VARIATION OF ENVIRONMENTAL AWARENESS AMONG THE STUDENTS IN GOVERNMENT HIGH SCHOOLS IN SOLO CITY INDONESIA

THESIS
A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS OF POSTGRADUATE PROGRAM FOR THE DEGREE OF MASTER IN ENVIRONMENTAL SCIENCE

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SEBELAS MARET UNIVERSITY
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STUDENTS IN GOVERNMENT HIGH SCHOOLS IN SOLO CITY
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Abstract

This study examined the variation of the environmental awareness of students in secondary education in government schools in Solo city in Indonesia. Where presented a questionnaire it was included by 41 questions it is divided into 3 parts, each part of those questions asked students about knowledge of environmental problems, the willingness of students to participate at the environmental Activities, and student's observation to the environmental problems that would be in the interest of the environment. The form of the sample taken for the study were represented in the 288 students (males and females), it were taken by 40% of the number of schools in the city, 10% of the number of students in that percentage of schools.

through This study found the lack of sufficient knowledge about environmental problems and the difference between the rate of acceptance of rejection for all grades 4.3% was observed the highest rate of frequency recorded for the second grade was 25.1% for the second row, followed by grades first and third, respectively, where the proportion of the frequency of the second row by 0.5% from the first grade, as well as a decrease of 5.4% for the third grade, they have a great desire to improve the state of the environment by 20.9%, and there was a lack of precision and attention to environmental issues, 20.9% of all grades, and female students were more aware than male students by 1.1%, and were willing to participate in the environmental programs of male students by 4.5%, and were observed for more state of the environment of male students by 1.4%. As well as all the students were ready to receive environmental education into the curriculum through the difference between percentages for acceptance and rejection was 48.6%.

Keywords: scholastic phases, grades, knowledge, willing, observed.
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CHAPTER I
INTRODUCTION

1.1 Background

All living beings on the Earth live in interaction in a certain environment. Living beings are influenced by their surroundings while they maintain their vital activities and this surrounding is called habitat or environment. On the other hand, environment can also be defined as all of the factors that affect the physical, biological, socioeconomic, and cultural life of an individual or society (Cetin, 2010).

Environmental awareness and quality are key indicators of the civilization of a nation and the essence of preserving the environment is to ensure the basic conditions for survival of both this and future generations. There are many environmental issues associated with awareness for example, littering, and negligence of pro-environmental activities, and so on. Identify the main point and deeply reason of negligence about the environment, improving the environmental awareness it will help individuals who live in a healthier and safer environment which is possible by raising environmental education in order to ensure the protection of natural cultural, economic, and aesthetic environment, with improved attitudes and behaviors with regard to environmental protection. To a large extent of environmental protection relies on the awareness, and behavior of the public, in particular the youth. Proceeding from the principle of the environment, which includes the continuation of permanence in an environmental case with the progress in development, as well as the principle of preventive environmental, pollution prevention, intergenerational equity, public participation, improvement constantly, the cumulative effects etc. it is impossible have these principles to achieve in the absence of adequate environmental awareness and impossible be achieved if they are not working on it, to determine the level of awareness and bring awareness required. Bring awareness of environmental needs for a long time and a lengthy joint work according to what is specified in the environmental principle, which states that reflect the best practices contribute to the existing performance, However, Indicators of the environmental awareness start from early age for the human to acquire environmentally friendly behaviors, which were
added in curriculum as basic and important concepts about the environment. Wherefore, the goal of education must create that early sufficient awareness.

A survey of literature on Environmental Awareness yielded quite inconclusive results. Shahnawaj (1990), in a study on environmental awareness and environmental attitude of secondary and higher secondary teachers and students in Rajasthan, found that female students possessed significantly more awareness than males while quite opposite results are reported by Tripathi (2000) where boys had better awareness than girls. Sabhlok (1995) found that urban teachers differed significantly from rural and tribal teachers on their awareness of environmental problems. No difference was observed between rural teachers and the tribal teachers. On the contrary, Dinakara (2000) reported significant difference between urban and rural school teachers in environmental awareness. Also, government and private school teachers differed significantly in their environmental awareness. Patel and Patel (1995) found significant impact of environmental awareness programs on the environmental awareness of the teachers (Larijani, 2010).

The present study is aimed at identifying the variation of awareness among the students in government high schools of solo city in Indonesia. It is hypothesized that students do differ in their levels of environmental awareness and variables like gender, and scholastic phases, will have significant on levels of environmental awareness.

1.2 Descriptive Research

The main case to study is the variation of thinking that is the part of human behavior about environment, That must be improved by environmental education at the schools, this study hopes to demonstrate the in considering environmental awareness, and discussion the differences between students in understanding of some of the environmental issues.
1.3 Problem statement

The main problems are:

1. Neglecting of the environment that related with adequate awareness among the circles of the society, which had to be interested to all segments of society and raise the level of environmental awareness to individuals and groups. It is noted that the receipt of environmental awareness should be in the early stages of life, especially in the early stages of school education,

2. Lack of sufficient influence of environmental programs prescribed for secondary schools,

3. The significant shortage of such these studies in this area, to determine the range of the impact of education on environmental awareness.

4. Before taking any action in connection with any activity has to be studied to assess the situation and put appropriate solutions.

1.4 Objective of research

Environmental awareness for achieving a global sustainable development, and global environmental sustainability it is on the top of international issue. Many of environmental surveys are caring about chemically, physically, and biological environmental issues in field studies all over the world.

1. To find out the differences of environmental awareness among the high school students.

2. To view the discussion of the subject of environmental awareness among of the students about some issues
1.5 Advantages of the Research

1. Improving behavior and raise the level of awareness of that fit with environmental issues.

2. Convince the competent authorities in education and educational institutions such as universities to set up seminars and educational campaigns to raise the level of environmental awareness.
CHAPTER II
LITERATURE REVIEW

2.1 World developing

Environmental problems have been recognized and acknowledged at the United Nations Conference on Environment and Development (UNED) held in Rio de Janeiro in 1992 as culminated in Agenda 21, a comprehensive blueprint of action taken globally, nationally and locally in which humans direct affect the environment. This conference also reaffirmed the Declaration of the United Nation Conference on the Human Environment which was adopted at Stockholm on 16 June 1972. A review by United Nation Environmental Program after seven years asserted that although the global system of environment management is moving in the right direction, (Aini Ms, 2011).

However, First set of international recommendation to guide environmental education were developed in Tbilisi, Georgia, in 1977. Ten years later, in 1987, a conference in Moscow, Russia reviewed progress, and focused on institutional environmental education conference was held in Thessaloniki, Greece in 1997, which debated that role of environmental education in contributing to sustainable development following the World Summit Development in 2002, a UN Decade on Education for Sustainable Development (DESD) (2005-2014) was launched, based on earlier recommendation in Chapter 21 Agenda 21. The fourth International Conference on Environmental Education, held in Ahmedabad, India in 2007 within the framework of the UN DESD, marks 30 years after Tbilisi (Ahmedabad, India in 2007).

Indonesia participated in the Decade of Education for Sustainable Development on the World Environment Day in 2005 through the signing of a memorandum of understanding between the Ministry of National Education and the Ministry of Environment. This is to reflect Indonesian's commitment to the 2009 Bonn Declaration which mandated that every country should integrate the concept of Education for Sustainable Development into its education system, teacher development, subject development, and curriculum development. The
declaration states that: Reorient curriculum and teacher education programs to integrate Education for Sustainable Development into both pre-service and in-services programs. Support teacher education institutions, teachers and professors to network, develop, and research sound pedagogical practice. Specifically support teachers to develop Education for Sustainable Development strategies that can work with large class sizes, and to evaluate Education for Sustainable Development learning processes.

The 6th Biennial Meeting of the International Network of Teacher Education Institutions associated with the UNESCO Chair on Reorienting Teacher Education to Address Sustainability, 19-21 May 2010 in Paris reaffirmed the message above and encouraged each participating country to take necessary steps to implement Education for Sustainable Development (UNESCO, 2011).

2.2 Developing Indonesian Education

In Indonesia, Education for Sustainable Development is relevant to the mandate of the 1945 Constitution, particularly in Article 31 Paragraph 3 which mandates that government shall establish and conduct a national education system, which increases the faith, piety, and noble character in the context of the intellectual life of the nation, governed by legislation. Act No. 20 of 2003 on National Education System as a follow-up of the 1945 Constitution states that the national education serves to develop skills and to form the character and civilization of a dignified nation in order to achieve the intellectual life of the nation. The objective of national education is to form comprehensive intelligence and competitive Indonesian human beings, which include spiritual intelligence, emotional and social intelligence, smart and kinesthetic intelligence (the Ministry of National Education Strategic Plan 2010-2014). Mandate of Law Number 17 Year 2007 on the National Long Term Development Plan (RPJPN) Year 2005-2025 also becomes an important foothold in implementing Education for Sustainable Development. It was showed in 2005-2025 RPJPN the direction of vision, mission and direction of the 2nd medium term development 2010-2014 (UNESCO, 2011).
Since the 1970s, the education reform policies in Indonesia have proceeded in the context of human resources expansion for the purposes of national development. In particular, the main reform initiatives in the 1990s focused on the quality of education. A number of efforts have been made to implement this policy. These include: (1) conducting training for teachers at the junior secondary and senior secondary school levels, (2) providing textbooks both for teachers and students, (3) supplying and distributing science equipments to schools, and (4) other activities related to the improvements of educational quality (Rodriguez, 2008).

2.3 Environmental education in Indonesia

Environmental education was introduced in 1986 to Indonesian technical and vocational secondary schools with the objective of developing positive environmental attitudes among vocational students. An attempt was also made through a Swiss-assisted project in 1996. According to a report by the Director of Technical and Vocational Education (Anonymous, 1996), Environmental education was to be promoted at two levels:

a) As a common subject that included topics on Basic Ecology, Environmental Pollution, and Environment and Economy.

b) As a trade-specific subject matter where Environmental education information was integrated into the curriculum of specific trades.

However, according to Bukit and Trenajati (2003), Environmental education has been taken up in secondary vocational schools only by promoting co-curricular activities. Several guidebooks have been developed on solid waste management, waste water treatment and energy management through six vocational teacher training centers.

2.4 Green school program in Indonesia

The Strategic Roadmap for Developing ‘Green Schools’ in Indonesia aims to assist the country in enriching and strengthening existing ‘green school’ initiatives (such as the Adiwiyata Programmer) through the adoption of a whole-
school system approach and by embracing the whole concept of Education for Sustainable Development. Education for Sustainable Development is an educational framework that seeks to meet the needs of the present without compromising the needs of future generations. It is interdisciplinary, holistic and values-driven, and promotes the ideals of gender equality, just and peaceful societies, human rights, environmental preservation and restoration, cultural diversity, and poverty alleviation towards creating a sustainable future. Education for Sustainable Development focuses on critical thinking and problem solving, and adopts a multi-methodological approach, participatory decision making and local relevance. Development of the new ‘green schools’ is put in the context of wider national sustainable development issues, as well as being a step towards realizing the vision of the United Nations Decade for Education for Sustainable Development (UNDESD) 2005-2014 to create a future where everyone has the opportunity to benefit from education and learn the values, behaviors, and lifestyles required for a sustainable future and for positive societal transformation (UNESCO, 2011).

The new ‘Green School’ Programmer builds on and will strengthen current green school initiatives in Indonesia, especially the Adiwiyata Programmer, which is now the most comprehensive in the country. It will also acknowledge relevant experiences in neighboring countries. The programmer is designed to comprise the concept of Education for Sustainable Development, explicitly integrating social, environmental and economic dimensions while capturing the values of resilience, which is immensely important in the Indonesian context due to its vulnerability to natural disaster. The programmer entails having a Certification and Award system for meritorious schools that meet the Education for Sustainable Development criteria, for which schools will be assessed through a rigorous process using a comprehensive indicator system. Piloting in certain schools is envisioned, which, when successful, could then serve as models for others to emulate.
2.5 Overall goals of Green School Programmer in Indonesia

The major goals of the new Green School Programmer are to:

1. Increase awareness and understanding, among students, communities and all stakeholders, both internal and external, of the fundamental interrelationships and interdependencies between natural and human systems;

2. Foster awareness of and concern about economic, social, and ecological interdependence;

3. Foster concern and a sense of responsibility for the environment and society;

4. Provide every person with opportunities to acquire the knowledge, values, attitudes, commitments, and skills needed to protect and improve the environment and promote societal and economic development;

5. Increase skills in synthesizing information from a variety of disciplines and knowledge areas in order to develop an integrated body of knowledge on Education for Sustainable Development;

6. Increase capacity to understand and make decisions about key issues affecting the individual, society, and the environment;

7. Foster new patterns of behavior among individuals, groups, and society as a whole towards the environment; and

8. Demonstrate the principles of sustainability in schools’ operation, decision-making practices, attitudes and responsibility towards their communities.

2.6 Environmental Principles for Environmental Laws

The Environmental Law Centre recognizes that the environment is a public good that must be protected. The Environmental Law Centre’s Strategic Plan 2012-2015 references several core environmental principles that are required for strong and effective environmental laws, policies and legal processes. These core principles are:

1. **Sustainability**

   Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts;
a. the concept of needs, in particular the essential needs of the world’s poor, to which overriding priority should be given; and
b. the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.

The principle of sustainability refers to the need for development to be socially, economically and environmentally sound. Long-term economic growth depends on a healthy environment. It also affects the environment in many ways. Ensuring environmentally sound and sustainable economic development requires the technology and wealth that is generated by continued economic growth. Economic and environmental planning and management must therefore be integrated. Surely the potential consequences for a community's livelihood, health and other social matters from environmental change are integral to decision-making on matters affecting environmental quality, the goals of environmental protection and sustainable development, of integrating environmental protection and economic decisions, of predicting environmental, social, economic and cultural consequences of a proposed activity and of providing for involvement by the public, proponents, government, and government agencies.

2. Precautionary Principle

To protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
3. **Pollution Prevention**

The use of processes, practices, materials, products or energy that avoiding or minimize the creation of pollutants and wastes, at the source. Pollution prevention promotes continuous improvement through operational and behavioral changes, Pollution prevention is a shared responsibility among governments and individuals, industrial, commercial, institutional, and community sectors. It focuses on areas such as:

a. Substances of concern
b. Efficient use and conservation of natural resources
c. Operating practices
d. Clean production processes which create less waste
e. Training
f. Equipment modifications
g. Process changes
h. Materials and feedstock substitution
i. Product design and reformulation
j. Product life-cycle
k. Purchasing practices

Pollution prevention is the preferred strategy for protecting the environmental. Pollution prevention does not include measures such as diluting constituents to reduce hazard or toxicity, or transferring hazardous or toxic contaminants from one medium to another or to the work place.

4. **Polluter Pays**

National authorities should endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment. To encourage sustainable development, that principle assigns polluters the responsibility for remedying contamination for which they are responsible and imposes on them the direct and immediate costs of pollution. At the same time, polluters are asked to pay more attention to the need to
protect ecosystems in the course of their economic activities. The principle requires accounting for both the short term and the long term external environmental costs. This can be undertaken in a number of ways including:

a. Environmental factors being included in the valuation of assets and services;

b. Adopting the polluter pays (or user pays) principle, that is to say, those who generate pollution and waste should bear the cost of containment, avoidance or abatement;

c. The users of goods and services paying prices based on the full life cycle of the cost of providing goods and services, including the use of natural resources and assets and the ultimately disposal of any waste; and

d. Environmental goals, having been established, being pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable the best placed to maximise benefits or minimise costs to develop their own solutions and responses to the environmental problems.

5. **Cumulative Impacts**

The effects of such changes on health and socio-economic conditions, physical and cultural heritage, and other matters described in the definition of environmental effects over a certain period of time and distance, resulting from effects of a project when combined with those of other past, existing, and imminent projects and activities. Only likely cumulative environmental effects must be considered. Projects or activities which have been or will be carried out must be considered. However, only approved projects must be taken into account; uncertain or hypothetical projects or activities need not be considered. The Agency's Reference Guide on Cumulative Effects suggests, however, that it would be prudent to consider projects or activities that are in a government approvals process as well. In order to assess cumulative environmental effects, advice from and consultation with relevant individuals, organizations and government departments and agencies should be consulted.
6. **Intergenerational Equity**

The principle of sustainable development incorporates the concept of
tergenerational equity: development that meets the needs of the present
without compromising the ability of future generations to meet their own
needs. This principle is also tied to the principles of pollution prevention and
polluter pays. The principle of pollution prevention is designed to prevent or,
at least, minimize the use of pollutants that persist and bioaccumulate thereby
affecting future generations. The principle of polluter pays is designed to
ensure that liabilities are not deferred to future generations.

7. **Public Participation**

Public participation in the environmental decision-making process is a
critical component in the legal mechanism of environmental protection. This
process becomes even more important during the time of dramatic legal and
political reform when ways to address environmental issues are being
reevaluated and attitudes to public involvement reconsidered.

8. **constantly improving**

Technological developments have provided important benefits to
health and the environment. Energy provision, waste and water treatment
systems, modern housing, transport, modern food production and distribution
systems, immunization, pest control and telecommunications have played
important roles in improving health and the quality of life while increasing
life expectancy and protecting the environment. Nevertheless, societal change
and rapid technological development over the last century have also produced
an increasing variety of agents and circumstances whose consequences are
partly unknown, are difficult to predict, and capable of posing irreversible
risks to human health and that of the ecosystem. While our understanding of
environmental and health risks has advanced greatly, so has the complexity of
the factors that can affect health. Avoiding environmental harm, promoting
the environmental, energy and safety consciousness of employees, customers
and suppliers are important goals, and pay particularly close attention to
complying with all legal requirements concerning safety, health, energy and environmental protection.

9. **Reflect and contribute to evidence based best practices**

   There are three main aspects of the evidence (that is, each study) that you need to appraise:

   a. Internal validity: This refers to whether the evidence is trustworthy. That can you believe the results of the study? You evaluate the validity of the study by determining whether the study was carried out in a way that was methodologically sound. In this step, it is concerned with the study’s internal validity

   b. Impact: If decide that the validity of that you can believe the results, then need to look closely at the results of the study. The main thing that you need to determine is the impact.

   c. Applicability: If decided that the validity of the study is adequate and that the results are important, the final step of critical appraisal is to evaluate whether you can apply the results of the study to your client. Essentially you need to assess whether your client is so different from the participants in the study that you cannot apply the results of the study to your client.

10. **Open, transparent and accountable**

   Principle transparent and accountable of the Declaration recognises that at the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities States shall facilitate and encourage public awareness and participation by making information widely available

   and Governments commit to the timely, accessible and standardised publication of

   a. environmental impact assessment (EIA) reports;

   b. air and water quality data;

   c. permits, approvals and licences for development projects and industrial facilities;
d. facility and project monitoring and compliance inspection reports; and

e. regular state of the environment reporting.

These are the five most important classes of environmental information.

2.7 Why study environmental Awareness, Education, Attitude, and behaviors?

Study an environmental awareness, Education, Attitude, and behaviors. It is a part of social environmental studies, which studies on transactions between individuals and change their environments, and their behavior and experiences are changed by their environments making the built environment more humane and improving human relations with the natural environment. Considering the enormous investment society makes in the physical environment (including buildings, parks, streets, the atmosphere, and water), and the huge cost of misusing nature and natural resources. Thus, a person’s level of awareness, degree of adaptation, and necessary selectiveness in attending to environmental cues within complex real scenes mean that people sometimes miss important elements of a scene resulting in negative consequences for health or safety (Gifford, 2011).

2.8 Environmental awareness

Environmental awareness: is the mirror image of all the knowledge one has after going through rigorous curriculum in the school which provides detailed knowledge about environment and current environmental problems (Saxena, 2012). High level of environmental awareness enables conscious choices for acting in an environmentally friendly way, as well as it is defined by Partanen-Hertell (1999) as follows Environmental awareness is a combination of motivation, knowledge and skills and created a model that illustrates the development of environmental awareness (see Figure 1). It is based upon research conducted as a part of a project that aimed to raise environmental awareness in Baltic Sea area.
Motivation, knowledge and skills are in a growing synergy when increasing environmental awareness. Environmental matters become part of professional and public awareness. Many environmentally friendly actions are held as natural part of everyday life. Motivation and learning have been shown that motivation plays an important role in influencing learning and achievement (Ames, 1990). Research has also shown that instructional context strongly affects. Instructional materials that are challenging, and promote perceived autonomy and self-determination can have a positive effect motivation (Hidi, 2000).

2.9 Environmental education

Environmental education is the study of nature, natural resources, the interrelationship with man, human activities, disturbances to the environment and the attempts to improve the environment. It is the application of knowledge from different disciplines to study and manage the environment. It is also study and manages the environment. It is also study of the conditions, circumstances and influences that affect life and how life in turn responds. Life requires the correct balance of environmental conditions to survive, and studying of connections in nature can explain how environment is being used and abused. Environment study
is based upon a comprehensive view of various environmental systems. It aims to make the citizens competent to do scientific work and to find out practical solutions to current environmental problem. In order to protect and conserve the environment, enabling people to lead quality life, emphasis has been given to environmental education in both formal and non formal system of education. In formal system of education, teachers can play an important role in educating their students about environment related issues, which is possible only when the teachers themselves have mastery over environmental awareness (Larijani, 2010).

Environmental education is not confined to the classroom and not aimed only at children; despite the formal ring to the term ‘education’, it has life-long relevance to people from all walks of life, for effective implementation of Environmental Education in the formal system integrating environmental concepts into the existing curriculum, developing new strategies, preparing instructional material for effective implementation of Environmental Education in the formal system. It is also increasingly recognized that environmental education is not a ‘nice-to-have’ peripheral activity, but an integral part of the sustainable socio-economic development that is required to achieve equality and a better quality of life for all.

2.10 Environmental attitude

Environmental attitudes are conceptualized in terms of attitude theory as being composed of beliefs and affect toward an object. In a technical sense any object outside of self exists in the individual’s environment, so all attitudes except those beliefs about self could be correctly called environmental attitudes (Heberlein).

It is based on the feeling inside of human towards the environment, for instance, Feelings of guilt, or to take a position through erratic behavior towards the environment, or a sense of pride in the surrounding environment, which enhances the behavior reflected on the environment, For example attitude toward the rights of others, Inanimate, Plant, Animal, or to mankind’ itself. As well as is a sense of compassion or full responsibility for what he does from human
behavior into the surrounding diverse. The positive attitude, which that safeguard the environment. Such as positive thinking about passive activity which may be detrimental to it, which boils down to when someone pollutes the air, extrapolates from this action harmful for others, and for him. He is polluted before the activity had been done. Neglect, prestige, compliance with the rules, laws and regulations, adapt, amity, sufficiency, and environmental affiliation, all these feelings, and attitudes. Environmental behavior will be created by them, they would be ideal beneficial to the environment, or negatively affect on it. However, Can it be said! That the environment has special stance towards its own, when the environment takes an attitude about what we are doing, and what is happening on Ecological system, which are an interactions and the process of transformation, before changes have happened on environmental conditions. For example climate changing phenomenon or global warming, before these environmental behaviors were taken place, It was the own environmental position with those changes.

2.11 Environmental behavior

The behavior relationship with human and environment and adaptation, it is completed in awareness, education, and human attitude with the environment , to achieve a perfect environmental that ensures sustainable environment, must increase the awareness with education and human thinking attitude about the environment.

It is described “pro-environmental behavior” as “behavior that consciously seeks to minimize the negative impact of one’s actions on the natural and built world (e.g. minimize resource and energy consumption, use of non-toxic substances, reducing waste production)” (Kollmuss, 2002). GreenCOM defines behavior as a single, observable action performed by an individual. Although the behavior may be performed by habit, it could also be the outcome of a conscious decision. Behaviors are distinguished from practices, which are a series of related behaviors (Day, 2000).
2.12 Previous studies

From overall view of review of past studies, it was found that researches had been conducted on environmental knowledge, environmental awareness, environmental attitudes, and environmental behavior among teachers and higher secondary school students. But no comprehensive effort has been made to highlight the relationship between environmental awareness and eco-friendly behavior. The decision makers need to decide and invest on the most powerful ones for social purposes and strengthen the weak point for improvement. Environmental issues are very sensitive and vital to the society as well as governors and decision makers as more knowledge is needed to help the earth to become more sustainable for future generations (Aminrad, 2010).

Nevertheless, some studies have concluded about the environmental education and behavior of a layer of society which were on groups of school students. The research design was a descriptive type of study utilizing survey method. Primary school students (age 11 years) was the focus of the study because this cohort has undergone formal environmental education at primary and secondary school. Two primary schools of category (schools with more than 1000 students) situated in rural area in the district of Hulu Selangor were randomly selected for the study. A total of 163 students were randomly selected from a total population of 940 students the average age of the respondents was 11 years and 51.5 per cent of them were female students. Majority were Malays (87.1%), followed by Indians (11.0%) and Chinese (1.8%) with corresponding religion of Islam, Hindu and Buddha, respectively. When asked to ascertain three main sources of environmental knowledge, data indicated that they were newspaper (40.0%), television (39.0%) and internet (30.0%). Text book and teacher as sources of environmental knowledge were mentioned by only 21.0% and 12.0% of the respondents, respectively (Aini, 2011).

It is worth noting that the studies conducted (among secondary school students) showed different findings in which the main sources of environmental knowledge for the students being television (84%), with other minor ones include internet (5.9%), newspaper (4.6%) and radio (4.2%) (Aini, 2007). The findings
illustrate that there was a considerable level of environmental concern among the respondents that indicating that the students were aware and conscious of the main environmental problems faced by the nation.

2.13 Hypothesis

Hypothesis (1): There is difference of thinking about the most of environment issues, between male and female students, as well as grades.

Hypothesis (2): There is difference in willing for improving the environment quality, by students, as well as grades.

Hypothesis (3): There is difference observation to environmental issues between male and female students, as well as grades.

Hypothesis (4): There is willing to receive environmental education in schools.
3.1 Cognitive Response on Likert scales

A variety of methods are available to assist evaluators in gathering data. One of those methods involves the use of a scale. One of the most common scale types is a Likert scale. A Likert scale is commonly used to measure attitudes, knowledge, perceptions, values, and behavioral changes. A Likert-type scale involves a series of statements that respondents may choose from in order to rate their responses to evaluative questions (Vogt, 1999).

Throughout the 20th Century, agree/disagree questions have been and remain extremely popular in questionnaire-based research. For classic attitude measurement technique uses an agree/disagree scale, and numerous batteries have been developed for attitude and personality measurement doing so as well but psychologists are not alone in their reliance on this response format. Agree/disagree response formats have been used for some of the most widely-studied items, including measures of political efficacy and alienation, international isolationism, and leading journals in many social science fields report frequent use of these sorts of items in contemporary research projects and much more. One reason for the popularity of agree/disagree response alternative is that they seem to offer the opportunity to measure just about any construct relatively efficiently. Alternative question design approaches require that response alternatives be tailored to each item's particular construct. These might be called questions with construct-specific response options, because each question offers a unique set of response options specifically addressing points along the continuum of the construct of interest, it might seem obvious that acquiescence would compromise the quality of data obtained. According to all of these explanations, respondents susceptible to acquiescence are inclined to answer an agree/disagree question by saying “agree,” regardless of whether that answer
accurately represents their opinion or not. Because the response scale is the same for each question, the questionnaire can present the scale only once, thereby saving some time and streamlining questionnaire administration. If this question were to be presented instead with construct-specific response options, perhaps these individuals would report their true opinions more accurately (Saris, 2005).

Having identified this dimension, respondents must then place themselves on the scale of interest. For example, the stem, “I am usually happy”, asks respondents first to decide how often they are happy. Then, they must translate this judgment onto the agree/disagree response options appropriately, depending upon the valence of the stem. Obviously, it would be simpler to skip this latter step altogether and simply ask respondents directly for their judgments of how often they are happy. This was also noted many years ago by (Fowler, 1995).

Doing this has another benefit as well in that it avoids a unique potential problem with agree/disagree questions that we have not yet considered. Researchers often presume that if a question stem is worded “positively”, as example is above then people who answer “agree” are indicating more happiness, liking, and positive evaluation, respectively, than people who answer “disagree”. However, “disagree”, “false”, and “no”, responses can be offered for various reasons, some of which violate the presumed monotonic relation answers and respondent placement on the underlying scale of interest. For example, consider a person who is asked whether he or she agrees or disagrees with the statement: “I am generally a happy person”. A person who disagrees may believe (1) he or she is generally an unhappy person, (2) he or she is generally neither happy nor unhappy, and instead is usually affect less, (3) he or she is happy 55 percent of the time and unhappy 45 percent of the time, and 55 percent of the time is not frequent enough to merit the adjective “generally”, or (4) he or she is always happy, and “generally” does not represent this universality adequately.

In fact, one tends to assume that individuals who are not at all happy will disagree strongly with the statement, individuals who are not happy will disagree,
individuals who are neither happy nor unhappy will respond neither agree nor disagree, individuals who are happy will agree and individuals who are completely happy will agree strongly. But this is not the case. It is not at all clear where individuals should place themselves on the agree/disagree scale if they are “not usually happy.” They may disagree but where should they place themselves? To solve this problem they can use deferent solutions for deferent items which would lead to lower reliability. They can also use a similar solution for deferent items and if this solution is deferent for deferent individuals this will lead to a method affect and consequently to lower validity because the score is not only influenced by their opinion but also by a response pattern. For example, it is possible that some individuals interpret the “strongly” as a way to say that individuals are more at the extreme on the considered scale: they are always happy (or unhappy). However, as Fowler (1995) suggested, others could interpret the “strongly” as the intensity of their opinion: how sure he/she is about the fact that he/she is happy or unhappy? Thus, even an individual who is generally neither happy nor unhappy can end up not only expressing disagreement with the statement about happiness above, but also expressing it strongly. Offering “neither agree nor disagree” as a response option would not necessarily prevent this sort of problem, since an individual who is confident that he/she is generally neither happy nor unhappy might well be inclined to strongly disagree in this case. When this sort of mismatch of the response dimension to the latent construct of interest occurs, it will compromise the validity of responses (Saris, 2010).

3.2 Sample question presented using a five-point Likert item

A psychometric response scale primarily used in questionnaires to obtain participants preferences or degree of agreement with a statement or set of statements. Likert scales are a non-comparative scaling technique and are unidimensional (only measure a single trait) in nature. Respondents are asked to
indicate their level of agreement with a given statement by way of an ordinal scale. However, variations: Most commonly seen as a 5-point scale ranging from “Strongly Disagree” on one end to “Strongly Agree” on the other with “Neither Agree nor Disagree” in the middle; however, some practitioners advocate the use of 7 and 9-point scales which add additional granularity. Sometimes a 4-point (or other even-numbered) scale is used to produce a positive (forced choice) measure where no indifferent option is available. Each level on the scale is assigned a numeric value or coding, usually starting at 1 and incremented by one for each level (Johns, 2010).

An important distinction must be made between a Likert scale and a Likert item. The Likert scale is the sum of responses on several Likert items. Because Likert items are often accompanied by a visual analog scale (e.g., a horizontal line, on which a subject indicates his or her response by circling or checking tick-marks), the items are sometimes called scales themselves. This is the source of much confusion; it is better, therefore, to reserve the term Likert scale to apply to the summed scale, and Likert item to refer to an individual item.

A Likert item is simply a statement which the respondent is asked to evaluate according to any kind of subjective or objective criteria; generally the level of agreement or disagreement is measured. It is considered symmetric or "balanced" because there are equal amounts of positive and negative positions (Burns, 2008). Often five ordered response levels are used, although many psychometricians advocate using seven or nine levels (Dawes, 2008).

### 3.3 Scoring and analysis points Likert item

After the questionnaire is completed, each item may be analyzed separately or in some cases item responses may be summed to create a score for a group of items. Hence, Likert scales are often called summative scales. Whether individual Likert items can be considered as interval-level data, or whether they should be treated as ordered-categorical data is the subject of considerable
disagreement in the literature (Jamieson, 2004). With strong convictions on what are the most applicable methods. This disagreement can be traced back, in many respects, to the extent to which Likert items are interpreted as being ordinal data.

There are two primary considerations in this discussion. First, Likert scales are arbitrary. The value assigned to a Likert item has no objective numerical basis, either in terms of measure theory or scale (from which a distance metric can be determined). The value assigned to each Likert item is simply determined by the researcher designing the survey, who makes the decision based on a desired level of detail. However, by convention Likert items tend to be assigned progressive positive integer values. Likert scales typically range from 2 to 10 – with 5 or 7 being the most common. Further, this progressive structure of the scale is such that each successive Likert item is treated as indicating a ‘better’ response than the preceding value.

The second, and possibly more important point, is whether the ‘distance’ between each successive item category is equivalent, which is inferred traditionally. For example, in the above five-point Likert item, the inference is that the ‘distance’ between category 1 and 2 is the same as between category 3 and 4. In terms of good research practice, an equidistant presentation by the researcher is important; otherwise a bias in the analysis may result. For example, a four-point Likert item with categories "Poor", "Average", "Good", and "Very Good" is unlikely to have all equidistant categories since there is only one category that can receive a below average rating. This would arguably bias any result in favor of a positive outcome. On the other hand, even if a researcher presents what he or she believes are equidistant categories, it may not be interpreted as such by the respondent.

One possibility as to why these response scales might be less effective in minimizing error is that “strongly” is an unfortunately ambiguous modifier. (Converse, 1986) argue that scales using “strongly disagree” and “strongly agree” confound extremity of opinion (where respondents place themselves on a
continuum) with intensity or certainty of opinion (how sure respondents are of their opinion, regardless of its location on the continuum). In other words, “strongly” may be interpreted by some respondents as referring to extremity, while for other respondents it is interpreted as certainty. If this hypothesis were true, respondents might not clearly distinguish “strongly disagree” from “disagree” or “strongly agree” from “agree” and the resultant scale might be unevenly spaced.

The second hypothesis investigated the possibility that, because “agree-disagree” response scales are bipolar (i.e., ranging from a negative to a positive), they do not achieve the precision of unipolar scales (e.g., do not agree at all – completely agree). In other words, respondents may feel as though they simply do not have enough choices to accurately indicate where they lie on the continuum. If this were the case, the variance of the scale as a whole might be restricted and/or be prone to floor or ceiling effects.

Third, respondents may be more likely to satisfied (Krosnick, 1991) when presented with “agree-disagree” response scales. In other words, something about the nature of answering “agree-disagree” response scales may reduce respondents’ motivation to give thoughtful, accurate answers. Specifically, it seems plausible that when respondents have to place themselves along a continuum (as is the case when forced-choice questions are used), they must search through their memories to determine what their opinion truly is. However, when merely agreeing (or disagreeing) with the opinion stated on a survey they might simply make a snap judgment as to whether the statement seems plausible. If true, the “agree-disagree” response scales might result in respondents completing these surveys more quickly than surveys using forced-choice questions.

Fourth, Fowler (2002) indicates that these response scales might encourage acquiescence. In other words, respondents who might be inclined to give low ratings to a forced-choice question, might end up agreeing when items
are put into the “agree-disagree” format. Extending his logic further, it seems that by asking respondents to agree or disagree with a series of items, there might be a measurement confound. Items might be partially measuring the intended construct; however they might also be measuring how agreeable respondents are. After all, agreeableness is one of the foundational “Big Five” traits in personality psychology (John, 1991). If this were the case, a scale using “agree-disagree” anchors might correlate much more positively with a measure of agreeableness than would a scale using different response anchors.

3.4 Methodology

Such studies use the questionnaire is dominant to collect quantitative and qualitative data. Analytically, will be analyzed data obtained from surveys using statistical procedures carried out by the appropriate available data analysis software such as SPSS. Quantitative research is about explaining phenomena by collecting quantitative data, which are analyzed by mathematically based methods. The fact that the data have to be quantitative does not mean that they have to be naturally available in quantitative form. This process is referred to as “quantitative research”. Much later, along came the researchers working in the social sciences such as psychology, sociology, anthropology, etc. They were interested in studying human behavior and the social world (Morgan, 1983).

Measurements tell how often or how many people behave in a certain way. Non-quantitative phenomena (such as beliefs, awareness) can be turned into quantitative data through measurement instruments.

When you look closer at researchers’ actual beliefs, it appears that the so-called (qualitative) versus realist (quantitative). Many researchers take a pragmatic approach to research, and use quantitative methods when they are looking for breadth, want to test a hypothesis, or want to study something quantitative. Qualitative researchers are guided by certain ideas, perspectives or hunches regarding the subject to be investigated (Cormack, 1991).
If they are looking for depth and meaning they will prefer to use qualitative methods. In many cases, mixed methods approaches will be appropriate. It is best to use a so-called mixed-methods design, in which we use both quantitative (for example, a questionnaire) and qualitative (for example, a number of case studies) methods. Mixed-methods research is a flexible approach, where the research design is determined by what we want to find out rather than by any epistemological position. In mixed-methods research, qualitative or quantitative components can predominate, or both can have equal status.

A quantitative study was conducted in 1998 to investigate differences in perception, knowledge, awareness, and attitude, with regard to environmental problems between educated and community groups and to identify human-dimension factors to improve public perception, knowledge, awareness, and attitude in relation to global environmental conservation concerns in developing countries. Educated and community groups in Jakarta were interviewed, and data obtained from a total of 537 males aged 30-49 years were analyzed. The data were evaluated by the chi-squared test and logistic regression was applied after factor analysis (Sudarmadi, 2001).

3.5 Location of the research and time

The research was located at center of java in Surakarta region (solo city) Indonesia, the location is 7°34′0″S 110°49′0″E. The time of the research starting from modeling the questionnaire and ending up by analysis the data, it from March of 2014 to June of 2014.

3.6 Samples and data collection

For data collection and questionnaires, cannot interview all students at all schools, Taking representative data of high schools in the region to view awareness variation about environment. To present the data will be 40% of the government schools and 10% students of each school from out 8 schools in
(Solo, Surakarta) as representative data by using variety of 41 closed-questions that were formed in different ways about the environment issues in general that would determine the environmental awareness among students and the extent of attention to environment, as well as Answering on all questions will be possible.

3.7 Parameters for identify the responding average

The total rank for 41 questions will be 205 point for all, there are parameters for ranking:

1. Parameter for question 1 to 41
   - 41-82 (very bad)
   - 82-123 (low)
   - 123-205 (very good)
   Theses parameters will be marks for student responds to identify the level of responding.

2. Parameter for question 1 to 14
   - 14-28 (very bad)
   - 28-56 (low)
   - 56-70 (very good)

3. Parameter for question 15 to 23
   - 18-27 (very bad)
   - 27-36 (low)
   - 36-45 (very good)

4. Parameter for question 24 to 41
   - 36-54 (very bad)
   - 54-72 (low)
   - 72-90 (very good)
3.8 Flow chart

Start

Model of questionnaire

Data collections
Representative data from 8 high schools
40% from schools 10% student from each school

Analysis of data:
Variation of awareness (SPSS, Excel software)
statistically analysis

Conclusion
Recommendation

Finish

Figure 3.1 Flowchart
CHAPTER IV
DATA ANALYSIS

4.1 Data

General data collection was 288 students from governmental high school in solo city (Indonesia). There are 8 governmental high schools and each school has about 1000 students, were distributed on three grades. Thus, to be representative data for these schools taking 40% from schools and 10% from students. The data was equal, by gender, schools, and grades.

4.2 Survey Instruments

Questionnaire: There were 41 questions associated with environmental awareness asked directly to the students, all questions were generally taking about environmental issues and possible to answer easily by choosing one extend of student opinion, there were 5 of ranges for answering starting by weakest responding opinion, ending up by strongest opinion.

Table 4.1 Responding ranges

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Hesitant</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Divided those 41 questions to three groups of questions it is useful to discuses more than one side about most important parts in environment issues, each group has specific questions to present responding that aimed population.

Group1 of questions were from 1 to 14 which asked about environmental knowledge.Group2 of questions were from 15 to 23 which asked about desire of students for improving the environment surrounding, by positive activates.Group3 of questions were from 24 to 41 which asked about environmental issues observation.

Raking the questions and giving marks for all questions to show the awareness level and proving the differences between students, Statistic software (SPSS software, And Microsoft Excel) for statistically analysis data.
4.3 Statistical methods of data analysis used in the research

First, in this research used nonparametric methods for analysis the data such as Mann-Whitney test to show differences between two groups, which groups were male and female of students for comparison responding about all group of questions, and used parametric methods for analysis the data such as ANOVA to show differences between more than two groups by school grades, and Independent Samples Test to show differences between two groups male and female about specific question with 95% confidence intervals at level of significance 0.05. Second, Descriptive frequencies proving by percentages, and determined responding differences. Third, Description of responding by points collections from answers on the questions (sum, average, max and min points). Theses parameters will be points for student responds to identify the level of responding.

1. Parameter for question 1 to 14
   - 14-28 (very bad)
   - 28-56 (low)
   - 56-70 (very good)

2. Parameter for question 15 to 23
   - 18-27 (very bad)
   - 27-36 (low)
   - 36-45 (very good)

3. Parameter for question 24 to 41
   - 36-54 (very bad)
   - 54-72 (low)
   - 72-90 (very good)

4.4 Results of the research

This chapter begins by discussing and investigating result of methods which they applied on the data to give image about a variance among the students.
4.4.1 Comparison by school grades responding on group of questions 1 to 14

This group of questions to determine the whole students’ knowledge about several environmental backgrounds that should be awakened by students such as importance of environmental education in schools, risk of air pollution, mass media effectiveness on the environment, water and plastic pollution, which highest gas concentration in the atmosphere, planting trees, soil erosion, contamination by sewage and sanitation, groundwater mining in coastal areas, hazardous wastes, phenomenon of global warming and facing the world now, and Fishers they are the only one responsible of destroy marine life.

ANOVA test will show if there are significant differences between grades responding about all these questions at the confidence interval 95%, and level of significance 0.05.

H₀: There is no difference between the mean of samples (three grades) at Sig ≥0.05.
H₁: There is difference between the mean of samples (three grades) at Sig ≤ 0.05.

Table 4.2 ANOVA test

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>10.323</td>
<td>4</td>
<td>2.581</td>
<td>3.883</td>
<td>.004</td>
</tr>
<tr>
<td>Within Groups</td>
<td>2663.677</td>
<td>4008</td>
<td>.665</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2674.000</td>
<td>4012</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thus, we reject the hypothesis H₀ and conclude that there is significantly difference responding between grades on this group of questions at Sig 0.004 < 0.05, See Table (2). Comparatively 6.7% strongly agree by first grade and second grade, and 9.0% by third grade. 16.5% disagree by first grade, 15.3 % by second grade and 14.8%, by third grade. 24.6% hesitant by first grade, 25.1%, by second grade and 19.7, by third grade. 32% agree by first grade, 33.8% by second grade
and 33.7% by third grade. 20.1% strongly agree by first grade, 19.0% by second grade and 22.8% by third grade, See Figure (4.1).

Figure 4.1 Percentage responding by grades on questions 1 to 14

As well as comparison by student's points it showed they had comparatively different averages of makes by three grades specifically in first grade and the second grade, for first grade the average points were 94.5, with maximum point 70, and the summation 4605 points. For second grade the average points were 94.7, with maximum point 58, and summation 4599 points, And third grade the average point were 95.5, with maximum point 58, and summation 4635 points.

Based on the percentages and averages comparisons between students respond by grade. Noted the differentially of the response from the students according to the phase Scholastic the students frequency of improvisation on the answers compared with their progress in grades very high it was 25.1 % for second grade. So did not show any obvious differences in the percentage increase
awareness about environmental problems by progressing in Phase Scholastic, where the frequency for the second grade was the highest rate it was followed by the first grade by 0.5 % and 5.4% for third grade, the difference between the rate of acceptance of rejection of the three grades by 4.3 %, which is a small percentage. It means that the degree of convergence between the response and refusal to choose the correct answers and wrong was relative close, and this reflects the lack of sufficient knowledge about environmental problems by progressing in Phase Scholastic. Likewise, By taking rate as numbered answers previously, the summation of rates were so close by the total scores for grades, and specially with grades first and third, The difference between those two grades was only 30 points, and also note that the highest rate for those two grades was (first and third), the rate of the second grade was in decline demonstrate that the plan and the educational curriculum intended for students these schools lack the rationalization of environmental.

4.4.2 Comparison by gender responding on group of questions 1 to 14

This comparison showed the differences between students depending on gender, on that group of questions, used another statistical test. Mann-Whitney test will show if there are significant differences between all samples of students responding about all these questions at the confidence interval 95%, and level of significance 0.05.

H₀: There is no difference between the mean of samples (male and female) at Sig ≥0.05.

H₁: There is difference between the mean of samples (male and female) at Sig ≤ 0.05.
Thus, we reject the hypothesis $H_0$ and proving $H_1$ to conclude that there is significantly difference responding by gender (male and female) on this group of questions at Sig 0.025<0.05, See Table (3). Comparatively 8.4% strongly disagree by male students 6.5% by female students. 16.1% disagree by male students 14.9% by female students. 23.7% hesitant by male students 22.3% by female students. 31.0% agree by male students 35.5 by female students. 20.8% strongly agree by male students 20.5% by female students, see Figure (4.2).

![Figure 4.2 Percentage responding by gender on questions 1 to 14](image-url)
As well as comparison by student’s points it showed they had comparatively different averages of makes by male and female. The average male points were 47.3 with maximum point 70, the minimum point 14, and the summation 6819 points. For female students the average points were 48.5 with maximum point 60, the minimum point 28, and summation 6993 points.

According to the percentages and points of students (males and females) recorded the highest percentage of the frequency of students in the selection of answers on that questionnaire were for male students 23.7% and either the difference between the ratios of the frequency of females and males was 1.1%. Observed that male were more frequency in choosing the answers on those questions. It is noticeable that the male students were more hesitant in choosing the answers to those questions it means that males are less familiar to those issues environmental raised in the questionnaire. Inferred the difference between approval for males and females was the difference between the two percentages was 4.5%, that means female students were more aware than male students.

From the other side as well, the difference between the highest rate of approval and rejection of the answers to all males and females were up 4.7%, variance of all samples students and lack on the knowledge about some of the environmental issues, which was raised in the questionnaire has become clear.

In the same context, the comparison by collection point’s method for answers, showed up the total points and average were higher for female students, as well as their accuracy and attention in choosing the answers than male students. Because the highest answer which was among the points by male students and represents the maximum point in the parameter used, that concluded the female students are more interested about environment than male students.

4.4.3 Comparison by school grades responding on group of questions 15 to 23

This group of questions to determine student’s desire about improving the surrounding environment, it reflects to student’s participation, knowledge, And behavior for developing the environment quality, because participation in developing environmental programs it is a part of environmental awareness, and
building positive environmental behavior. In this research the students were asked by simple and directly some of questions about participation in any cleaning campaigns is very important and must join in, Lack of time prevents to join in, Attending workshop environmental awareness will help developing remote areas, desire receiving environmental education in school, The spirit of keeping the environment in the presence of positive environmental activities, Environmental activities which must be aware early enough, Connecting most of environmental issues with environmental awareness, And Environmental Sustainability extend from concern for future generations.

ANOVA test will show if there are significant differences between grades responding about all these questions at the confidence interval 95%, and level of significance 0.05.

$H_0$: There is no difference between the mean of samples (three grades) at Sig $\geq 0.05$.

$H_1$: There is difference between the mean of samples (three grades) at Sig $\leq 0.05$.

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
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<th>Sig.</th>
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</thead>
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<td>2591</td>
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Thus, we reject the hypothesis $H_0$ and conclude that there is difference responding by grades on this group of questions at Sig 0.05=0.05, See Table (4). Comparatively there is difference between grades, specifically with disagree responding. 2.2% strongly agree by first grade and 0.9% second grade, and 2.8% by third grade. 7.6% disagree by first grade, 7.5 % by second grade and 7.1%, by third grade. 20% hesitant, by first grade, 15.3% by second grade, and 17.4% by third grade, 45.3% agree by first grade, 49.4% by second grade and 44.3% by
third grade. 24.8% strongly agree by first grade, 26.9% by second grade and 28.5% by third grade, See Figure 4.3.

As well as comparison by student’s points it showed they had comparatively differences averages by makes in three grades, for first grade the average points were 34.4, with maximum point 45, And the summation 3304 points. For second grade the average points were 35.4, With maximum point 44, and summation 3402 points, And third grade the average point were 34.9, With maximum point 43, And summation 3359 points.

Based on the percentages of the response the students and the average compared points by the Scholastic phase, It was observed the highest rate of frequency recorded for the first grade, Followed by the third and second grades in a row, Where the ratio of the frequency of the second grade was decreased by 4.7% from the first grade, As well as the increase by 2% for third grade from second grade This shows that for the second grade has a desire to improve the environmental situation and participating than first and third grades in environmental programs by the questionnaire that was asked. Comparatively of
all students have desire at all Scholastic phases. The difference between rejection and acceptance ratios for all grades it was 20.9%, Which was a big difference, Which proves that all students in those Scholastic phases have a big desire to improve the situation of the environment and to participate in environmental programs.

Likewise, by taking the average answers numbered as in the past, the highest value for the total and average scores were for the second grade, followed by third grade, but for the first grade was less than the total rate and grades, as well as recording the highest value scores recorded for the first grade which is the highest value of the parameter followed. This boils down to that first grade lacks precision and attention to environmental activities that were raised.

### 4.4.4 Comparison by gender responding on group of questions 15 to 23

This comparison showed the differences between students depending on gender, on that group of questions, used another statistical test. Mann-Whitney test will show if there are significant differences between all samples of students responding about all these questions at the confidence interval 95%, and level of significance 0.05.

- **H₀**: There is no difference between the mean of samples (male and female) at Sig ≥0.05.
- **H₁**: There is difference between the mean of samples (male and female) at Sig ≤0.05.

<table>
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<tr>
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</tr>
<tr>
<td>Wilcoxon W</td>
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</tr>
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<td>Z</td>
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</tr>
<tr>
<td>Asympt. Sig. (2-tailed)</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 4.5 Test Statistics

a. Grouping Variable: gender
Thus, we reject the hypothesis $H_0$ and proving $H_1$ to conclude that there is significantly difference responding by gender (male and female) on this group of questions at Sig 0.000<0.05, See Table (5). Comparatively 2.6% strongly disagree by male students 1.4% by female students. 8.3% disagree by male students 6.6% by female students. 19.4% hesitant by male students 15.7% by female students. 44.6% agree by male students 48.2 by female students. 25.2% strongly agree by male students 28.2% by female students, see Figure (4.4).

![Figure 4.4 Percentage responding by gender on questions 15 to 23](image)

As well as comparison by student’s points it showed they had comparatively different averages of makes by male and female. The average male points were 34.2 with maximum point 45, the minimum point 18, and the summation 4939 points. For female students the average points were 35.5, with maximum point 44, the minimum point 23, and summation 5126 points.

According to the percentages and points students (male and female) recorded the highest frequency of the students in the selection of responses to the questionnaire, Which was for male students 19.4% and either the difference
between the proportions of the frequency of females and males was 3.7%. It was observed that males were more frequency in the selection of the answers to those questions. This means that male students are less willing to join and participate in some of the environmental programs offered in that questionnaire, As well as the difference between the ratios of approval and rejection of males and females was 19.9% in general is a good percentage to demonstrate that all students, Both male and female have a great desire to participate in the environmental activities.

In the same context, the comparison by collection point’s method for answers, showed up the total points and average were higher for female students, as well as their accuracy and attention in choosing the answers than male students. Because the highest answer which was among the points by male students and represents the maximum point in the parameter used, that concluded the female students are more interested, and have a great desire to participate in the environmental activities than male students.

4.4.5 Comparison by school grades responding on group of questions 24 to 41

This group of questions to determine student’s environmental observation and how far giving attention and concerning to the surrounding environment based on their knowledge about some of environmental issues. These questions were asked about how feeling about the place, State of environment for respondents around the region, Environmental issues in respondents region, Noting landfills in respondents village, The global warming influence, Influencing coasts and harbors’ by Land-based activities, All products contain post-consumer recycled materials, Fishers they are the only one responsible of destroy marine life and Illegal fishing effects, The impact of migration of people on the environment, Linked of human diseases with environmental issues, The high a good level of state of the environment it is from clean streets and spread of trees and green spaces, Environmental improved in the next 10 years, Producing especially hazardous waste (chemicals, radiation, etc)every 12 months, Impact by
The political system on the state of urban environment, Reducing consumption of electric energy helps in preserving the environment, And a good environmental condition has influenced on Economic growth.

ANOVA test will show if there are significant differences between grades responding about all these questions at the confidence interval 95%, and level of significance 0.05.

$H_0$: There is no difference between the mean of samples (three grades) at $\text{Sig} \geq 0.05$.

$H_1$: There is difference between the mean of samples (three grades) at $\text{Sig} \leq 0.05$.

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
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<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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<td>1.811</td>
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</tr>
<tr>
<td><strong>Within Groups</strong></td>
<td>3443.754</td>
<td>5172</td>
<td>.666</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3450.998</td>
<td>5176</td>
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</tr>
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</table>

Thus, we reject the hypothesis $H_0$ and conclude that there is difference responding by grades on this group of questions at $\text{Sig} 0.028<0.05$, See Table (6). Comparatively there is difference between grades. 4.4% strongly agree by first grade and 4.6% second grade, and 5.0% by third grade. 11.8% disagree by first grade, 11.5 % by second grade and 11.5%, by third grade. 26.7% hesitant by first grade, 25.1%, by second grade and 22.6, by third grade. 36.3% agree by first grade, 38.6% by second grade and 40.8% by third grade. 20.6% strongly agree by first grade, 20.2% by second grade and 20.0% by third grade, See Figure 4.5.
Figure 4.5 Percentage responding by grades on questions 24 to 41

As well as comparison by student’s points it showed they had comparatively differences averages by makes in three grades, or first grade the average points were 64, With maximum point 90, And the summation 6146 points. For second grade the average points were 64.4, with maximum point 81, and summation 6185 points, And third grade the average point were 64.6, With maximum point 78, And summation 6206 points.

Based on the percentages of student response and point comparison between the grads about some environmental problems can be observed, and raised in the questions. Note that the highest frequency recorded for the first grade, followed by grades (second and third), where the ratio decreased frequency of the second grade by 1.6% and 2.5% for the third grade of the proportion of the first grade. Respectively through a questionnaire that asked. This indicates that the severity of the note to the students on the rise with the progress in the stage of study. The difference between the percentage of rejection and acceptance for all grades 29%, which is high, is proof that all students in this class have a lack of adequate control of the state of the environment around them.
Similarly, by taking the average answers numbered as in the past, and the total and the average score for all grade levels are not equal, and that is to prove to all stages Scholastic did the same environmental observation. As well as recording the highest score of the first semester, and that was the highest score in the parameter, which concluded there was a lack of precision and attention in the first Scholastic stage.

4.4.6 Comparison by gender responding on group of questions 24 to 41

This comparison showed the differences between students depending on gender, on that group of questions, used another statistical test. Mann-Whitney test will show if there are significant differences between all samples of students responding about all these questions at the confidence interval 95%, and level of significance 0.05.

H₀: There is no difference between the mean of samples (male and female) at Sig ≥0.05.

H₁: There is difference between the mean of samples (male and female) at Sig ≤0.05.

<table>
<thead>
<tr>
<th>Table 4.7 Test Statistics(^a)</th>
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<tbody>
<tr>
<td>levels</td>
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<td>Mann-Whitney U</td>
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<td>Wilcoxon W</td>
</tr>
<tr>
<td>Z</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
</tr>
</tbody>
</table>

\(a\). Grouping Variable: gender

Thus, we reject the hypothesis H₀ and proving H₁ to conclude that there is significantly difference responding by gender (male and female) on this group of questions at Sig 0.005<0.05, See Table (7). Comparatively 5.1% strongly disagree by male students 4.4% by female students. 12.4% disagree by male students 10.7% by female students. 25.4% hesitant by male students 24.3% by female students.
students. 37.9% agree by male students 39.3 by female students. 19.3% strongly agree by male students 21.3% by female students, see Figure (4.6).

![Figure 4.6 Percentage responding by gender on questions 24 to 41](image.png)

As well as comparison by student's points it showed they had comparatively different averages of makes by male and female. The average male points were 63.5 with maximum point 90, the minimum point 36, and the summation 9153 points. For female students the average points were 65.1, with maximum point 81, the minimum point 45, and summation 9384 points.

According to the percentages and points students (male and female) recorded the highest frequency of the students in the selection of responses to the questionnaire, Which was for male students 25.4% and either the difference between the proportions of the frequency of females and males was 1.1%, It was observed that males were more frequency in the selection of the answers to those questions. This means that male students are less observed to the state of the environment around than female students by questionnaire that offered, As well as the difference between the ratios of approval and rejection of males and females was 1.4% by this percentage it demonstrates that all students were observed to the state of the environment.
In the same context, the comparison by collection point’s method for answers, showed up the total points and average were higher for female students, as well as their accuracy and observed to the state of the environment than male students. Because the highest answer which was among the points by male students and represents the maximum point in the parameter used, that concluded the female students are more interested to the environment.

4.4.7 Comparison by all students responding on environmental education question

This comparison showed the differences between responding between all students on specific question it is about the importance of environmental education in schools that must be strongly confirmed for students to increase their environmental knowledge and awareness, which associated with environment issues and challenges in the future, by environmental education curriculums in schools.

Independent Samples Test will show if there are significant differences between grades responding about all these questions at the confidence interval 95%, and level of significance 0.05.

H₀: There is no difference between the mean of samples (schools) at Sig ≥0.05.

H₁: There is difference between the mean of samples (schools) at Sig ≤ 0.05.
Thus, we reject the hypothesis $H_1$ and conclude that there is no significantly difference responding between schools at $\text{Sig} > 0.05$, See Table (8). Comparatively 2.1% strongly agrees by male. 0.7% strongly disagree by female. 2.8% disagree by male, 0.7%, by female. 2.8% hesitant by male, 0.7% by female. 47% agree by male, 51.4% by female. 45.1% strongly agree by male, 46.5% by female, See Figure (4.7).
Figure 4.7 Percentage responding about environmental education in schools

Based on the percentages of response statistical tests for all students on environmental education, Observed no differences between that students for study, convergence in the percentage was large about the importance of environmental education in schools, which there are no statistical differences in the frequency response of schools around the question, either the difference between acceptance and rejection was a very large 48.6%. Through the convergence of percentages at the frequency, and the difference between acceptance and rejection, that concluded all students have Sufficient perceptive of importance environmental education, as well as to have a great willingness to receive environmental education in the curriculum.
CHAPTER V

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Through this study on a group of secondary school students, and assessed if they have the awareness being they are a member of this community, and through the results and analysis, concluded to.

1. Female students were more aware than male students. There was lack of sufficient knowledge about environmental problems comparatively with progress in phase Scholastic.
2. Female students have much desire to improve the situation of the environment and to participate in environmental programs than male students. For all Scholastic phases have a big desire to improve the situation of the environment and to participate in environmental programs.
3. Female students were more observed to the state of the environment than male students. There was a lack of observation of the state of the environment around them in all phase Scholastic.
4. All students in schools have a great willingness to receive environmental education in the curriculum.

5.2 Recommendation

1. Holding seminars and lectures for students to increase awareness and incentive to raise the level of environmental awareness,
2. Participation in environmental projects that are commensurate with the students inside and outside the school starting from primary schools to improve students pro-environmental skills and reconsider on old environmental programs,
3. Focus on and reconsider the curriculum in terms of curriculum development and the introduction of some knowledge to incentive and create a generation more aware for challenges that is occurring on the environment,

4. Focus on the media for increasing the environmental awareness such as television, radio, internet, and newspaper to make strong friendly relationship between the human and environment from early age,

5. Setting up plans for doing the same these studies on other layers of society to assess and raising the level of their awareness,
References


Heberlein, T., and Wisconsin. M. *Environmental Attitudes*. Research was supported by the college of Agriculture and Life Sciences at the University of Wisconsin. ZfU 2/81,241—270.


Procedia Social and Behavioral Sciences 2. 1830–1834


*The Reform of Secondary Education in Education in Indonesia During the 1990s: Basic Education Expansion and Quality Improvement Through curriculum decentralization.* (2002), Vol. 3, No. 1, 56-68.


APPENDIX

1. Percentage responding by grades on questions 1 to 14.

<table>
<thead>
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<th>Grade</th>
<th>Valid Percent</th>
<th>Grade</th>
<th>Valid Percent</th>
<th>Grade</th>
<th>Valid Percent</th>
</tr>
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<td></td>
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2. Percentage responding by gender on questions 1 to 14.

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3. Percentage responding by grades on questions 15 to 23.

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<th>Valid Percent</th>
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4. Percentage responding by gender on questions 15 to 23.

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5. Percentage responding by grades on questions 24 to 41.

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</table>

6. Percentage responding by gender on questions 24 to 41.

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<th></th>
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</tr>
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</table>
7. Percentage responding about environmental education in schools.

<table>
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</tr>
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<tr>
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<td>Disagree</td>
<td>.7</td>
</tr>
<tr>
<td>Hesitant</td>
<td>2.8</td>
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<td>47.2</td>
<td>Agree</td>
<td>51.4</td>
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<tr>
<td>Strongly agree</td>
<td>45.1</td>
<td>Strongly agree</td>
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Questionnaire

Instructions Questionnaire:

Before you answer please read these instructions carefully.

- Fill your identity on the space provided.
- All the answers are expressing on your point of view you have all the freedom in answering.
- You should answer in private, do not let anyone answering with you.
- Choosing one answer from your point of view, Depending on the appropriate description of case, Put (x) in one box for every question.

a- Gender

1- Male

2- Female

---

c- Level of school

1- First grade

2- Second grade

3- Third grade
**Numbering answers**

For answering, Please mark a number for each question to indicate about your opinion. Please answer all of the questions to the best of your ability.

<table>
<thead>
<tr>
<th>No</th>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>1</td>
<td>Environmental education is important in schools</td>
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<td>2</td>
<td>Mass media such as TV and Radio programs are effective to improve environment</td>
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<td>3</td>
<td>The most serious pollution is water pollution</td>
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<td>4</td>
<td>The risk of air pollution in the direct exposure</td>
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<td>The concentration of which gas is highest in our environment is the Oxygen</td>
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<td>Biodegradable plastics are harmful</td>
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<td>7</td>
<td>Plant trees are not helping in reduce acid rain</td>
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<td>8</td>
<td>Soil erosion can be prevented by a forestation</td>
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<td>Sewage and sanitation sources are of the contamination</td>
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<td>Groundwater mining in coastal areas can result into increase in the salinity of groundwater</td>
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<td>The most serious environmental effects posed by hazardous wastes, is contamination of groundwater</td>
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<td>12</td>
<td>The main cause of the phenomenon of global warming is the increase of carbon dioxide</td>
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<td>Global warming is one of the biggest environmental problems facing the world now</td>
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<td>14</td>
<td>Fishers they are the only one responsible of destroy marine life</td>
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<td>No</td>
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<td>15</td>
<td>I believe participating in any cleaning campaigns is very important</td>
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<td>If there is a project for improving and developing the environment where we live, we must join with it</td>
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<td>Lack of time prevents me from doing more to help the environment</td>
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<td>18</td>
<td>Attending workshop environmental awareness is helpful for developing remote areas</td>
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<td>19</td>
<td>I would like receiving environmental education in my school</td>
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<td>The spirit of keeping the environment in the presence of positive environmental activities</td>
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<td>Positive environmental activities which must you be aware early enough</td>
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<td>It is possible connecting most of environmental issues with environmental awareness</td>
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<td>23</td>
<td>Environmental Sustainability extend from concern for future generations</td>
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<tr>
<td>NO</td>
<td>Statement</td>
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<td>24</td>
<td>I feel that I am living in one of the most beautiful place in the world</td>
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<td>25</td>
<td>I see the state of environment in my region in a good condition</td>
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<td>There are many environmental issues in your region</td>
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<td>27</td>
<td>There are landfills in your village</td>
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<td>28</td>
<td>The global warming is affecting on your region</td>
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<td>Land-based activities have an effect on the health of our coasts and harbours</td>
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<td>30</td>
<td>All products that you have, contain post-consumer recycled materials</td>
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<td>31</td>
<td>Fishers they are the only one responsible of destroy marine life</td>
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<td>32</td>
<td>Illegal fishing effects on fish reproduction season</td>
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<td>33</td>
<td>Immigration people does not affect on the environment</td>
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<td>34</td>
<td>Many human diseases are linked with environmental issues</td>
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<td>35</td>
<td>The evidence of the high level of the state of the environment in my region, it is cleanliness streets</td>
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<td>36</td>
<td>Spread of trees and green spaces, Is it mean a good environmental condition</td>
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<td>37</td>
<td>It is possible for our environment to be significantly improved in the next 10 years</td>
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<td>38</td>
<td>Everyone can produce especially hazardous waste (chemicals, radiation, etc) every 12 months</td>
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<td>39</td>
<td>The political system, it impacts on the state of urban environment</td>
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<td>40</td>
<td>Reducing the consumption of electric energy helps in preserving the environment</td>
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<td>41</td>
<td>If there was a good environmental state, it would contribute in economic growth</td>
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