



Investigating the Relationship Between Local Environmental Knowledge and Environmental Concern Among Students of Kashmir Valley

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ABSTRACT: The aim of the study is to investigate the relationship between local environmental knowledge and environmental concern among college students of Kashmir valley. A pre tested questionnaire was used to collect the data from the students who participated in this study. The study indicated that most of the students in our study were having knowledge about local environmental issues. However, they were not having proper understanding of their solutions. Hence, intervention from all stakeholders is needed to create awareness with focus on practical implementations.

Keywords: Environmental problems, Awareness, Practical approach, Students.

INTRODUCTION

Schools, communities, businesses, and governments have all shown a lot of enthusiasm for environmental education (EE) during the last three decades. These groups advocate for EE to be included into secondary school curricula but do not provide suggestions on how to create a standardised environmental education curriculum. Understanding and accepting the interconnectedness of human society, cultural practises, and the natural world is the ultimate goal of environmental education. It's a tool for teaching people how to be more mindful of the surroundings and make better decisions in the real world. Environmental education programmes that aim to foster pro-environmental attitudes and behaviours among participants and foster the growth of individual ecological knowledge should provide participants with a range of approaches and characteristics across a number of developmental levels, according to the available literature (Farmer *et al.*, 2007). Irresponsible environmental behaviour, which is highly influenced by people's attitudes, contributes to many of the environmental problems that have recently caused alarm around the world (Meinhold & Malkus, 2005; Ramsey & Rickson, 1976). That is to say, a person's ideals and outlook will influence the choices they make (Rennie, 2005, 2007). Attitude, defined as "evaluations

and reactions to objects, people, situations, or any other aspects of the world," allows us to both anticipate and influence people's behaviours (Sampreetha *et al.*, 2022). One of the purposes of environmental education is to encourage more positive perspectives on environmental issues. Programmes to alter public behaviour in favour of conservation and the preservation of the natural environment may benefit from research on environmental attitudes.

Individual student behaviour, including their decision making and their willingness to stick with a decision, is influenced by their attitudes. Students with a high level of scientific literacy, for instance, are more likely to make wise judgements and present themselves as competent (Ugulu, 2011). It has been proposed that favourable environmental views are linked to personally ecologically responsible behaviour (Scott and Gough, 2003; Eilam and Trop, 2012), despite the shaky connection between environmental knowledge and attitudes. Attitudes towards the environment may vary depending on a person's gender, age, and socioeconomic standing (Worsley and Skrzypiec 1998; Erten, 2012; Ozsoy 2012). Education, especially elementary school education, may have a major impact on how people feel about the environment (Strong, 1998; Kahriman-Ozturk, *et al.*, 2012). Therefore, educators have a crucial role in shaping these views (Said *et al.*, 2003; Kandir *et al.*, 2012). Because

environmental concerns are more easily included into school curriculum, schools may be more effective than universities at raising environmental awareness (Pearson *et al.*, 2005; Arslan, 2012; Ogunbode and Arnold, 2012). Behavioural change is the goal in the EE (Artvinli & Demir, 2018), thus it is crucial to appreciate the significance of environmental attitudes in order to cultivate environmentally aware actions.

Objectives of the Study

1. To compare the environmental awareness and scientific attitude of under graduate arts science and commerce students.
2. To study the relationship between environmental awareness and scientific attitude of under graduate students.
3. To compare the environmental awareness of under graduate students having high and low scientific attitude.
4. To compare the environmental awareness and scientific attitude of male and female under graduate students.
5. To compare the environmental awareness and scientific attitude of science and commerce under graduate students.

REVIEW OF LITERATURE

The researchers' ability to clearly articulate their notion and demonstrate familiarity with both established knowledge and new, unproven hypotheses is greatly aided by a thorough review of the relevant literature. Literature review may be used to build up the foundation of the research. The best studies build on prior research; doing so helps avoid repeating efforts and yields ideas that may guide in-depth exploration. The investigator has to have defined his research issue with more reliability and purpose than that before he can conduct a systematic review of the relevant literature. It provides the most in-depth look into the topic the researcher is delving into in order to discover answers to the research question. In this vein, it is essential for each researcher to review the historical developments in his or her field of study. In this regard, he should gather as much relevant data as possible via all available channels.

The way people feel about the environment affects the state of the environment. The term refers to a person's "accumulation of beliefs, affect, and behavioural intentions" in regards to activities or concerns that impact the environment. According to Kulasekera and colleagues' (2012) definition of environmental attitudes, there are two distinct forms of environmental attitudes: (1) attitudes towards the environment, and (2) attitudes towards ecological behaviour. Ogunjinmi (2012) argues that an individual's subjective assessments disclose more about that person's true character than the latter's professed actions. Positive or negative emotions towards a feature of one's physical surroundings or a problem in this area are examples of attitudes, and they

have a direct impact on subsequent actions. Changing behaviour, which is crucial for solving environmental problems, is a result of shifting attitudes and goals. Therefore, individuals form opinions on many objects based on their preconceived notions and biases (Ogunjinmi, 2012). This assumption underpinned the first, more simplified linear models of eco-friendly practises. In particular, it was argued that better environmental practises would arise from an increase in environmental awareness and positive attitudes. Research in the Theory of Planned Behaviour proposes that attitudes are not direct predictors of behaviours, but they impact behavioural intentions, and this construct, together with perceptions of behavioural control, could explain a significant amount of variance in actual behaviours. Multiple studies have shown that people who have a positive outlook on environmental issues are more likely to take action in favour of the environment (Erol and Gezer 2006). A clear purpose of environmental education is to influence behaviour, therefore understanding the foundation of environmental attitudes is helpful. How much do pupils know about the environment? isn't the only question teachers should be asking. However, it is equally important to know how they feel about environmental safety (Woodgate, 2012). Examining people's feelings on the environment might yield a wealth of tacit, insider information. It also aids in the prioritisation of environmental issues and the identification of those that have gone unnoticed by traditional scientific inquiry. People's perspectives on these issues matter just as much as the actual scientific and economic repercussions of them. That's why it's crucial for government environmental policies to take into account public opinion (Erol and Gezer 2006). Reviews of influencing behaviour constantly stress the difficulty of doing so. Multiple mechanisms, both conscious and unconscious, impact behaviour. Internal (psychological) and external (socioeconomic, physical, etc.) variables interact to produce pro-environmental activity. To achieve the goals of EE, education must instill in students an appreciation for the natural world, inspiring them to make responsible choices about their own actions and the world around them. This is due to the fact that students' attitudes have a significant role in shaping their behaviour (Chealsea *et al.*, 2012).

The goal of environmental education (EE) is to help students develop the values, beliefs, habits, and abilities they'll need to have a positive impact on the world around them. Therefore, the goal of EE is to provide students with the knowledge and experience necessary to take part in solving environmental problems. This requires accountability on both an individual and organisational level (Erol and Gezer, 2006). The first step for protecting the environment is active participation. It's the last step in the conceptual framework for EE, and it depicts an educated populace that can make sound judgements and take effective

action. A successful process of participation will be innovative and adaptable, making use of a broad variety of strategies. That's why it's important to inspire fresh thinking when using participation methods (Sarkar, 2011).

According to UNESCO (2012), the goal of environmental education (EE) is to instill in its target populations a lifelong commitment to the responsible management of natural resources and an appreciation for the interconnectedness of all aspects of environmental, social, economic, and political systems. It has also been discovered that a student's father's educational status contributes more than a mother's to the student's overall degree of environmental awareness and attitude. While a positive correlation was established between the mother's education and the child's environmental awareness, Makki *et al.* (2003) observed that participants whose dads were "more educated" had considerably higher scores on the same scale. According to Tayci and Uysal (2012), middle school students in Turkey did not differ significantly in their environmental knowledge and attitudes based on the level of education of their parents. Students' familiarity with environmental concerns was shown to be strongly correlated with their parents' educational attainment in a research by Gambro and Switzky (1999). Tangail's secondary school pupils (those in grades 9 and 10) had a more positive outlook on environmental concerns and a deeper understanding of them, according to a study by Ashish (2023). Gender, school type, and geographical region had no effect on environmental literacy, however study group and environmental attitude level did (Negar *et al.*, 2017).

An environmental mindset is defined as students' overt and covert dedication, motivation, and impact on problems related to nature and the environment (Aminrad, 2009). An individual's attitude is a multifaceted cognitive construct (perception) that develops from the synthesis of their belief and value system (Boershing & Young, 1993). Common environmental attitudes have been articulated as shared sentiments, as well as concerns about and efforts to address particular environmental challenges. While personal responsibility conveys a sense of duty towards the natural world, locus of control describes a person's belief in his or her power to affect environmental change via his or her own actions (Peer *et al.*, 2007). As a result, the external influences that affect how an individual's traits evolve will have little impact. According to Bhartiya's (2016) research, students in high school are more knowledgeable and informed than those in upper secondary schools, but the reverse is true when it comes to students' attitudes. Behera and Samal (2015) also found no statistically significant gender gap in environmental literacy in West Bengal, India. While a positive correlation was established between the mother's education and the child's environmental awareness, Makki *et al.* (2003) observed that

participants whose dads were "more educated" had considerably higher scores on the same scale. According to Tayci and Uysal (2012), in Turkey, eighth graders' environmental knowledge and attitudes were not correlated with their parents' level of education. Students' familiarity with environmental concerns was shown to be strongly correlated with their parents' educational attainment in a research by Gambro and Switzky (1999). "Cynthia" (2013). There is a lack of study on the elements that affect adults' environmental literacy, despite the fact that these aspects are likely to be complex. This article's study aims to fill in some of that knowledge gap by analysing data from a Minnesota environmental literacy survey to learn more about the factors that affect adults' knowledge of environmental issues. One of the most important aspects of environmental literacy is shown here via the presentation of study results about the impact of demographic characteristics and of non-formal and informal learning on environmental behaviour. This research found that incorporating non-formal and informal learning into environmental behaviour prediction yielded the best results. These findings highlight the need for further investigation into the predictive potential of non-formal and informal learning settings. If given the chance, pupils would participate actively in school environmental programmes, according to studies. The students of today are the leaders of tomorrow, and they are the ones who will be responsible for managing their country's resources (Müderisolu & Altanlar, 2011). Therefore, several research were conducted to investigate students' perspectives and actions about the environment. Previous research has examined the relationship between socio-demographic variables and perceptions, including age (Mohai & Twhight, 1987), gender (Mohai, 1992; Sasidharan & Thapa, 1999; Shobeiri *et al.*, 2007), location, and education (Sasidharan & Thapa, 1999; Thapa, 1999). The results of these research reveal that rural students, female students, and younger students all have a higher developed environmental consciousness than their urban counterparts, male counterparts, and older counterparts, respectively.

Thapa (1999) ; Tehrani *et al.* (2009, 2010) seen how students' environmental views and actions have evolved in response to their schooling. Students with a higher level of environmental education were more conscious of ES than those with a lower level of education or none at all. Students' receptivity, knowledge, and comprehension of evolving environmental challenges are commonly cited as indicators of their level of environmental literacy. Thus, environmental education leads to greater and responsible environmental behaviours on the part of pupils (Bradley *et al.*, 1997; Moseley, 2000; Magntorn & Hellden, 2007; Woodworth *et al.*, 2011). Students' perspectives may also be substantially impacted by where they live. Robertson and Burdge (1998) claimed that urbanites

worry more about the environment than their rural counterparts. On the other hand, rural land users make up the bulk of Australia's land care organisations. College students in Pondicherry, India, were studied by Little Flower (2006), who concluded that these young adults had a strong commitment to environmental ethics. There was also a notable disparity between male and female university students. There was also a notable difference between urban and rural college students, as well as between students from public and private institutions. Secondary school teachers in India and Iran were surveyed about their perspectives on the environment in a research titled "Influence of gender and type of school on environmental attitude of teachers in Iran and India" by Shobeiri *et al.* (2006). The findings showed that environmental awareness was significantly different among Indian and Iranian educators. There were also substantial gender-based disparities in environmental outlook between and among the two groups. Overall, there was no correlation between the kind of school administration (public vs. private) and teachers' perceptions of the school's atmosphere. According to "The Environmental Attitudes of Turkish Senior High School Students in the Context of Post materialism and the New Environmental Paradigm" (Taskin Ozgur, 2009). Students' perspectives on the environment differ by demographic factors such as school setting, gender, parental socioeconomic status, political leanings, and degree of education. More high school students are environmentally conscious if they attend a public institution, are female, come from a lower socioeconomic background, have parents who work in white-collar professions, or were raised by liberal parents. The results of both polls show that vocational school students have performed the worst. Coertjens *et al.* (2010) found that demographic factors such as students' gender, immigration status, family income, and academic concentration go a long way towards explaining why certain students are more environmentally conscious than others. Moreover, the findings demonstrate the importance of education; schools where science is taught in a more hands-on way was connected with greater environmental awareness among students, and environmental learning activities were linked to more positive student attitudes towards the environment. When other factors are taken into account, there is no difference in these school impacts between students with higher and lower levels of scientific literacy.

An examination of "A Comparative Study of Environmental Knowledge, Attitudes, and Behaviours among University Students in China" was conducted by He, Xueqin *et al.* (2011). While students often lacked in environmental knowledge, they did have favourable views towards the environment and were open to committing to eco-friendly practises. Even though all students had access to formal environmental education,

there were substantial differences in the overall environmental awareness of those who grew up in developed vs less developed areas. The research project "A study on Environmental Awareness of the Higher Secondary Students of Theni Educational District" was carried out by Arul karthikeyan (2008). He discovered that secondary school kids had a strong sense of environmental responsibility. Hausbeck *et al.* (1992) examined consciousness alongside environmental expertise and concern. The results of this research showed that high school pupils' levels of awareness and concern were far greater than their levels of knowledge. Leeming *et al.* (1993) analysed 34 research in the field of environmental education that had appeared in print between 1974 and 1993. Most of the research looked at investigated whether or not participants' attitudes or knowledge might be altered. Only 5 out of the 34 studies looked at behavioural changes. Unfortunately, "it is ultimately behaviour change that is required to preserve environmental quality," the scientists said. This evaluation also found that no research focused on how to use environmental education to persuade children to modify the environmental behaviour of others (such as their parents). Since environmental awareness is impacted by social elements such social status, age, and degree of education, Rovira (2000) offered an evaluation of students and parents that suggested it could be questionable that transmission of environmental consciousness to families via students.

A research study on the topic of gender differences in environmental attitudes and behaviours was undertaken by Zelezny *et al.* (2000). They came to the conclusion that women, thanks to their greater degrees of socialisation and social responsibility, exhibit more positive environmental attitudes and behaviours than males. Females exhibited more NEP 1978 worries than males in four of the six research conducted using the New Environmental Paradigm between 1988 and 1998. Women are more likely than males to say that present rules and regulations do not go far enough to safeguard the natural environment, according to the 1998 National Report Card on Environmental Knowledge, Attitudes, and Behaviour (NEETF, 1998). Stern and Dietz (1994) proposed a three-part categorization of people based on their concerns for the environment, other people, and their personal well-being. Morrone *et al.* (2001) conducted a research on ecological literacy that included in participants' socioeconomic level (SES). Environmental risks were not taken as seriously by individuals from lower socioeconomic backgrounds. Those from lower socioeconomic backgrounds also claimed to know more about environmental issues than college students and people of colour.

Changing people's habits is the ultimate goal of environmental education (Artvinli & Demir, 2018), therefore having a positive outlook on the environment is crucial. In his research on environmental attitudes and knowledge, Arcury (1990) established a clear

correlation between the two. Since the focus of most EE programmes is on the mind, it's vital that there be plenty of opportunities to exercise the heart as well. Since direct experiences influence the creation of attitudes in the emotional field, they will likewise play an essential part in the development of environmental attitudes (Pooley & O'Connor, 2000). In addition to educating people and instilling a feeling of responsibility, EE should also alter how people act. To that aim, lessons should include more video and audio content, as well as hands-on exercises, for optimal learning. A study of university students found that knowledge-based education did not achieve an adequate level in EE and in the formation of environmental awareness, but that students who learned actively by using their own creativity and skills developed more positive attitudes towards the environment.

Students who knew more about the environment tended to feel better about it. Choudary (2005) found that as compared to males, girls show a more positive attitude and higher levels of awareness when it comes to environmental education. Ernesto (2010) discovered that there were substantial disparities in the levels of interest, knowledge, and attitude towards environmental education across the groups. Students constituted the study's sample population. His research focused on the environmental consciousness and openness to environmental education of high school pupils in Assam's Golaghat area. Male and female secondary school students were shown to have no significant relationship between environmental awareness and attitude towards environmental education, whereas students from rural and urban areas did have a significant relationship. Positive student attitudes towards environmental education were shown to have a substantial correlation with students' environmental consciousness.

There was a clear gender gap in how men and women felt about the environment in college-level research. Female undergraduates were shown to be more environmentally conscious than male undergraduates in a research examining environmental attitudes at the conclusion of the course "Environment, Human, and Society" (Kose et al., 2011). Both Fernandez Manzanal *et al.* (2007); Tuncer (2008) found that there were substantial variations between male and female students on the aspects of the need for conservation and environmentally favourable behaviour. Women performed better than men on both measures. Gender differences in environmental awareness have been shown in studies of elementary and secondary school children (Yilmaz *et al.*, 2004; Jenkins and Pell, 2006; Aslan *et al.*, 2008). According to research (Jenkins and Pell, 2006), females have a more upbeat perspective on environmental issues and are more likely to be ready to shoulder personal responsibility for their conservation. The research' findings imply that students' environmental views are related to their curiosity about

environmental education. When assessing the effectiveness of a scientific programme or helping students form positive habits, it is crucial to take their perspectives into account (Bennett *et al.*, 2007; Kahrman-Ozturk *et al.*, 2012). Therefore, it is of highest importance to assess the effectiveness of teaching about the environment. There may also be important outcomes from studying what motivates students to behave responsibly towards the environment. Ugulu and Erkol (2013) argue that learning more about how students feel about environmental issues might contribute to finding solutions to such issues.

"Environmental Education awareness among Elementary School Teachers," Dhillon and Sandhu (2005). The purpose of this research is to examine primary school teachers' environmental education knowledge in relation to factors such as location (urban/rural), gender, and area of expertise. What we observed was that (1) there is a clear gap between the environmental education knowledge of urban and rural school teachers, with the former having a higher level of awareness. Neither male nor female educators were found to have a significantly different level of environmental consciousness. Thirdly, there was a notable disparity between professors and the subjects they taught. (4) Science educators had a higher level of knowledge about education than their social science and language teaching counterparts. In their article "Environmental Interest of Secondary Schools Students in Relations to their Environmental Attitude," Abraham and Arjuna (2005) set out to investigate the connection between students' enthusiasm for the environment and their overall worldview. One major finding was that secondary school pupils did not show much concern for the environment. Boys and urban participants showed more interest in the environment compared to their rural counterparts, indicating a gender and location impact. We identified a strong positive and statistically significant link between environmental interest and environmental attitude across all study groups. An Examination of Secondary School Students' Attitudes Towards Environmental Education in the Birbhum District of West Bengal, by Nayek *et al.* (2011).

Kalpana Thakur (2012) studied the level of environmental consciousness among Chandigarh's high school seniors. The descriptive survey approach was used to obtain data from a sample of 200 high school students attending four different Chandigarh schools. Students at both public and private institutions showed similar levels of environmental consciousness, which was the study's most important conclusion. The environmental consciousness of science majors was much higher than that of humanities majors. Third, although male scientific students showed more concern for the environment than female science students, there was no statistically significant difference between the sexes overall. Across the board, women have shown to

be more environmentally conscious than men as they have progressed through higher education. Female students, for instance, have been shown to score higher than male students on the attitudes scale, particularly with respect to the elements of the need of conservation and environmentally favourable behaviour (Fernandez-Manzanal *et al.*, 2007).

According to Serhat (2012), there is little difference in the critical thinking abilities of students based on gender, socioeconomic class, or kind of school. According to Pooley and O'Connor (2014), environmental educators should focus on students' emotions and beliefs rather than their knowledge when designing environmental education curriculum. Aminrad *et al.* (2011) came to a similar conclusion, namely, that environmental consciousness and concern rise in tandem with age and education. In his research, Sarkar (2011) found that pupils in both urban and rural locations had positive views towards the environment, with females having much more positive sentiments than boys. This study also found that rural females had the most positive environmental sentiments. DiEnno and Hilton (2005); Lee (2008); Ridener (1997); Eagles and Demare (1999) all report that environmental attitudes are a major focus of environmental education. The environmental attitudes of secondary school pupils in Bangladesh were studied by Sarkar (2011) using a standardised environmental attitude measure. Fifteen questions, each on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree), were used for this purpose. Since there was considerable sex variance in student environmental views, it was hypothesised by Mittelstaedt *et al.* (1999) that both male and female students participated. In 2011, Astalin analysed "A Study on Environmental Awareness among Higher Secondary and some Educational Factors Affecting it" to determine how much of an impact education had on students' concern for the environment. When comparing the environmental consciousness of 11th and 12th graders, he observed no significant difference. Students in the science major were more concerned about the environment than their arts-major peers. When compared to pupils from the UP Board, CBSE students demonstrated a higher level of environmental consciousness. Parental groups from the literacy, undergraduate, graduate, and research levels exhibited more environmental knowledge than those from the high school and intermediate levels. Finally, male students overall exhibited more environmental consciousness than female pupils. An investigation on "Indicating the Attitudes of High School Students Towards the Environment" was undertaken by Ozkan (2013). Male students have less positive attitudes than female students, 10th graders have more positive attitudes than 11th graders, Occupational and General High School students have more positive attitudes than Anatolian High School students, and students whose families have at least one member with a primary

school education have more positive attitudes. (Aydın, 2000). If you have a favourable disposition towards something, you are more likely to interact with it in a constructive manner. A person with a negative outlook is more likely to be uninterested in, alienate, criticise, or even destroy the thing in question. According to study conducted by Tuncer *et al.* (2005), there is a statistically significant gender and school type influence on environmental views. As a result, the private school students' mean scores were higher than the public school students' across the board. Furthermore, it was reported that the mean scores of females were higher than those of boys on all dependent measures. According to the research conducted by Chen and Chai (2010), which aimed to examine the perspectives of men and women on the environment and green goods, the researchers discovered no statistically significant differences between the sexes. Budak (2008); Bilgili (2008) argue that environmental education should be one of the first lines of defense in the fight to save the planet. All of society is included in environmental education. In this sense, environmental education could be defined as the promotion of environmental consciousness in all societies, the instillation of lasting, environmentally beneficial changes in individual behaviour, the defense of irreplaceable ecological, cultural, and aesthetic resources, and the facilitation of student engagement in the prevention and resolution of environmental issues. The purpose of environmental education is to provide individuals with the knowledge and skills they need to become active stewards of the environment as volunteers (Şüyük 2010).

Yalçinkaya And Çetin (2018) did a study entitled "An Investigation of Environmental Attitudes and Opinions about Environmental Education (EE) Among Secondary School Students." We examined the quantitative attitude scale data by examining categories including gender, socioeconomic status, and kind of institution attended. Using content analysis to categorise the results of the interviews, we discovered that there were substantial disparities based on gender and school type but not on grade level. Recommendations were given for schools to organise programmes that promote environmental awareness and EE based on data gathered from student interviews (Bozkurt, 2006).

It was found in a research conducted by Atasoy and Ertürk (2008) that children in sixth, seventh, and eighth grades lacked the necessary degree of environmental knowledge and attitude. According to Arcury (1990), people's perspectives on the environment shifted as their level of environmental literacy grew. The "Study of Awareness, Attitude, and Knowledge about Environmental Education in High School and College Students" was compiled by Bhartiya (2016). Data for the research was gathered using a survey instrument measuring ecological consciousness, and was analysed using the statistical software SPSS-24. High school

students were found to have a better level of awareness and knowledge than their higher secondary counterparts, while higher secondary students were found to have a higher level of attitude.

Gupta (2017) studied the "Environmental Awareness of Urban and Rural School students" and discovered that male and female students in both settings had an interest in environmental issues. The "Environmental Behaviour of Secondary Education Students of Central Greece" study was completed by Ntanos *et al.* (2018). The findings imply that most students care about the environment, but they also highlight the need for more consolidated environmental education and incentive from extracurricular and community settings. Once the different students' perspectives on the environment have been identified, the research technique and analysis applied might be helpful in implementing and arranging school environmental programmes.

METHODOLOGY

Sample design: This study consists mostly of administering a questionnaire to college students in order to learn more about their attitudes and experiences with Environmental Science classes.

The original intention of the survey was to include students from several colleges in the Baramulla area, with a focus on those taking Environmental Science as a course either in the social sciences or the natural sciences. Preexisting research were utilised with minor adjustments to produce an appropriate questionnaire for the purpose. Due to the scope and timeline constraints, a more streamlined approach was required, with participation restricted to students majoring in environmental science at the collegiate level.

The districts were selected, and the schools were picked from both rural and urban locations. However, this analysis only included a small number of universities. By limiting their access to education and avenues for self-expression. The second benefit is that only students of environmental science were included in the sample. College students who were not studying environmental education were unlikely to provide sufficient responses to questions regarding their attitudes and actions related to the issue. Due to the focus on how people see Environmental Education, a survey consisting of 15 separate questions, spread over two pages, was developed.

Sampling Design: Schools in both rural and urban areas of the designated districts were included in the samples. This was done with Environmental Science students in mind, giving them a more varied perspective from which to draw. It is possible that a sample of students' perspectives will not accurately reflect either the rural or urban population from which it was drawn. Similarly, if we just look at the top institutions, we may not get an accurate representation of the responses that a broader sample could provide. So, in order to find a happy medium, we choose one excellent school, one

decent school, one above-average school, and one poor school. This has led to the researcher choosing between publicly funded and privately funded institutions.

Questionnaire detail:

The questionnaire was designed to give as much information as possible from four main areas. These are:

- (a) The students' background.
- (b) Students' perception and behaviour towards environmental Science.
- (c) Role of student in Environmental Conservation.
- (d) Difficulties and easy aspects of studying Environmental Science.

The whole survey is included as Appendix A at the conclusion of the dissertation. Questions on attitudes and actions related to Environmental Science were prioritised in the survey. Using checkboxes and radio buttons, the questionnaire attempted to streamline the students' response time as much as feasible. Students were given the opportunity to provide in-depth responses to various topics pertaining to perception and conduct. It was assumed that students' perceptions of Environmental Science would be strongly influenced by their grasp of the discipline's goals, and therefore questions were crafted to elicit their perspectives.

One's perspective on a topic might shift depending on how challenging or simple one finds it to be. To investigate this matter, a set of questions had to be formulated, and both the questions and the answers were documented. It's also possible that the students' personal histories affect how they feel about and engage in Environmental Science. Therefore, questions were developed to probe students for this data. The majority of the questions here needed a "guided answer" or a "checkbox" response. Almost all of the questions in this section were formulated by the researcher herself; however, a few were modified from previously published works (Spiropoulou *et al.*, 2007).

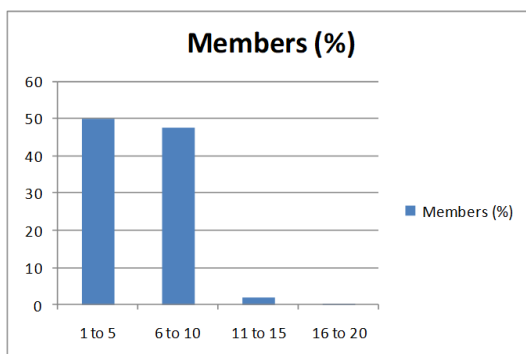
Statistical Analysis: Microsoft Excel-2010 was used to compile all of the statistics. We computed the mean and the percentage, and we made some charts. Correlations between the parameters were also determined by calculating the Pearson's coefficient of correlation.

RESULTS

Q1) Number of members in the family

Range	No. of members	% age
1-5	95	47.50
6-10	100	50.00
11-15	4	2.00
16-20	1	0.50

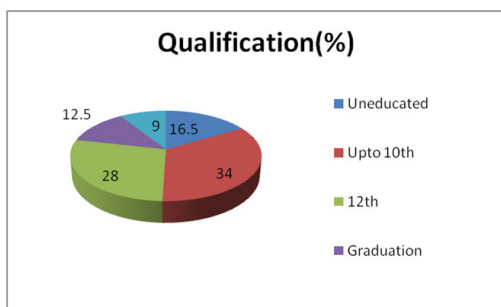
The above table illustrates that maximum percentage of family members *i.e.* 50% fall in the range of 1-5 and the rest *i.e.* 47.50%, 2.00% and 0.50% fall in the range of 6-10, 11-15 and 16-20 respectively.



Q2) Father's qualification

Qualification	Number	% age
Uneducated	33	16.50
Up to 10 th	68	34.00
12 th	56	28.00
Graduation	25	12.50
Others (PhD, B.Ed, PG, MA B.Ed etc)	18	9.00

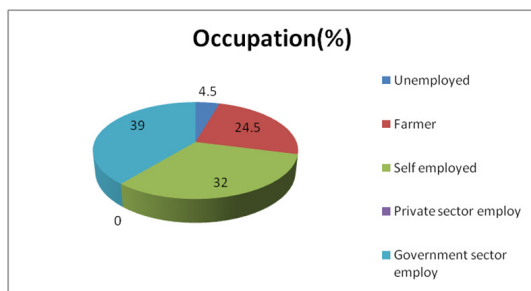
The father's qualification is varied. 16.50% fathers are uneducated, 34.00% have studied up to 10th, 28.00% have passed 12th class and 12.50% have done graduation. The rest i.e. 9.00% have done PhD, B.Ed, PG, MA B.Ed etc. courses.



Q3) Father's occupation

Occupation	Number	% age
Unemployed	9	4.50
Farmer	49	24.50
Self employed	64	32.00
Private sector employ	0	0.00
Government sector employ	78	39.00

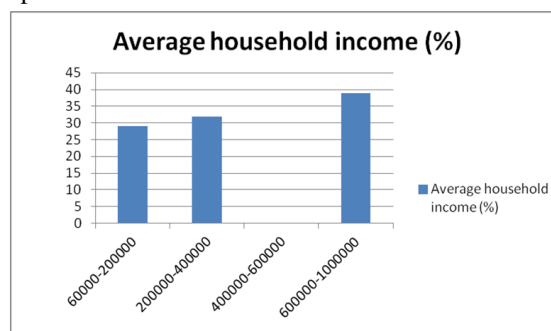
From the above table, it is evident that 4.50% of fathers are unemployed, 24.50% belong to farmer category and 32.00% are self employed. There is no private sector employ but the maximum portion i.e. 39.00% is Government sector employs.



Q4) Average household income

Income	Number	% age
60000-200000	58	29.00
200000-400000	64	32.00
400000-600000	0	0.00
600000-1000000	78	39.00

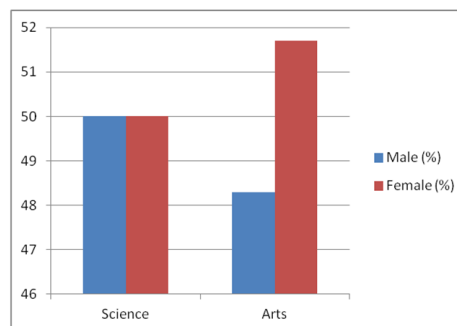
From the above table, it is evident that 60000-200000 is the average household income of 29.00% of respondents, 200000-400000 is of 32.00% of respondents and the rest i.e. 600000-1000000 is the average household income of maximum number of respondents i.e. 39%.



Q5) Total number of students

Stream	Male	Male (%)	Female	Female (%)
Science	71	50.00	71	50.00
Arts	28	48.30	30	51.70

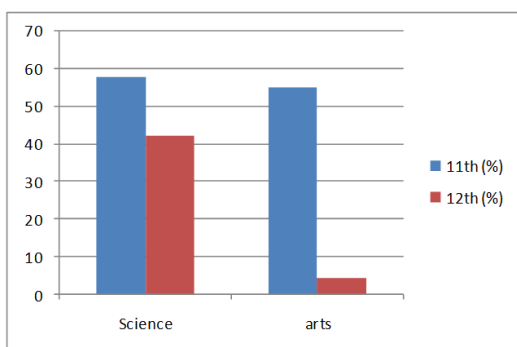
The total number of science students is 142, out of which 50% are male and 50% are female. On the other hand, total number of arts students are 58, out of them 48.30% are male and 51.70 are female.



Q6) Stream wise number of students in 11th and 12th

Stream	Class	Number	Number (%)
Science	11 th	82	57.70
	12 th	60	42.30
Arts	11 th	32	55.20
	12 th	26	44.80

It is evident from the above table that 57.70% is the percentage of 11th science students and 42.30% is the percentage of 12th science students. In the same way, 55.20% and 44.80% is the percentage of 11th and 12th arts students respectively.

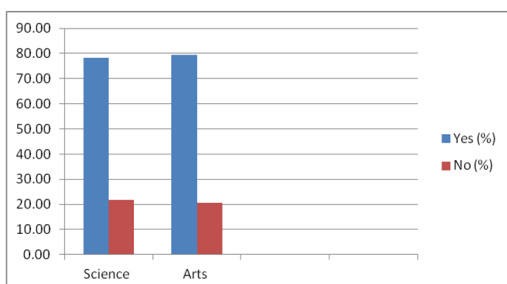


SAY YES OR NO

Q7) Do you like studying environmental science?

Stream	Yes	Yes (%)	No	No (%)
Science	111	78.20	31	21.80
Arts	46	79.31	12	20.69

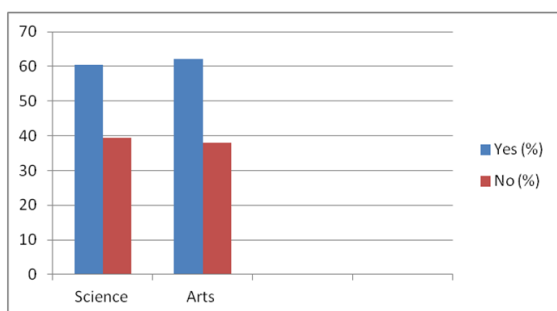
Most of the students from science stream *i.e.* 78.20% like to study environmental science and a few of them don't like it. Similarly 79.31% of arts students also like to study environmental science and 20.69% don't like to study it ($r=1$).



Q8) Do you think engineering students should study environmental science ?

Stream	Yes	Yes (%)	No	No (%)
Science	86	60.60	56	39.40
Arts	36	62.06	22	37.94

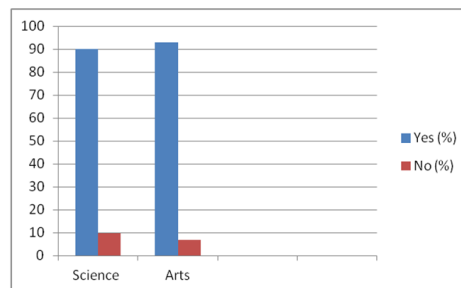
Among the total students surveyed in science stream, 60.60% of them felt that engineering students should study Environmental Science and 39.45% students felt that they don't need to study it. However in arts stream, 62.06% of students felt that engineering students should study Environmental Science and 37.94% feel that they don't need to study it ($r=1$).



Q9) Do you think you will apply the knowledge gained from environmental science in your future?

Stream	Yes	Yes (%)	No	No (%)
Science	128	90.14	14	9.86
Arts	54	93.10	4	6.90

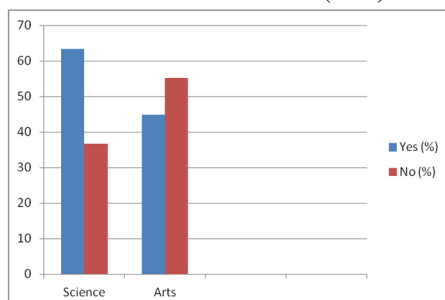
Most of the students from science stream (90.14%) and arts stream (93.10%) reported that they will apply the knowledge gained from environmental science in their future and a few students (9.86%) from science stream and 6.90% from arts stream reported that they won't apply the knowledge gained from environmental science in their future ($r=1$).



Q10) Do you think that there is application of studying environmental science in your course?

Stream	Yes	Yes (%)	No	No (%)
Science	90	63.38	52	36.62
Arts	26	44.83	32	55.17

Among the total science students, 63.38% felt that there is application of studying environmental science in their course and 36.62% felt that there is no need of studying it. However, among arts stream students, 44.83% felt that there is an application of studying environmental science in their course and 55.17% felt that environmental science is of no need ($r=-1$).

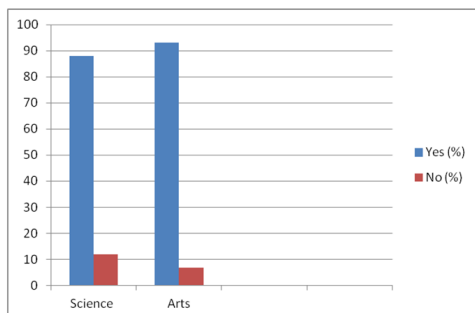


Q11) Do you aware people about the cleaning of surroundings?

Stream	Yes	Yes (%)	No	No (%)
Science	125	88.03	17	11.97
Arts	54	93.10	4	6.90

Majority of the students in science stream (88.03%) were willing to aware people about the cleaning of surroundings and a few (11.97%) were not willing to aware people. Similarly in arts stream, 93.10% of students were also willing to aware and 6.90% were

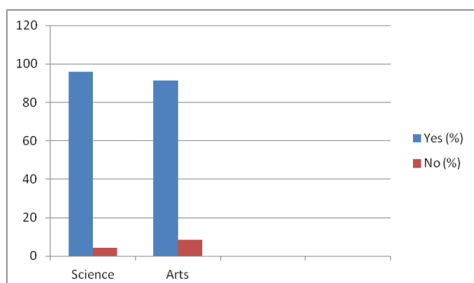
not willing to aware people about the cleaning of surroundings ($r=1$).



Q12) Do you know that unhygienic conditions will cause diseases?

Stream	Yes	Yes (%)	No	No (%)
Science	136	95.80	6	4.20
Arts	53	91.40	5	8.60

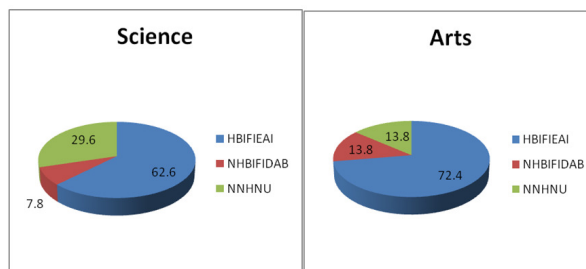
From the above table it is evident that 95.80% respondents of science stream and 91.40% respondents of arts stream were aware with the fact that unhygienic conditions cause disease while as 4.20% respondents from science stream and 8.60% respondents from arts stream were not aware with the above fact ($r=1$).



Q13) How do you feel when you are going to have environmental science lesson?

Options	Science	Science (%)	Arts	Arts (%)
Happy because I find it easy and interesting	89	62.60	42	72.40
Not happy because I find it difficult and boring	11	7.80	8	13.80
Normal neither happy nor unhappy	42	29.60	8	13.80

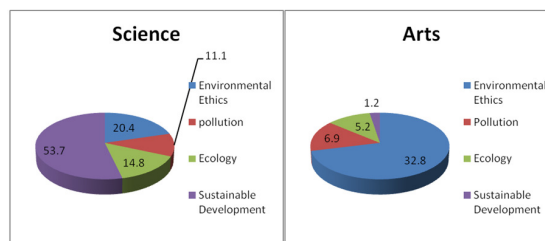
Most of the science students (62.60%) feel happy during an environmental science lesson as they find it easy and interesting, few feel unhappy /not happy because they find it difficult and boring and the rest *i.e.* 29.60% feel normal. Same is the case with arts students as 72.40% feel happy, 13.80% feel unhappy/ not happy and 13.80% feel normal ($r=0.919$).



Q14) what portion must be included in the curriculum that will be applicable with you in future?

Options	Science	Science (%)	Arts	Arts (%)
Environmental ethics	29	20.40	19	32.80
Pollution	17	11.10	4	6.90
Ecology	21	14.80	3	5.20
Sustainable Development	75	53.70	32	55.10

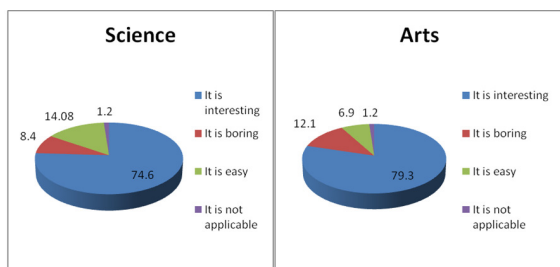
From the above mentioned data, 20.40% respondents from science and 32.80% respondents from arts mentioned that environmental ethics should be included in the curriculum. Others *i.e.* 11.10% from science and 6.90% from arts choosed pollution to be included in the curriculum. Few respondents *i.e.* 14.80% from science and 5.20% from arts reported that ecology should be included in the curriculum. While the rest *i.e.* 53.70% and 55.10% from science and arts streams mentioned that sustainable development should be included in the curriculum that will be applicable in the future ($r=0.923$).



Q15) what will you suggest to your friend if he will ask you about environmental science?

Options	Science	Science (%)	Arts	Arts (%)
Its interesting	106	74.60	46	79.30
It is boring	12	8.40	7	12.10
It is easy	20	14.08	4	6.90
It is not applicable	4	2.92	1	1.70

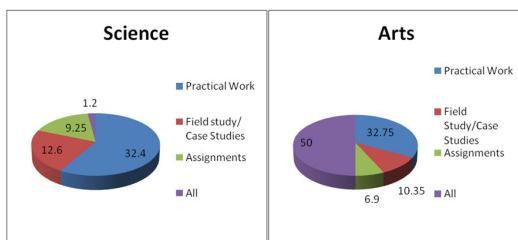
Environmental science is an interesting subject. This was suggested by 74.60% science students to their friends. While as, 8.40% suggested it is boring, 14.08% suggested it is easy and 2.925 suggested it is not applicable. Similarly in arts stream, 79.30% suggested it is interesting, 12.10% suggested it is boring, 6.90% suggested it easy and 1.70% suggested it is not applicable ($r=0.992$).



Q16) which among the following would you suggest to incorporate in the curriculum?

Options	Science	Science (%)	Arts	Arts (%)
Practical work	46	32.40	19	32.75
Field study / Case studies	18	12.60	6	10.35
Assignments	13	9.25	4	6.90
All	65	45.75	29	50.00

Among the total students surveyed in different higher secondary's, 32.40% from science and 32.75% from arts suggested that practical work should be incorporated in the curriculum, 12.60% from science and 10.35% from arts suggested that field study/case studies should be incorporated in the curriculum, 9.25% from science and 6.90% from arts suggested that assignments should be incorporated in the curriculum and the rest i.e. 45.75% and 50.00% from science and arts streams suggested that all the above should be included in the curriculum (0.999).

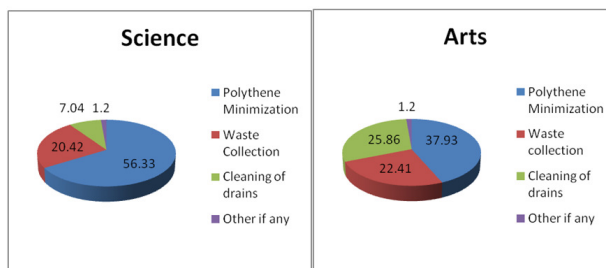


Q17) How do you participate in cleaning of environment near your locality?

Options	Science	Science (%)	Arts	Arts (%)
Polythene minimization	80	56.33	22	37.93
Waste collection	29	20.42	13	22.41
Cleaning of drains	10	7.04	15	25.86
Other if any	23	16.21	8	13.80

Majority of the science students (56.33%) reported that polythene minimization is a way by which they can participate in the cleaning of environment. Others i.e. 20.42%, 7.04% and 16.21% suggested waste collection, cleaning of drains and other if any as the different ways by which they can participate in the cleaning of environment. However 37.93% students from arts stream also suggest polythene minimization as a way to clean environment and the rest i.e. 22.41%, 25.86%

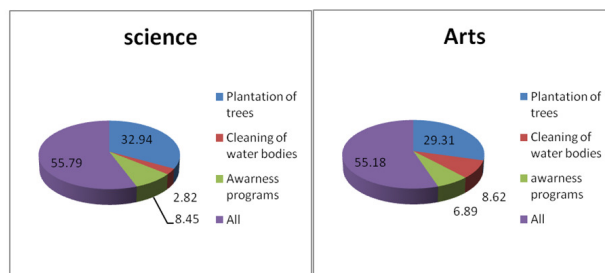
and 13.80% reported about waste collection, cleaning of drains and other if any as the different ways to clean environment respectively (0.771).



Q17) How will you help in promotion and conservation of environment?

Options	Science	Science (%)	Arts	Arts (%)
Plantation of trees	34	32.94	17	29.31
Cleaning of water bodies	4	2.82	5	8.62
Awareness programs	12	8.45	4	6.89
All	92	55.79	32	55.18

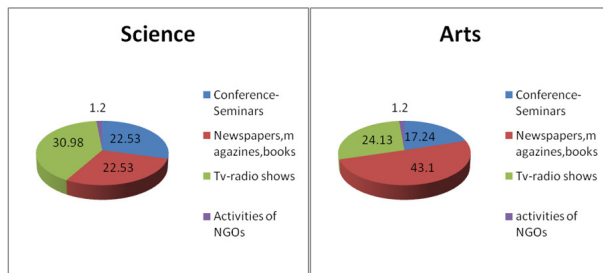
32.94% of the respondents from the science stream suggested that plantation of trees will help in the promotion and conservation of environment, 2.82% suggested for cleaning of water bodies, 8.45% suggested for awareness programs and a major portion i.e. 55.79% suggested for all of the above. Similarly, 29.31% of the arts students' chose plantation of trees as a way to promote and conserve environment, 8.62% suggested for cleaning of water bodies and the remaining i.e. 6.89% and 55.18% mentioned for awareness programs and all of the above to be helpful in promotion and conservation of environment (r=0.989).



Q18) which of the following can be used most effectively to attract the attention of people and raise their awareness about the environmental issues?

Options	Science	Science (%)	Arts	Arts (%)
Conference-seminars	32	22.53	10	17.24
Newspapers, magazines, books	32	22.53	25	43.10
TV-radio shows	44	30.98	14	24.13
Activities of NGOs	34	23.96	9	15.53

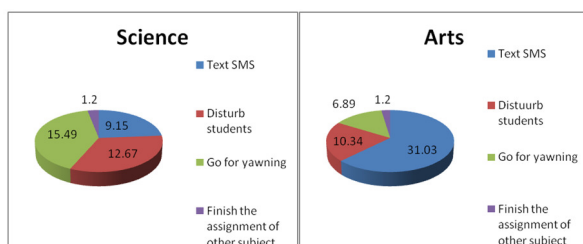
The above table illustrates that 22.53% of respondents find conference-seminars effective to attract the attention of people and raise their awareness about environmental issues. Newspapers, magazines, books were also found effective by the same percentage of students *i.e.* 22.53%. Moreover the concept of Tv-radio shows and activities of NGOs was supported by 30.98% and 23.965 of students in science stream. However, in arts stream the idea of conference-seminars was supported by 17.24% of students, Newspapers, magazines, books were supported by 43.10%, Tv-radio shows by 24.13% and activities of NGOs were supported by 15.53% of students ($r=0.136$).



Q19) When you are not finding the lecture interesting what do you do?

Options	Science	Science (%)	Arts	Arts (%)
Text SMS	13	9.15	18	31.03
Disturb students	18	12.67	6	10.34
Go for yawning	22	15.49	4	6.89
Finish the assignment of other subject	88	62.69	31	51.74

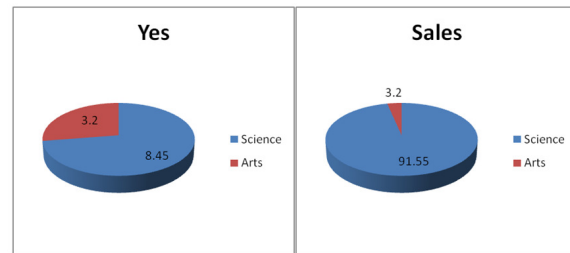
When the students don't find their lecture interesting, 62.69% respondents from science and 51.74% respondents from arts finish the assignment of the other subject, 15.49% respondents from science and 6.89% respondents from arts go for yawning, 12.67% respondents from science and 10.34% respondents from arts disturb students. While the rest *i.e.* 9.15% respondents from science and 31.03% respondents from arts text SMS in their boring lecture ($r=0.804$).



Q20) Have you created any club for environmental conservation – yes or no

Stream	Yes	Yes (%)	No	No (%)
Science	12	8.45	130	91.55
Arts	2	3.44	56	96.56

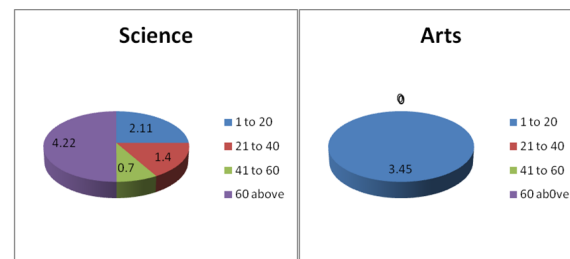
It is evident from the above table that 8.45% of science students and 3.44% of arts students have created an environmental club whereas 91.55% of science students and 96.56% of arts students have not created an environmental club ($r=1$).



Q21) How many people have joined your club?

Options	Science	Science (%)	Arts	Arts (%)
1-20	3	2.11	2	3.45
21-40	2	1.40	0	0.00
41-60	1	0.70	0	0.00
60 above	6	4.22	0	0.00

An environmental club of range of 1-20 persons was joined by 2.11% of science students and 3.45% of arts students. Another club with a range of 21-40 was joined by small percentage of only science students *i.e.* 1.40%. 41-60 was one more range of an environmental club which was joined by only 0.70% of science students. The last was also joined only by science students (4.22%) containing members 60 above ($r=0$).

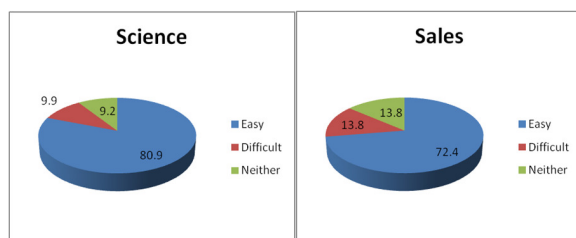


Q22) Think of the different things you might do in environmental science lesson. Here are things that teacher might ask you to do. Put a tick in the right option to show whether you find these things easy, difficult or neither easy nor difficult.

a) Follow teachers' explanations

Options	Science	Science (%)	Arts	Arts (%)
Easy	115	80.90	42	72.40
Difficult	14	9.90	8	13.80
Neither	13	9.20	8	13.80

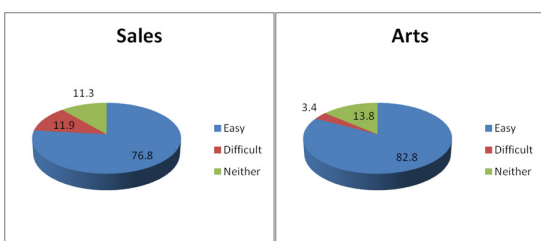
80.90% respondents from science stream and 72.40% respondents from arts stream feel teachers' explanations an easy task while 9.90% from science and 13.80% from arts feel it difficult and the rest *i.e.* 9.20% from science and 13.80 from arts feel neither easy nor difficult to follow teachers explanations ($r=0.99$).



b) Reading text books

Options	Science	Science (%)	Arts	Arts (%)
Easy	109	76.80	48	82.80
Difficult	17	11.90	2	3.40
Neither	16	11.30	8	13.80

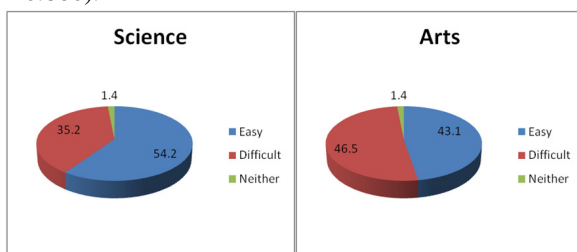
Reading text books is an easy task for 76.80%, difficult for 11.90% and neither difficult nor easy for 11.30% of the students in science stream. Similarly in arts stream, 82.80% of the students find it easy, 3.40% of the students find difficult and 13.80% of the students find neither easy nor difficult to read text books ($r=0.991$).



c) Making notes by yourself

Options	Science	Science (%)	Arts	Arts (%)
Easy	77	54.20	25	43.10
Difficult	50	35.20	27	46.50
Neither	15	10.60	6	10.40

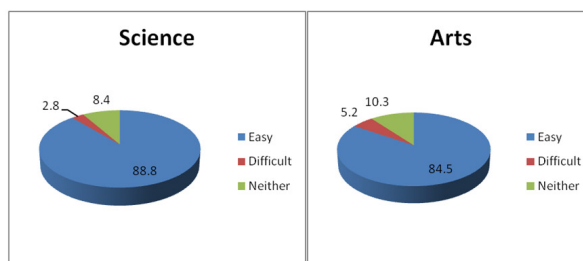
It is evident from the above table that notes making is an easy task for 54.20% of the respondents, difficult for 35.20% and neither easy nor difficult for 10.60% of the respondents in science stream. Same is the case with arts stream as 43.10% of the respondents find notes making an easy task, 46.50% find difficult and 10.40% of the respondents find neither easy nor difficult ($r=0.860$).



d) Answer short questions

Options	Science	Science (%)	Arts	Arts (%)
Easy	126	88.80	49	84.50
Difficult	4	2.80	3	5.20
Neither	12	8.40	6	10.30

Among the total students surveyed in different higher secondary's, 88.80% respondents from science stream and 84.50% respondents from arts stream reported that to answer short questions is an easy task for them, others *i.e.* 2.80% from science and 5.20% from arts reported a difficult option for it and the rest *i.e.* 8.40% from science and 10.30% from arts felt that to answer short questions is neither easy nor difficult task for them ($r=0.99$).



DISCUSSION

The purpose of this research was to learn how college-bound students feel about the field of Environmental Education. Questionnaires were used in the research. Seven secondary schools provided the pool of 200 pupils, of whom 142 were scientific majors and 58 were arts students. There were 71 male and 71 female students among the 142 scientific majors, and 28 male and 30 female majors among the 58 arts majors. Since students learn about the environment and Environmental Education in classes, our findings make sense. This is particularly true in the fields of life sciences, natural sciences, and social studies. As Environmental Education is not a required course for graduation, some students may have been unaware of its existence. It is common knowledge that as one's environmental literacy grows, so does one's perspective and attitude towards the environment. The implication is that pupils with a higher degree of environmental awareness will also have a more positive attitude towards the environment and a more accurate perception of the world around them. People are more likely to show enthusiasm for and engage with a topic when they have a solid foundation of knowledge about it. Students who study environmental topics are more likely to cultivate a healthy disposition because of the information they get.

Environmental education programmes in elementary and high schools are being credited with helping shape the pupils' optimistic and congruent outlooks. Furthermore, educational environmental activities conducted in other courses may also promote students' environmental views.

The results showed that the gender of the pupils made a big difference in how they interpreted their surroundings. Female students overwhelmingly had more positive views of the environment than their male counterparts. This advanced degree of environmental

views among females may be used effectively in teaching young women. Some future female environmentalists may emerge if environmental education is successful in capturing and maintaining their more progressive perspectives. There was no significant difference in how pupils from different socioeconomic backgrounds felt about environmental education. Students in both groups agreed that exposure to the news and other programmes in print and broadcast media was the most effective way to bring environmental concerns to the public's notice.

Students were given enough information on the risks associated with poor hygiene. The vast majority of pupils across all grade levels agreed that poor sanitation is harmful to human health. So they were ready to spread the word about the importance of keeping the environment clean. Moreover, they indicated that reducing their use of polythene is the most effective approach for them to help clean up their community. The cultivation of ecologically conscious habits begins with this kind of insight, thus spreading the word is a priority.

Students were polled on how they felt during environmental science classes, and the overwhelming majority said "happy" since the material is straightforward and enjoyable. This shows that they are responding well to environmental instruction.

According to the results, pupils understand that the current rate of resource depletion poses a serious risk to future generations. To ensure that the world's natural resources are preserved for future generations, they recommended that sustainable development be included into classroom instruction.

The study's results also showed that pupils have serious environmental concerns. They discussed activities including tree planting, water body cleansing, and education campaigns that would aid them in their efforts to promote and protect the environment. This demonstrated their caring attitude towards the natural world.

The results also showed that science students and arts students shared similar environmental awareness and expertise; there was little to no difference in their attitudes and behaviours. The perspectives of 11th and 12th graders on environmental education were very similar; pupils' age did not play a major role.

Positive attitudes towards course materials were found in the evaluation of the environmental course. Students felt that the Environmental Sciences course provided very important information about environmental issues, that more hands-on activities would improve the course, and that they had a greater sense of environmental responsibility as a result of taking the course. Items like this demonstrated students' appreciation for the relevance of knowledge in environmental sciences. The findings also demonstrated their engagement with course materials, which resulted in critical thinking and the conclusion that additional hands-on exercises would

improve the quality of the course. Students also said that they were more environmentally conscious as a result of what they learned in class. In addition, students were eager to provide constructive criticisms for improving the course.

CONCLUSIONS

Beginning in early childhood and continuing through higher education, environmental education has been seen as a crucial means of introducing students to environmental challenges. The goal of this research is to examine the ways in which students from different socioeconomic backgrounds interpret and respond to environmental education. Based on the results, it hopes to provide suggestions on how to prioritise further research into the topic. Based on the data analysed, it is clear that where a student resides may have a major impact on their worldview. Students who call cities home are more likely to be worried about environmental concerns than their rural counterparts. Students' sensitivity to environmental issues increased in correlation with the level of parental education. Fifty percent or more of pupils surveyed said they found environmental consciousness via media. The study found that students' families, teachers, the media, personal reading, and school curricula could all play a role in fostering a more positive and in-depth understanding of environmental issues among students and the general public.

In order to gauge how students at various high schools feel about environmental education, a survey was administered. The findings revealed that students' perspectives on the environment differed by demographic factors such as school setting, gender, parents' level of education and political leanings, parents' occupations and income levels, and students' own ages and places of residence. Students with a higher level of environmental education were more conscious of ES than those with a lower level of education or none at all. Students in metropolitan regions are more concerned with environmental concerns than those in rural areas, therefore location is another factor that may dramatically affect students' perspectives. There was also a considerable gender gap in terms of environmental consciousness among high school pupils. Moreover, public high school pupils viewed environmental education differently from their private school counterparts.

REFERENCES

- Abraham, M., and Arjuna, N. K. (2005). Environmental Interest of secondary schools students in Relations to their Environmental Attitude. *Perspectives Educ.*, 21(2), 100- 105.
- Aminrad, Z., Zakaria, S. Z. B. S. and Hadi, A. S. (2011). Influence of age and level of education on environmental awareness and attitude: case study

- on Iranian students in Malaysian Universities. *Medwell Journals of social sciences*, 6(1), 15-19.
- Aminrad, Z. (2009). Environmental Awareness and Attitude among Iranian Students in Malaysian Universities. University Putra Malaysia. Selangor, Malaysia.
- Arcury, T. (1990). Environmental attitude and environmental knowledge. *Human organization*, 49(4), 300-304.
- Arslan S. (2012). The influence of environment education on critical thinking and environmental attitude. *Procedia- Social and Behavioral Sciences*, 55, 902-909.
- Artvinli, E., & Demir, Z. M. (2018). A study of developing an environmental attitude scale for primary school students. *Journal of Education in Science, Environment and Health*, 4 (1), 32-45.
- Arul karthikeyan (2008). "A study on Environmental Awareness of the higher secondary students of Theni Educational District", UN published M.Ed. Dissertation, Annamalai University.
- Ashish Sharma (2023). Impact of Environmental Law in India with Reference to Climate Change and Environmental Degradation. *Biological Forum – An International Journal*, 15(4), 915-918.
- Aslan, O., Sagir, S. U. and Cansaran, A. (2008). Çevre tutum olcegi uyarlanması ve ilköğretim öğrencilerinin çevre tutumlarının belirlenmesi. *Ahmet Kelesoglu Egit Fak Derg*, 25, 283-295.
- Atasoy, E., & Ertürk, H. (2008). İlköğretim öğrencilerinin çevresel tutum ve çevre bilgisi üzerine bir Alan araştırması [A field study about environmental knowledge and attitudes of elementary school students]. *Erzincan Üniversitesi Eğitim Fakültesi Dergisi*, 10 (1), 105-122.
- Aydın, O. (2000). Introduction to Behavioral Science. Eskişehir Anadolu University Press.
- Bennett, J., Lubben, F., and Hogarth, S. (2007). Bringing science to life: A synthesis of the research evidence on the effects of context-based and STS approaches to science teaching. *Sci Educ*, 91(3), 347-370.
- Bilgili, S. (2008). İlköğretim 7. Sınıf Fen ve Teknoloji Dersinde Çevre Konularının Öğretiminde, Yapılandırıcı Yaklaşımın Dayalı İşbirlikli Öğrenmenin Öğrencilerin Erişine Etkisi. Yayınlanmamış Yüksek Lisans Tezi, Ankara: Gazi Üniversitesi, Turkey.
- Boershing, S. and R. De Young (1993). Evaluation of Selected Recycling Curricular: Educating the Green Citizen. *J. Environmental Education*, 18(3), 7-13.
- Bozkurt, O. (2006). Çevre eğitimi [Environmental Education] (Eds: M. Aydoğdu ve K. Gezer). *Çevre Bilimi [Environmental Science]*. Ankara: Anı Yayıncılık.
- Bradley, J. C., Waliczek, T. M. & Zajicek, J. M. (1997). Relationship between demographic variables and environmental attitude of high school students. *J. Nat. Resour. Life Sci. Educ.*, 26, 102-104.
- Budak B (2008) İlköğretim Kurumlarında Çevre Eğitiminin Yeri ve Uygulama Çalışmaları. Yayınlanmamış Yüksek Lisans Tezi, Ege Üniversitesi, İzmir, Turkey.
- Chelsea, S., Jennifer, E. Cross, B., William, F., Peter, H. and Stu, R. (2012). How to Go Green: Creating a Conservation Culture in a Public High School through Education, Modeling, and Communication. *Journal of Environmental Education Volume 43, Issue 3*,
- Chen, T. B., and Chai, L. T. (2010). Attitude towards the Environment and Green Products: Consumers' Perspective. *Manage. Sci. Eng.* 4(2), 27-39.
- Choudary, R. (2005). Ecology and environment and pollution, definition, history and scholarship. Agrobios (India), Jodhpur, pp.1, 10, 14-15. Retrieved on March 17, 2016 from <http://jcmc.ind>.
- Coertjens (2010). "Do Schools Make a Difference in their Students' Environmental Attitudes and Awareness? Evidence from PISA 2006, *International Journal of Science and Mathematics Education*, V.8, n3, P.497-522.
- Dhillon, J. S., and Sandhu, V. (2005). Environmental Education awareness among elementary school teachers, *Perspectives Educ.*, 21(2), 117-122. 17, January.
- DiEnno, C. M. and Hilton, S. C. (2005). High school students-knowledge, attitudes and levels of enjoyment of an environmental education unit on nonnative plants. *The Journal of environmental education*, 37 (1), 13-25.
- Eagles, P. F. J. and Demare, R. (1999). Factors influencing children's environmental attitudes. *Journal of environmental education*, 30 (4), 33-37.
- Eilam, E., and Trop, T. (2012). Environmental attitudes and environmental behavior-Which is the horse and which is the cart? *Sustainability*, 4, 2210-2246.
- Ernesto, A. (2010). Environmental education course development for pre service secondary school science teacher in the republic of Korea. *The Journal of Environmental Education*, 31(4), 11- 18.
- Erol, G. and Gezer, K. (2006). Teachers' Attitudes toward Environment and Environmental Problems. *International Journal of Environmental and Science Education*, 1(1), 65-77.
- Erten, S. (2012). Environmental consciousness among Turkish and Azeri candidate teachers. *Educ Sci*, 37(166), 88-100.
- Farmer, J., Knapp, D., & Benton, G. M. (2007). An elementary school environmental education field trip: Long-term effects on ecological and environmental knowledge and attitude development. *J Environ Educ*, 38(3), 33-42.
- Fernandez-Manzanal, R., Rodriguez-Barreiro, L., & Carrasquer, J. (2007). Evaluation of environmental attitudes: Analysis and results of a scale applied to university students. *Sci Educ*, 91(6), 988-1009.
- Fernandez-Manzanal, R., Rodriguez-Barreiro, L., & Carrasquer, J. (2007). Evaluation of environmental attitudes: analysis and results of a scale applied to university students. *Science Education*, 91(6).
- Gambro, J. S., & Switzky, H. N. (1999). Variables associated with American high school students

- knowledge of environmental issues related to energy and pollution. *Journal of Environmental Education*, 2(30), 15-22.
- Gautreau T., Binns C., Brian T, Wood, N., Lawrenz, F. and Haroldson, R. (2012). A judicial Presentation of Evidence of a Student Culture of "Dealing". *Journal of Research in Science Teaching*, 46, 421-441.
- Hausbeck, K., Milbrath, L., & Enright, S. (1992). Environmental knowledge, awareness and concern among 11th grade students: New York State. *The Journal of Environmental Education*, 24, 27-34.
- He, Xueqin, Hong, Ting, Liu, Lan & Tiefenbacher, John (2011). "A Comparative Study of Environmental Knowledge, Attitudes and Behaviors among University Students in China", *International Research in Geographical and Environmental Education*, V.20, n2, P.91-104.
- Jenkins, E. W., & Pell, R. G. (2006). The Relevance of Science Education Project (ROSE) in England: A Summary of Findings. Centre for Studies in Science and Mathematics Education. London: University of Leeds.
- Kahrman-Ozturk, D., Olgan, R., & Tuncer, G. (2012). A qualitative study on Turkish preschool children's environmental attitudes through ecocentrism and anthropocentrism. *Int J Sci Educ*, 34(4), 629-650.
- Kalpana Thakur (2012). A study of Environmental Awareness among Senior secondary school students of Chandigarh. *International indexed and Referred Research Journal*, 4(38). 70-73.
- Kandyr, A., Yurt, O., & Cevher-Kalburan, N. (2012). Comparison of teachers and teacher candidates in terms of their environmental attitudes. *Educ Sci Theor Pract*, 12(1), 323-327.
- Kose, S., Savran-Gencer, A., Gezer, K., Erol, G. H., & Bilen, K. (2011). Investigation of undergraduate students' environmental attitudes. *Int Electron J Environ Educ*, 1(2), 85-96.
- Kulasekara, P. (2012). A Study of Environmental Awareness of Higher Secondary School Students in Cuddalore District. *Research Expo International Multidisciplinary Research Journal Volume – II*.
- Lee, E. B. (2008). Environmental attitudes and information sources among African American college students. *The Journal of environmental education*, 40 (1), 29-42.
- Leeming, F., Dwyer, W., Porter, B., & Cobern, M. (1993). Outcome research in environmental education: a critical review. *The Journal of Environmental Education*, 24, 8-21.
- Little flower, D. (2006), "A study of Environmental Awareness, Environmental Ethics of Higher Secondary School Students in Pondicherry." Unpublished M.Phil Thesis, Annamalai University, Tamil Nadu, India.
- Magntorn, O., & Hellden, G. (2007). Reading New Environments: Students' ability to generalise their understanding between different ecosystems. *International Journal of Science education*, 29(1), 67-100.
- Makki, M. H., Abd-El-Khalick, F., & Boujaoude, S. (2003). Lebanese secondary school students' environmental knowledge and attitudes. *Environmental Education Research*, 1(9), 21-33.
- Meinhold, J. L., & Malkus, A. J. (2005). Adolescent environmental behaviors. Can knowledge, attitudes, and self-efficacy make a difference? *Environment and Behavior*, 37(4), 511-
- Ministry of Environment and Forestry (2004). XVIII. Çevre Eğitimi [Environmental Education]. *Türkiye Çevre Atlası*. Ankara.
- Mittelstaedt, R., Sanker, L. and VanderVeer, B. (1999). Impact of a week-long experiential education program on environmental attitude and awareness. *The Journal of experiential education*, 22(3), 138-148.
- Mohai, P. (1992). Men, Women and the Environment: An examination of gender gap in environmental concern and activism. *Soc. Natur. Resour.* 5, 1-19.
- Mohai, P., & Twight, B. W. (1987). Age and environmentalism: An elaboration of the Buttel model using national survey evidence. *Soc. Sci.*, 68, 798-815.
- Morrone, M., Mancl, K., & Carr, K. (2001). Development of a metric to test group differences in ecological knowledge as one component of environmental literacy. *The Journal of Environmental Education*, 32, 33-42.
- Moseley, C. (2000). Teaching for environmental literacy. *Clearing House*, 74 (1), 23-25.
- Müderisoğlu, H. & Altanlar, A. (2011). Attitudes and behaviour of undergraduate students toward environmental issues. *Int. J. Environ. Sci. Tech.*, 8(1), 159-168.
- Nayek, B., Behera, S. K., & Rath, S. K. (2011). An Investigation into the Attitude of Secondary School Students towards Environmental Education in Birbhum District of West Bengal, *ISRJ*, Vol. I, Issue-VII, July.
- NEETF (1998). The national report card on environmental knowledge, attitudes and behaviors: the seventh annual survey of adult Americans. National Environmental Education and Training Foundation. (ERIC Document Reproduction Service No. ED433214).
- Ntanos, S., Kyriakopoulos, G. L., Arabatzis, G., Palios, V., & Chalikias, M. (2018). Environmental behavior of secondary education students: A case study at central Greece. *Sustainability*, 10(5), 1663.
- Negar Sultana, Md. Shahadat Hossen, Rehana Khatun (2017). Assessment of Environmental Knowledge and Attitude of Secondary Level Students of Tangail, Bangladesh. *International Journal of Research in Environmental Science (IJRES)* 3(2), 41-46.
- Ogunbode, C. A., & Arnold, K. (2012). A study of environmental awareness and attitudes in Ibadan, Nigeria. *Hum Ecol Risk Assess*, 18, 669-684.
- Ogunjinmi, A. (2012). An Empirical Study of the Effects of Personal Factors on Environmental Attitudes of Local Communities around Nigeria's Protected Areas. *The*

Journal of Trans disciplinary Environmental Studies vol. 11(1) 2012.

- Ozsoy, S. (2012). A survey of Turkis pre-service science teachers' attitudes toward the environment. *Eurasian JEduc Res*, 12, 121-140.
- Pearson, S., Honeywood, S., & O'Toole, M. (2005). Not yet learning for sustainability: The challenge of environmental education in a university. *Int Res Geogr Environ Educ*, 14, 173–186.
- Peer, S., Goldman, D., & Yavetz, B. (2007). Environmental literacy in teacher training: Attitudes, knowledge and environmental behavior of beginning students. *Environmental Education*, 39(1), 45-59.
- Pooley, J. A., & O'Connor, M. (2000). Environmental education and attitudes: Emotions and beliefs are what is needed. *Environment and Behavior*, 32, 711-723.
- Pooley, J.A.and O'Connor M. (2014). Environmental education and attitudes (emotions and beliefs are what is needed). *SAGE Journal of environment and behaviour*, 32(5), 711- 723.
- Prashant Kumar Astalin (2011). A Study on Environmental Awareness among Higher Secondary and some Educational Factors Affecting it. *International Journal of Multidisciplinary Research*, Vol.1 Issue 7.
- Ramsey, C. E., & Rickson, R. E. (1976). Environmental knowledge and attitudes. *The Journal of Environmental Education*, 8(1), 10-18.
- Recep Ozkan (2013). Indicating the attitudes of high school students to environment. *Academic Journals*, 8(4).
- Recep Ozkan (2013). Indicating the attitudes of high school students to environment. *Educational Research and Reviews*, 8(4).
- Ridener, L. R. (1997). University students attitude to the environment: An Australian / USA comparison and the effects of an education program. *Australian Journal of environmental education*, 13, 77-84.
- Rovira, M. (2000). Evaluating environmental education programs: some issues and problems. *Environmental Education Research*, 6, 143-155.
- Şahin, N. F., Cerrah, L., Saka, A., & Şahin, B. (2004). Yüksek öğretimde öğrenci merkezli çevre eğitimi dersine yönelik bir uygulama [A practice for student centered ecology course in higher education]. *Gazi Eğitim Fakültesi Dergisi*, 22(3), 113-128.
- Said, A. M., Ahmadun, F., Paim, L. H., & Masud, J. (2003). Environmental concerns, knowledge and practices gap among Malaysian teachers. *Int J Sustain High Educ*, 4, 305–313.
- Sampreetha, H. N., K. Ravi Shankar, B. Savitha and K. Bhanu Rekha (2022). A Study on the Awareness of Women Farmers to Climate Change in Rice Crop in Karnataka. *Biological Forum – An International Journal*, 14(3), 873-877.
- Sarkar M. (2011). Secondary Students 'Environmental Attitudes: The case of Environmental Education in Bangladesh. *International Journal of Academic Research in Business and Social Sciences* August (2011), Vol. 1, 2222-6990
- Sarkar, M. (2011). Secondary School Environmental Attitudes: The case of Environmental Education in Bangladesh. *International Journal of Academic Research in Business and Social Sciences*, 1.
- Sasidharan, V., & Thapa, B. (1999). An exploration of the influence of gender and locality on environmental attitudes, using the new ecological paradigm (NEP) scale. Proceeding of the Northeastern Recreation Research Symposium. Bolton Landing, New York, The Pennsylvania State University, 57-61.
- Scott, W., & Gough, S. (2003). *Sustainable Development and Learning: Framing the Issues*. London: Routledge-Falmer.
- Serhat S. (2012). The Influence of Environmental Education on Critical Thinking and Environmental Education. A paper presented on the 3rd international conference on new horizons in education held on the 5th of October, 2012.
- Shobeiri, S. M., Omidvar, B. and Prahallada, N. N., (2006). Influence of gender and type of school on environmental attitude of teachers in Iran and India. *Int. J. Environ. Sci. Tech.*, 3 (4), 351- 357.
- Shobeiri, S. M., Omidvar, B., & Prahallada, N. N. (2007) a comparative study of environmental awareness among secondary school students in Iran and India. *Int. J. Environ. Res.*, 1(1), 28-34.
- Stern, P., & Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues*, 26, 4-20.
- Strong, C. (1998). The impact of environmental education on children's knowledge and awareness of environmental concerns. *Market Intell Plann*, 16, 349–355.
- Taskin, Ozgur (2009). The Environmental Attitudes of Turkish Senior High School Students in the Context of Postmaterialism and the New Environmental Paradigm. *International Journal of Science Education*, V.31, n4, P.481-502.
- Tayci, F. and Uysal, F. (2012). A study for determining the elementary school students' environmental knowledge and environmental attitude level. *Procedia - Social and Behavioral Sciences*, 46, 5718 – 5722.
- Tehrani, S. M., Karbassi, A. R., Ghoddosi J., Monavvari, S. M. and Mirbagheri, S. A. (2009). Prediction of energy consumption and urban air pollution reduction in e-shopping adoption. *J. Food. Agric. Environ.*, 7 (3-4), 898-903.
- Tehrani, S. M., Karbassi, A. R., Monavari, S. M., Mirbagheri, S. A. (2010). Role of e-shopping management strategy in urban environment. *Int. J. Environ. Res.*, 4(4), 681-690.
- Thapa, B. (1999). Environmentalism: A study of undergraduate students. Proceedings of the North-eastern recreation research symposium. Bolton Landing, New York, the Pennsylvania State University, 41-50.
- Tribhuan Kr. Bhartiya (2016). Study of Awareness, Attitude and Knowledge about Environmental

- Education in High School and Higher Secondary School Students. *IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT)* 10(12), 51-54.
- Tuncer, G. (2008). University students' perception on sustainable development: A case study from Turkey. *Int Res Geogr Environ Educ*, 17(3), 212-226
- Tuncer, G., Ertepinar, H., Tekkaya, C., & Sungur S. (2005). Environmental attitudes of young people in Turkey: effects of school type and gender. *Environ. Edu. Res.*, 11(2), 215-233.
- Ugulu, I. (2011). *The Impact of Recycling Education on the Knowledge, Attitudes and Behaviors of Secondary School Students*. PhD Thesis, Unpublished. Izmir: Dokuz Eylul University.
- Ugulu, I., & Erkol, S. (2013). Environmental attitudes of biology teacher candidates and the assessments in terms of some variables. *NWSA-Education Sciences*, 8(1), 79-89.
- UNESCO (2012). Education Policy Matters. UNESCO, Bangkok.
- Woodgate, G. (2010). Introduction. In *The International Handbook of Environmental Sociology*, 2nd edn, Redclift MR, Woodgate GR (Eds). Elgar: Cheltenham; 1-8.
- Woodworth, B. L., Steen-Adams, M. M. & Mittal, P. (2011). Role of environmental studies course on the formation of environmental worldviews: a case study of a core curriculum requirement using the NEP scale. *Journal of Environmental Studies and Sciences*, 1(2), 126-137.
- Worsley, A., & Skrzypiec, G. (1998). Environmental attitudes of senior secondary school students in South Australia. *Global Environ Change*, 3, 209-225.
- Yalçinkaya, E., & Çetin, O. (2018). An Investigation of Secondary School Students' Environmental Attitudes and Opinions about Environmental Education (EE), *Review of International Geographical Education Online (RIGEO)*, 8 (1), 125-148,
- Yilmaz, O., Boone, W. & Andersen, H. O. (2004). Views of elementary and middle school Turkish students toward environmental issues. *Int J Sci Educ*, 26(12), 1527-1546
- Zelezny, L., Chua, P., & Aldrich, C. (2000). Elaborating on gender differences in environmentalism. *Journal of Social Issues*, 56, 443-457.