

# SECONDARY SCHOOL STUDENTS' ATTITUDE TOWARDS ENVIRONMENTAL ISSUES IN KARACHI PAKISTAN

Anisa Yousuf<sup>1</sup>, Dr. Sadia Bhutta<sup>2</sup>

## ABSTRACT

The aim of the study was to find out whether there is a difference between male and female students' attitude towards environmental issues (pollution of air and water, overuse of resources, global changes of the climate etc.)

A total of 312 students (n = 154 girls; n = 158 boys; and) attending government (n = 151) and private schools (n = 161) located in Karachi, (Pakistan), participated in the study. Data was collected through an adopted questionnaire "Me and Environmental challenges" (Part D) from the questionnaire- based Relevance of Science Education (ROSE) project. Data was analyzed using the non- parametric equivalent of the independent t-test.

The results of the study indicate that there was no significance difference between male and female students' attitude towards environmental issues. The results of the study provide significant insights into male and female students' attitude towards environmental issues towards discipline in both government and private secondary schools. Based on the results of the study, some recommendations have been put forward for policy and practice. Furthermore, the results of the study can be used as a base line for further studies.

**Index Terms**—Environmental education, environmental attitude, positive attitude, negative attitude, secondary school, gender, school system

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<sup>1</sup> Federal Government Girls High School No1, Gilgit.

<sup>2</sup> Aga Khan University, Institute for Educational Development, Karachi, (PAKISTAN).

## INTRODUCTION

Environmental degradation has emerged as a serious issue in the world today. Human factor is the largest contributor to the environmental degradation (Makki, Abd-El-Khalick, & Boujaoude, 2003) which might pose serious threats to sustain life on earth (Gore, 1993). Therefore, there is a dire need to pay serious attention towards protecting life on earth. As teacher and teacher educator, it is our prime responsibility to take measures to overcome this problem. UNESCO<sup>3</sup> (2005) emphasizes the role of education in shaping attitudes, values, and behavior, while developing the capacities, skills, and commitments needed for building a sustainable future.

Dunlap, Gallup, & Gallup (1993) conducted an international survey on environmental values. In this survey, twenty four countries all over the world including developed and developing nations had participated. From each country, around one thousands sample selected. The survey's results showed that citizens of many developing nations were highly concerned about the state of the environment.

Studies generally tend to examine students' environment attitudes in relation to environmental knowledge, interest, behavior as well as socio-economic variables (e.g., Huang & Yore, 2003; Makki, Abd-El-Khalick, & Boujaoude, 2003; Negev, Sagy, Garb, Salzeberg & Tal, 2008) have been carried out all around the world in developed as well as developing countries. Lavonen and Meisalo (2004) examined the Finnish students' environmental attitudes across gender. They found overall positive attitude towards environment across gender. In a comparative study by Huang and Yore (2004), they reported that both Canadian and Taiwanese 5th grade students held positive behaviour and attitudes towards the environment. Moreover, they expressed a high emotional disposition toward the environment and high concern about environmental problems and issues as well as a moderate level of environmental knowledge.

Makki, Abd-El-Khalick, and Boujaoude's (2003) study showed that Lebanese high school students held positive environmental attitudes but had inadequate environment knowledge. Young students' environmental attitudes were also investigated by many Turkish researchers (e.g., Alp, Ertepinar, Tekkaya, & Yilmaz, 2007; Taskin, 2009; Tuncer,

Ertepinar, Tekkaya & Sungur, 2005). In one of these studies, Cavas, Cavas, Tekkaya, Cakiroglu, Kesercioglu, (2009) found that Turkish students generally have favorable attitudes and interest toward environmental issues. They seemed to be eager to find solutions to environmental problems and show optimistic trends about the future.

In ROSE (Relevance of Science Education) study Sjoberg & Camilla (2004) conducted survey in forty countries of the world. As part of ROSE study, the researcher examined how students relate environmental challenges. They found that students did not seem to be pessimistic about the global future. They put trust in themselves that they personally could influence what happens with the environment. However, the study showed no significant gender differences regarding environmental issues. Results of the study revealed that in general students have positive attitude towards environmental protection.

In summary, research studies which are carried out all over the world showed that students have positive attitude towards protection of environment. They are eager to find solutions of environmental issues.

Furthermore, school may play some role in the formation of students' views on the environment (Tuncer, Ertepinar, Tekkaya and Sungur, 2009). Kuhlemeier, Bergh, and Lagerweij(1999) also seems to agree by saying that , the student population (family background or prior achievement); the enthusiasm, experience and competence of the team of teachers; the curricular offering; the quality of instruction; and the social climate (Gamoran and Nystrand, 1994) may all play a part to develop attitude of students.

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<sup>3</sup>United Nations Educational, Scientific and Cultural Organization

## GENDER AND ENVIRONMENTAL ATTITUDE

The relationships between gender and environmental concern are studied and “carefully theorized more than other structural variations in environmental concern” (Dietz, Stern, Guanaco, 1998). Stern, Dietz and Karloff, (1993) argues that women are more concerned about environment than men because “women are potentially more environmentalist than men due to their caring nature. This is supported by the Harris survey (1991), which showed that more women are concerned about the environmental quality, critical about policy taken by government and willing to accept lower standard of living for fewer health risks. Nevertheless, other empirical investigations show inconsistent results on this hypothesis. For instance, one of the earlier studies done by McIvor (1972, quoted in Van Lyre and Dunlap 1980) showed that men are more concerned about environment than women due to their higher level of education and involvement with the communities and political issues. However, other studies (Van, Lyre and Dunlap 1980) shows that women are more concerned about environment than men because men are much more concerned about economic growth and economic stability and consider environment as constraint to the economic growth. Stem et al (1993) further discussed on difference in gender roles. They state that, in general, mothers are more concerned about local environmental problems than fathers. The reasons for such differences are based on role in the society: mothers give more importance to welfare and health of family (which closely associates with the local environmental quality such as water, air and solid waste), while for fathers the priority is economic and material well-being of the family. Another study was carried out by Sparker (2011) in Bangladesh. The study explores that girls and boys attitude across urban and rural contexts. The study found that overall students from both the urban and rural areas expressed favorable environmental attitudes with girls having a significantly higher level of favorable environmental attitudes than boys; in particular, rural girls had displayed more positive environmental attitudes comparing among others. In one of these studies, Wilma, Boone and Andersen (2004) examined the Turkish students’ environmental attitudes across gender. Girls’ attitudes towards environmental responsibility were found to be more positive than boys. This means that girls are more sensitive towards environmental issues and they are more concern about environmental problems.

By using ROSE data, Nitti, Jute, Lavonen, and Mesial (2004) examined the Finnish students’ environmental attitudes with respect to four factors, namely, positive attitudes towards environmental responsibility, negative attitudes towards environmental responsibility, nature-centric attitudes towards environmental values, and anthropocentric attitudes towards environmental values. While girls’ attitudes towards environmental responsibility were found to be more positive than those of boys, the girls’ negative attitudes were reported to be lower than those of the boys. Jenkins and Pell’s (2006) study with English students indicated statistically significant effect of gender on environmental attitudes and environmental concern. On average, most of the studies explore that girls have more positive attitude towards environment than boys.

## STATE OF ENVIRONMENTAL EDUCATION IN PAKISTAN

Some researchers argue that formal environmental education helps students to develop more favorable attitudes towards environment (e. g Lee, 2008). Therefore, it is reasonable to look at the environmental education context in Pakistan within this study. The Environmental Education (EE) in Pakistan is in its very beginning stages. There is not a well-established environmental education policy for Pakistan. It is important to note that in Pakistan, EE is not taught as a separate subject. However, EE concepts like energy, greenhouse effect, pollution; microorganism, recycling, and ecosystem have been incorporated in the science curriculum of the primary and secondary classes. Moreover, textbooks of Urdu, English, Social Studies and Islamic Studies at primary and secondary levels also carry some environmental education concepts, which are presented as part of content in various chapters. There is very little attempt to make connections between concepts, especially between science and environment and vice versa. Furthermore, the textbooks lack guidelines for teachers to teach these concepts not only to create awareness and develop attitudes, interests and skills among students but also to equip students with strategies to take action in order to preserve the earth’s natural resources and to deal with environmental issues.

An overview of the discussion presented above appear to indicate that although there is no separate environmental education course in the secondary education in Pakistan, environment related ideas are intended to provide to all students from both the science and non-science groups through different subject areas. However, curriculum review revealed that most of the topics related to environment failed to portray adequately the relationship between human activity and the quality of environment in the presentation of content. Furthermore, National Education Policy (2009) has not given attention to the area of environmental education. Rabia (2010) argues that by keeping in view the importance of EE, environmental education should be given proper attention. For example, it is important to relate EE with daily life as this strategy would help to develop positive attitude towards environmental issues.

#### **PURPOSE**

The study aimed to investigate secondary school students' attitude towards environmental issues across school system.

#### **RESEARCH QUESTION**

What is the difference in environmental attitude of secondary school students across gender in Karachi, Pakistan?

#### **METHODOLOGY**

##### **Cross-Sectional Survey**

The purpose of my study was to investigate the attitude of Grade Ten students towards environment. Accordingly, I opted for quantitative approach, which seemed to be most appropriate as it aims to identify what a situation is like and the direction in which it is going (Punch, 2005). There was no manipulation of variables required in the study and it only aims in describing the current attitude and differences across existing variables (i.e. school system and gender. An additional advantage of this design, according to Fraenkel & Wallen (2006) is that "it is quicker to conduct and cheaper to administer" (p.397). It produces a "snapshot" of a population at a particular point in time. (Cohen, Manion & Morrison, 2000).

This cross-sectional survey, involving the questionnaire proved to be an effective way of assessing environmental knowledge and attitude from large group as surveys can directly collect information from people about their ideas, feelings, and social and educational background (Fink & Kosecoff, 1998, p.1)

Furthermore, attitude is a positive or negative thinking about a person, object or issue (Abell and Lederman, 2007). Therefore, asking directly from individuals through an attitudinal survey research method was the most logical method for gathering information on attitude. (May, 2003).

#### **Description of the Questionnaire**

The questionnaire consists of 23 items divided into two parts. Part A, in which participants were asked to provide information about name, gender, age, and class and school system. In Part B, relevant section of ROSE<sup>4</sup> questionnaire was used. It is a Likert-type scale which includes ten sections (A to I). I chose section D which contains 18 items that focuses on students' attitude towards environmental issues column ranging from disagree to agree.

#### **Sample**

The ROSE questionnaire was translated from English to Urdu by five researchers working in the fields of Science Education, Urdu language and English language. Pilot study carried out for reliability. For drawing a representative, Multi stage cluster sampling sample of grade ten students from private and government schools of Karachi, I encountered two major constrains:

- Geographical spread of the target population
- Partially or complete unavailability of listing of schools

Keeping in mind the above constrains, from the eighteen towns, those towns were selected, which are half an hour's traveling distance from AKU-IED<sup>5</sup>. Of the eighteen towns, seven towns fulfilled this criterion. Of the seven selected towns, two towns were randomly selected in the first stage of sampling. In the second stage, 10 schools were selected from two towns through random sampling using SPSS. In the third stage, grade ten students were selected from each school by setting the criteria that the whole class will be included if the class size is thirty or more than thirty. Application of the questionnaires in the classroom took forty minutes. The sample of the study consist 312 students (154 girls and 158boys) who were enrolled in the 10th grade. A direct a

#### **Data Analysis**

Data was analyzed by using SPSS. Inferential analysis was used for comparing the mean scores of students'

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<sup>4</sup> <http://www.ils.uio.no/forskning/rose/>

<sup>5</sup> Aga Khan University, Institute for Educational Development

environmental attitude across systems. Group comparison (Mann-Whitney) was used to find out differences across school systems. This analysis was carried out in two steps: (i) overall comparison; (ii) item-wise comparison. Before, comparing group analysis was carried out on overall score to explore general trends across all items.

**Results**

This section begins with a subsection of overall attitude of students followed by presentation of results.

**OVER ALL ATTITUDE OF STUDENTS TOWARDS ENVIRONMENTAL ISSUES**

Table 1 shows the overall attitude of students at secondary level in Karachi, Pakistan. An examination of table shows that students hold moderately positive attitude in most of the items of ROSE questionnaire (section D “Me and environmental challenges”). The participants responses were distributed among the five options (i.e. strongly disagree, disagree, neutral, agree, strongly agree). The findings revealed that Pakistani students generally have moderately favourable attitudes towards environmental issues. They seemed to be eager to find solutions to environmental problems and showed optimistic trends about the future

**TABLE 1: Overall Attitudes of Students**

Items	Mean	Standard Deviation
1. Threats to the environment are not my business (-)	2.50	1.44
2. Environmental problems make the future of the world look bleak	3.74	1.29
3. Environmental problems are exaggerated (-)	3.17	1.26
4. Science and technology can solve all environmental problems	3.29	1.20
5. I am willing to have environmental problems solve even if this means sacrificing many goods	3.79	1.00
6. I can personally influence what happened with the environment	3.59	0.95
7. We can still find solutions to our environmental problems	4.26	0.92
8. People worry too much about environmental problems (-)	3.14	1.32
9. Environmental problems can be solved without big changes in our way of living (-)	2.56	1.29
10. People should care more about protection of the environment	4.24	1.04
11. It is the responsibility of the rich countries to solve the environmental problems of the world	2.67	1.34
12. I think each of us can make a significant contribution to environmental protection	4.13	1.05
13. Environmental problems should be left to the expert (-)	2.30	1.17
14. I am optimistic about the future	3.70	1.12
15. Animals should have the same right to life as people	3.91	1.14
16. It is right to use animals in medical experiments if this can save human lives	3.46	1.21
17. Almost all human activity is damaging for environment	3.27	1.29
18. The natural world is sacred and should be left in peace	3.69	1.30

What follows is detailed analysis at item level.

The students scored highest in item 7 which is about the vision for future. It is worth mentioning that the students scored (M = 4.26). Students’ images of the future affect actions in the present, they try to adapt what they imagine and acts that they wish for future. Future images are influenced by the background, experiences, knowledge of each individual. By knowing the youth’s images of the future; we can better understand their present motivation, choices and actions. The images students’ hold of the future will make the future of country. Showing positive attitude regarding finding solutions to environmental problems suggest that students seem more concerned about the environmental problems. They own the problems and are enthusiastic to solve them. It is interesting to note that the youth of Pakistan is ready to take action for their better future.

It is quite surprising to note that students scored relatively higher (M =4.24) in item 10, which is about protection of environment. They think that it is important for the society that environmental problems should be solved. Students showed their concern for environmental issues and they want to protect the environment by their personal contribution. This attitude shows their determination towards protection of environment.

For item 12, which deals with the feeling of influence environmental problem, students have demonstrated an overall positive attitude (M= 4.13). Interestingly, students seem to be more motivated towards taking action instead of depending on other sources to solve environmental issues. They think that each of them can make significant contribution to environmental protection. They have demonstrated more positive attitude in terms of understanding their own responsibility to solve environmental problems. The average low score on the negatively worded item (*environmental problems should be left to expert*) indicates that in general students have shown their sense of responsibility to participate in solving environmental problems. It is heartening to observe that in general students have demonstrated more positive outlook for influencing the development.

Responding to the item 15, which is about whether animals should have the same rights to live as people, students showed positive attitude (M =3.91). This item is related to the bio centric value. The positive attitude of student shows that they recognize the pleasures and pains of non-human subjects to be considered. They might be of the view that at least some of what counts in ethics is common to our kinship with animals, not just specific

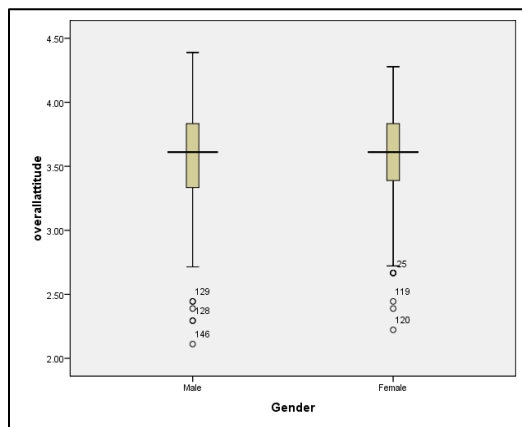


to our species. Common sense first and science later teaches that we humans have many similarities with animals. For survival on planet earth, all members of ecosystem are equally important. Positive attitude towards same right of life of animals is encouraging in the sense that students love and care for animals. On the other hand, in three items (4, 11, 17) students showed their less positive attitude. It is interesting to see that both items 4 and 11, which focus on external sources (i.e. technology and rich countries) to solve problems, have scored relatively lower. It is encouraging to observe that in general participant students have demonstrated their sense of responsibility and relatively less reliance on external sources. Item 17 (almost all-human activity is damaging for environment) is regarding the protection of nature. Relatively low scores show that the students believe that not all-human activity is damaging for environment. By doing environmental friendly activities, they can protect their environment. Overall results reveal that in general students have moderately favourable attitude towards environmental issues. They seem to be eager to find the solutions to environmental problems and show optimistic trends about the future.

**COMPARISON BETWEEN GENDERS**

This section presents the results of comparative analysis between male and female students' attitude towards environmental issues at the secondary level in both public and private schools, in Karachi, Pakistan.

Figure 1 presents an overall comparison of students' attitude towards environment across gender.



**FIGURE 1: Comparative Overview of Students' Attitude across Gender**

On average, female students reported to have slightly more positive attitude (Mean=3.57; SD = .36) towards environment as compare to male students (Mean=3.54; SD= .41). However, this difference was not found to be statistically significant [U=12552.500; p=.627]. Further analysis was carried out at item level.

**TABLE: 2 Comparisons across Gender – Item-Wise Analysis**

Item	Male M(SD)	Female M(SD)	Difference
1. Threats to the environment are not my business (-)	2.4(1.3)	2.6(1.3)	U=1.096;p>0.05(ns)
2. Environmental problems make the future of the world look bleak	3.9(1.1)	3.6(1.5)	U=1.178;p>0.05(ns)
3. Environmental problems are exaggerated (-)	3.2(1.2)	3.1(1.3)	U=1.114;p>0.05(ns)
4. Science and technology can solve all environmental problems	3.5(1.2)	3.1(1.1)	U=9.500;p<0.01
5. I am willing to have environmental problems solve even if this means sacrificing many goods	3.6(1.0)	4.0(0.9)	U=9.860;p<0.05
6. I can personally influence what happened with the environment	3.4(1.0)	3.8(1.0)	U=9.190;p<0.001
7. We can still find solutions to our environmental problems	4.3(0.9)	4.3(0.1)	U=1.138;p>0.05(ns)
8. People worry too much about environmental problems (-)	3(1.3)	3.3(1.3)	U=1.031;p>0.05(ns)
9. Environmental problems can be solved without big changes in our way of living (-)	2.6(1.3)	2.5(1.3)	U=1.034;p>0.05(ns)
10. People should care more about protection of the environment	4.2(1.0)	4.2(1.0)	U=1.142;p>0.05(ns)
11. It is the responsibility of the rich countries to solve the environmental problems of the world	2.7(1.3)	2.6(1.3)	U=1.116;p>0.05(ns)
12. I think each of us can make a significant contribution to environmental protection	3.9(1.1)	4.4(0.9)	U=8.916;p<0.001
13. Environmental problems should be left to the expert (-)	2.4(1.1)	2.1(1.1)	U=1.035;p<0.05
14. I am optimistic about the future	3.7(1.0)	3.6(1.1)	U=1.101;p>0.05(ns)
15. Animals should have the same right to life as people	3.6(1.1)	4.2(1.0)	U=8.787;p<0.001
16. It is right to use animals in medical experiments if this can save human lives	3.5(1.2)	3.4(1.2)	U=1.122;p>0.05(ns)
17. Almost all human activity is damaging for environment	3.4(1.2)	3.2(1.3)	U=1.092;p>0.05(ns)
18. The natural world is sacred and should be left in peace	3.7(1.2)	3.7(1.4)	U=1.140;p>0.05(ns)

As shown in the Table 2, both boys and girls expressed moderately favourable attitude towards environment. As expected, boys and girls have shown similar attitude on most of the items; however, there are a few items on which the scores differ significantly across gender. It is important to note that the difference across gender was not significant on

twelve items (i.e. 1,2,3,7,8,9,10,11,14,16,17,18). Among these items 2, 7 and 14 could be categorized as 'vision for the future'. Among the three items, item 2 is the one most that is directly addressing the environmental problems and the future of the world. A mean score 3 implies that on average, the students neither agree nor disagree with the statement that 'the future of the world looks bleak and hopeless due to environmental problems'. On average, for the last three items (i.e. items 16 to 18) which represent views on 'nature and protection of nature as a goal in itself', both boys and girls have shown positive attitude. Although, the score on these items does not represent 'highly' positive attitude, it still demonstrates an encouraging trend. It is clear that both boys and girls in the selected sample 'value lives of animals and humans' show an awareness about 'negative impact of human activity on environment' and acknowledge 'the sacredness of the natural world'. Both boys and girls are of the view that the environmental problems are important for the society (i.e. items 3, 8, 9, 10); however, the score varied considerably on the four statements. Relatively low score on item 9 (negatively worded item) is encouraging, which demonstrates their awareness about making 'considerable' changes in lifestyles to solve an environmental issue. On the other hand, relatively higher score on the two negatively worded items (3 and 8) demonstrates that they need to value the gravity of environmental issues more before thinking of solving them. In order to solve any issue, it is important to understand the importance and level of seriousness of those issues. The question that arises here is 'how did they view life style and making changes in it to solve environmental issues' if they perceive that 'environmental problems are exaggerated'. What follows is a detailed description of those items for which boys and girls have shown different attitudes.

Surprisingly, there was a significant difference in views of boys and girls role of technology to solve environmental problems (item 4). Boys have shown more hope and vision for the future in terms of use of technology than girls. It is interesting to note that while boys view technology as a rescuer they are more inclined towards 'someone else should solve the environmental problems'.

Concerning gender difference, a statistically significant difference in favour of girls found in five items (5, 6, 12, 13, and 15) including a negatively worded item (i.e. 13). Interestingly, unlike boys, girls seem to be more motivated towards taking action instead of depending on other sources to solve

environmental issues. While girls have demonstrated more positive attitude in terms of understanding their own responsibility to solve environmental problems, on average low score on the negatively worded item (*environmental problems should be left to expert*) across gender indicates that in general both boys and girls have shown their sense of responsibility to participate in solving environmental problems. It is encouraging to observe that in general girls have demonstrated more positive outlook for influencing the development as compared to boys. For example, girls are of the view that they cannot only personally influence the environment but can make a significant contribution to protect it. Also, girls have shown their willingness to sacrifice 'goods' to solve environmental problems. It is important to note that female believes that each of them can make a significant contribution towards environmental protection (item 12) and it is noticeable that girls scored highest in item 12 in all the items of questionnaire, which shows their determination in solving the environmental problems. Moreover, girls have shown more positive attitude in 'protecting animals' right to life'. However, when it comes to 'saving human life by using animals' life in medical experiments, both boys and girls have shown rather neutral attitudes. However, comparing scores across items (15 and 16) for both genders reveal that girls have more strongly favoured the idea of 'equal rights of animals and human beings to life' ( $M= 4.2$ ;  $SD = 1.0$ ) as compared to 'using animals in medical experiments to save human life' ( $M= 3.4$ ;  $SD = 1.2$ ). In other words, girls are of the opinion that saving human life is important but sacrificing animals' life for the sake of human life might not be an appropriate option. On the other hand, boys have shown almost same attitude towards both aspects (item 15:  $M= 3.6$ ;  $SD = 1.1$ ; item 16: ( $M= 3.5$ ;  $SD = 1.2$ ).

## DISCUSSION

The results of the study explores that there is no significant difference in attitude towards environmental issues across gender. Boys and girls showed similar attitude. Literature on gender differences is still inconclusive. While some studies support gender differences others have not found any differences. Results of this study corroborate findings of internal Relevance of Science Education (ROSE) study where no differences were found between environmental attitudes of girls and boys (Schreiner & Sjoberg, 2004). Moreover, in her five-country comparison on the determinants of environmental attitudes, Weaver (2002) did not find significant gender effect in any of the participating countries (e.g. Great Britain, Russia or Japan) except USA. According

to her finding in USA women showed a more positive attitude. Nevertheless, the results of the study do not match with a number of studies which have been carried out in the past to explore students' environmental attitudes (Gifford *et al.*, 1983; Worsley & Skrzypiec, 1998; Eagles & Demare, 1999; Tikka *et al.*, 2000; Tuncer *et al.* 2007). A common theme of the study revealed that girls had higher mean scores on environmental attitude as compared to boys.

Loughland *et al.* (2003) also emphasizes the gender difference as one of the important factors influencing young people's concepts regarding the environment. As presented earlier, it is evident that overall comparison did not reveal any difference across gender; however, interesting patterns were observed on some of items.

This study found that girls had exhibited a more positive outlook in terms of their motivation for action (item 5); have demonstrated more positive feelings to influence development (items 6 and 12); were less inclined towards depending on other sources to solve problems (item 13); and have favoured equality, and animals and human rights (item 15). These findings are in line with studies, which were carried out in other parts of the world, and have demonstrated that girls have an edge on boys in terms of positive environmental attitude (Grifford *et al.*, 1983; Worsley & Skrzypiec, 1998; Eagles & Demare, 1999; Tikka *et al.*, 2000; Tuncer *et al.* 2007). Why is it so? One possible explanation for the different tendencies of boys and girls towards the environment could be that girls have been traditionally responsible for looking after the home and children. Therefore, such behaviours can be perceived as a way of taking care of their off springs (Tikka *et al.*, 2000). In fact, socialization-based theories proposed in the literature have been used to explain the gender differences in environmental variables. Female determination could be explained by considering the propositions of socialization – based theory. Based on socialization theory, a caregiver role have been directed towards girls, which enabled them to become more nurturing, protective and cooperative as compared to boys (Blocker & Eckberg, 1997). As mentioned by Blocker and Eckberg, this type of 'motherhood mentality' promoted development of protective attitudes towards the environment.

While on average, students have a marginally positive attitude towards the use of technology; boys were found to have a more positive outlook towards the use of technology for solving environmental problems. A positive viewpoint about the use of

technology indicates a more optimistic position about the future (Eckersley, 1999) and understanding of a positive role of science and technology in society. Other studies have found a corresponding connection between future images and people's attitude towards scientific and technological development (Hicks & Holden, 1995). Studies have shown that people in developed countries are less confident with future achievements of science than less developed countries Sjoberg (2000, 2002). When it comes to capacity of science and technology to solve the environmental problems in particular, a number of studies find that boys have more faith than girls in science and technology as problem solver (Eckersley, 1999; Schreiner & Sjoberg 2003) – a finding which supports results of this study.

Why a moderately positive score on the usefulness of science and technology? A possible explanation could be that as Pakistan can be categorized as a less developed country. Students from Pakistan might not be as familiar with the devastating results of science and technology (e.g. Industrial wastes and damage of ozone layer) as their counterparts in developed countries. The later might have more realization that science and technology cannot solve the environmental issue but due to advancement of science and technology, environmental problems have increased to its fullest.

In a nut shell, students have exhibited a moderately positive outlook towards environmental issues and moderately optimistic about future. These findings provide a strategic entry point into this important issue to help young generation realize that future would be better than the present (Heilbronner, 1995). Hicks (1996) refer to sources of expertise and experiences on how to engage students in envisioning a preferred future, and argue that environmental education for empowerment seems to be stimulating students' awareness of what future they would prefer. Empowering young people for action towards a better future than the one they expect should consequently involve visualizing the alternatives and the goals one wants to work on.

## RECOMMENDATIONS

This section presents recommendations for policy and practice in the light of the results of this study.

### For ppolicy

In view of the results of this study, it is recommended that teacher-training institutes should include environmental issues in their curriculum. Mere inclusion of topic would not work therefore, it is important to train teachers in pedagogical strategies to orient them as how to teach environmental



education to students for critical thinking, problem solving, and action.

Furthermore, examination boards should consider their requirements to see what modifications are required to bring out the environmental implications in the existing subjects, or what new subjects are needed.

In addition, Teacher training institutions working in Karachi must look into the gender gaps between male and female students' attitude towards environment at the secondary level and design courses for pre-service and in-service teachers in such a way to address these gaps.

#### **For practice**

The results of the study suggest that teachers both in government and private schools must re-examine traditional teaching strategies such as chalk-and – talk method that mostly do not match the learning styles of students. Teachers need to use variety of innovative teaching strategies such as cooperative learning strategies, while delivering their lessons. Besides that teacher should use problem solving teaching methods, so that critical thinking in students could be developed. Student should be encouraged to take positive actions in daily life so that they could be able to act positively in their practical life in future. In other words, action oriented pedagogy could be considered a first necessary step towards realizing and solving environmental problem.

The heart of teaching lies in interaction and discussion with students. In the light of the results of the study, it is suggested that teachers must appreciate and encourage interactions and discussions in the classroom so that students can express and justify themselves. In this way, they can gain confidence, which would improve their attitude towards environment. Teacher must create such a platform for interactions for students with the aim that useful learning will take place in the classroom. The results of this study also suggest that future research should look more thoroughly into the kinds of environmental attitude across regions. This is to investigate the parameters that impede and/or facilitate environmental friendly attitudes of young people, and to use the data gained for setting up an EE strategy and action plan for Pakistan. The determination of different kinds of environmental attitudes across the country would be helpful both for policy-makers and for educators. Additionally, the attitudes of children are a major focus of many environmental education programs and the development of environmental sensitive attitudes in youth is seen as important for a sustainable future.

#### **FUTURE STUDIES**

This study generates many opportunities for further research.

This study can be replicated in other parts of the country. It would generate some interesting findings which can be compared with the findings of this study. In addition, it would provide an opportunity to educationists to see the varied attitudes of students, if any across different contexts of Pakistan. For example, the same instrument could be employed for data generation in order to measure the differences, regarding gender differences, if any, in both urban and rural contexts.

Furthermore, considering the fact that significant changes in attitudes may occur over a long period of time, longitudinal research is encouraged to investigate deeply an enhancement in Pakistani students' environmental attitudes.

Moreover, conducting qualitative studies in future research would provide more comprehensive information about 'how students' environmental attitudes are formed and changed.

#### **CONCLUSION**

This survey research aimed to investigate the differences between government and private schools students' attitude towards environment across gender at the secondary level, in Karachi, Pakistan. The study provides ample evidence that the overall attitude of students show that Pakistani students are moderately engaged with environmental issues. There were significant differences between government and private schools students' attitude towards environmental issues. The study also explores that there is no significant difference in environmental attitude across gender.

The results of the study give us the overall impression of moderate attitude of students towards environmental issues. However, for positive changing of the prevailing level of attitude and hope among youth, there is a need of bringing change in different levels. For example, some rethinking needs to be done regarding curriculum content and structure, teaching methods, teacher education and in-service training, and development of suitable resources. It is my hope that these efforts will make youth of Pakistan environmentally informed and friendly citizen.

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