8. Environmental awareness categories and type of area:

Cross tabulation was performed to identify if there Were any differences between environmental awareness categories and type of area..

Table (5.10)

Environmental Awareness Categories And Type Of Area.

Place of Residence	Environmental Awareness Categories				Chi Square	P
	Low		High			
	N	%	N	%		
Resident Area	12	12.0%	88	88.0%	48.642	.000
Popular Area	35	35.0%	65	65.0%		
Agricultural Area	57	57.0%	43	43.0%		
Recent Area	48	48.0%	52	52.0%		
Total	152	38.0%	248	62.0%		

As shown in table (5.10), about 88 of 100 students of class nine in the governmental high basic school children in the resident area of Gaza city with percentage of 88% have got 17 points and above, and 12 of them only with percentage of 12% have got 16 and below. While 65 of 100 student of grade nine in the governmental high basic school children in the popular area of Gaza city with percentage of 65% have got 17 points and above, and 35% have got 16 points and lower. Also, 43 of 100 school children in the agricultural' area with percentage of 43% have got 17 points and above, while 57% of them have got 16 and lower, and only 52 of 100 school children in the recent area have got 17 points and above, while 48% of them have got 16 points and lower out of 24 points.

These results mean that the level of environmental awareness among school children in resident area was the highest, the second area was the popular area, followed by the agricultural area, and the lowest was among school children in the recent area. Differences among localities are statistical significant, with Chi – square=48.642, and $P< 0.001$.

5.3.9. Level of environmental awareness and grade of students' scores:

According to students scores achievement at school they were divided into four categories, out of the 100 %, the first category was of students who have got excellent level (90 and above), the second category was very good (80-89%), while the third category was moderate level (70-80%,) and the last category was students who have got low scores (60-69%).

The mean, standard deviation, percentage, and one way analysis of variance were used to explore if the level of environmental awareness among the students of class nine in the governmental high basic school children in Gaza differ due to their grades.

Table (5.11)

Means And Standard Deviation Of The Level Of Environmental Awareness Among School Children And Their Grade.

Level achievement	GRADE	N	Mean	Std. Deviation
Excellent	90-	142	18.72	2.456
Very good	80-89	131	16.86	3.364
Moderate	70-79	101	15.04	3.955
Low	60-69	26	13.62	5.300
-	Over All	400	16.85	3.775

F= 31.610 **P<0.001**

As shown in table (5.11), the results reflect differences in the mean of the level of environmental awareness among the study population according to their grade. Out of the 24 points reflecting the level of environmental awareness , the students whose grades were 90% and above , their mean of environmental awareness level was the highest among the means of the other grades according to grade categorization in this study. While the second mean was for those whose grades were between 80-89%, followed by those whose grades were 70-79% , and the lowest mean was of those whose grades were 60-69%. This means that there is a direct proportional relationship between the level of environmental awareness and the students grade.

In order to study the differences between the level of environmental awareness among high basic school children as independent variable and their grades as dependant variable One – way ANOVA was used. According to the test results, F=31.61, P<0.001, there is a statistically significant difference in the level of environmental awareness among school children due to the students grade (p< 0.001). So, the study alternative hypothesis which proposed that there is a statistically significant difference at (p<0.001) in the level of environmental awareness among high basic school children due to their grade is accepted.

To verify the significant difference in this total environmental awareness, shceffe post test was used and table (5.12), clarifies that.

Table (5.12)

Scheffe post test for environmental awareness and grade in Gaza city.

Dependent Variable	(I) GRADE	(J) GRADE	Mean Difference (I-J)	Std. Error	Sig.
Environmental awareness	90-	80-89	1.86(*)	.412	.000
		70-79	3.68(*)	.443	.000
		60-69	5.10(*)	.726	.000
	80-89	90-	-1.86(*)	.412	.000
		70-79	1.82(*)	.451	.001
		60-69	3.25(*)	.731	.000
	70-79	90-	-3.68(*)	.443	.000
		80-89	-1.82(*)	.451	.001
		60-69	1.42	.749	.307
	60-69	90-	-5.10(*)	.726	.000
		80-89	-3.25(*)	.731	.000
		70-79	-1.42	.749	.307

Scheffe post test clarifies that there was a statistically significant difference in environmental awareness among children due to their grades. So this agrees with the study hypothesis which proposed that there is statistically a significant difference in the level of environmental awareness due to grade.

As shown in table (5.12), there was a statistically significant difference at ($p<0.001$) in the level of environmental awareness among high basic school children whose grades were90% and above, and other three grades according to categorization of this study. Also there was a significant difference among students whose grades were between 80-89% and the other three grades. In addition there was a statistically significant differences in the level of environmental awareness among school children whose grades were between 70-

79% and whose with grades between 80-89% and from 90% to above, while there was no any significant differences with children of grades between 60-69%. Finally there was a statistically significant difference in the level of environmental awareness among children of grades between 60-69% and those of grades between 80-89 and from 90% and above, while there wasn't any significant difference with children of grade between 70-79%.

From the above finding, it is clear that there was statistically significant differences in the level of environmental awareness according to children grades. The highest level was among the children of grades from 90% and above, then students of grades between 80-89%, followed by those of grades between 70-795, and the lowest level of environmental awareness was among those of grades between 60-69%.

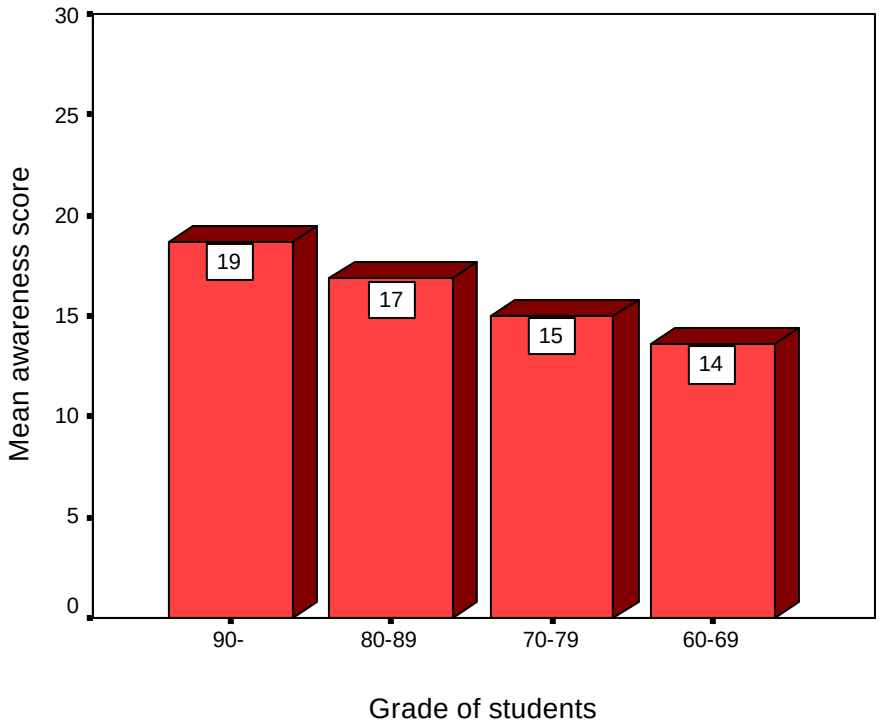

Figure (5.6) : Level Of Environmental Awareness According To Students Grades In Gaza City

5.3.10. Environmental awareness categories and students' grade:

Cross tabulation was performed to identify if there were any differences between environmental awareness categories and students grades at school.

Table (5.13)

Cross Tab Between Level Of Environmental Awareness Among School Children And Their Grade.

Grade	Environmental Awareness Categories				Total	Chi Square	P
	Low		High				
	N	%	N	%			
90-	26	18.3%	116	81.7%	142	51.00	< 0.001
80-89	49	37.4%	82	62.6%	131		
70-79	61	60.4	40	39.6	101		
60-69	16	61.5	10	38.5	26		
Over All	152	38	248	62	400		

As shown in table (5.13), about 116 of 142 children with a percentage 81.7% whose grades were 90% and above have got 17 points and above, and 26 of them with a percentage of 18.3% have got 16 points and lower, while 82 of 131children with a percentage 62.6% whose grades were between 80-89% have got 17 points and above, and 49 of them with percentage 37.4% have got 16 points and lower. About 61.4% whose grades were between 70-79% have got 16 points and lower, and finally 16 0f 26 children with a percentage of 61.5% have got 16 points and lower, while 10 of them with percentage 39.6% have got 17 points and above. These results mean that the level of environmental awareness among school children of grade nine in the governmental high basic school children in Gaza differs due to their grade.

These results mean that the level of environmental awareness among school children of grade 90% and above, was the highest among school children of other grade. The second rank was among students of grades between 80-89% in the level of environmental awareness , the third was of grades between 70-79%, and the lowest level of environmental awareness was among students of grades between 60-69%. Differences between students grade and their level of environmental awareness reach statistically significant, Chi square = 51.00, and $P < 0.001$.

5.3.11. Level of environmental attitude:

In this part the researcher tries to answer the question: What is the level of attitude toward environment of the grade nine students in the governmental high basic school children in Gaza city.

To answer this question , descriptive statistics including measuring mean, standard deviation and percentage of students' scores were developed to show the current level of environmental attitude of these students.

Table (5.14)

Mean ,Standard Deviation And Percentage Of The Level Of Environmental Awareness Among School Age Children In Gaza City.

Item	N	Mean	Standard deviation	%
Environmental Attitudes	400	19.30	5.89	64.33

The second part of the questionnaire includes 30 questions that reflects the environmental attitude among the students of the study population. For each answer that reflects a positive attitude toward the environment 1 mark was given, and 2 marks were given for the answer reflecting a negative attitude. As shown in table(5.14), out of the 30 points reflecting the level of positive environmental attitude among school children, the mean of the scores was 19.30 with standard deviation of 5.89 and a percentage of students' scores reflecting the level of their positive attitude toward their environment was 64.33%. These results indicate that the level of positive environmental attitude among the governmental high basic schools children of class nine in Gaza city was relatively low.

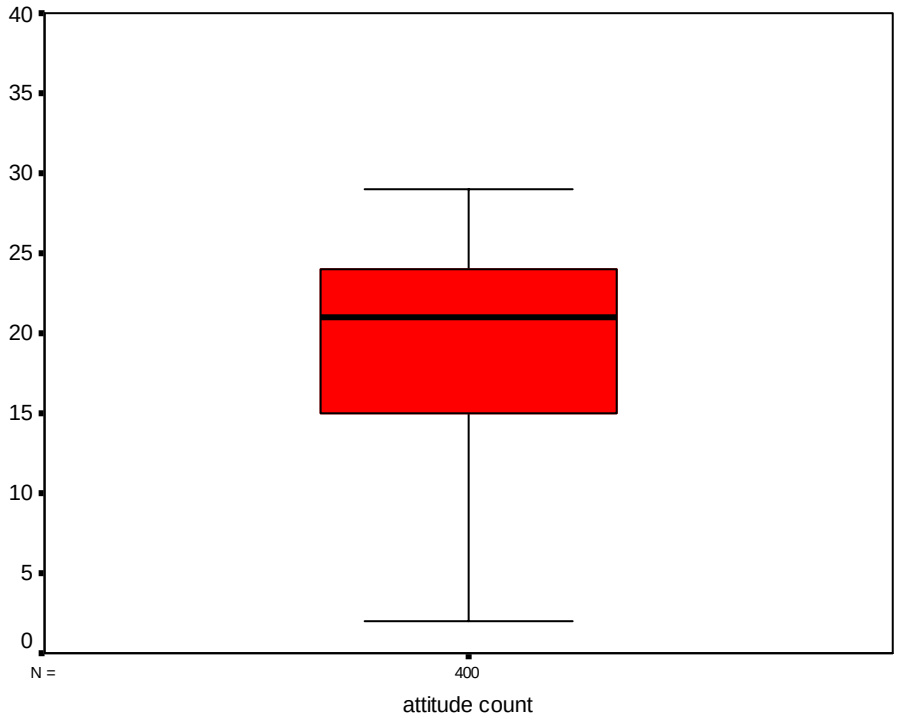

Figure (5.7) : Level Of Environmental Attitude Among Children Of Class 9 In Gaza City.

The figure show's that out of the 30 points reflecting the level of environmental attitude, the median of environmental attitude among children of class nine in high basic school children was about 21 which can be considered as a high level of attitude, but there was a large variation in the range of environmental attitude scores among school children between 2 points to 29 points. This result indicates that, while there were children with a very low positive attitude toward the environment, and children with high positive attitude, most of the scores were concentrated between 15 and 24 points out of 30.

5.3.12. Environmental attitude categories:

As mentioned previously in chapter 4, the students were classified into two categories according to their scores which reflect their attitude toward environment. From the total of 30 scores, there were students with low scores who have got 19 and less, in addition to students with high scores who have got 20 and above.

Cross tab was made between environmental attitude groups among the class nine of the governmental high basic school children - Gaza .

Table (5.15)

Number And Percentage Of Student According To The Level Of Environmental Attitude Categories.

Item	Categories	Frequency	%
Level Of Environmental Attitude Group	**Low**	174	43.5
	High	226	56.5
	Total	400	100.0

As shown in table (5.15), the number of students who have got 19 points and less was about 174 of 400 school children with a percentage of 43.5%, while there was 226 of 400 school children with a percentage of 56.5% have got 20 points and above on the level of environmental awareness scale. This result indicates that according to the above mentioned categorization, the number of students who have got high scores in the level of environmental attitude was more than those who have got low scores.

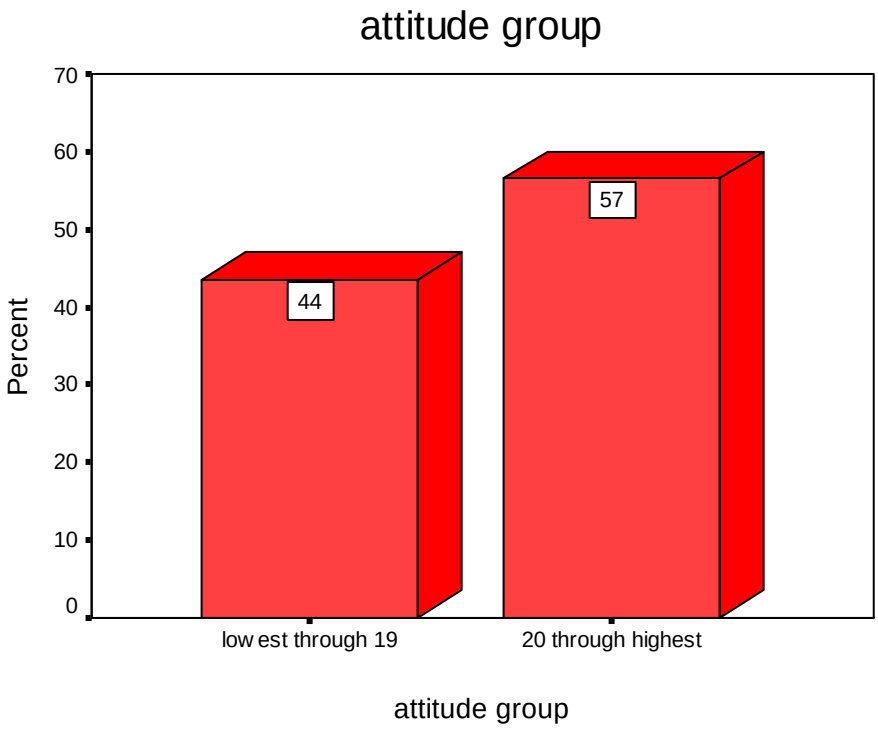

Figure (5.8): Environmental Attitude Categories Among Students Of Class 9 In Gaza City.

The figure shows that the percentage of the students who have got 20 points and above of the attitude toward environment scale, was more than those who have got 19 points and less.

5.3.13. Environmental attitude items:

To examine the level of environmental attitude toward different environmental issues among the study population, the researcher divided the questions of this part into different items, the 30 questions cover five items which reflects the level of environmental attitudes toward different environmental issues.

The first item which consists of four questions with four scores reflects the level of attitude toward refusal and prevention of activities and sources which cause air pollution. The second item consists of five questions with five scores reflecting the level of attitude toward waste water problem, the third item consists of seven question and seven scores, reflecting the level of attitude toward solid waste problem solving, the fourth item contains eight questions with eight scores reflecting the level of attitude toward protecting biodiversity, and the last item consists of six questions reflecting the level of attitude toward general environmental issues.

The mean, standard deviation and percentage were conducted to identify the level of environmental attitude toward different environmental items among the study population.

Table (5.16)

The Level Of The High Basic School Children Attitude Toward Different Environmental Issues.

Item	N	Mean	No. of items questions	Standard Deviation	Percent	Rank
Air pollution	400	2.96	4	1.06	74	1
Waste water	400	3.46	5	1.37	69.2	2
Solid waste	400	4.68	7	1.66	66.86	3
Biodiversity	400	4.76	8	1.17	59.5	4
Other environmental issues	400	3.44	6	1.70	57.33	5

In spite of the low level of environmental attitude among the study population, the results in table (5.16) emphasized that there was a variation in the level of attitude toward different environmental issues among students of grade nine in the governmental high basic school children in Gaza city. The first rank of the students concern reflects a positive attitude toward refusal and prevention of activities and sources which cause air pollution. Out of the 4 scores to this item the mean of environmental attitude among the study population was 2.96 with standard deviation of 1.06 and percentage of 74% , while the second rank with a percentage of about 69.2% reflects the attitude toward waste water problem, where out of the 5 scores to this item the mean of environmental attitude was 3.46 with standard deviation 1.37. The third rank reflects a positive attitude toward solid waste problem solving, and out of 7 scores to this the mean was 4.68 with standard deviation 1.66 and a percentage of 66.86%, while fourth attitude was toward protecting biodiversity, and out of the 8 scores to this item the mean of environmental attitude was 4.76 with standard deviation of 1.17 and a percentage of 59.5%. The least item of their concern was the attitude toward general environmental issues, and out of 6 scores to this item the mean of environmental attitude was 3.44 with standard deviation 1.7 and a percentage of 57.33% only.

5.3.14. Gender effect on the level of environmental attitude:

Is the student of the class nine of the governmental high basic school children in Gaza city attitude differ due to their gender. (male, female)?

To answer this question, the mean, standard deviation, independent T-Test and percentage were used.

Table (5.17)

Mean , Standard Deviation And Percentage Of The Level Of Environmental Attitude Among High Basic School Children According To Their Gender.

Item	Gender	N	Mean	Std. Deviation
Environmental Attitudes	**Male**	200	18.34	6.730
	Female	200	20.27	4.740

T- Test value= - 3.31 **P<0.001**

As shown in table (5.17), the mean of environmental attitude among females of class nine in the governmental high basic school children is higher than that of environmental attitude among males of the study population.

According to independent T-Test results, T value was –3.31,P< 0.001. and there was a statistically significant difference in the level of environmental attitude among the students of class nine in the governmental high basic school age children in Gaza city attributed to their gender towards females. So this results rejects the study alternative hypothesis proposed that there is statistically significant differences at (P< 0.001) in the level of environmental attitude among high basic school children due to their gender toward males.

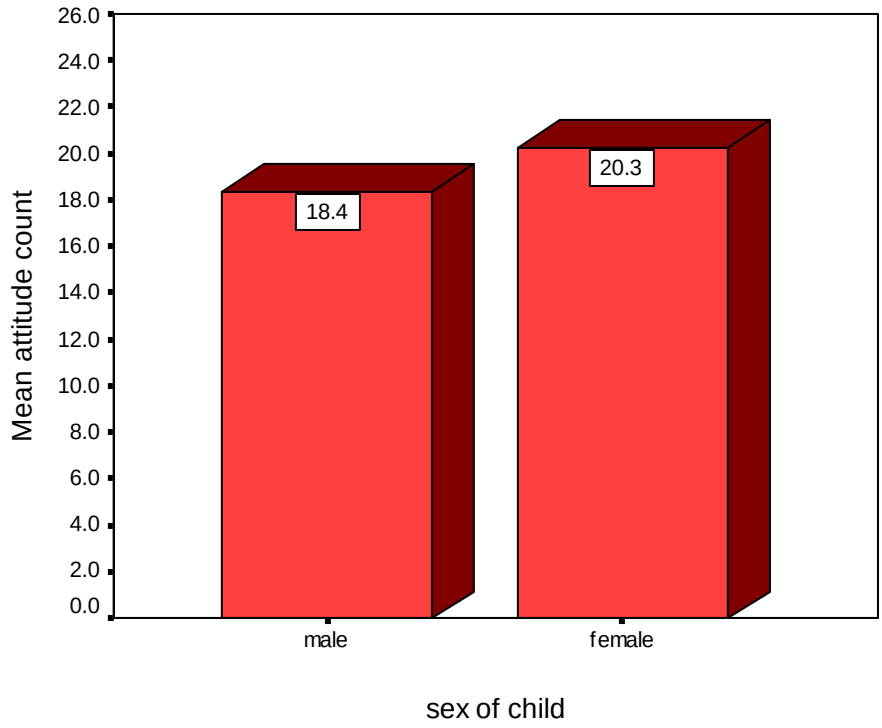

Figure (5.9): Environmental Attitude And Gender.

Level of environmental attitude among female was higher than male environmental attitude.

5.3.15. Environmental attitude categories and gender:

As explained previously, school children were classified into two categories according to their scores of the questions reflecting the level of environmental attitude, from the total 30 scores, there were children with low scores who have got 19 and less, in addition to students with high scores who have got 20 and above. Cross tabulation was performed to identify if there was a difference between males and female according to this categorization.

Table (5.18)

Environmental Awareness Categories Among High Basic School Children According To Their Gender

Sex of student	Environmental attitude categories				Chi Square	P
	Low		High			
	N	%	N	%		
Male	97	48.5%	103	51.5%	4.069	.044
Female	77	38.5%	123	61.5%		
Total	174	43.5%	226	56.5%		

As shown in table (5.18), there is a difference between males and females in the level of environmental attitude categories. The results show that about 97 of 200 school children males with a percentage of 48.5% have got 19 points and less, and 103 of 200 with a percentage of 51.5% have got 20 points and above. While 77 of 200 school children females with a percentage of 38.5% have got 19 points and less, and 123 with percentage of 61.5% have got 20 points and above on the level of environmental attitude. This means that females of class nine in the governmental high basic school children in Gaza have a positive attitude toward the environment more than males, and most of the females have got higher level of environmental attitude than males. Differences between males and

females in their environmental attitude revealed a statistically significant difference, Chi Square = 4.069, and P= .044.

5.3.16. Level of environmental attitude and place of residence:

As mentioned previously in this study, according to Gaza municipality, Gaza city is distributed into four areas, popular area, agricultural area ,resident area and recent area. Eight governmental high basic schools were selected from these four areas, from each area tow governmental high basic schools of class nine students were selected, one for males and the other for females. The selection considered equal number of males and females accordingly**.**

The mean, standard deviation, one way ANOVA, and percentage was used to explore if the level of environmental attitude among the students of class nine in the governmental high basic school children in Gaza differ due to the place of residence.

Table (5.19)

Place of Residence	N	Mean	Std. Deviation	Rank
Resident Area	100	23.18	3.415	1
Popular Area	100	19.29	5.779	2
Recent Area	100	17.47	6.417	3
Agricultural Area	100	17.28	5.569	4
Total	400	19.30	5.893	

F= 25.566 **P<0.001**

As shown in table (5.19),the results reflect differences in the mean of the level of environmental attitude among school children according to residential area, and out of 30 points reflecting the level of environment attitude among the study population, the level of environmental attitude toward environment among study population was low in general, and according to the type of area, the level of students attitude toward environment was in

the residential area higher than the other areas with percentage of 23.18% of the study population and rank 1, the second rank in the positive attitude toward environment was among students of popular area, then the third rank was of the recent area, and finally the fourth rank was of the agricultural area in Gaza city.

In order to study the differences between level of environmental attitude among high basic school children as independent variable and place of residence in Gaza city as dependant variable one way analysis of variance was used. There was a statistically significant difference at the level of environmental attitude among children due to the place of residence at $p<0.00$, so this agree with the study alternative hypothesis which assumed that there is a statistically significant differences at $p<0.05$ in the level of environmental attitude.

To identify the significant differences in this total environmental awareness, shceffe post test was used and table (5.20) clarifies that.

Table (5.20)

Dependent Variable	(I) Place of Residence	(J) type of area	Mean Difference (I-J)	Sig.
Environmental Attitude	resident area	popular area	3.89(*)	.000
		agricultural area	5.90(*)	.000
		recent area	5.71(*)	.000
	popular area	resident area	-3.89(*)	.000
		agricultural area	2.01	.077
		recent area	1.82	.132
	agricultural area	resident area	-5.90(*)	.000
		popular area	-2.01	.077
		recent area	-.19	.996
	recent area	resident area	-5.71(*)	.000
		popular area	-1.82	.132
		agricultural area	.19	.996

And as shown in table (5.20), scheffe post test clarifies that there is a statistically significant difference at $p< 0.001$ in the level of environmental attitude among high basic school children in the residential area and the other three areas (popular area, agricultural area and recent area). Also there is a significant difference between popular area and resident area, while there is no any significant difference in the level of environmental attitude between popular area and both agricultural area and recent area. In addition there is a statistically significant difference in the level of environmental attitude among school children in agricultural area and resident area, while there is no any significant difference with both popular area and recent area. Finally there is a statistically significant difference in the level of environmental attitude between high basic school children in recent area and resident area only, while there is not any significant difference with the other areas.

From the above findings, it is clear that there is a statistical significant difference in the level of environmental attitude according to the place of residence, and this difference was the highest in the residential area followed by the popular area, and the recent area. The lowest level of environmental awareness was among the children of the agricultural area.

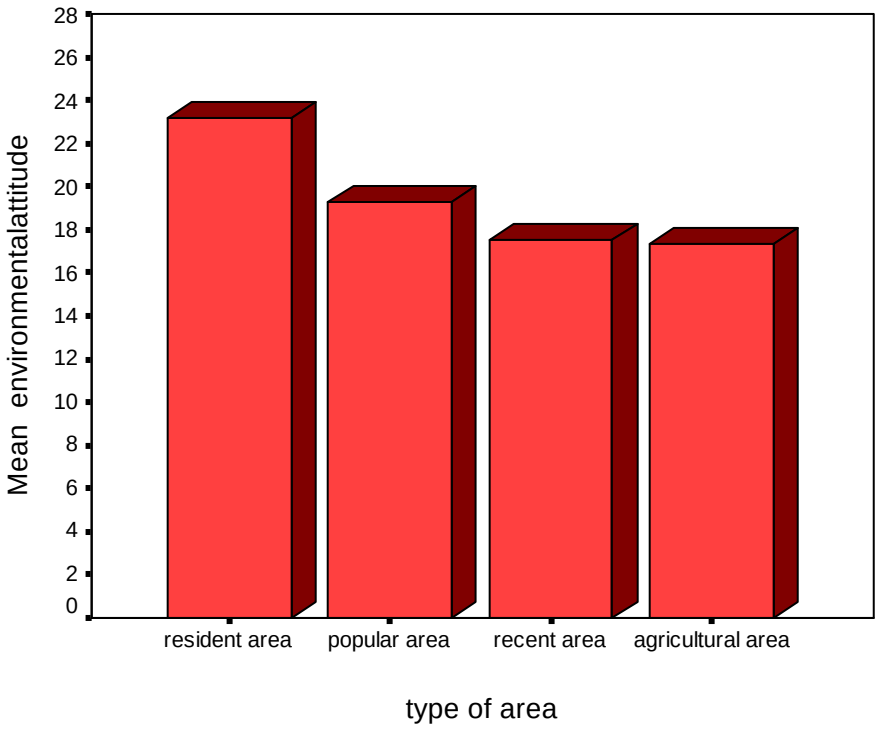

Figure (5.10.)

Level Of Environmental Attitude According To Type Of Area In Gaza City

5.317. Environmental attitude categories and place of residency:

Cross tabulation was performed to explore if there was a difference between environmental attitude categories and place of residency.

Table (21)

Environmental Attitude Categories And Place Of Residency.

Type Of Area	Environmental Attitude Categories				Chi Square	P
	Low		High			
	N	%	N	%		
Resident Area	11	11.0%	89	89.0%	62.944	<0.001
Popular Area	45	45.0%	55	55.0%		
Agricultural Area	61	61%	39	39%		
Recent Area	57	57.0%	43	43.0%		
Total	174	43.5%	226	56%		

As shown in table (5.21), about 11 of 100 students of class nine in the governmental high basic school children in the resident area of Gaza city with a percentage of 11% have got 19 points and less, and 89 with a percentage of 89% have got 20 points and above. About 45 of the 100 student in the popular area with a percentage of 45% have got 19 points and less, and 55% have got 20 points and above. While in the agricultural area, about 61 children with a percentage of 61% have got 19 points and less, and 39% have got 20 points and above. Also, 57 of 100 school children in the recent area with a percentage of 57% have got 19 points and less, and 43% have got 20 points and above.

These results mean that the level of environmental attitude among school children in resident area was the highest among all the areas, the second area in the level of

environmental attitude was the popular area followed by the agricultural area, then the lowest level of environmental awareness was among school children in the recent area. Differences between males and females in their environmental attitude revealed a statistically significant difference (Chi square= 62.944, and P<0.001).

5.3.18. Level of environmental attitude and grade of students' scores:

As mentioned previously, according to students scores achievement at school they were divided into four categories, out of the 100 %, the first categories was of students who have got excellent level range between 90 and above, the second category was very good ranging from 80-89%, while the third category was moderate level ranging from 70-80%, and the last category was students who have got low scores between 60-69%.

Mean, standard deviation, One way ANOVA, and percentage was used to explore if the level of environmental attitude among the students of class nine in the governmental high basic school children in Gaza differ by their grades.

Table (5.22)

Level Of Environmental Attitude Among School Children According To Their Grade.

Level achievement	GRADE	Mean	N	Std. Deviation
Excellent	**90-**	22.40	142	4.392
Very good	**80-89**	19.08	131	5.681
Moderate	**70-79**	16.47	101	5.863
Low	**60-69**	14.58	26	5.442
-	**Total**	19.30	400	5.893

F= 32.890, P<0.001

As shown in table(5.22), the results reflect differences in the mean of the level of environmental attitude among the study population according to their grades. Out of the 30 points reflecting the level of environmental attitude , the students whose grade were 90% and above , got the highest mean of environmental attitude level among the means of the other grades according to grade categorization in this study. The second mean was of those whose with grades between 80-89%, then those whose with grades of 70-79% , and the lowest mean was of those with grades 60-69%. This mean that the relationship between the level of environmental attitude and the students grade is a directly proportional relationship.

In order to study the differences between the level of environmental attitude among high basic school children as dependent variable and their grades as an independent variable, one way analysis of variance was used. There was a statistically significant difference in the level of environmental attitude among children by their grades at $P<0.05$. So this agrees with the study alternative hypothesis which proposed that there is a statistically significant differences at $P<0.05$ in the level of environmental attitude among study population due to their grade.

To identify the significant differences in this total environmental attitude, shceffe post test was used and table (5.23) clarifies that.

Table (5.23)

Scheffe Post Test For Environmental Attitude And Grade Of Students In Gaza City.

Dependent Variable	(I) GRADE	(J) GRADE	Mean Difference (I-J)	Sig.
Environmental Attitude	90-	80-89	3.33(*)	.000
		70-79	5.94(*)	.000
		60-69	7.82(*)	.000
	80-89	90-	-3.33(*)	.000
		70-79	2.61(*)	.003
		60-69	4.50(*)	.002
	70-79	90-	-5.94(*)	.000
		80-89	-2.61(*)	.003
		60-69	1.89	.453
	60-69	90-	-7.82(*)	.000
		80-89	-4.50(*)	.002
		70-79	-1.89	.453

According to table (5.23), scheffe post test clarifies that there is a statistically significant difference between environmental attitude among children and their grades. So this agree with the study hypothesis which assumed that there is a statistically significant difference in the level of environmental attitude due to their grade. There is a statistically significant difference at $P<0.001$, in the level of environmental attitude among high basic school children whose grades were 90% and above, and the other three grades according to categorization of this study. Also, there is a significant difference between students whose grades were between 80-89% and the other three grades. In addition there is a statistically significant difference in the level of environmental attitude among school children whose grades were between 70-79% and students whose grades were between 80-89% and from 90% to above. There is not any significant difference with students of grades between 60-69%. And finally there is a statistically significant difference in the level of environmental attitude among students of grades between 60-69% and students of grades between 80-89%

and grades from 90% and above, while there is not any significant differences with students of grades between 70-79%.

From the above findings, it is clear that there is a statistically significant difference in the level of environmental attitude according to students grades, and this difference is toward students of grades from 90% and above were the level of environmental attitude was the highest among other categories, then students of grades between 80-89%, then those of grades between 70-79%, and the lowest level of environmental attitude was among those of grades between 60-69%.

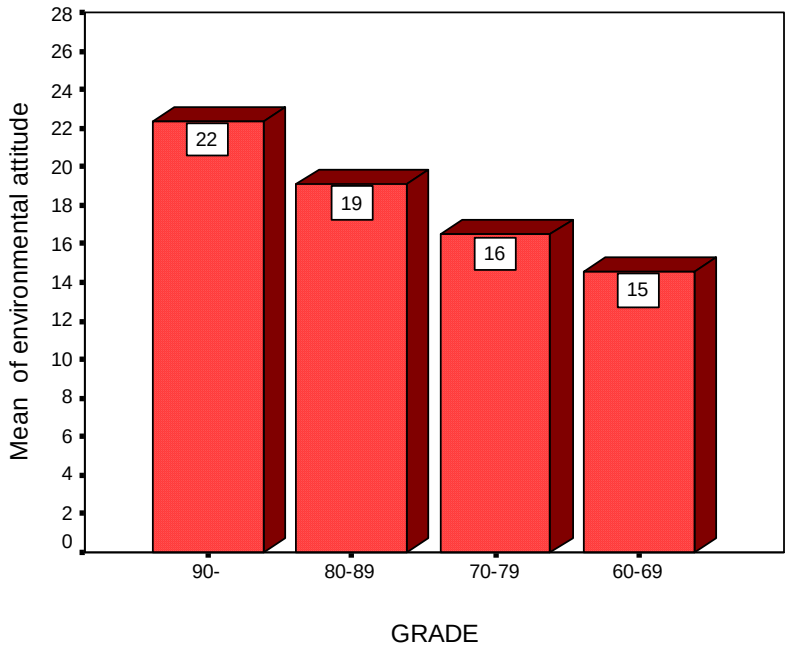

Figure (5.11)

Level Of Environmental Attitude And Grades Of Students' Score At School.

5.3.19. Environmental attitude categories and students' grade:

Cross tab was performed to identify if there was a difference between environmental attitude categories and students grades at school.

Table (5.24)

Cross Tabulation Between Level Of Environmental Awareness Among School Children And Their Grade.

Grade	Environmental Attitude Categories					Chi Square	P
	Low		High		Total		
	N	%	N	%			
90-	23	16.2%	119	83.8%	142	80.318	<0.001
80-89	63	48.1%	68	51.9%	131		
70-79	67	66.3	34	33.7%	101		
60-69	21	80.8%	5	19.2	26		
Total	174	43.5%	226	56.5%	400		

As shown in table (5.24), about 23 of 142 students with percentage 16.2% whose grades were 90% and above have got 19 points and less out of 30 on the environmental attitude scale, and 119 of them with percentage of 83.8% have got 20 points and above, while 63 of 131 students with percentage 48.1% whose grades were between 80-89% have got low category of environmental attitude, and 68 of them with percentage 51.9% have got high category of environmental attitude. And about 67 of 101 students with percentage of 66.3% whose grades were between 70-79% have got a low scores of 19 points and less, and only 34 of them with percentage of 33.7% have got 20 points and above. Finally 21 of 26 students with percentage of 80.8% have got the lowest score of 19 points and less on

the level of environmental attitude scale, while only 5 of them with percentage 19.2% have got 20 points and above.

These results mean that the level of environmental attitude among school children of class nine in the governmental high basic school children in Gaza is differ due to their grade.

This results indicate that the level of environmental attitude among school children of grade 90% and above, was the highest among school children of other grades, the second rank was among students of grades between 80-89% in the level of environmental attitude. The third rank was of grades between 70-79%, then the lowest level of environmental attitude was among students of grades between 60-69%. The difference between the different grade categories is statistically significant, (Chi – square=80.318, and $p<0.001$).

5.3.20. Correlation between environmental awareness and environmental attitude among the study population:

The purpose of this part of study is to determine whether there is a correlation between the environmental awareness and environmental attitude among students of class nine in the governmental high basic school in Gaza city.

The Pearson correlation was calculated, and table (5.35) shows the results.

Table (5.25)

Correlation Table Between Environmental Awareness And Attitude

		awareness score	attitude count
awareness score	Pearson Correlation	1	.578(**)
	Sig. (2-tailed)	.	.000
	N	400	400
attitude count	Pearson Correlation	.578(**)	1
	Sig. (2-tailed)	.000	.
	N	400	400

** Correlation is significant at the 0.01 level

As shown in table (5.25), Person's correlation coefficient results between environmental awareness and attitude indicated that, there was a positive correlation between environmental awareness and environmental attitude among the study population (r= .578). The correlation between level of environmental awareness and attitude reached a strong statistically significance level (P< 0.001), which means that students with higher environmental awareness are significantly more likely to have higher environmental attitude.

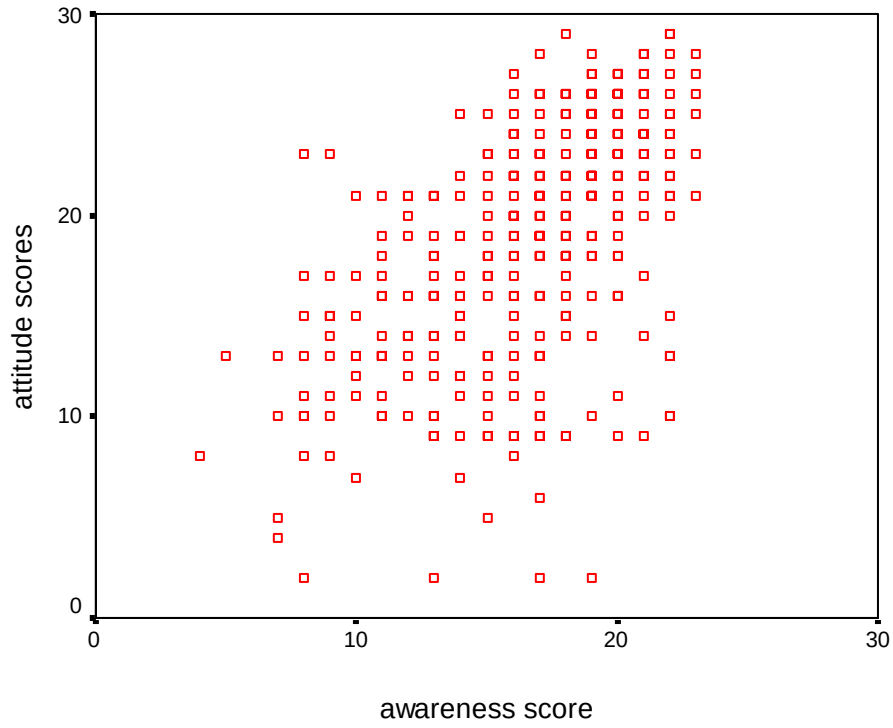

Figure (5.12)

Correlation Between Environmental Awareness And Attitude

5.4. Summery

The results of this chapter indicate that there is a moderate level of environmental awareness among students of class 9 in the governmental high basic school children in Gaza city, while their attitude toward their environment is low. On the other hand, the results of the study questions and hypotheses show variations, as some hypotheses were significant and others were not. Also, there is a positive correlation between the level of environmental awareness and that of environmental attitude.

Chapter Six

Discussion

Chapter Six

Discussion

6.1. Introduction

This chapter discusses the main findings from this study in order to explore the level of environmental awareness and attitude of class nine students in the governmental high basic school children in Gaza city, to investigate the relationship between the students of the sample awareness and the three socio demographic factors namely gender, place of residence and grade of students' scores achievement at school. Also to search which studies agree with the researcher finding, and which was in contrast, and to explain these differences.

6.2. Environmental awareness

6.2.1. Level of environmental awareness:

The mean of scores for the 400 students environmental awareness was 16.85 (total score is 24), with a percentage of 70.2% . About 62% (N=248) of these students were found to have a high level of environmental awareness, while 38% (N=152) of them have a low level of environmental awareness. These results indicated that the level of environmental awareness among class nine students of the governmental high basic school in Gaza city is generally moderate. In spite of this result, the number of students who have got high score in the level of environmental attitude was more than those who have got low scores.

This finding agrees with the local study of Dadah (2002), which was conducted in Ramallah and El Bireh Governorate in West bank, and the results revealed that environmental awareness of the students appear to fall into the moderate range based on the survey results. Similar results were found with several studies in different countries

which had reported a generally moderate level of students' environmental awareness, such as in the study conducted on 1256 secondary school students of three classes of grade 11 students in Singapore, it was reported that the students' mean environmental knowledge score was 70.9% (Geok Chin, et al., 1998). In the study of Hsu and Roth (1996) in Taiwan, it was also reported that the level of environmental knowledge among the study population was about 75.9%. However, our finding are in contrast to the local study of Abu Jahjoh (1999), which revealed that the level of grade nine students knowledge about environmental value was about 66.9% only which can be considered as low level. Also, In a local study of Affifi (2000) which was conducted on the 400 sixth grade students in Rafah governorate , where the results revealed a lower level of environmental enlightenment of the students (65.3%) than the accepted standard of the established study which is 80%. In addition, the study results disagree with the study conducted in the occupied Palestinian region since 1948, which reported that the level of environmental awareness about different environmental issues among students of academic institution for preparing Arab teachers and students of grade nine of the elementary school was very low (Naser and Naser, 2000). Another findings were in contrast to this study finding across different countries, in Oman Sultanate (Salmi and Mekhlafy, 2003); in Hong Kong (Sheila,W. 2004) and in Iran (Ehrampoush, and Moghadam, 2005). This variation can be attributed to the differences in cultures and environmental education materials applied in their schools curriculum in different communities.

6.2.2. Environmental awareness items:

The researcher has concentrated on a variety of questions included in the questionnaire to measure the students' level of awareness about different environmental issues which are covered in the environmental health curriculum of the male three classes of the high basic

school (7,8,9 class). Hence the male students of class 9 who participated in this study have been exposed to these environmental issues during these three stages of the preparatory school. The results emphasized that, in addition to the moderate level of students' awareness about environmental issues in general, it was found that the actual awareness level varied considerably for different environmental topics. This variation may reflect the level of efficiency of environmental education curriculum in presenting these different environmental issues to the students, and the important role of environmental teachers to improve the students' awareness about different environmental issues in their country. Moreover, the level of environmental awareness among female students was lower than male students, this will be discussed later in this chapter. So the low female scores may affect the total scores reflecting the level of environmental awareness about different environmental items among the study population which consisted of male and female students in equal number. According to the above mentioned, the variation in the level of awareness about different environmental topics may be due to differences in the level of environmental awareness among males and females, since the males have had an opportunity to learn about these items in their curriculum of health and environment which is applied on males only.

This finding is consistent with study results of Naser and Naser, 2000, which reported that there were differences in the level of awareness about different environmental issues among the study population. Similar findings reported in different countries, such as the study of Salmi and Mekhlafy, 2003, in Oman Sultanate, and that of Sheila 2004 in Hong Kong, where the results revealed that the level of environmental knowledge of students varied among the students considerably towards different environmental topic areas.

6.2.3. Gender effect on the level of environmental awareness:

There is a statistically significant difference in the level of environmental awareness among students of class nine in the governmental high basic school children in Gaza city based on gender. Out of total 24 scores reflecting the level of environmental awareness, the mean awareness for males was 17.36 (72.3%), where as the mean of female scores was 16.34 (68.1%). Males have a significantly higher environmental awareness than females as hypothesized. Also, about 67.5% of male students have got high level of environmental awareness while 56.5% only of females have got high level of environmental awareness, and the results of Chi- square test indicated a significant difference in the level of environmental awareness by gender toward males. This may be explained by the fact that the environmental health curriculum was conducted on male students only of the governmental high basic school in three classes of this stage (7,8,9 class), while it wasn't conducted on female students of the same stage up to the date of the study implementation. So, whether there was another sources of environmental education means such as, television, radio, non disciplinary programs and family, males have more opportunity to develop their knowledge by learning more about the different environmental issues through disciplinary way, which lead them to demonstrate a greater knowledge and awareness of the facts about environment more than females.

Similar results which emphasized that males are more aware than females were demonestrated in the local study of Mohsen (2003) which revealed a significance differences between males and females acquirement of environmental concepts test scores in favor to males. Another study of Kibert (2000) in U.S.A., which suggested that males did have a significantly higher mean knowledge score than females. Also, this finding is consistence with Ehrampoush and Moghadam (2005) in Iran , and the results of Gambro and Switzky (1999) in U.S.A. However, this finding is different from local studies of

Abu Jahjoh (1999) which revealed that there were significant differences in the level of environmental knowledge according to gender in favor to female. Also, a recent local study of Affifi (2000), who found that the students proved that gender has some significant statistical differences in the level of environmental enlightenment towards female who have got higher scores than males. Oman sultanate study by Salmi and Mekhlafy (2003) emphasized that females students reported greater environmental awareness than males. Also, the finding of this study is different from Sheila (2004) in Hong Kong, whose results indicated a significant difference in the level of environmental knowledge by gender, with female students were more likely to have higher environmental knowledge than male students. Szagun and Pavlov (1995) in their study examined awareness among German and Russian adolescents. Results revealed that females of both nationalities had higher level of environmental awareness than did males.

On the other side, there were many studies which had reported that there was no statistical differences in the level of environmental awareness by gender, such as the findings of (Naser and Naser, 2000; Dadah, 2002; Kazy,1988; Nunez,L.,2000; and Zimmerman, 1996).

6.2.4. Gender and awareness about different environmental issues:

The results indicate that there is a variation in the level of awareness about different environmental issues, based on gender. There was no statistically significant differences in the level of environmental awareness about resources of the environment. Due to gender also, there were no statistically significant difference in the level of awareness about the type of environmental pollution. The level of environmental awareness about the different sources of environmental pollution among males was higher than females, and there was statistically significant difference. In addition, the level of environmental awareness about

different methods of environmental pollution control or mitigation among males was higher than females, with a statistically significance difference.

This variation in the level of awareness about different environmental items based on gender may be explained by that information about resources of environment and type of environmental pollution can be considered as general information which may beavailable in different textbooks such as geography, science, or civilization education, in addition to the environmental health curriculum taught to male students only. So, that may explain why there was not any difference between males and females in their awareness about these items, in spite of males opportunity to learn about these items more than females, that females may learn about these issues through other textbooks.

The presence of significant differences between males and females favoring males in the level of awareness about resources of environmental pollution and methods of pollution resistance may be explained by the fact that males have more opportunity to learn about it more than females mainly from the environment and health curriculum. The above mentioned finding may reflect the differences in opportunity to learn about factual knowledge of environmental issues between males and females, in favor to males. On the level of awareness about different environmental items based on gender, diverging results have been found. These results of differences based on gender agree with the studies of Mohsen, 2003; Kibert, 2000; Ehrampoush and Moghadam,2005; Gambro and Switzky,1999, which revealed that male students have significant higher level of awareness in relation to different environmental tropics. However, there are other studies which agree with the researcher finding of the presence of a statistical difference in the level of awareness about different environmental items, but toward females not male. This difference was reported in studies of Abu Jahjoh 1999; Affifi,2000; Salmi and Mekhlafy,2003; and Sheila,W.,2004. In contrast to the above results, whether the

difference is toward males or females, other studies revealed that there was no statistical differences in the level of awareness about different environmental items based on gender (Dadah, 2000; Kazy,1988; Nunez,L.,2000, Zimmerman,1996).

6.2.5. Level of environmental awareness and place of residence:

According to Gaza municipality, Gaza city is distributed into four areas, popular area, agricultural area ,resident area and recent area . Referring to the results, there were statistically significant differences in the level of environmental awareness among the students of the study population based on their place of residence. About 88% of the students in residential area have got a high level of environmental awareness, and the results revealed that the level of environmental awareness among school children in resident area was the highest among school children in the other areas, the second area in the level of environmental awareness was the popular area, the third one was the agricultural area, then the lowest level in environmental awareness was among students of the recent area. The results of chi – square test indicated that the differences in the level of environmental awareness between localities reached a statistically significant level.

Similar results were obtained in the survey conducted by Salmi and Mekhlafy (2003) on 3517 students from different 5 educational area in Oman Sultanate. It's results revealed that there were a statistically significance difference in the level of environmental awareness according to the type of educational area. However, the current study finding is in contrast to a local study done by Affifi (2000) which reported that there was no statistically significant difference related to the place of residency (camp, town) through out Rafah governorate in the environmental enlightenment level. Also, the study of Dadah (2002) conducted in Ramallah and El Bireh governorate, revealed no statistically significant difference in the environmental awareness among students based on their

residential location. Another contrasting finding was in Maxceic Country, (Zimmerman, 1996).

6.2.6. Level of environmental awareness and grade of students' scores :

The researcher findings revealed that, there is statistically significant difference in the level of environmental awareness among students of the study population based on their grades at school favoring excellent level (students who have got scores between 90 and above). These findings agree with the results of Affifi (2000) which revealed that there was a strong relation between the level of environmental enlightenment and the academic level of achievement of the students in favor to excellent achiever.

6.3. Level of environmental attitude

Out of the 30 points reflecting the level of environmental attitude among school children, the mean score for the 400 students of the study was 19.3, with a percentage of 64.33%. These results indicate that the level of positive environmental attitude among the governmental high basic schools children of class nine in Gaza city was low. In spite of this low level, about 56.5% of students have got high scores, 20 and above from the total 30 points which reflect a positive attitude toward the environment.

This finding is consistent with the local study of Nashwan (1997), who conducted a survey of 1590 male and female students of 3 levels in the preparatory school (7,8,9 classes) in Gaza strip, to estimate the level of their positive attitude toward the environment. The results revealed that above 50% of the study population have got positive attitude toward the environment. Similar findings were also found in a study of Singapore students' attitude toward environment which reported that the level of environmental attitude among the study population was about 66% (Geok chin et al., 1998).

In contrast , this finding disagree with Naser and Naser (2000) finding which reported that, in spite of low level of environmental awareness among the study population, the results emphasized a high level of students' attitude toward their environment. Also, there were various studies that reported a high positive environmental attitude of students across different countries (Kazy,1988 in Syria, Hsu and Roth,1996 in Taiwan; and Sheila,2004 in Hong Kong).

6.3.1. Attitude toward different environmental items:

In spite of the low level of students' attitude toward their environment, the results showed a considerable variation in their level of concern and attitude toward different environmental items. The first rank of student concern and positive attitude was toward refusal and prevention of activities and sources which cause air pollution, then toward waste water problem, then solid waste problem solving, protecting biodiversity, and the last environmental items of their concern was toward general environmental issues. This result can be referred to the increasing level of air pollution in Gaza due to different resources such as, cars emissions, burning car tires, burning garbage buy citizens, in addition to many negative practices which increase this problem. Due to these practices may students notice and feel this problem of air pollution more than other environmental problems in the community. On the other hand students believe that waste water and solid waste problem solving is of the governmental concern and responsibility more than the citizen. The least concern of the students was toward biodiversity protection, the results reflect very low positive attitude and this probably because Gaza students in general are not close to wildlife and rarely exposed to it due to the very small area of Gaza. Similar results were reported in different countries. In Singapore, Ivy et al.,(1998) found that in contrast to strongly positive attitude for certain environmental issues such as waste disposal in the

oceans, the conservation of forest and ozone depletion responses were least favorable when the environmental concern were more specifically related to their lives. In Hong Kong study, Sheila, (2004), found that in contrast to strongly positive attitudes for certain environmental issues, responses were less positive when environmental concerns were more specifically related to their lives. A study of Ju – Chun Yen, (2002) in Taiwan, reported that high school students in southern Taiwan performed better on the attitude of problem of environmental pollution and got lower grades on attitude of new ecological paradigm.

6.3.2. Gender effects on the level of environmental attitude:

There was a statistical significant difference in the level of environmental attitude by gender favoring females, where most of females (61.5%) have got high level of environmental attitude than males. This may be explained by that females across cultures are socialized to be more expressive to have stronger "ethic of care", and to be more interdependent, compassionate, nurturing, cooperative, and helpful in care giving roles (Beutel and Marini, 1995; Chodorow,1974; Eagly,1987; Gilligan,1982). On the other hand, males are socialized to be more independent and competitive (Chodorow,1974; Gilligan,1982; Keller,1985).

Several studies revealed a significant relationship between gender and environmental attitude. Most of them indicated that females were more likely than males to be environmentally concerned and willing to undertake behaviour for the environment. As reported by Chonell et al., (1998) a consistent difference between males and females across several parameters were including views more consistently aligned with an environmental paradigm, and belief in the possibility of having both prosperous economy and a healthy environment. This was supported by similar findings reported by two other Australian

studies (Clarke, 1996; Hample et al., 1996). While this finding is consistent with many studies across countries, it is inconsistent with a local study by Mohsen (2003) in Gaza strip and a study of Ebrahim and Dusoky, 1985 in Egypt which reported that males have a more positive attitude toward there environment than females. On the other hand many studies such as, local study of Nashwan, (1997) in Gaza Strip, Kazy, (1988) in Syria, and Sheila, (2004) in Hong Kong which revealed no significant differences in the level of environmental attitude related to gender, both males and females nearly have got similar level of environmental attitude

6.4. Correlation between environmental awareness and attitude

The results showed that, there is a positive correlation between environmental awareness and environmental attitude among the study population (r=.578),and there is strong statistically significant correlation, P< 0.001. This means that students with higher environmental awareness were significantly more likely to have higher environmental attitude. This finding is consistent with a study of Arcury (1990) who found that increased knowledge about the environment promoted positive attitude. Also similar results were obtained in the survey conducted by Roth and Perez (1989), which suggested that there was a substantial correlation between students' knowledge of environmental issues and their attitudes toward the environment. They added that, it can be postulated that a good background in environmental knowledge could eventually lead to the development of positive attitudes toward the environment. Similar finding was of Sheila, (2004) in Hong Kong in which the results revealed a positive correlation between environmental knowledge and environmental attitude of Hong Kong secondary third class students' knowledge and their attitudes toward environment. However, the current study is in contrast to other researchers who have shown that, in some cases knowledge is low and

level of concern is high (Brody, 1994, and Blun, 1987). This is supported by other experiments mentioned in the literature review where awareness and attitude had a weak to moderate relationship (local study of Nashwan, 1997 in Gaza strip, Zimmerman, 1996 in Mexic, Gambro and Switzky,1996 and Kibert, 2000 in US). This variation in the correlation between environmental awareness and attitude ranging from weak to high positive relationship, may be influenced by cultural differences, and this supported by many studies which indicated that people of different cultures have differences in the perception of interrelationship between humans and the natural resources (Nunez, 2000). For example, Szagun and Pavlov (1995) in their study which aimed to examine environmental awareness and attitude among German and Russian adolescent, emphasized that German adolescent had stronger feeling and were more willing to engage in personal pro- environmental behavior than were Russians. In 1993, Lynch (cited by Schultz et al. 2000) outlined differences between people from central and south America who tend to be more concerned about environmental issues than people from the United States.

Chapter Seven

Conclusion and Recommendations

Chapter Seven

Conclusion and Recommendations

7.1. Introduction

In an attempt to measure the level of environmental awareness and attitude among school children in Gaza city – Palestine, the current study was conducted as a part of my study at school of public health.

This chapter is divided into 3 sections. The first section includes the major findings of the present study and gives answers to the research questions. The second section discusses the implications of the present findings for the environmental education in Gaza. The third section provides recommendations and suggestions for further investigation on similar areas.

The main questions of the study are:

Q1. What is the level of environmental awareness and attitude among the preparatory class 9 students in the governmental high basic school children in Gaza city?

Q2. Is there any relationship between the gender, residential area and grade of students' scores achievement and the environmental awareness and attitude of students?

Q3. Is there any relationship between the environmental awareness and the attitudes of the preparatory class 9 students in the governmental high basic school children in Gaza?

The study findings may help in increasing and developing the level of environmental awareness and attitude among school children in Gaza, and conducting suitable environmental awareness programs to achieve this goal.

7.2. Conclusion

According to the study results obtained in chapter 5 and interpretation in chapter 6, the following conclusion can be obtained:

7.2.1. Environmental awareness:

In general local preparatory class 9 students in the study have a moderate level of environmental awareness. About 62% (N=248) of these students were found to have high level of environmental awareness, while 38% (N=152) of them have low level of environmental awareness, which means that the number of students who have got high scores in the level of environmental awareness was more than those who have got low scores. This finding revealed that the students knowledge and awareness base was strong. Moreover their actual awareness level varied considerably towards different environmental items.

7.2.2. Environmental attitude:

In contrast to various studies which reported high positive environmental attitude of students across different countries (section 5.2), the students of class nine in the governmental high basic school children in Gaza have generally low level of positive attitude toward their environment. About 56.5% of students in the survey have got high scores (20 and above) of total 30 points which reflects high positive attitude toward the environment . However, this results was affected by the yield percentage 43.5% of the students who have got low scores and lead to the generally low level of environmental awareness among the total study population. Moreover, in spite of this low level the results emphasized a variation in the level of concern and attitude toward different environmental items considerably.

As these students will be the masters of our future after few years, there fore it is important for the government through it's different activities and environment related ministries to invest more to promote environmental education not only in the preparatory school, but also in all different educational stages starting from kindergarten up to university.

7.2.3. Relationship between the environmental awareness and environmental attitude with other variables (gender, residential area and students grade of scores achievement) :

There were significant differences in the level of environmental awareness and environmental attitude based on gender. The interesting of these results is that, while males have a significantly higher environmental awareness than females as hypothesized, females reflected more positive attitude toward environment than males, and this result was consistent with many studies across different cultures. In addition to this, significant differences are found in the students environmental knowledge and awareness based on students' residential area and grade of students' score achievement at school.

7.2.4. Correlation between environmental awareness and attitude:

There was a positive significant relationship between environmental awareness and environmental attitude among students of the study population. This result can be postulated that good background in the environmental knowledge and awareness could eventually lead to the development of positive attitude toward the environment.

7.3. Implications for environmental education in Gaza

The main aim of this study is to measure the level of environmental awareness and attitude among school children in Gaza city – Palestine, in an attempt to reach to some practical recommendations and implications depending on the study results about the present status of environmental awareness among our students in the study population. According to this the researcher tried to present the recommendations in a justified way that is consistent with the study results.

In this study, the students of grade 9 were generally found to have moderate level of environmental awareness, with male students having significantly higher knowledge and awareness level than females. As in the study, the preparatory class 9 students were found to reflect low level of environmental attitude, this was inconsistent with various studies across cultures. Therefore, it's important to enrich our students background in environmental knowledge and awareness, especially for the female students who did not have the opportunity to learn about environment through environmental curriculum in their schools which was conducted on males only until the date of conducting this study.

In view of the above mentioned, it is suggested that a plan for environmental education is needed in Gaza in order to strengthen the base and concepts of our students' environmental knowledge, awareness and attitude. Moreover, it is recommended that the environment teachers should pay more attention toward developing higher and deeper environmental concepts to increase the students attitude toward their environment, and to insure that this be applied in a qualified way. Students should understand that environmental problems are embedded in the existing political, economic and social systems. They need the freedom of speech to discuss environmental issues more frequently, and the power to make change to the present situation. For doing all of these, environmental education should not be

restricted to formal education only. Non formal environmental education programs should be increased and produced out of school timetable, such as environmental clubs, environmental summer camps and so on. as the children will be the master of our future after few years, therefore we need to pay more attention toward improving their concern and commitments to protect the environment from further deterioration.

7.4. Recommendations

1. Environmental health curriculum should be applied on females students to enable them to have an equal opportunity as male students in developing their environmental concepts and attitude.
2. Conducting training courses for environmental curriculum teachers on how to improve and develop higher and deeper environmental concepts among students.
3. Environmental teachers should pay more attention to integrate concepts and principles of environmental issues into all opportunities for social learning in order to develop commitment toward protecting their environment.
4. Encourage establishing environmental awareness programs in non disciplinary way to improve our children environmental awareness and attitudes.
5. Establishing community awareness program to advocate for positive environmental attitude among the children, to insure improving our community as a whole and protecting our environment from further deterioration.

7.5. Further researches recommendation:

According to he study results, and limitations, the researcher recommends the following suggested further researches

1- Further research is necessary to measure the level of environmental awareness and attitude of high basic school children from all different Gaza governorate to be more generalized, and more representative.
2- As, the researcher conducted her study on the governmental schools only, she recommends for further researches includes UNRWA, and Private schools to investigate the level of environmental awareness and attitude among their students.
3- Further study should also be undertaken to analyze the impact of students' level of environmental awareness and attitude on their environmental behavior suggested to be undertaken.
4- A study on the different sources of students' environmental information might be of great benefit to improve the awareness and attitude level among the students.
5- Evaluate the Palestinian curriculum about health and environment to insure it's efficacy in improving our students' environmental awareness and attitude.
6- Since this study had involved quantitative research by using a survey instrument depending on self- reported, further studies could be conducted using qualitative researches.

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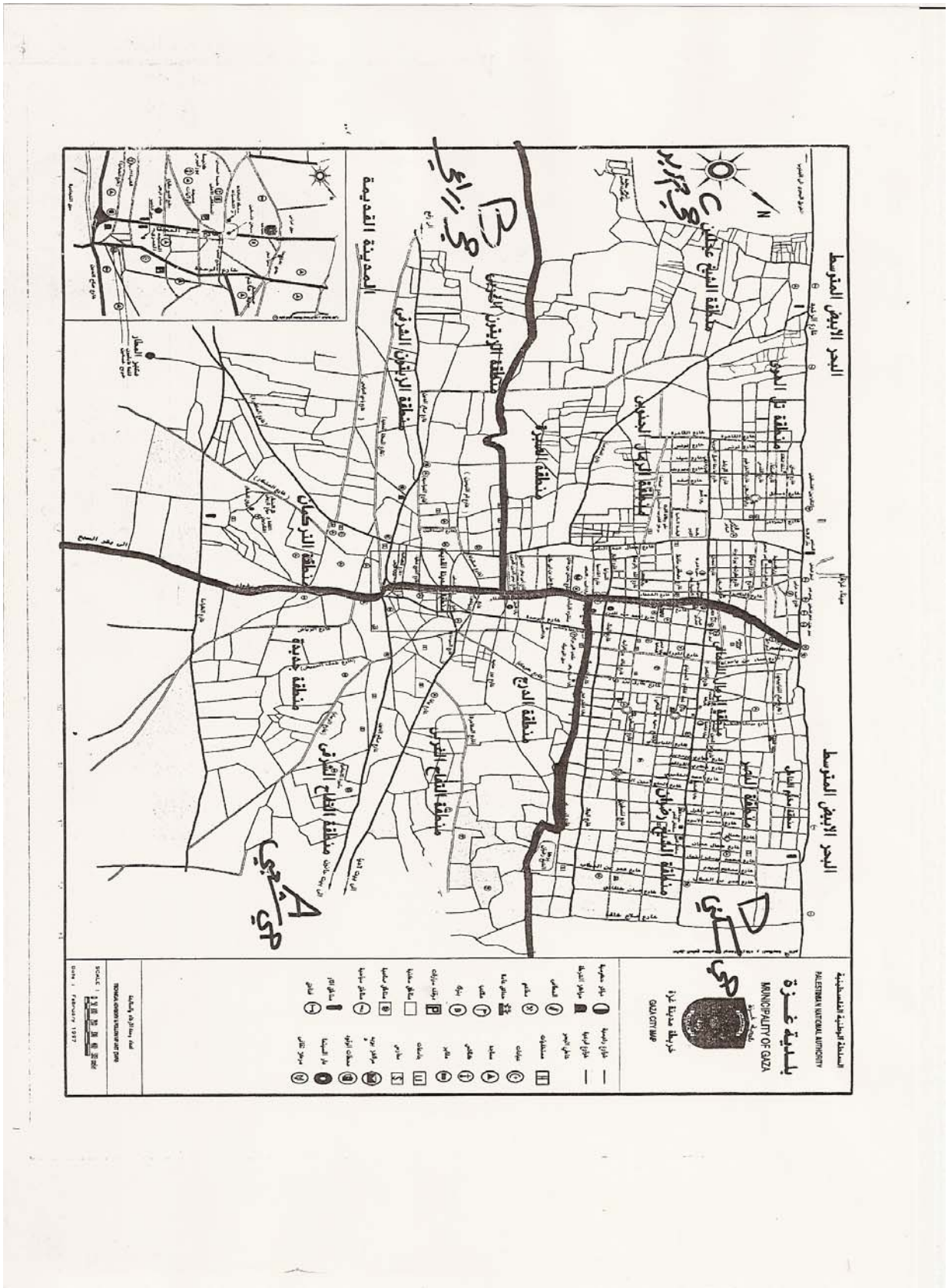
Annexes

Annex 1

Map of Gaza City



Annex 2

Palestinian National Authority
Ministry of Health
Helsinki Committee

السلطة الوطنية الفلسطينية
وزارة الصحة
لجنة هلسنكي

Date: 30/10/2005

التاريخ: 2005/10/30

Mrs./ Amal Sarsour

السيدة: أمل صرصور

I would like to inform you that the committee has discussed your application about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:-

Environmental Awareness Among School – Age children in Gaza - Palestine.

In its meeting on October 2005 and decided the Following:-

و ذلك في جلستها المنعقدة لشهر أكتوبر 2005 و قد قررت ما يلي:-

To approve the above mention research study.

الموافقة على البحث المذكور عاليه.

Signature
توقيع

Member
عضو

Member
عضو

Ministry of Health Helsinki Committee

Chairperson

Conditions:-

- Valid for 2 years from the date of approval to start.
- It is necessary to notify the committee in any change in the admitted study protocol.
- The committee appreciate receiving one copy of your final research when it is completed.

Gaza Etwam – Telefax 972-7-2878166

Annex 3

بسم الله الرحمن الرحيم

Palestinian National Authority
Ministry of Education &Higher Education
Directorate General of Educational Textbooks & Printings

السلطة الوطنية الفلسطينية
وزارة التربية والتعليم العالي
الإدارة العامة للكتب والمطبوعات التربوية

الرقم: و. ت. ع/ مذكرة داخلية ١٢٢٧/١
التاريخ: 2005/11/10م
الموافق: 8 / شوال / 1426هـ

السيد/ مدير التربية والتعليم/ غزة المحترم

تحية طيبة وبعد،،،

الموضوع/ إجراء بحث

تقوم الباحثة / أمل خليل صرصور المسجلة ببرنامج الماجستير بكلية الصحة العامة بجامعة القدس بإجراء بحث بعنوان:-

"مستوى الوعي البيئي لدى طلبة المرحلة الأساسية في المدارس الحكومية بمدينة غزة"

لامانع لدينا من قيام الباحثة من تطبيق أدوات الدراسة المكونة من اختبار قياس مستوى الوعي البيئي، ومقياس اتجاه الفرد وسلوكه مع البيئة، وذلك على عينة من طلبة الصفوف (السابع، الثامن، التاسع) بمدارس مدينة غزة وذلك حسب الأصول.

وتفضلوا بقبول فائق الاحترام والتقدير

١- فهد الأحمد بن الأثير بنات
٢- موسى بن نصير العليا بنين
٣- المجدل [illegible]
٤- الحرية العليا بنين
٥- أنس العليا
٦- الشيخ عجلين العليا بنات
٧- المأمون [illegible] م
٨- الرهاوي العليا م بنين

نسخة/ السيد مدير عام الكتب والمطبوعات التربوية المحترم

/وزير التربية والتعليم العالي
وكيل الوزارة

د.عبد الله عبد المنعم

Gaza (08-2822479-2849311) Fax: (08-2865909) غزة هاتف (08-2849311-2822479) فاكس (08-2865909)
E-mail:hope@hally.net

Annex4

بسم الله الرحمن الرحيم

السيد/ _____ **حفظه الله**

تحية طيبة وبعد،

تقوم الباحثة بإجراء مشروع بحث بعنوان:

" Environmental Awareness Among School _ Age Children in Gaza _ Palestine"

كمتطلب للحصول على درجة الماجستير في الصحة العامة .

لذا قامت الباحثة بإعداد أداة قياس للإجابة على أسئلة الدراسة والتي اعتمدت على أهداف الدراسة .

حيث تضمن الهدف العام للدراسة:

" التعرف على مستوى الوعي البيئي لدى طلبة المرحلة الإعدادية الأساسية (العليا) بمدينة غزة ومدى ارتباطه باتجاهاتهم ومدى استعدادهم للعمل من أجل البيئة ."

تفرع عنه الأهداف التالية:

1- تحديد مستوى الوعي البيئي لدى طلبة المرحلة الإعدادية الأساسية العليا (سابع ، ثامن ، تاسع) التابعة لمدارس الحكومة في مدينة غزة (طلاب وطالبات).

2- درجة ارتباط مستوى الوعي البيئي باتجاهاتهم نحو البيئة.

3- مدى الاستعداد من أجل المحافظة على البيئة.

4- أثر الجنس ، الصف والمنطقة على درجة الوعي البيئي.

5- وضع فرضية أن الطالبات أكثر وعيا من الطلاب.

بناء على ما سبق تم إتباع الخطوات التالية:

1_ قامت الباحثة بحصر أهم المفاهيم ، التعريفات والاتجاهات البيئية التي ينبغي أن يكون قد اكتسبها طالب المرحلة الأساسية العليا وذلك ليتسنى إعداد قائمة بها ومن ثم إعداد اختبار القياس مستوى الوعي البيئي وذلك من خلال الاطلاع على:

_ بعض الكتب والمراجع والدراسات السابقة في مجال التوعية و التربية البيئية.
_ بعض الدراسات السابقة التي تناولت الاتجاهات البيئية.
_ نتائج بعض المؤتمرات والندوات التي عقدت حول البيئة والتربية البيئية.
_ تم الاطلاع على مقرر صحة البيئة للصف (السابع ، الثامن، والتاسع) من المرحلة الأساسية العليا والذي يتم تدريسه للطلاب دون الطالبات حيث مقرر لهن دراسة منهاج الاقتصاد والتدبير المنزلي.

في ضوء ذلك تم:

_ إعداد اختبار تحصيل في القضايا والمفاهيم البيئية لدى الطلاب والطالبات.
_ إعداد مقياس الاتجاه نحو البيئة.

وبناء على ما سبق أرجو من سيادتكم التكرم بالاطلاع على المقياس وإبداء الرأي حول دقة صياغة الأسئلة ومناسبة كل سؤال لقياس ما وضع لقياسه.

و اقبلوا منا وافر الاحترام والتقدير

الطالبة
أمل صرصور
جامعة القدس/ كلية الصحة العامة

مرفق لكم طيه: نسخة عن أداة القياس

Appendix 5

اختبار قياس مستوى الوعي البيئي لدى

طلاب وطالبات المرحلة الأساسية العليا – غزة

عزيزي الطالب..... عزيزتي الطالبة ، الرجاء تعبئة البيانات الواردة أدناه وذلك للأهمية

أولاً:- البيانات العامة

الاسم _____ الجنس: ذكر ( ) ، أنثى ( )

اسم المدرسة _____ الصف الدراسي _____

معدل الطالب في السنة الدراسية السابقة _____

ثانياً : اختبار قياس الوعي البيئي:

أخي الطالب – أختي الطالبة:

1- يهدف هذا المقياس الذي بين يديك إلى قياس مدى معرفتك بـبعض المعـارف والمصـطلحات البيئية ، وسوف تقتصر نتائجه لأغراض البحث العلمي فقط.

2- اقرأ / ي كل عبارة بعناية ثم حدد / ي معرفتك باختيارك إجابة واحدة فقط وهي التي ترتاح / ي إليها أو تفضلها. لذا أرجو الإجابة على جميع الأسئلة بمصداقية وعدم تـرك أي منهـا دون إجابة وذلك لتحقيق هدف الدراسة.

هذا المثال يوضح لك / ي كيفية الإجابة:

يقصد بالبيئة:

أ- جميع الكائنات الحية بما فيها الإنسان. ( )

ب- التربة والماء والهواء والمناخ والمعادن. ( )

ج- كل ما يحيط بالكائن الحي من مكونات مادية وحيوية . (√)

د- جميع ما يحيط بالإنسان من ظواهر طبيعية. ( )

فان كانت الإجابة "ج" تعبر عن اختيارك ضع علامة صح في القوس الذي أمام العبارة كمـا فـي المثال. وشكرا لتعاونكم معنا .

الباحثة

أمل خليل صرصور

1- كل ما يلي ضروري للحياة ما عدا :

أ- الماء. ( )

ب- الهواء. ( )

ج- التربة. ( )

د- النفايات الصلبة. ( )

2- من الموارد الطبيعية التي تتوفر في بيئتي :

أ- وسائل المواصلات العامة. ( )

ب- المصانع الحديثة. ( )

ج- التربة والنبات والحيوان. ( )

د- المدارس والمستشفيات. ( )

3- أهم مورد دائم للطاقة في البيئة هو:

أ- البترول. ( )

ب- الشمس. ( )

ج- النباتات. ( )

د- الحيوانات. ( )

4- تعتبر الميكروبات والحشرات الضارة من الملوثات:

أ- الطبيعية. ( )

ب- الصناعية. ( )

ج- المستحدثة. ( )

د- الكيميائية. ( )

5- من المصادر المباشرة لتلوث الهواء في المدن:

أ - استخدام الغاز الطبيعي في الطهي. ( )

ب- كثرة أعداد السكان في المدن. ( )

ج- أدخنة المصانع وعوادم السيارات. ( )

د- وجود مساحات كبيرة من الحدائق. ( )

6- لتقليل آثار التلوث البيئي يجب تشجيع استخدام :

أ- الطاقة الشمسية. ( )

ب- البترول ومشتقاته. ( )

ج- الفحم الحجري. ( )

د- الطاقة الكهربائية. ( )

7- من أهم طرق مقاومة انتشار الأمراض والأوبئة

أ- الاهتمام بأخذ العلاج المناسب. ( )

ب- الاهتمام بالنظافة الشخصية والعامة. ( )

ج- الذهاب للمستشفيات للعلاج. ( )

د- الاهتمام بزراعة الأشجار والنباتات. ( )

8- من نتائج التلوث البيئي:

أ- ازدياد الأمراض. ( )

ب- فساد مكونات البيئة. ( )

ج- انقراض العديد من النباتات والحيوانات. ( )

د- كل ما ذُكر كان صحيحاً. ( )

9- من أهم مصادر تلوث مياه البحار:

أ- المبيدات الحشرية. ( )

ب- التلوث بالمواد المشعة. ( )

ج- النفط ونفايات السفن. ( )

د- الدخان الناتج عن حرق الغابات. ( )

10- أفضل وسيلة للتخلص من قمامة المنزل:

أ - إلقائها في العراء. ( )

ب- إلقائها في المياه الجارية. ( )

ج- تحويلها إلى سماد. ( )

د- تجميعها وحرقها في الهواء الطلق. ( )

11- من الموارد الطبيعية الغير متجددة:

أ- الثروة النباتية. ( )

ب- الثروة الحيوانية. ( )

ج- الثروة السمكية. ( )

د- الثروة المعدنية. ( )

12- من المصادر الطبيعية لتلوث الهواء:

أ- الأتربة التي تحملها الرياح والعواصف. ( )

ب- المواد الكيماوية والمبيدات الحشرية. ( )

ج- نواتج احتراق الفحم وزيت البترول. ( )

د- مخلفات المصانع المختلفة. ( )

13- كل ما يلي يسبب تلوث الماء ما عدا:

أ- صرف مخلفات المصانع والمنازل في الماء. ( )

ب- إلقاء المخلفات من قمامة وصرف صحي في الماء. ( )

ج- بويضات ويرقات بعض الطفيليات. ( )

د- ازدياد كمية ثاني أكسيد الكربون في الجو. ( )

14- من الآثار الضارة الناتجة عن الرعي الجائر:

أ- زحف الصحراء. ( )

ب- اختلال التوازن البيئي. ( )

ج- انجراف التربة بفعل الرياح. ( )

د- كل ما سبق. ( )

15- ترشيد استخدام الموارد الطبيعية يعني:

أ- حسن استغلالها للمحافظة عليها من النفاذ. ( )

ب- الإبقاء عليها دون استهلاك للمحافظة عليها. ( )

ج- استهلاك أكبر قدر منها لسد حاجات السكان. ( )

د- استغلال الإنسان لها دون مراعاة لنفادها. ( )

16- من الملوثات المستحدثة للهواء:

أ- الغازات الناتجة عن البراكين. ( )

ب- الأتربة الناتجة عن الرياح والعواصف. ( )

ج- أشعة الشمس. ( )

د- عوادم السيارات. ( )

17- من أسباب التوتر والقلق النفسي الذي يعاني منه بعض الأفراد وبخاصة في المدن:

أ- التلوث الهوائي. ( )

ب- التلوث المائي. ( )

ج- التلوث الضوضائي. ( )

د- التلوث في التربة. ( )

18- من أقرب مصادر التلوث الإشعاعي للإنسان:

أ- السخانات الشمسية. ( )

ب- أجهزة التكييف. ( )

ج- عوادم السيارات. ( )

د- أجهزة التليفزيون. ( )

19- يقصد باستنزاف الموارد الطبيعية:

أ- تبديد الموارد الطبيعية وإتلافها بفعل الإنسان. ( )

ب- تلف الموارد الطبيعية بفعل العوامل المناخية. ( )

ج- الحفاظ على الموارد الطبيعية للحفاظ على البيئة. ( )

د- المحافظة على الموارد الطبيعية وإنمائها. ( )

20- تعرض الإنسان للضجيج المرتفع بصورة مستمرة يؤدي إلى:

أ- فقدان مؤقت لحاسة السمع. ( )

ب- فقدان دائم لحاسة السمع. ( )

ج- تنبيه أعصاب السمع فقط. ( )

د- تقوية حاسة السمع. ( )

21- التوسع في غرس الأشجار داخل المدن وخارجها يساعد على:

أ- زيادة الأتربة والغبار في الجو. ( )

ب- زيادة الأكسجين في الجو. ( )

ج- زيادة ثاني أكسيد الكربون في الجو. ( )

د- نقص الأراضي السكنية. ( )

22- يعتبر يوم 5/ يونيو من كل عام مناسبة عالمية تُعرف بـ:

أ- يوم كوكب الأرض. ( )

ب- يوم البيئة العالمي ( )

ج- يوم الشجرة. ( )

د- اليوم العالمي للمياه. ( )

23- يؤدي تزايد حفر الآبار في المناطق الساحلية إلى:

أ- ارتفاع منسوب المياه في الآبار. ( )

ب- ارتفاع نسبة الأملاح في مياه الآبار. ( )

ج- بقاء الماء في الآبار دون تغير. ( )

د- انخفاض نسبة الأملاح في مياه الآبار. ( )

24- كنت في رحلة لإحدى المراعي الطبيعية ولاحظت زوال الغطاء النباتي في بعض المناطق فان ذلك بسبب :

أ- سقوط الأمطار بكميات كبيرة. ( )

ب- استخدام الأسمدة بشكل مستمر. ( )

ج- شدة الرياح والعواصف. ( )

د- الرعي الجائر بشكل مستمر. ( )

Appendix 6

مفتاح الإجابة لاختبار قياس مستوى الوعي البيئي
لدى طلاب وطالبات المرحلة الأساسية العليا

رقم السؤال	الإجابة الصحيحة
1	د
2	ج
3	ب
4	أ
5	ج
6	أ
7	ب
8	د
9	ج
10	ج
11	د
12	أ
13	د
14	د
15	أ
16	د
17	ج
18	د
19	أ
20	ب
21	ب
22	ب
23	ب
24	د

Annex 7

ثالثاً: مقياس اتجاه الفرد وسلوكه مع البيئة:

_ يرجى قراءة كل عبارة قراءة متأنية وتحديد مدى موافقتك عليها أو رفضك لهـا ، ثـم ضـع علامة (√) في المربع المقابل لها في العمود الذي يمثل إجابتك.

_ تذكر / ي أنه ليس هناك إجابة صحيحة وأخرى خاطئة في هذا الجزء من الأسئلة ، فالإجابـة الصحيحة هي ما تُمثل موقفك الحقيقي تجاهها .

الرقم	العبارة	أوافق	لست متأكدا	لا أوافق
1 -	أعتقد أن تلوث البيئة مشكلة خطيرة يواجهها مجتمعنا الفلسطيني.			
2 -	أرى أن استخدام مياه المجاري في ري المزروعات وسيلة جيـدة لزيـادة خصوبة التربة .			
3 -	أجد انه لا يوجد خطر من دفن النفايات النووية في أراضينا .			
4 -	أعتقد أن أفضل وسيلة للتخلص من القمامة هو تجميعها وحرقها في الهـواء الطلق .			
5 -	طالما أن الكهرباء تغطي حاجاتنا من الطاقة فلا داعي لمحاولـة اسـتخدام الطاقة الشمسية.			
6 -	أرى أن دخان المصانع وعوادم السيارات من المصادر المباشـرة لتلـوث الهواء.			
7 -	أفضل غرس الأشجار داخل المدن وخارجها لتقليل تلوث الهواء.			
8 -	أرى أن حماية البيئة مسئولية الدولة ولا دخل للأفراد فيها .			
9 -	أعتقد أن مكافحة الديدان والطفيليات المسببة للأمراض هي مسـئولية وزارة الصحة وليس للسكان .			
10 -	اعتقد أنه لا بد من اشتراك الطلاب في تنظيف مدارسهم وبيئتهم .			
11 -	اعتقد انه لا بد من منع استخدام أبواق السيارات ومكبـرات الصـوت فـي المناسبات والأفراح .			
12 -	أرى أن كثرة آبار المجاري في بعض المناطق تلوث المياه الجوفية .			
13 -	لا يمكن منع إنتاج النفايات ولكننا نستطيع تقليلها وذلـك بإعـادة اسـتخدام الأدوات التي يمكن استعمالها لأكثر من مرة.			
14 -	أجد أن أفضل طريقة لحل مشكلة الصرف الصحي في سـاحل غـزة هـو تصريفها في البحر.			
15 -	أعتقد أن معالجة مياه الصرف الصحي وإعادة استخدامها فكرة صائبة.			

الرقم	العبارة	أوافق	لست متأكدا	لا أوافق
16 -	أرى انه يمكن إقامة المصانع والورش الصغيرة في الأماكن السكنية حتى يسهل الوصول إليها.			
17 -	أعتقد أن حرق إطارات السيارات وسيلة جيدة للتعبير عن الغضب والاستياء بالرغم من تلويثها للبيئة .			
18 -	اعتقد أن استخدام الأكياس البلاستيكية بدل الورقية ظاهرة حضارية.			
19 -	أرى أن الغربان والبوم هي طيور غير مفيدة ويجب القضاء عليها .			
20 -	أعتقد أن قطع الأشجار والغابات جريمة لابد أن يعاقب عليها القانون.			
21 -	أرى أنه يمكن مكافحة الجرذان والفئران بالأعداء الطبيعيين كالكلاب والقطط .			
22 -	أرى أنه من الأفضل منع صيد الأسماك في موسم تكاثرها للمحافظة على الثروة السمكية.			
23 -	أفضل التوسع في الرعي ولو على حساب النباتات والأعشاب لتوفير الغذاء للإنسان .			
24 -	أفضل تجميع مياه الأمطار للاستفادة منها في الزراعة بدلا من تصريفها.			
25 -	أفضل تشجيع الناس على استصلاح الأراضي وزيادة مساحة الرقعة المزروعة لتوفير الغذاء للإنسان .			
26 -	عند الذهاب للتنزه في الحدائق العامة ألقي بالنفايات على الحشائش حتى يأتي عامل النظافة لإزالتها.			
27 -	اعتقد أن الفرد من حقه استهلاك ما يشاء من كهرباء وماء وغذاء ما دام أنه يدفع مقابلها رسوم دون تهرب.			
28 -	أفضل إقامة المصانع على الأراضي الزراعية لتحقيق التقدم الصناعي وحل مشكلة البطالة .			
29 -	أعتقد أن أفضل وسيلة للحد من استهلاك الطاقة والتلوث البيئي هو إعادة تدوير النفايات كالورق والزجاج والمعادن.			
30 -	اعتقد أن صيد الأسماك بكثرة باستخدام المتفجرات من أفضل الطرق لصيد الأسماك .			

Annex 8

Environmental awareness Questionnaire:

No.	Question	
1.	All of the following is life essential except	
a.	Water	( )
b.	Air	( )
c.	Soil	( )
d.	Solid waste	( )
2.	Nature resources available in my country	
a.	Public transportation	( )
b.	Recent factories	( )
c.	Soil, plant and animal	( )
d.	Schools and hospitals	( )
3.	The important permanent energy resource in the environment	
a.	Petrol	( )
b.	Sun	( )
c.	Plants	( )
d.	Animals	( )
4.	As pollutants, microbes & harmful insects is considered :	
a.	Natural	( )
b.	Artificial	( )
c.	Recent	( )
d.	Chemical	( )
5.	direct air pollution resources in cities	
a.	usage of physical gas in cooking	( )
b.	increase of population	( )
c.	industrial emission & vehicles burning	( )
e.	garden extent	( )
6.	To reduce pollution effect, we should encourage usage of:	
a.	solar energy	( )
b.	petrol derivation	( )
c.	fossil fuel	( )
d.	electric energy	( )

7. diseases resistance ways
a. take suitable medicine ( )
b. personal & public hygiene ( )
c. go to hospital ( )
d. trees plantation ( )

8. pollution results
a. increase of diseases ( )
b. environmental deterioration ( )
c. plant & animals extinction ( )
d. all the above ( )

9. The most important marine pollution resources
a. Insecticides ( )
b. Radiation pollution ( )
c. oil and ships waste ( )
d. smoke emission from forest fires ( )

10. The best way for household waste disposable
a. disposed in open area ( )
b. disposed in surface water ( )
c. transform to compost ( )
d. collect & burn it in open area ( )

11. non renewable natural resources
a. plant resources ( )
b. animal resources ( )
c. fish resources ( )
d. mineral resources ( )

12. natural resources of air pollution
a. dust which loaded by wind and storm ( )
b. chemical material & insecticides ( )
c. fuel combustion & petrol oil ( )
d. different industrial waste ( )

13. all of the following cause water pollution except
a. industrial and houses waste disposal in water ( )
b. solid waste & wastewater disposal in water ( )
c. parasite eggs & larvae ( )
d. CO2 increase in the atmosphere ( )

14. harmful effect of over cultivation
a. Desertification ( )
b. Environmental balance disturbance ( )
c. soil erosion by wind effect ( )
d. all of the above ( )

15 decrease exploitation of natural resources
a. good usage to prevent depletion ( )
b. stop consumption to protect it from depletion ( )
c. increase consumption to meet people needs ( )
d. over consumption with compromising it to depletion ( )

16. Non conventional air pollution
a. Volcanoes gas emission ( )
b. Dust produced by wind and storm ( )
c. Solar radiation ( )
d. Cars emission ( )

17. Some people in cities suffer from tension and anxiety due to
a. air pollution ( )
b. water pollution ( )
c. noise pollution ( )
d. soil pollution ( )

18. The nearest radiation source to human body
a. solar boiler ( )
b. Air condition ( )
c. Car emission ( )
d. Television ( )

19. natural resources depletion mean
a. natural resources dispersion and destroyed by man ( )
b. natural resources spoil by climatic factors ( )
c. natural resources conservation to protect environment ( )
d. conservation and development of natural resources ( )

20. continuous exposure to loud noise lead to
a. temporary loss of hearing ( )
b. permanent loss of hearing ( )
c. hearing nervous stimuli only ( )
d. strength hearing ( )

21. extent in trees cultivation inside & outside cities lead to
a. increase soil and dust in the atmosphere ( )
b. increase oxygen in the atmosphere ( )
c. increase carbon dioxide in the atmosphere ( )
d. decrease earth for habitation ( )

22. five of June yearly is a day of
a. earth day ( )
b. environmental world day ( )
c. tree day ( )
d. water world day ( )

23. increase wells excavation near coastal area lead to
a. increase water table wells ( )
b. increase salinity of water wells ( )
c. no any change in water table ( )
d. decrease salinity of water wells ( )

24. disappear of plant cover in some of the natural cultivated area is due to
a. Increase rainfall in this area ( )
b. continual usage of pesticides ( )
c. increase wind and storm strength ( )
d. continuous over cultivation ( )

Annex 9

Key of correct answer of environmental awareness questionnaire

No. of Q.	Correct answer
1	d
2	c
3	b
4	a
5	c
6	a
7	b
8	d
9	c
10	c
11	d
12	a
13	d
14	d
15	a
16	d
17	d
18	d
19	a
20	b
21	b
22	b
23	b
24	d

Annex 10

Student Attitude toward Environment Questionnaire

No.	Clause	Agree	Not sure	Diss agree
1	I think that environmental pollution is a serious and dangerous problem for our Palestinian community			
2	I see that usage of WW in irrigation is a good way to increase soil fertility			
3	I think there is no any dangerous from nuclear waste burying in our earth			
4	I think that the best way for solid waste disposal is collection and burning it randomly in open area			
5	whilst electricity cover our needs for energy, so no need to use solar energy			
6	I see that smoke emission from factories & cars exhaust is a direct source for air pollution			
7	I prefer agriculture inside & outside cities to decrease air pollution			
8	I see that environmental protection is government responsibility , not citizen			
9	I think that insects & pathogenic parasites resistance is MOH responsibility not citizen			
10	I think that it is necessary of students participation in cleaning their schools & environment			
11	I think that usage of cars bugles & microphones in wedding & joyful ceremonies should be prevented			
12	I see that increase spreading of waste water wells in some area will cause ground water pollution			
13	we cannot prevent solid waste production but we can decrease it by reuse tools that can be use many times			
14	the best way to overcome waste water problem is direct discharge to sea water			
15	I think that reuse of treated waste water is a			

	good idea			
16	I see that establish factories & small shops in habitat area is good idea for accessibility			
17	I think that burning cars wheals is good way to anger expression, in spite of causing air pollution			
18	I think that usage of plastic bags better than paper baggage is a civilization phenomena			
19	I think that doomsayers & crows is a harmful birds & should be killed			
20	trees & forest cutoff is criminal and should be castigated by law			
21	Fight mice & rats by natural animals like cats and dogs			
22	to protect marine fish from extinction, we should prevent fishing in reproduction seasons			
23	I prefer expansion in cultivation to provide people with food, in spite of decreasing plant & grass			
24	collection & usage of rainstorm water in irrigation is better than discharge without usage			
25	I prefer encourage people to earth agriculture & increase cultivated and grassy area			
26	when I go to picnic, I threw trash & waste on grass, waiting worker to come & collect it			
27	I think that citizen has the right to consume what he want from electricity, water & food whilst he pay without withdrawal from taxis			
28	I prefer to establish factories on agricultural area to attain solving unemployment problem			
29	I think that the best way to decrease energy consumption and environmental pollution is solid waste recycling, such as paper, carton, glass & metal			
30	I think that fishing by using bombs is the best way for fishing.			

Annex 11

قائمة بأسماء السادة المحكمين لأداة قياس درجة الوعي البيئي والاتجاهات البيئية لـدى طلبـة الصـف التاسـع للمرحلة الأساسية العليا - غزة:

1. د. أحمد أبو طواحينة	أخصائي نفسي إكلينيكي _ برنامج غزة للصحة النفسية
2. د. تيسير الشرفا	نائب مدير عام مدير إدارة الصحة المدرسية- وزارة التربية والتعليم العالي
3. د. صلاح بحر	أستاذ بقسم البيئة وعلوم الأرض بالجامعة الإسلامية بغزة
4. م. عبد الرحيم أبو القمبز	مدير إدارة الصحة والبيئة – بلدية غزة
5. م. غسان أبو رمضان	مدير مركز أبحاث البيئة في محافظة غزة
6. د. منال محسن	دائرة التوعية البيئية في سلطة جودة البيئة
7. م. منذر شبلاق	مدير مشروع مصلحة بلديات مياه الساحل