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Eco Schools – Are They Really Better?

Comparison of Environmental Knowledge, Attitude and Actions
between Students in Environmentally Certified Schools and
Traditional Schools in Iceland

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*A thesis submitted in partial fulfillment of the requirements of Lund University International Master's
Programme in Environmental Studies and Sustainability Science (LUMES)*

May 2011

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Abstract

The research, originally inspired by how poorly Icelandic students scored in the 2006 PISA assessment regarding environmental issues, was intended to explore whether or not the Eco School program strengthens environmental knowledge and attitude among its students and encourages pro-environmental actions. The data was collected through a survey that included 153 students drawn from four primary schools in the Greater Reykjavik Area in Iceland. Quantitative comparison of the results showed that the Eco School students are more aware of environmental issues, but there is not a significant difference in environmental knowledge or attitude between the two groups. The difference in regards to environmental actions, and especially regarding recycling, is statistically significant. According to these findings the Eco School program has little effect on students' environmental knowledge and attitude. However, it encourages the pro-environmental action of recycling, which can be directly linked to the situational factor of recycling facilities at the schools. In addition, the results showed that Eco School students are more willing to recycle at home than Non-Eco School students, which could mean that habit and routine play an important role. It can be determined that the Eco School program provides the recycling facilities and emphasis on recycling, but fails on increasing students' knowledge and fostering 'pro-environmental consciousness'. The criteria of the Eco School project could be changed, putting more emphasis on environmental education within the school and there needs to be an emphasis on students' understanding of environmental problems as conflicting interests, and their capability to discuss possible changes and their motivation to take an active part in the solutions of them.

Keywords: *environmental education, ecological literacy, eco school, knowledge, awareness, attitude, actions*

Acknowledgements

First of all, I wish to thank my two favorite people in the whole world, Himmi and Hrafnhildur. Thank you, Himmi, for all your support, help and endless belief in me throughout these two years of study. Thank you, Hrafnhildur, for your patience and being such a wonderful daughter when I needed to sit at the computer and work. I would also like to offer many thanks to my family in Iceland for their support and encouragement over the last two years.

Special thanks to my supervisor, Dr. Kimberly Nicholas, for your constructive and valuable feedbacks and guidance, and always encouraging me when I needed. Thank you for helping me to organize my thoughts and turn my ideas into a thesis.

Finally, I am grateful to my fellow LUMES students and friends, as well as all my LUMES teachers. Thank you for making those two years of study a precious and unforgettable experience.

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Abbreviations

DESD	Decade of Education for Sustainable Development 2005-2014
EE	Environmental Education
EMAS	Eco-Management and Audit Scheme
ES	Eco School
ESD	Education for Sustainable Development
FEE	Foundation for Environmental Education
ISO	International Organization for Standardization
LA21	Local Agenda 21
NCGCS	National Curriculum Guide for Compulsory Schools
NES	Non-Eco School
OECD	Organization for Economic Co-operation and Development
PISA	Programme for International Student Assessment
SD	Sustainable Development
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization

1. Introduction

1.1 Project Context

The world's present development path is not sustainable and therein lies a fundamental challenge for all of humanity (Kates *et al.*, 2000). Sustainable development (SD) seeks to understand the interaction between nature and society in order to promote transition towards sustainability. The essence of SD is "meeting fundamental human needs while preserving the life-support systems of planet Earth" (Kates *et al.*, 2000, p. 641). In order to face the environmental challenges of the planet there is a need for educated, informed people. Knowledge and awareness about the existence and scope of environmental problems is important because it arouses concern and awakes attention. The emphasis should be on (i) knowledge about causes, (ii) knowledge about effects and (iii) knowledge about strategies for change, when it comes to environmental problems (Mogensen & Mayer, 2005).

The concept of 'Education for Sustainable Development' (ESD) is relatively new in the general discourse in Iceland and in a new national curriculum that will be published later this year (2011), the concept has become one of the five common threads running throughout the whole educational system (primary and secondary education). ESD is cross-curricular, meaning that it cuts through the traditional subject lines; however, even though ESD is cross-curricular, science education is important in developing understanding that underpins environmental issues.

The primary schools in Iceland are the workplace of students for ten years during an important period of their cognitive development. During that time the person is very receptive and is being shaped as an individual, as he or she is constantly interacting with the world around him. According to cognitive development thinkers, knowledge is invented and reinvented throughout the development and people read the environment through their understanding, which is socially and culturally conditioned (Kozulin *et al.*, 2003). Therefore it could be assumed that fostering a pro-environmental consciousness from early stages in life is likely to affect the intellectual development of the child along with his emotional, social, and moral aspects.

The Eco School Program has existed in Iceland since 2001 and a large number of schools have been awarded the Green Flag, which is the project's recognition. By participating in the project, the schools commit to reducing their environmental impact, strengthening environmental education and the environmental awareness of their students and faculty as well as implementing an environmental policy. In order for the project to be as effective as possible, everybody needs to join hands and integrate the aims and goals of the project.

1.1.1 Research Purpose

The purpose of this research was to explore whether or not the Eco School program leads to a deeper knowledge of environmental issues among students, and whether or not students in the program have more pro-environmental attitudes and actions than students in schools that are not a part of the Eco School program.

1.1.2 Thesis Structure

The structure of the thesis is as follows: The introduction chapter will provide a broad context of the project and address global initiatives on sustainability education, the link between knowledge, attitude and actions, and the idea of ecological literacy. The status of ESD in Iceland will be explored, as well as the performance of Icelandic students, compared to other OECD countries, regarding attitude towards environmental matters. The initiative of the Eco School program will be given an account of, which leads to the research aim. The introduction chapter ends with three proposed hypotheses. The subsequent sections outline the methods used in the research, followed by a section detailing the results, the discussion, conclusion and finally, a policy recommendation.

1.2 Global Initiatives in Education

The emerging scientific understanding of how the Earth system works has led to international policy development. For example, the Local Agenda 21 (LA21), signed by 178 heads of state, is an international consensus on the interlocking issues facing humanity and the steps that must be taken by the global community to achieve a sustainable future. While it is not legally binding, municipal governments, as well as other parties that the resolution applies to, have a

political and moral duty to fulfill it. LA21 recognizes education as one of the key tools for SD. Chapter 36, 'Promoting Education, Public Awareness and Training', is entirely dedicated to education. In the chapter, the focus is on education being the basis for action and critical for improving the capacity of the people as well as for societies to be able to reach their fullest potential. It is emphasized that both formal and non-formal education are indispensable to changing people's attitudes. People need to develop the capacity to assess and address their SD concerns and education is critical for achieving environmental and ethical awareness, values and attitudes, skills and behavior that are consistent with SD (UNESA, n.d.).

A declaration that emanated from the UN World Summit on Sustainable Development in Johannesburg in 2002, named a 'Plan of Implementation', emphasized that education is critical and an indispensable element for achieving SD (WSSD, 2002). Following the World Summit, a UNESCO's declaration of 'Decade of Education for Sustainable Development 2005-2014' (DESD) was launched, originally built on chapter 36 of LA21. The DESD "aims to integrate values, activities and principles that are inherently linked to sustainable development into all forms of education and learning and help usher in a change in attitudes, behaviours and values to ensure a more sustainable future in social, environmental and economic terms" (UNESCO, 2007, p. 5). The declaration calls for the international education sectors to make education for SD a high priority in curriculum and structural planning.

1.3 Linking Knowledge, Attitude and Action

Numerous studies and theoretical frameworks have been developed to investigate the connection between knowledge, attitude and behavior. Not all agree on how the three affect each other or what the barriers are between them. In this section the main theories in this field will be addressed as well as the factors that need to be in place in order for a pro-environmental behavior to occur.

Initially it was assumed that knowledge affected attitude, which then affected behavior. Therefore, in order to induce a change in behavior regarding any particular matter, it would be sufficient to increase knowledge of the matter as that would change the attitude, which in turn would lead to a change in behavior.

Knowledge → Attitude → Behavior

This rationalist model was conducted in the early 1970s and was soon proven to be wrong when different models emerged. It has been established that when it comes to environmental behavior, well informed citizens do not always act according only to their knowledge. Ajzen and Fishbein (1975; 1980) investigated the connection between attitude and behavior and developed two theories, the ‘Theory of Reasoned Action’ and the ‘Theory of Planned Behavior’. According to their theories, attitude does not determine behavior directly; rather it influences a behavioral intention which in turn shapes the action. The intention is though not the only influential factor because attitude is also shaped by the social pressure. However, the model has some underlying limitation as it maintained that people are essentially rational, as well as it does not include habit and routine, which has been considered to be a strong behavioral factor (Stern, 2000).

Hines, Hungerford, and Tomera (1986/87) proposed a model of predictors of environmental behavior (figure 1). Through their research they found the following individual variables to be associated with responsible environmental behavior: action skills, knowledge of action strategies, knowledge of issues, and personality factors, such as attitudes, locus of control, and individuals’ sense of responsibility. These factors all influence a person’s intention to act. However, their model also included the situational factors of economic constrains, social pressure and opportunities to choose different actions.

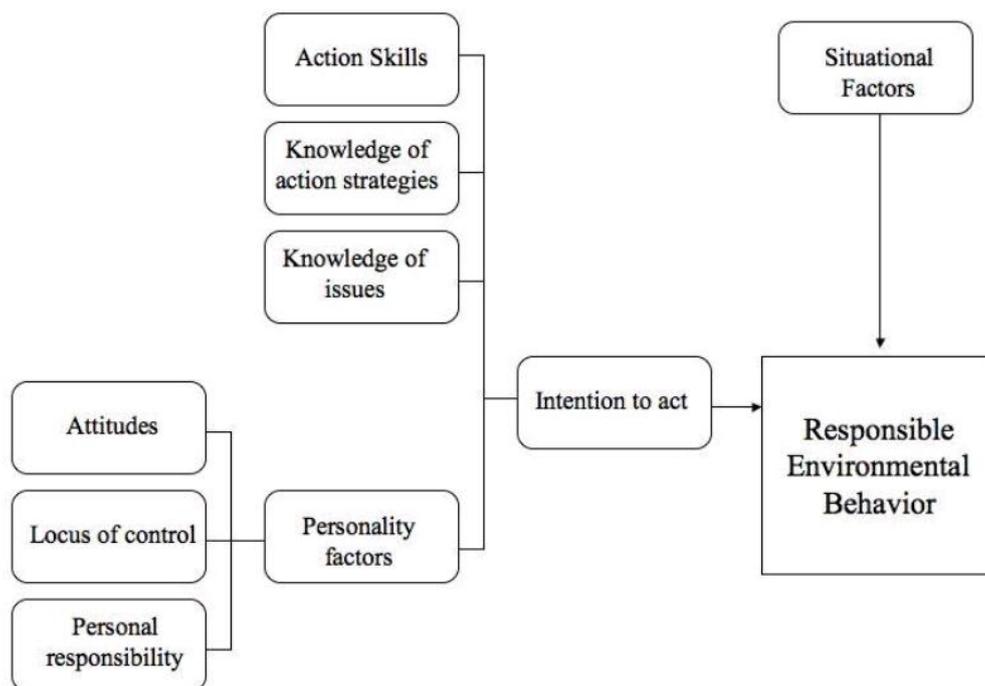


Figure 1: Models of predictors of environmental behavior (Hines et al., 1986/87, p. 7)

According to Fliegenschnee and Schelakovsky (as cited in Kollmuss & Agyeman, 2002) 80% of the motives for behavior are situational factors and the rest are internal factors. This suggests that no matter how environmentally well-informed an individual is, he or she is not likely to behave pro-environmentally without appropriate situational factors. The same goes for attitude. Researches have shown that the more the ‘right behavior’ costs, the less likely people are to behave in that manner. Diekmann and Preisendoerfer (as cited in Kollmuss & Agyeman, 2002) propose a model that clearly describes this relationship. Their research indicates that people tend to choose the pro-environmental behaviors that demand the least cost in money, time and effort needed to undertake the pro-environmental behavior. Their research also revealed that a positive environmental attitude can directly influence low-cost, pro-environmental behavior (such as recycling) but does not necessarily influence activities that are more costly or time consuming. However, their research also revealed that people with high levels of environmental awareness are more willing to accept political changes that will enhance pro-environmental behavior.

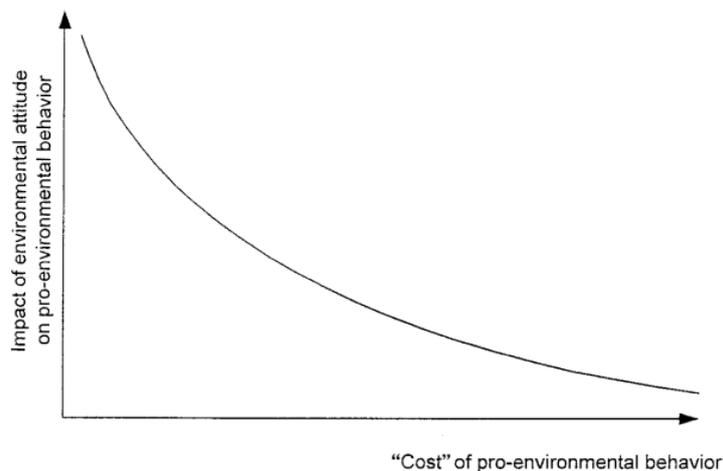


Figure 2: Low-cost high-cost model of pro-environmental behavior by Diekmann & Preisendoerfer (Kollmuss & Agyeman, 2002)

The theory of ‘Environmentally Significant Behavior’ provided by Stern (2000) proposes that there are four types of causal variables important for pro-environmental behavior.

- *Personal capabilities:* sociodemographic variables, personal resources and individual’s knowledge
- *External or contextual factors:* physical, social, economic and political variables
- *Attitudinal factors:* attitudes, beliefs, values and personal norms
- *Habit or routine:* acting without considering the behavioral choice

As can be seen Stern includes the factor ‘habit or routine’, which deals with the fact that people act without considering their behavioral choice. As an example, recycling, or lack of recycling, can be considered as a habit of the household routine.

Kollmuss and Agyeman (2002) described pro-environmental behavior as a behavior that “consciously seeks to minimize the negative impact of one’s actions on the natural and built world, e.g., minimize resource and energy consumption, use of non-toxic substances, reduce waste production” (p. 240). Kollmuss & Agyeman do not attribute a direct relationship to environmental knowledge and pro-environmental behavior; rather they see environmental knowledge, values, and attitudes, together with emotional involvement as making up a complex they refer to as “pro-environmental consciousness” (p. 256).

Even though a great deal of research shows that it is difficult to identify exactly what influences behavior, most research in the field shows that increased knowledge affects

individuals' attitude, awareness and pro-environmental consciousness. Furthermore, as stated by LA21, knowledge is the basis for action and increased environmental knowledge, attitude and awareness within a society might gradually enhance social responsibility of the citizens when it comes to environmental issues.

1.4 Ecological Literacy

The concept of ecological literacy was coined by American educator David W. Orr and physicist Fritjof Capra in the 1990s. Ecological literacy emerges around the concepts of holism, systems thinking, sustainability, and complexity; it is to think in terms of relationships, interconnections, patterns, and context (Orr, 1992). The basis of ecological literacy is “knowing, caring, and practical competence” (p. 92) and implies a broad understanding of “how people and societies relate to one another and to natural systems, and how they might do so sustainably” (Orr, 1990, p. 49).

Orr suggests that ecological literacy requires a broad familiarity with the development of ‘ecological consciousness’, which is in contrast with Kollmuss’s and Agymen’s approach of ‘pro-environmental consciousness’ which includes environmental knowledge, values, attitudes and emotional involvement. An ecologically literate person would have the practical competence required to act on the basis of knowledge and feeling.

Orr emphasizes that learning is something done from one’s environment and surroundings as well as from books. He specially mentions school facilities and how the buildings are constructed, and states that school buildings have their own hidden curriculum that teaches as effectively as any course taught in them (Orr, 1996). This is in accordance with Vygotsky’s theory of ‘Social Development of Learning’ (Kozulin *et al.*, 2003). According to Vygotsky, social interaction and culture profoundly influences the cognitive development of a child, and the major theme of his work is that social interaction plays a fundamental role in the development of cognition. This means that through social interactions the child learns the habits of mind of the culture, which affects the child’s construction of knowledge. This supports Orr’s argument that school facilities and surroundings profoundly influence the child and can be seen as a part of the hidden curriculum. Orr also emphasizes that the way the education occurs, and where, is just as important as the educational content itself. Orr

continues by explaining that “students that are taught environmental awareness in a setting that does not alter their relationship to basic life support systems learn that it is sufficient to intellectualize, emote, or posture about such things without having to live differently. Environmental education ought to change *the way* people live, not just *how* they talk” (Orr, 1990, p. 50).

1.5 Education for Sustainable Development in Iceland

1.5.1 A New Educational Policy

In Iceland the municipalities are responsible for operating schools and enforcing laws regarding primary education. Primary school is mandatory, which means that each municipality is obliged to provide every child in the age of 6 - 16 years with at least 180 days of education annually (Ministry of Education, 2010). The National Curriculum Guide for Compulsory Schools (NCGCS) in Iceland is based on the laws and regulations for preschools (age 2-6), primary schools (age 6-16), and secondary schools (age 16-20), and creates a framework for the school work, the structure of teaching and criteria and goals for progress of study. The NCGCS is currently being revised and the new curriculum will be published later this year (2011). One of the biggest changes is that there now will be one common general section for all three school stages, based on five basic aspects of education:

- Literacy in a broad sense
- Democracy and Human Rights
- Equality
- Creative Work
- Education for Sustainable Development (ESD)

This shows that ESD is becoming one of the main aspects of education in Iceland. According to the draft, ESD first and foremost means developing each individual as an active citizen in a society of joint responsibility, who has “knowledge of and is conscious about his or her values, attitude and feelings towards global changes, the equality of all humans, the nature and environment, democracy and human rights, equality and multicultural society, welfare and public health” (Ministry of Education, 2010, p. 7).

This new trend in the curriculum is in accordance with a policy report, titled ‘Welfare for the future’ (is. *Velferð til framtíðar*), that was adopted by the Icelandic Government shortly before the Johannesburg World Summit in 2002. The report frames the goals that the Icelandic Government has set regarding SD. In the latest report, which emphasizes the period of 2010-2013, it is stated that education is an important part of SD and that education should not only take place within the school system but also through daily life and work, and that authorities, municipal governments, school administrators, teachers and the school society all need to take responsibility if success towards ESD is to be achieved (Ministry for the Environment, 2010).

1.5.2 Environmental Education in Iceland

Environmental education (EE) was first formally introduced in the NCGCS in 1989. Following that, environmental educational material was published, EE became a mandatory subject for student teachers at Iceland University of Education and the subject became a higher priority than before within the primary schools (Bergmann *et al*, 2008). However, in the revised curriculum, published in 1999, EE was pushed aside as a special subject and instead incorporated into a subject called ‘Life Skills’. As well as addressing environmental matters, ‘Life Skills’ was intended to cover self knowledge, communication skills, creative skills and lifestyle (Ministry of Education, 2007a). From that point, EE was not bound to a single subject out of the traditional subjects in the curriculum, rather it was incorporated into ‘Life Skills’, which caused problems for teachers because the teaching became unsystematic and ineffective (Gíslason, 2009). Following this change, EE in primary schools seems to have become fragmented and subject to the interest or lack of interest of individual teachers and school administrators. Furthermore, in 2001, EE disappeared from the list of mandatory subjects for student teachers at Iceland University of Education (Bergmann *et al*, 2008). In the current NCGCS that came into effect in 2007, the concept of EE was let back in. Natural sciences and EE were together defined as one of 12 curriculum subjects (Ministry of Education, 2007b). Today, since only a draft of the general section of the newest curriculum has been published, but not the curriculum for individual subjects, it remains to be seen how ESD will be presented, not least since it has become one of the basic aspects of education in Iceland.

1.6 Programme for International Student Assessment

1.6.1 PISA: An Overview

PISA is a triennial survey of the knowledge and skills of 15 year old students (in most countries, at the end of compulsory education) and is the product of collaboration between participating countries and economies through the Organization for Economic Co-operation and Development (OECD). PISA is the largest and most extensive international research project that deals with the results from the test and gathers information about the student, his or her family as well as information about each educational system, all of which can be used to explain why different countries and educational systems get different results (OECD, 2007a).

The PISA assessment is an extensive survey on students' ability to solve tasks in his or her daily life and apply knowledge to real situations in reading, natural sciences, mathematics and problem solving (Halldórsson *et al.*, 2010). The first assessment in 2000 emphasized reading; in 2003, the main emphasis was on mathematics; in 2006, it was on natural science; and in 2009, it was on reading again. This means that not only do the assessments provide comparison between countries, but also comparison between periods, which has not been done before in such an extensive way.

The aim of the PISA assessment is to assist in policy formulation for educational systems and allow international comparison between different educational systems and students' situation in different cultural and educational circumstances (Halldórsson *et al.*, 2007). OECD places special emphasis on the connection between the social and economical background of students and their ability. One aim of the research is therefore to find out in which ways the ability of students from economically well standing countries differs from the ability of students from countries that are not as well economically standing (Halldórsson *et al.*, 2007).

1.6.2 2006 PISA Assessment

In the 2006 PISA assessment the main focus was on science, including scientific knowledge, awareness of environmental issues and sense of responsibility towards resources and the environment. More than 400.000 students from 57 countries making up close to 90% of the

world economy took part in PISA 2006 (OECD, 2007a). All 30 OECD member countries participated, as well as 27 partner countries.

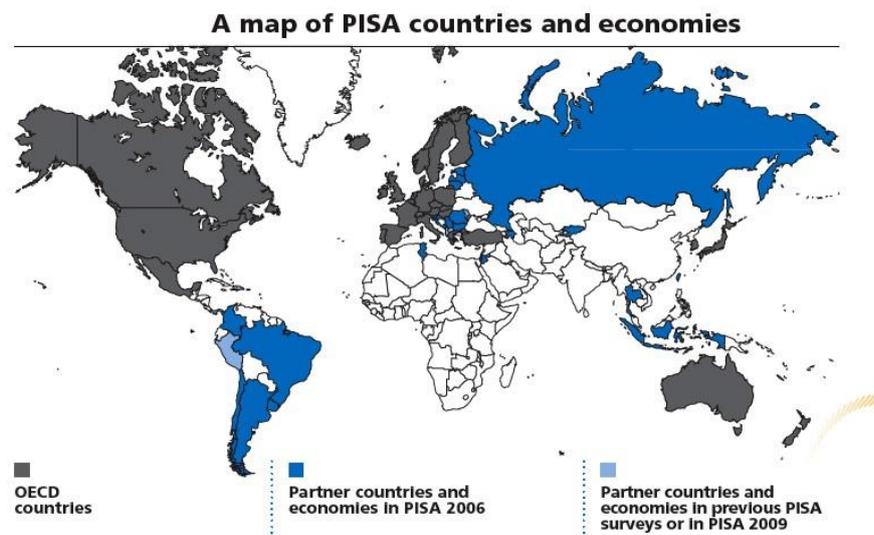
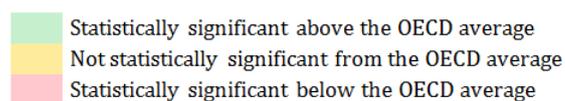


Figure 3: A map of countries/economies participating in PISA 2006 (OECD, 2007a)

Table 1 shows a range of rank of selected countries from the PISA 2006 in science, mathematics and reading. The students' performance is graded along a scale where the average among OECD countries is 500 points and the standard deviation is 100 points (OECD, 2007a). As can be seen, Finland, Chinese Taipei and Korea are at the top of each category and generally score very high, while Icelandic students scored under average in both science and reading, but six points above average in mathematics.



Science		Mathematics		Reading	
Finland	563	Chinese Taipei	549	Korea	556
Chinese Taipei	532	Finland	548	Finland	547
Japan	531	Korea	547	Sweden	507
Korea	522	Japan	523	Japan	498
Germany	516	Iceland	506	Chinese Taipei	496
United Kingdom	515	Germany	504	United Kingdom	495
Sweden	503	Sweden	502	Germany	495
Iceland	491	United Kingdom	495	Iceland	484
United States	489	Norway	490	Norway	484
Norway	487	United States	474	Mexico	410
Mexico	410	Mexico	406		

Table 1: Range of rank of a few countries/economies from PISA 2006 (OECD, 2007)

1.6.3 Students' Attitude towards Environmental Matters

One section of the PISA 2006 included questions about environmental issues such as greenhouse gases, acid rain, nuclear waste and genetically modified organisms. The results were used as an indication of the students' environmental awareness and concern. The students were also asked whether they were optimistic or pessimistic about improvement with regard to these issues and finally, the students were required to indicate the level of responsibility they were willing to take towards SD in a number of problem areas.

The results showed that environmental awareness in Iceland is lower than in any other OECD country, except for Mexico. Awareness of and concern for environmental matters among Icelandic students is on average a lot lower than the average among OECD countries (figures 4 and 5).

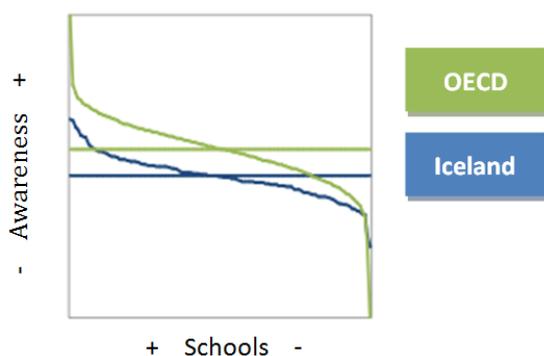


Figure 4: Comparison of environmental awareness between Iceland and OECD students in the 2006 PISA assessment (Halldórsson et al., 2010, p. 34)

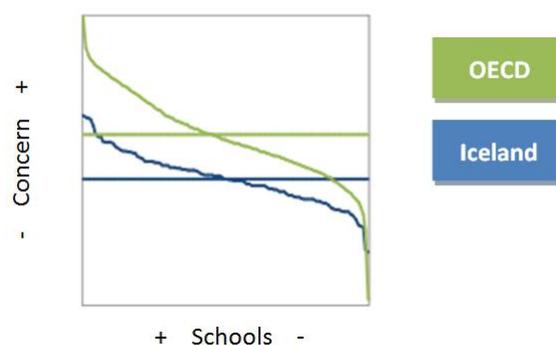


Figure 5: Comparison of environmental concern between Iceland and OECD students in the 2006 PISA assessment (Halldórsson et al., 2010, p. 34)

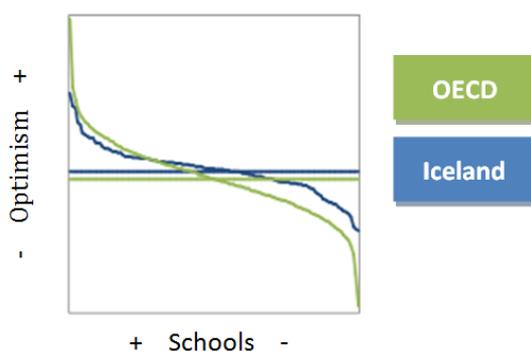


Figure 6: Comparison of optimism about the development of environmental matters between Iceland and OECD students in the 2006 PISA assessment (Halldórsson et al., 2010, p. 34)

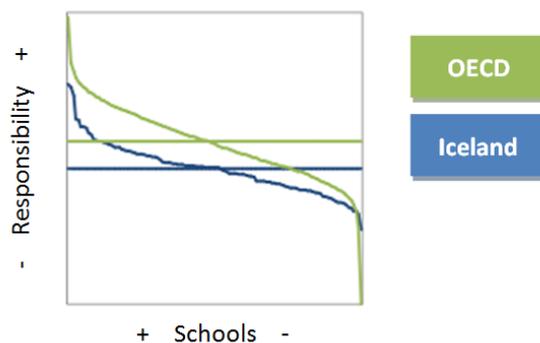


Figure 7: Comparison of responsibility for SD between Iceland and OECD students in the 2006 PISA assessment (Halldórsson et al., 2010, p. 34)

The optimism about the development of environmental matters is higher in Iceland than in OECD (figure 6). The optimism on the left side of the chart, where the more optimistic schools are, is similar in Iceland and OECD, but on the right side, where the more pessimistic schools are, the OECD schools are a lot more pessimistic than the Icelandic ones. Responsibility regarding SD is lower in Iceland than among students of the same age in other OECD countries (figure 7).

In a nutshell, awareness, concern and responsibility regarding environmental matters is a great deal less in Iceland than in other OECD countries, while there is a lot more optimism about the development of environmental issues in the world. The PISA 2006 Summary Report (OECD, 2007a) reveals that awareness of environmental issues is stronger among students who perform better in science. The students with higher performance in science, who reported greater awareness of environmental issues, also reported being more pessimistic about the future of the environment. This indicates that with increased knowledge of environmental issues comes increased environmental awareness.

1.7 Schools Initiative in Education for Sustainable Development

1.7.1 Eco Schools

The Eco Schools program was launched in 1994 aiming to reduce the environmental impact of the schools. It is based on environmental management systems, such as EMAS and ISO 14001 (FEE, n.d.a). The Eco School program is one of five environmental and educational programs that are active through The Foundation for Environmental Education (FEE). FEE is an international non-governmental and non-profit organization that has been aiming to promote EE since 1981 and is administered by member organizations in 59 countries worldwide (FEE, 2010). FEE promotes EE as a way to spread awareness and enhance knowledge and focuses on local action for change and emphasizes that “environmental education cannot be limited to knowledge, it must also be action oriented, with observable and measurable results” (FEE, n.d.b, p. 1). They believe that effective EE should be promoted through individual and collective participation and commitment which is why they build their programs on the methodology of participation and on turning knowledge and understanding into action (FEE, n.d.b). The aim of the Eco School program is therefore to raise awareness of SD through classroom study as well as through school and community action.

1.7.1.1 The Green Flag

The Eco School program's methodology includes seven steps that any school can adopt and the process involves a wide range of stakeholders. The seven steps are (IEA, n.d.a):

1. Establishment of the Eco School committee
2. Assessment of the status of the school's environmental issues
3. Preparing an action plan and setting environmental goals for the school
4. Monitoring and evaluating the school's environmental issues
5. Educating students in environmental matters and curriculum linking
6. Informing and involving the wider community
7. Establishing a formal environmental policy of the school

As well as following these seven steps, the school must emphasize on at least one of the nine following themes: water, energy, transport, public health, climate change, waste and recycling, Local Agenda 21, biodiversity, and greening the school grounds. After a period of participation and implementing the program, the school is assessed by a third party, i.e. the National Operator of the program in each country. The schools need to have reached a certain level of performance, defined by the National Operator in each country, of reducing the environmental impacts of the school, as well as implementing the seven steps, including one of the mandatory themes. Schools that have successfully achieved this goal are awarded with the Green Flag eco label. Today, the Eco School program involves over 10 million students, supported by over 60.000 teachers in 35.000 schools in 5000 local government areas worldwide. Over 10.000 Green Flags have now been awarded (FEE, 2010).

1.7.2 Eco Schools in Iceland

In Iceland, the Eco School program was implemented in 2001 by Icelandic Environmental Association (IEA). The IEA is a non-governmental organization engaged in environmental matters and improving the quality of life in Iceland. IEA's role is to protect the nature of Iceland and be an active participant in policy making, education and enlightened decision making in matters that involve land use, natural resources and the environment. The organization encourages a locally and globally sustainable treatment of the environment and nature, based on a strong environmental awareness, knowledge and will to protect (IEA, n.d.b).

According to IEA (n.d.c) the main goals of the Eco School program in Iceland are:

- Improving the school's environment, reduce waste and water and power consumption
- Enhancing social awareness within the school
- Enhancing environmental awareness through education and assignments in the classroom as well as outside of it
- Improving democratic work practices in the school administration when decisions involving the students are taken
- Providing students with education and skills to deal with environmental matters
- Improving international solidarity and language skills
- Connecting the school with its community, local businesses and the public

During the first year of the Eco School program in Iceland twelve schools officially applied for participation and became part of the program. In the spring of 2002 the first three Green Flags were rewarded in Iceland. Since then, and up until mid April of 2011, 189 schools have entered the program (out of 573 schools in Iceland). In Figure 8 the number of participating schools and the number of awarded Green Flags are listed (Jóhannsson verbal reference, March 24 2011).

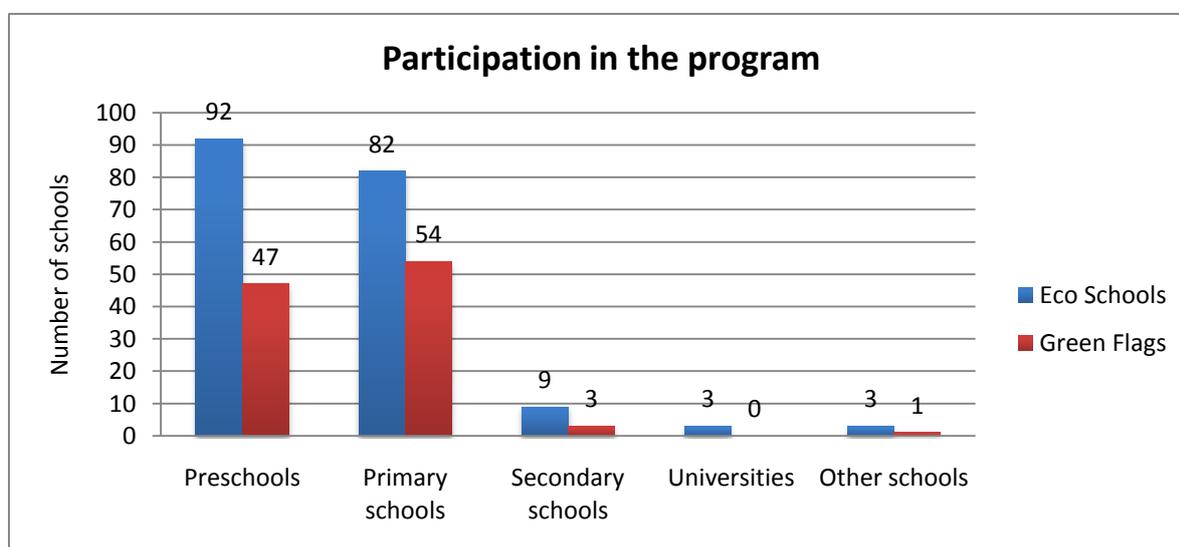


Figure 8: Number of schools participating in the Eco-School program in Iceland

The blue line represents the number of schools that have registered their participation in the program but not completed all steps. The red line represents the number of schools that have been awarded with the Green Flag. As can be seen, schools from the earlier school levels, i.e.

preschools and primary schools, have shown more interest in the program than schools at a higher level.

1.8 Research Aim

This research was originally inspired by how poorly Icelandic students did in the 2006 PISA assessment regarding environmental issues. The Icelandic students were well below average when compared to other OECD countries. Through the years there has not been much emphasis on EE in Icelandic primary schools, particularly in the later stages (students aged 13-16 years). Therefore, it did not come as a big surprise that Icelandic students scored low on the environmental questions in the 2006 PISA assessment. The above said triggered an interest in taking a closer look at the Eco School project as it is an initiative with the aim to strengthen EE and environmental awareness in schools, as well as reducing the schools' environmental impact. This led to the aim of the research which was to explore whether or not the Eco School program strengthens environmental knowledge among students and encourages pro-environmental attitude and actions.

The approach was to compare an equal number of students in four comparable schools in the Greater Reykjavik area in Iceland, and the focus was on students' knowledge of environmental issues and their attitudes towards the environment and environmental matters to further understanding of this aspect of students' ecological literacy. As has been explained, people's attitude and actions are shaped by the interplay of many different factors such as infrastructure, economics, social and cultural norms, knowledge, locus of control and habit, to name a few. Keeping that in mind, it was the intention in this research to look especially at actions that are mentioned as one of the emphasis of the Eco School program, i.e. recycling, as it clearly shows the situational factor included in the Eco School program.

1.9 Hypotheses

The underlying question that guided this research was: Does the Eco School program affect students' environmental knowledge, environmental attitude and environmental actions? In order to answer these questions, three hypotheses were formulated.

Hypothesis 1: Student *knowledge* about environmental issues is higher in Eco Schools than Non-Eco Schools.

Hypothesis 2: Student pro-environmental *attitude* is higher in Eco Schools than Non-Eco Schools.

Hypothesis 3: Student pro-environmental *action* is higher in Eco Schools than Non-Eco Schools.

The logic behind these hypotheses is that when a school enters the Eco School program it is expected to put emphasis on environmental matters, in theory and in practice, and in that way increase environmental knowledge and pro-environmental attitude and behavior among the school's students.

2. Methods

2.1 Research Design

A semi-experimental strategy, or a non-randomized quasi-experimental design, was primarily used to determine the impact that Eco Schools have on student's environmental knowledge, attitudes and actions, in selected primary schools in the Greater Reykjavik Area in Iceland. A quasi experimental design is a research design that has certain characteristics of experimental designs but does not fulfill all of the internal validity requirements (Bryman, 2004). Findings with quasi-experiments may be applied to other subjects and settings, allowing for some generalizations to be made about a population.

2.2 Participants

The sample included 153 students drawn from four primary schools in the Greater Reykjavik Area in Iceland. Two of the schools were Eco Schools and two of them were Non-Eco Schools. All of the respondents were 15 or 16 year old students in the 10th grade of primary

school, their last year of compulsory education before enrolling in secondary school, either grammar or vocational, or entering the employment market.

2.2.1 The Sample Criterion

Participating schools were selected on the basis of geographical location, school size, ‘undivided school’ and number of years with the Green Flag.

- i. *Geographical location:* The Greater Reykjavik Area consists of eight municipalities. The geographical area is 1.062 km² and the population is about 201.000, which is the majority of the Icelandic population of 320.000 (Statistics Iceland, 2010). The schools that were chosen for this research are all located in the municipalities of Reykjavik and Kópavogur (figure 9).

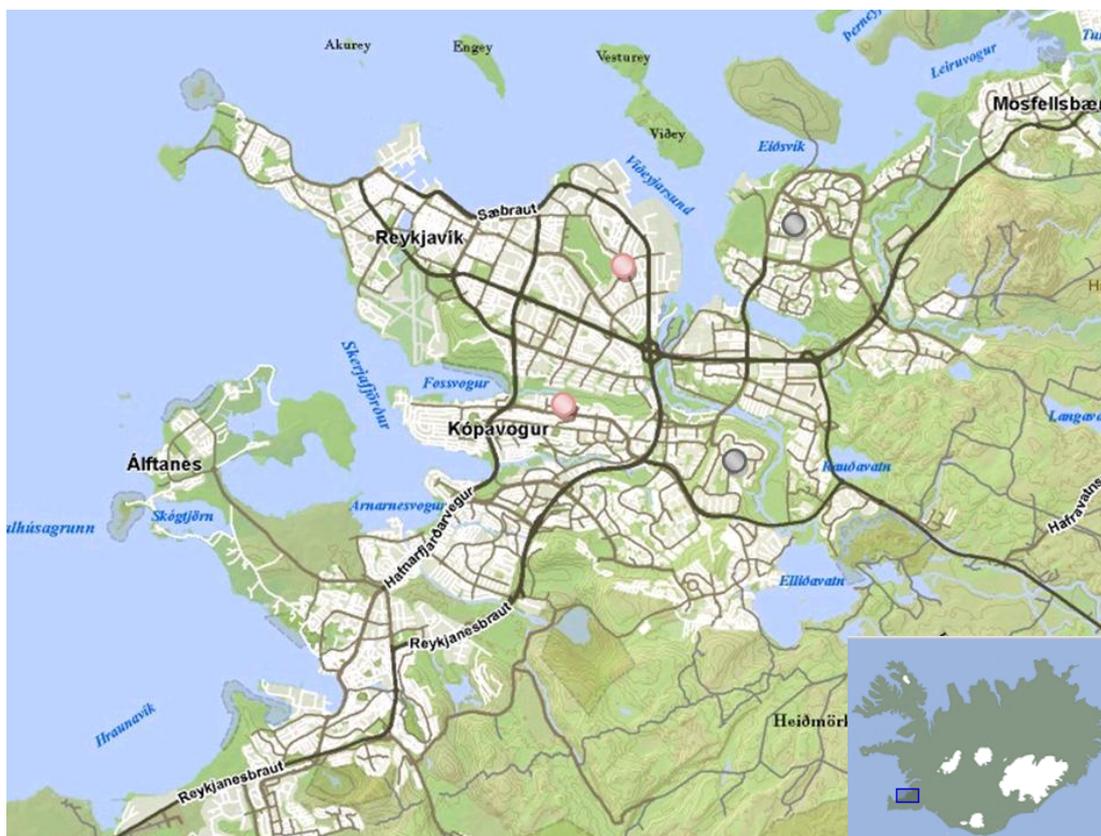


Figure 9: Map of the Greater Reykjavik Area. Participating schools were located in the municipalities of Reykjavik and Kópavogur. On the map, Eco Schools are red and Non-Eco Schools are gray.

- ii. *School size:* Schools similar of size (from 435 to 696 students) and with a similar number of 10th grade students were chosen.

- iii. *'Undivided schools'*: Many schools in the Greater Reykjavik Area are divided in to two levels, i.e. schools for children (6 - 12 year olds) and schools for adolescents (13 - 16 year olds). It was therefore important to select 'undivided schools', i.e. schools for students from 6 - 16 years old, because that would reduce the risk of Non-Eco School students having gotten to know the Eco School program in the early stages of primary school.
- iv. *Number of years with the Green Flag*: Schools that have been involved in the Eco School program for the longest time (6 and 7 years), as well as been rewarded with the Green Flag. That means that as many students as possible have been exposed to the program during their time in the school.

2.2.2 Case Settings

Even though all schools in Iceland follow the NCGCS, the schools are free to formulate their own policy and emphasis. Below is a short summary of the school settings in all four cases.

	<i>Eco School 1</i>	<i>Eco School 2</i>	<i>Non-Eco School 3</i>	<i>Non-Eco School 4</i>
<i>Green Flag</i>	Since 2004	Since 2005		
<i>Nr. of students</i>	435	540	511	696
<i>Location</i>	Kópavogur	Reykjavik	Reykjavik	Reykjavik
<i>Schools motto</i>	Respect Wisdom Openness Friendliness		Care Respect Happiness	Creation Ambition Discipline
<i>Emphasis</i>		Individualized learning	'Upbringing for responsibility'	Individualized learning

Table 2: Short summary of the school settings in all four cases

2.2.3 The Procedure of Data Collection

In order to collect the data, a process of arrangements was needed. Firstly, it had to be decided which schools were appropriate for the research's criteria. Secondly, the schools needed to be contacted in order to get their participation, and thirdly, an approval for the survey was

needed from the Data Protection Authority in Iceland. Fourthly, a letter needed to be sent to the student's parents and lastly, each visit had to be planned in collaboration with the school in question and the time and date for the submission of the survey decided.

Since the primary schools in Iceland are run by the municipalities and emphasis can be different between different municipalities, it was desirable to select schools within one municipality. Reykjavik, being the biggest municipality, seemed the most appropriate choice. However, after the Eco School in Reykjavik that had held the Green Flag the longest declined participation in the research, the search was successfully expanded to the neighboring municipality of Kópavogur in order to find a school that had held the Green Flag for a similar period of time as the school in Reykjavik.

After getting approval from the four schools the plan was to submit the survey electronically and an online version of the survey had been prepared. However, due to technical constraints, the survey was submitted on paper during the period from March 1st to March 9th 2011. During the survey, desks were spaced out as much as possible and the questionnaires were completed in exam-like conditions. If the students had any questions they would raise their hands in order to get assistance. The response rate was excellent and only two questionnaires were not fully filled out.

2.3 Instrumentation

2.3.1 Survey Design

A 30-item survey was administered to participants (appendix 1). Some of the questions were a matrix of choices, which means that some questions had multiple questions per row. The survey consisted of:

- i.* General questions and demographics – 9 questions (one matrix of choices)
- ii.* Environmental knowledge – 14 questions (one matrix of choices)
- iii.* Environmental attitude – 3 questions (all matrixes of choices)
- iv.* Environmental actions – 4 questions (all matrixes of choices)

Efforts were made to overcome potential biases, such as the “social desirability bias” (Bryman, 2004, p. 134), where people often have the tendency to want to ‘look good’ in the

eyes of others, which means that the respondents might answer some of the questions in a manner they believe will make them look better. In order to try to prevent that, it was emphasized to the students how important it was for the research that they answered according to their own conviction. In order to reduce the risk of “respondent fatigue” (Bryman, 2004, p. 133), the questionnaire was kept not too long. In order to try to prevent “data collection error” (Bryman, 2004, p. 105), the questionnaire was pilot tested. Five individuals, aged 15 to 50 years, were asked to try the questionnaire and provide their feedback on it. A few comments were received regarding the flow in the questions, wording and layout, which were used to revise the final survey.

2.3.1.1 General questions and demographics

The demographic questions provided information about the characteristics of the individuals and it included the respondent’s gender, outdoor activity, and level of schooling completed by parents among other (appendix 1, pages 1-2). These characteristics were used as the basis for comparison when identifying trends in the respondents’ answers to the rest of the questionnaire.

2.3.1.2 Environmental knowledge

In the environmental knowledge part the aim was to find out about the students’ knowledge of certain aspects of environmental sciences. The total number of questions was 17, where of one question consisted of a matrix of choices (appendix 1, pages 3-6). The first question was taken from the PISA assessment in 2006 and was intended to shed light on the respondent’s environmental awareness. The following 16 questions were a combination of questions written for this research and questions from another survey used to evaluate ecological literacy of the faculty, staff and students of the University of Iceland (Davidson, 2010). The author of the survey based those questions on an environmental literacy quiz used by the National Environmental Education and Training Foundation from a report entitled ‘Environmental Literacy in America’. After reviewing and comparing the questions from Davidson’s research with the national curriculum’s final goal for the subject of natural and environmental sciences in mind, a few of them, which were considered appropriate for 15 year old students, were selected. However, the option ‘Don’t know’ was removed from the

possible answers and the students were asked to rather check the most likely option. Each question had four possible answers but only one of them correct.

2.3.1.3 Environmental attitude

The Environmental attitude part of the survey consisted of a combination of questions written for this research and questions from PISA 2006. There were three questions that were matrixes of choices, in all 19 choices (appendix 1, pages 7-8). These questions were intended to show the student's views, values and beliefs regarding environmental matters.

2.3.1.4 Environmental action

In the environmental action part there were four questions, all matrixes of choices, in all 29 answers (appendix 1, pages 9-11). In addition there were two optional open questions where the students could add whatever they felt like adding to their answers. The purpose of the questions in this section was to gather information about the students' environmental actions, both at home, at school and outside.

2.4 Analysis

The primary aim of the analysis was to describe the difference (or similarities) of environmental knowledge, attitudes and actions between the Eco School students and the Non-Eco School students. A secondary aim of the data analysis was to identify any trends in the total responses. The respondents were grouped into Eco School students and Non-Eco School students in order to identify trends in the responses. Excel was used to analyze and interpret the data. In order to answer the hypotheses, only questions with more than 10% difference were taken into account in order to measure presumed substantial difference.

2.4.1 Environmental Knowledge and Awareness

Awareness: Results were grouped from a 4 point scale into "I know something about this and could explain the general issues" and "I am familiar with this and I would be able to explain this well" in order to explore the environmental awareness of the students. The results were put up in a chart and compared with the results of the OECD and Icelandic students from the 2006 PISA assessment (appendix 1, page 3, question 1).

Knowledge: The results were grouped into Eco School and Non-Eco School responses with the percentage of how many students answered the questions correctly. The average number of correct responses including standard deviation was calculated, and the difference was compared with a t-test (appendix 1, pages 3-6, questions 2-14).

2.4.2 Environmental Attitude

Attitude: Responses were grouped from a 5 point scale into ‘strongly agree’ and ‘agree’ in one graph, and ‘strongly disagree’ and ‘disagree’ in another graph (appendix 1, page 7, question 1).

Concern: Responses were grouped from a 4 point scale into the percentage of students that believed specific environmental issues to be a ‘serious concern for themselves’ and a ‘serious concern for people in their country’. The responses were compared with the results from the 2006 PISA assessment (appendix 1, page 7, question 2).

Optimism: Responses were grouped from a 3 point scale into the percentage of students that believed problems associated with specific environmental issues will ‘improve’ over the next 20 years. The responses were compared with the results from the 2006 PISA assessment. In addition, a graph was created that showed the comparison of concern and optimism of Eco School and Non-Eco School students with the OECD average in the 2006 PISA assessment (appendix 1, page 8, question 3).

2.4.3 Environmental Action

Behavior: Responses were grouped from a 5 point scale into two charts; one with ‘always’ or ‘often’, and another with ‘never’ or ‘seldom’ (appendix 1, page 9, question 1).

Recycling: The questions about recycling at school and recycling at home were grouped from a 5 point scale into charts of ‘always’ or ‘often’, and ‘never’ or ‘seldom’ (appendix 1, pages 9-10, questions 2 & 4).

Responsibility to SD: Responses were shown in two charts; one with the total responses showing every response of a 5 point scale from ‘strongly agree’ to ‘strongly disagree’, and the other where the responses were grouped together combining ‘strongly agree’ or ‘agree’. The responses were then compared with the results from the 2006 PISA assessment (appendix 1, page 11, question 6).

2.5 Scope and Limitation

A large factor of the limitation of the research was time constraints, particularly regarding the research method since it was not investigated how the Eco School program was followed in the schools, how the program was implemented, the level of participation or the students’ and faculty’s attitude towards the program, or what was done in order to increase the students’ knowledge and awareness. Research has shown that the main obstacle within the Eco School program is that it often depends on the level of personal involvement of a few teachers and that it is difficult to extend the idea of an ‘Eco school’ to the whole school. One of the main challenges within the Eco School program is changing the paradigm of the school’s teachers (Mogensen & Mayer, 2005).

In this research, on the other hand, only quantitative data that showed the knowledge, attitude and actions regarding specific issues, was collected with a self-completion questionnaire taken this one time. Had there been sufficient time, it would have been interesting to also explore how well the program was followed in each school, by taking interviews and looking more closely at the facilities.

3. Results

3.1 Participants

Of the 153 responses, there were slightly more males than females, i.e. 81 were male (53%) and 72 were female (47%). Gender proportions within the Eco School (ES) are practically even, i.e. 37 were male (51%) and 36 were female (49%). However, of the Non-Eco School (NES) responses there were a few more males, i.e. 44 were male (55%) and 36 were female (45%).

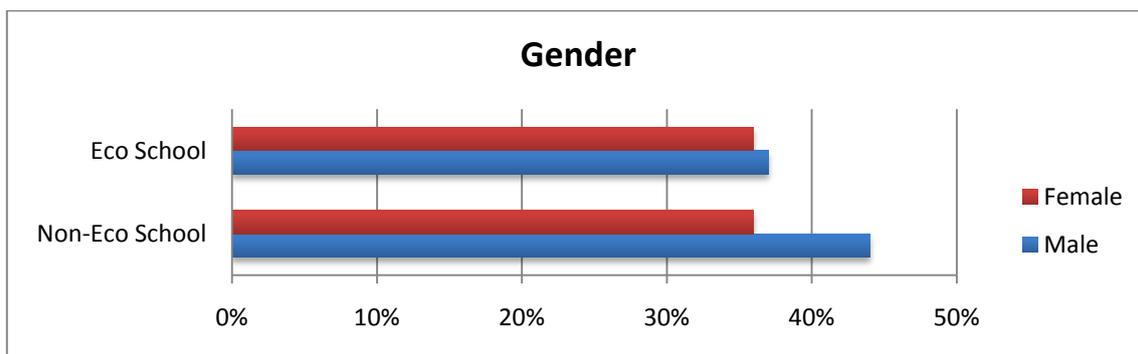


Figure 10: Gender proportions of the responses

3.1.1 Knowledge of the Green Flag

Of the 73 ES responses, 86% knew that their school had the Green Flag, while 12% were not sure and 2% said no. Of the 80 NES responses, 5% thought that their school had the Green Flag, while 19% answered no and 76% were not sure.

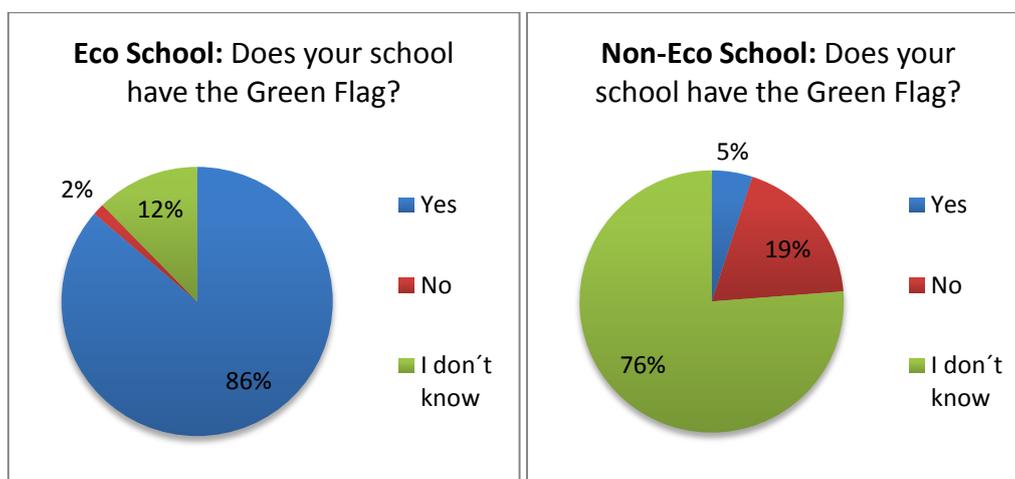


Figure 11: Students knowledge of whether their school has the Green Flag or not

3.1.2 Outdoor Activities

The graphs below show the amount of time that respondents answered they engaged in outdoor activities in their spare time. They were asked to state how many hours a week, on average throughout the year, they engaged in outside activities, such as skiing, hiking, etc. The responses show that the ES students on average spend more time outside than the NES students. 32% of ES students claim to spend more than 8 hours a week engaged in outdoor activities, compared to 21% of the NES students. However, if the first two categories of answers are put together, i.e. from 5 hours to over 8 hours, the ES students are 54% and the NES students are 46%, which means a difference of 8%.

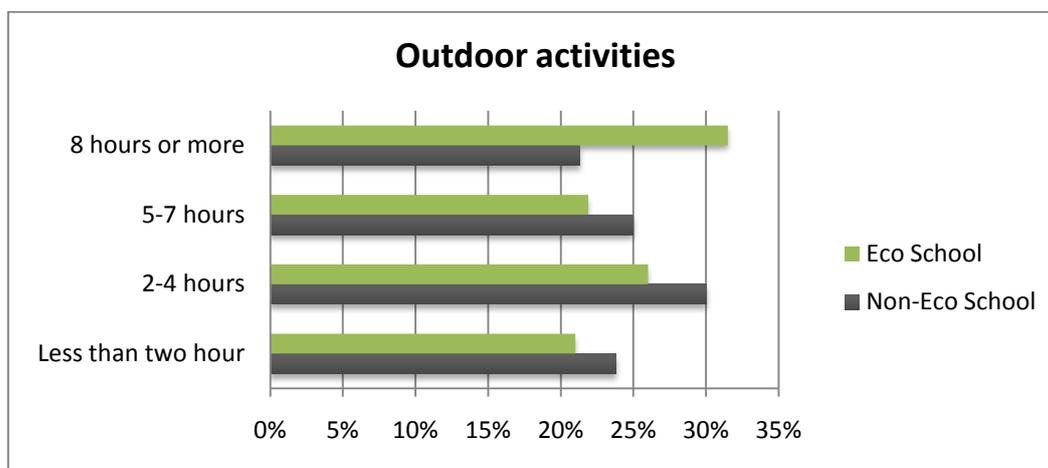


Figure 12: Amount of hours a week students engage in any outdoor activities in their spare time

3.1.3 Parental Education Level

Parental education is a family background variable that is often used in the analysis of educational outcomes. Figure 13 shows the highest level of schooling completed by the respondents' mother and father. As can be seen, parental education level is higher among the ES students; 55% of their mothers have university education and 34% of their fathers, compared to 34% of mothers and 28% of fathers among the NES students. It must be noted, though, that more of the NES students do not know the highest level of their parents' education. Especially high number of vocational training amongst fathers can be noted in both ES and NES, furthermore, 10% more mothers within the NES have vocational training compared to ES.

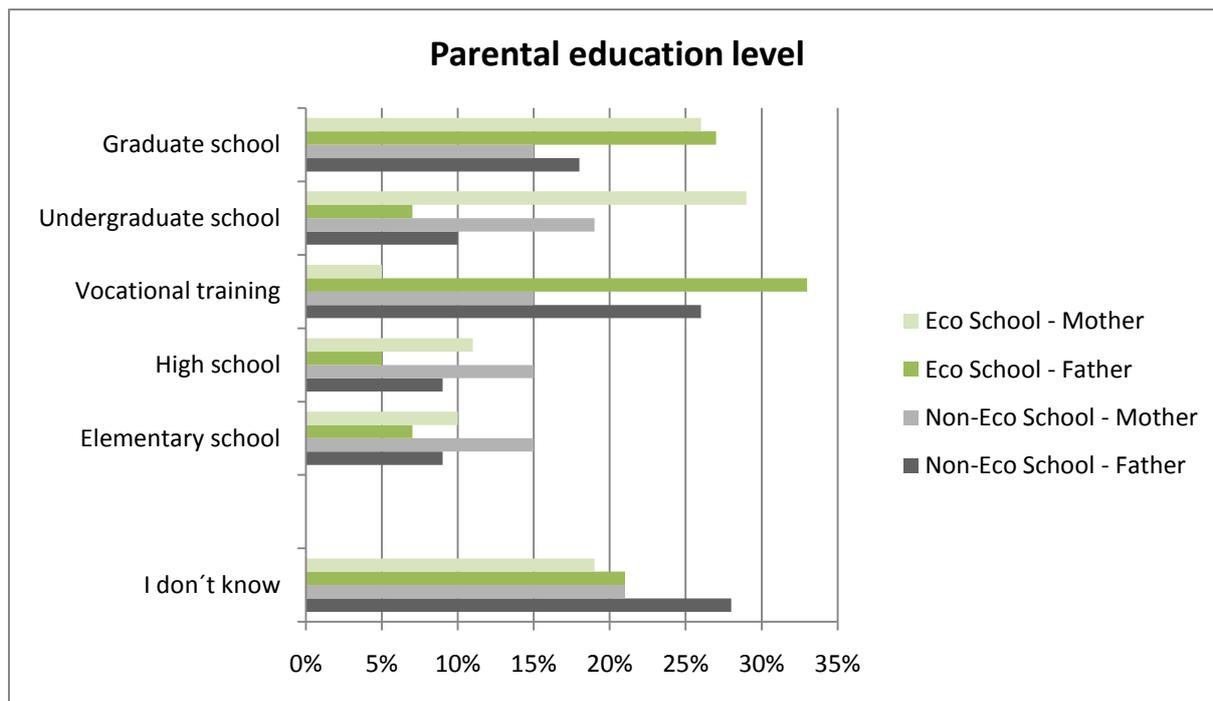


Figure 13: Percentages of the highest level of schooling completed by the respondents parents

3.1.4 Main Sources of Information

Students were asked to state from which source they mainly learned about certain environmental issues, and they were allowed to tick as many boxes as applied. Figures 14 and 15 show the distribution of responses from the ES and the NES. As the two charts show, the two main sources of information, marked by the students, seem to come from the 'School' and the 'Media' (TV, radio, newspaper or magazines), while 'Friends' and 'Family' seems to be pretty low. Information from the 'Internet and Books' is also high in many cases.

Among the ES students, 'Media' was the source of information most often selected. In five out of eight issues 'Media' scored the highest; i.e. air pollution (71%), clearing of forests for other land use (64%), water shortages (62%), nuclear waste (52%) and energy shortages (41%). The 'School' scored the highest in the three remaining issues; extinction of plants and animals (67%), climate change (67%) and recycling (73%). On the other hand, the NES responses reveal that, except for information about recycling (58%), 'Media' scored higher than the 'School' in all the categories.

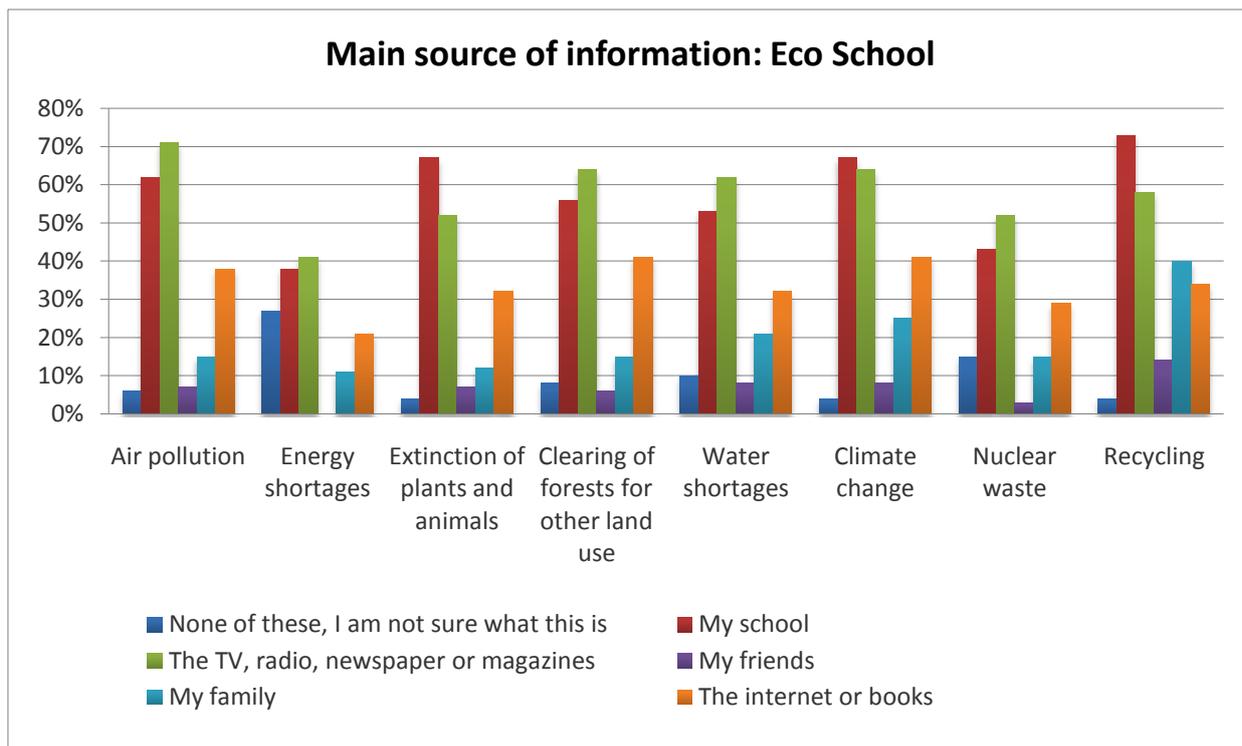


Figure 14: Eco School responses on main sources of information

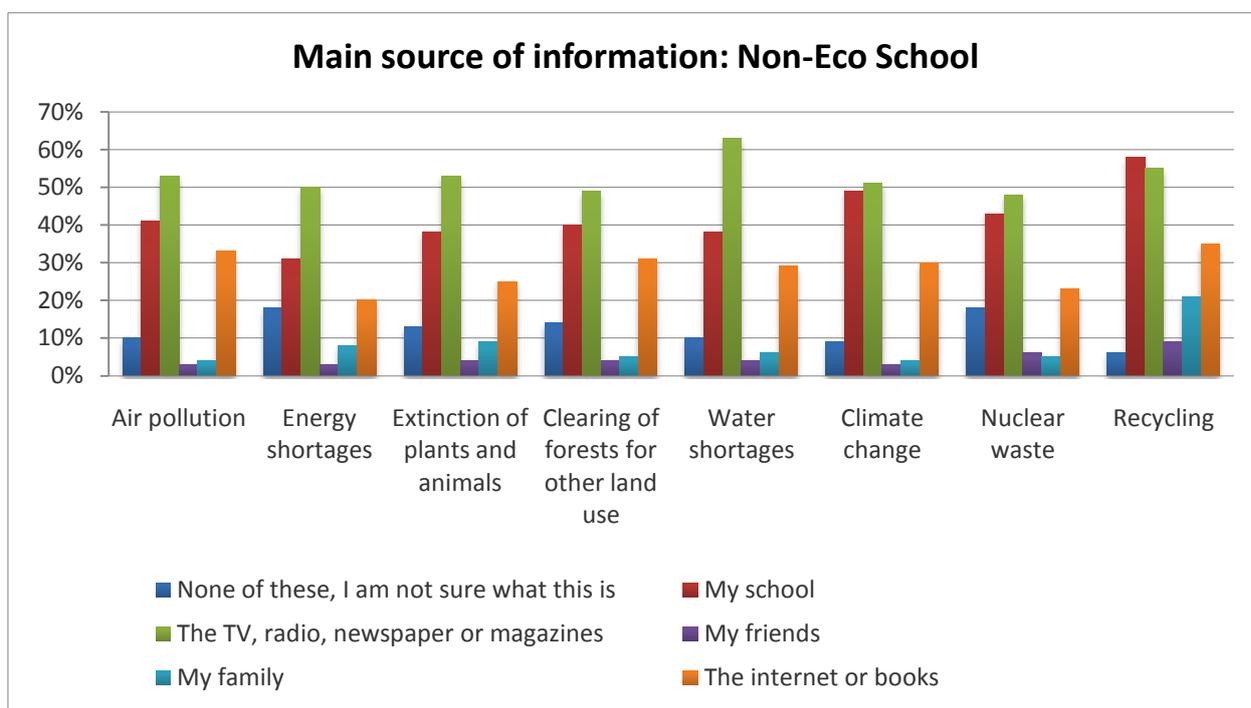


Figure 15: Non-Eco School responses on main sources of information

3.2 Environmental Knowledge

The second section of the survey consisted of environmental knowledge questions that aimed to demonstrate the general knowledge and awareness of environmental issues among respondents.

3.2.1 Awareness of Environmental Issues

Figure 16 shows the distribution of environmental awareness among students in respect of how well informed the students believe they are about specified environmental issues. The first two columns show results from the 2006 PISA test: OECD average (blue) and the Icelandic average (red). The other two columns show the results from this research: ES average (green) and NES average (gray).

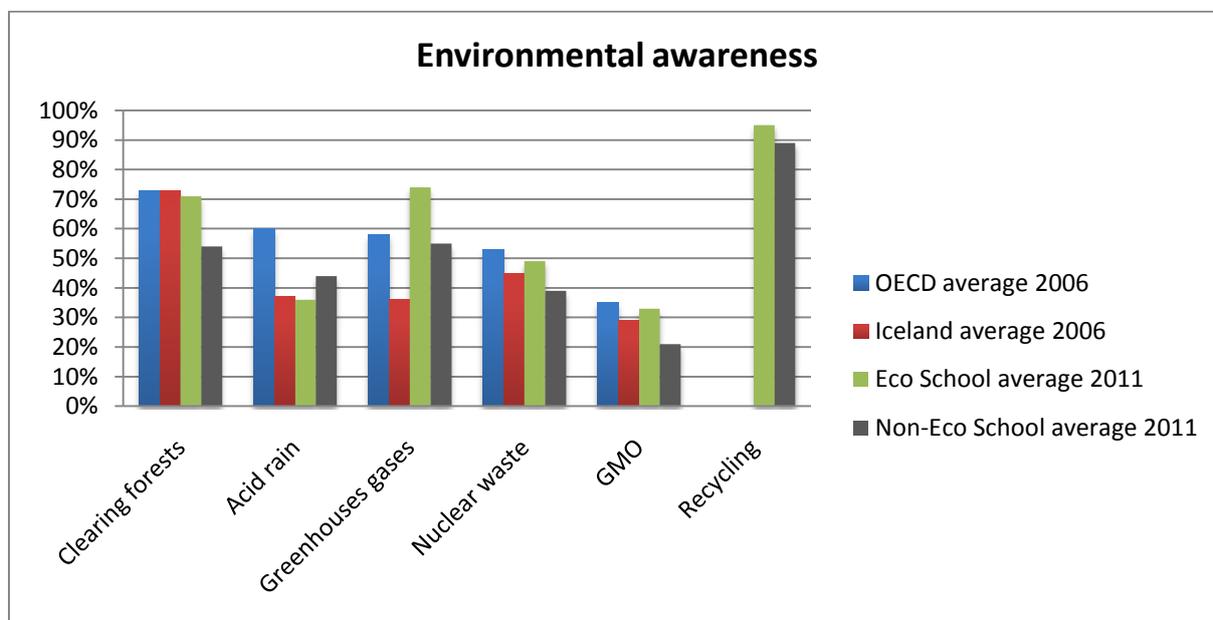


Figure 16: Percentage of students who are 'familiar with' or 'know something about' the following environmental issues (adapted from OECD, 2007b, p. 156)

The Icelandic students scored lower than the OECD average in the 2006 PISA assessment, except regarding the consequences of clearing forests for other land use, where Iceland's score was equal to OECD. The highest level of awareness of an environmental issue within the ES and the NES is regarding recycling, where 95% of ES students claimed to be familiar with it and 89% of the NES students. The use of genetically modified organisms (GMO) is the environmental issue that the fewest students reported awareness on in general among all groups. However, it is interesting that the ES students score the highest by far in this research

when it comes to the increase of greenhouse gases in the atmosphere; 74% compared to the OECD 58%, Iceland average of 36% and 55% among NES students. When the results from ES and NES are compared, the ES students score higher in all instances, except for acid rain, and the difference ranges from 6% to 19%.

3.2.2 Empirical Knowledge

The right or wrong questions part consisted of 16 questions where each question had one correct option for answer and three incorrect options (appendix 1, pages 3-6). Figure 17 shows a comparison of percentages of correct responses between ES and NES.

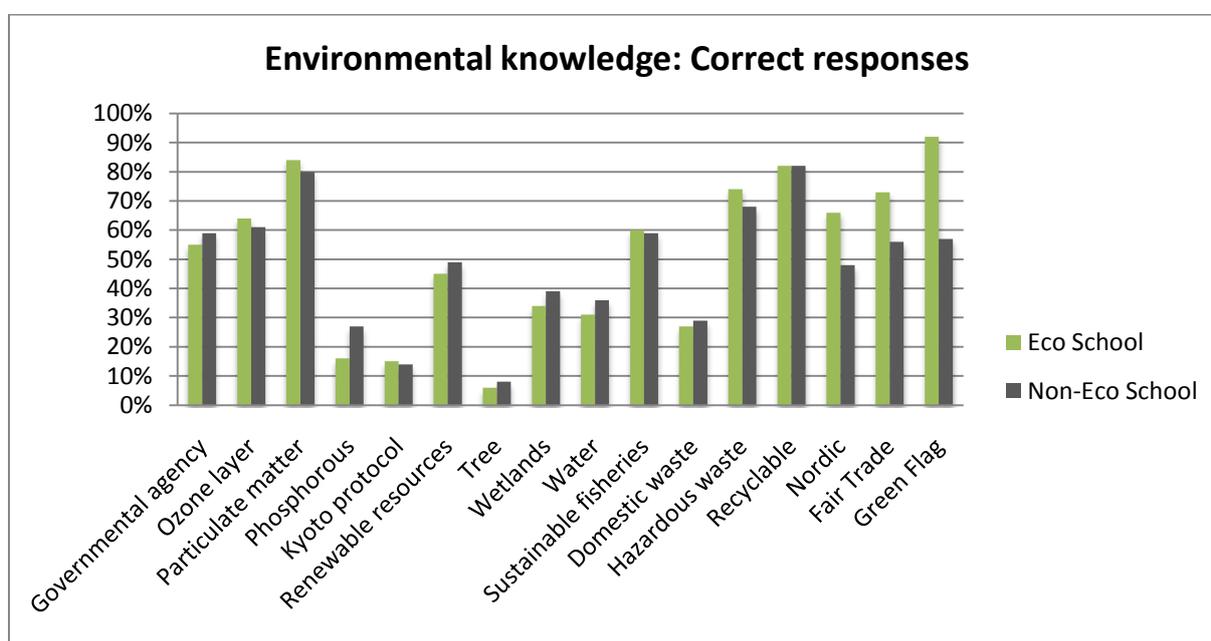


Figure 17: Comparison of percentages of correct responses between ES and NES

Some questions were more frequently answered correctly than others. The questions that the respondents most often knew the answer to were related to the particulate matter in Reykjavik (ES 84% vs. NES 80%), batteries as a hazardous waste (ES 74% vs. NES 68%), the ozone layer (ES 64% vs. NES 61%) and sustainable fisheries (ES 60% vs. NES 59%). The questions that the fewest respondents were able to answer correctly were related to why phosphorous is considered dangerous (ES 16% vs. NES 27%), the Kyoto protocol (ES 15% vs. NES 14%), where trees get the majority of their material to grow (ES 6% vs. NES 8%) and what happens to the domestic waste from the Icelandic households (ES 27% vs. 29%).

There does not seem to be much difference of knowledge between students in ES and students in NES, as they were evenly split (ES students scored higher than the NES students 8 times and lower 7 times). However, when it comes to eco-labels a notable difference can be seen, in favor of the ES students. Among ES students, 96% know the Green Flag, compared to 57% among NES students. 66% of ES students know the Nordic Swan versus 48% of NES students and finally 73% of ES students know the Fair Trade label versus 56% of the NES students.

The average number of correct responses from the ES students was 8.2 out of 16, with a standard deviation of 2.4, while the average number of correct responses from the NES students was 7.7 out of 16, with a standard deviation of 2.7. No one answered all 16 questions correctly. As can be seen, the average is slightly higher in the ES than in NES. However, the difference is not statistically significant as compared with a t-test ($p = 0.24$).

3.3 Environmental Attitude

The second section of the survey consisted of questions and statements that aimed to describe the respondents' general attitude towards the environment. The first question addressed the students' attitude towards specific statements and the other two questions addressed their concerns and optimism/pessimism on environmental issues.

3.3.1 Attitude towards Statements

3.3.1.1 General attitude of total responses

A large proportion of the students, from 30% to 55%, had no opinion of the statements that were asked about (figure 18). The highest level of agreement (including 'strongly agree' and 'agree') among all respondents was to the statement "I feel like it is my duty to lessen my impact on the environment" with 55%. The statement with the least opinion is the "I feel that lack of recycling in Iceland is a problem" with 55% responses. Respondents mostly disagreed (including 'strongly disagree' and 'disagree') to the statement "I care about the environment but I don't think that one person's behavior can make much of a difference" with 38% responses. This question was borrowed from another survey, in retrospect this statement was

not suitable because it actually includes two statements, i.e. (i) I care about the environment and (ii) I don't think that one person's behavior can make much of a difference. It is therefore impossible to see which statement the student meant in his or her answer.

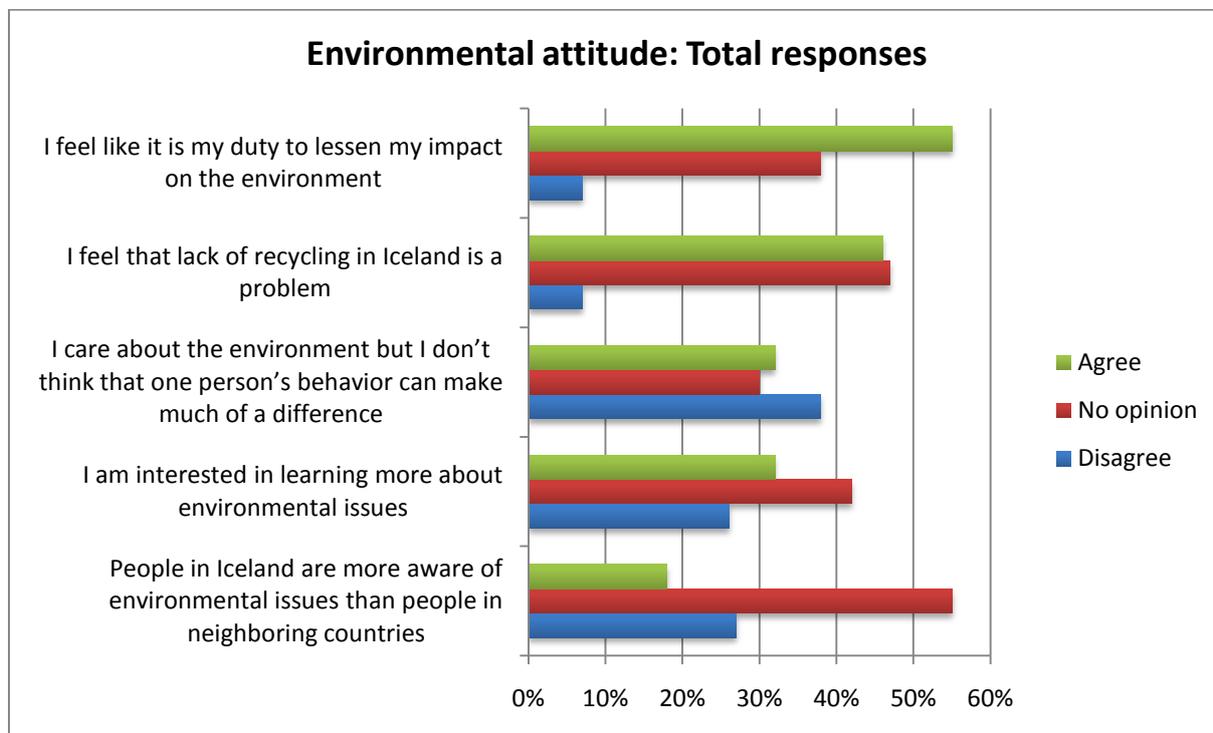


Figure 18: Respondents level of agreement or disagreement to statements regarding environmental attitude

3.3.1.2 ES and NES comparison towards attitude statements

Students from the two groups respond similarly when agreeing to the statements that were asked about (figure 19). The biggest difference is in regard to the statement “I feel like it is my duty to lessen my impact on the environment” where 63% of the NES students agreed to the statement compared to only 47% of the ES students. In addition, 11% of ES students disagreed to the same statement while only 3% of the NES students disagreed to it.

The highest difference of the level of disagreement between ES and NES is to the statement “People in Iceland are more aware of environmental issues than people in neighboring countries”, where 38% of ES students disagreed to the statement compared to 18% of the NES students (figure 20). The difference is 20%, which is the biggest difference in this category of questions.

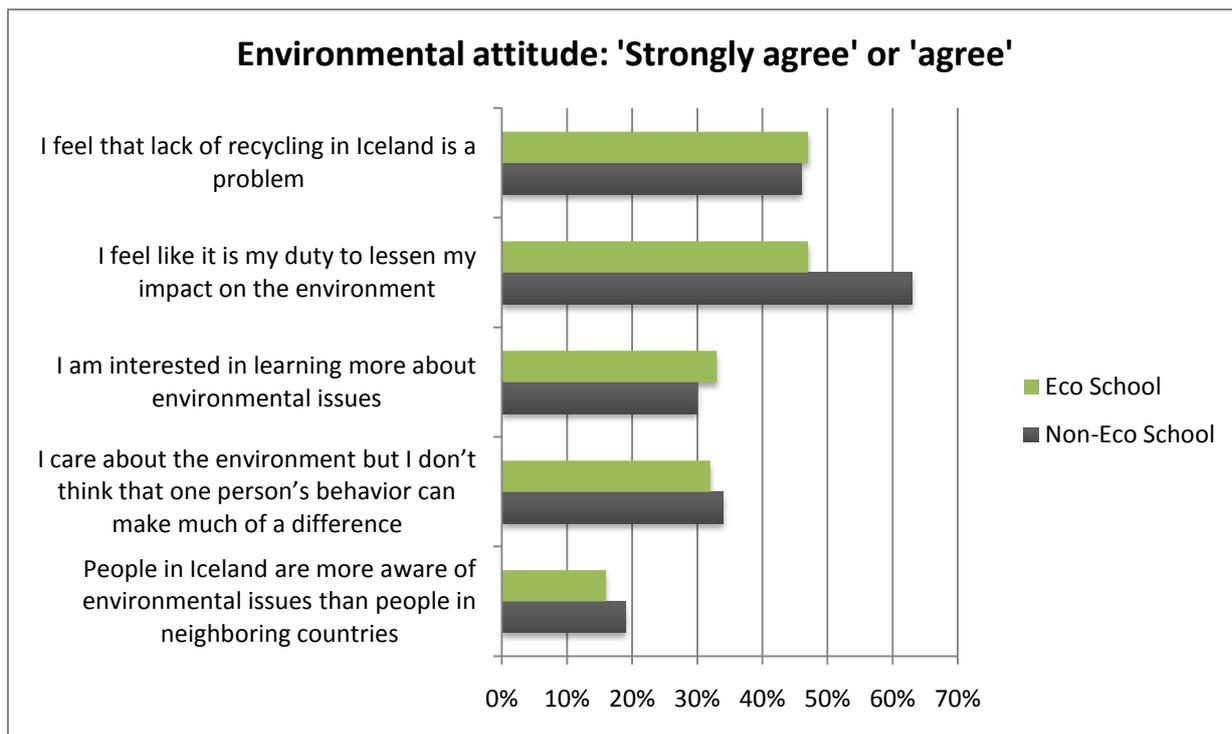


Figure 19: ES and NES respondents level of agreement to statements regarding environmental attitude

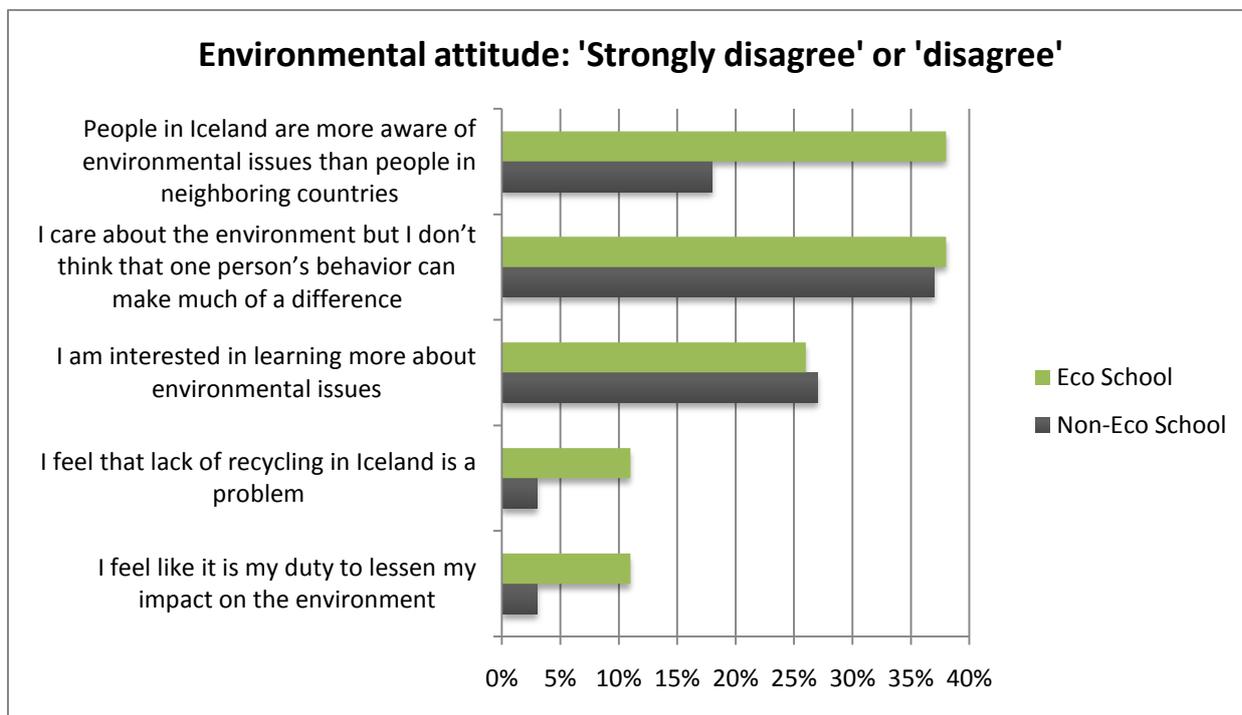


Figure 20: ES and NES respondents level of disagreement to statements regarding environmental attitude

3.3.2 Environmental Concern

The concern is highest among the OECD students in all categories of environmental concern except for air pollution, where the ES students had the highest level of concern. 95% of the ES respondents believed air pollution to be a serious concern for themselves or other people in their country, versus 92% in the OECD, 89% in NES and 84% in the Iceland average in 2006. When it comes to the concern about lack of recycling the level of concern among NES students was slightly higher than among ES students. It can also be seen that Iceland scored much lower than the OECD in the categories of nuclear waste and water shortages. Both categories measure higher among NES students than among ES students and in the category of water shortages the difference is 20%. Overall there is more concern in Iceland now than in 2006 because both ES and NES measured higher than the Icelandic average in 2006 in all categories.

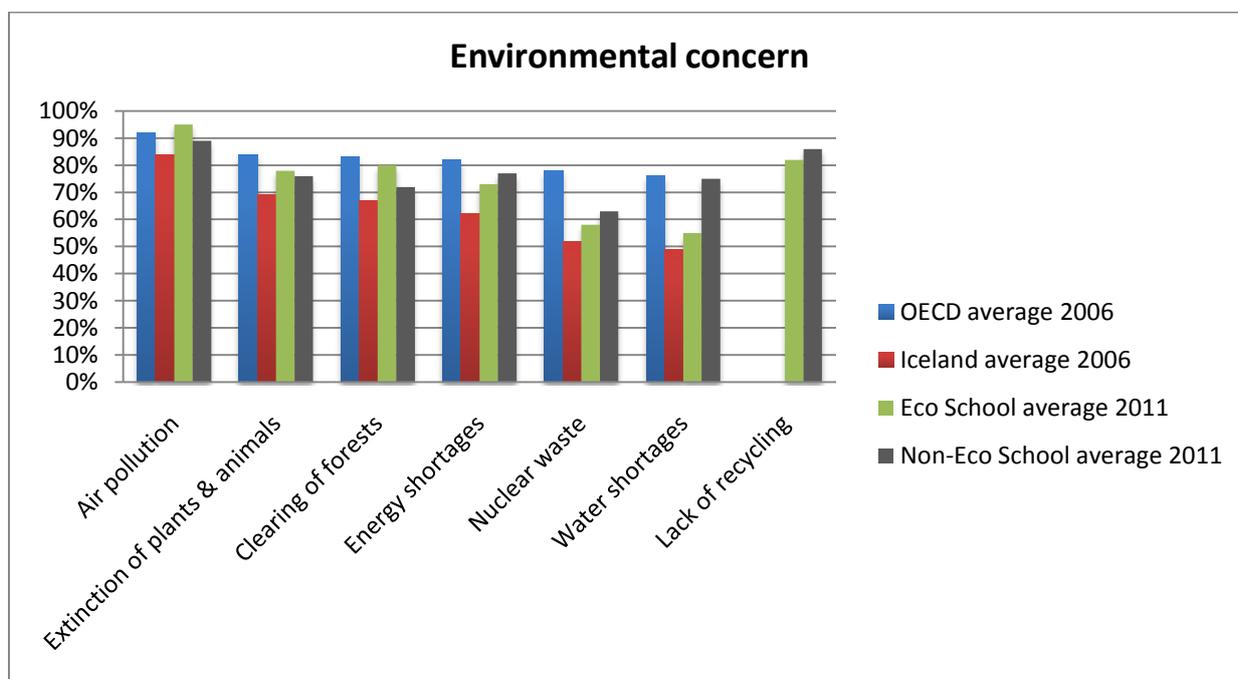


Figure 21: Percentage of respondents who believe specific environmental issues to be a 'serious concern for themselves' or 'other people in their country' (adapted from OECD, 2007b, p. 159)

3.3.3 Optimism on Environmental Issues

In all categories except for energy shortages, the ES and the NES students are more optimistic about environmental issues than OECD and Iceland average in 2006. If the ES and NES responses are compared to each other, the ES are more often, i.e. four times, more optimistic than the NES students and the difference ranges from 3% (lack of recycling) to 11% (nuclear

waste). In two categories the NES students are more optimistic than the ES students, i.e. regarding air pollution (7%) and extinction of plants and animals (8%).

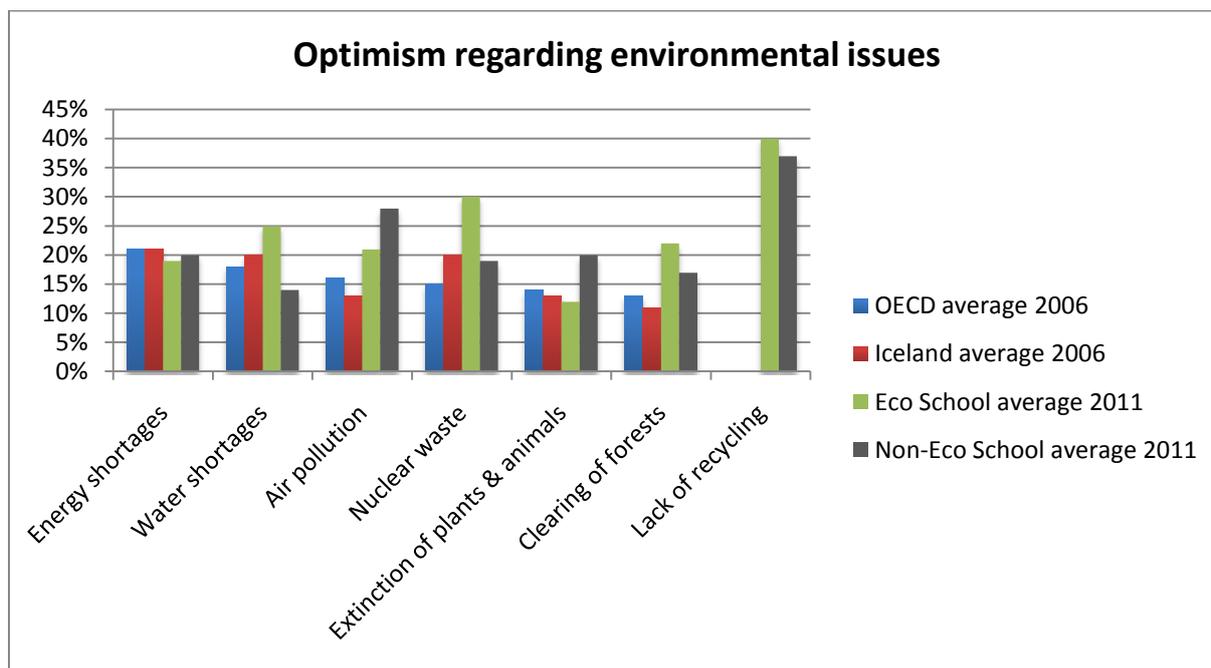


Figure 22: Percentage of respondents who believe the problems associated with specific environmental issues will 'improve' over the next 20 years (adapted from OECD, 2007b, p. 160)

3.3.4 Comparison of Concern and Optimism

Icelandic students are much less concerned and more optimistic about nuclear waste, water shortages and clearing of forests for other land use, compared to OECD students (figures 23 & 24). The less concerned that ES students are about an environmental issue, the more optimistic they are about improvements. Nuclear waste and water shortages are good examples of this, where the ES students are not very concerned but on the other hand are very optimistic about improvements in the area in the next 20 years. Both ES and NES students are very concerned regarding lack of recycling, and also very optimistic that it will improve. The NES shows a different trend than the ES where, with the exception of lack of recycling, the lines for concern and optimism follow similar paths.

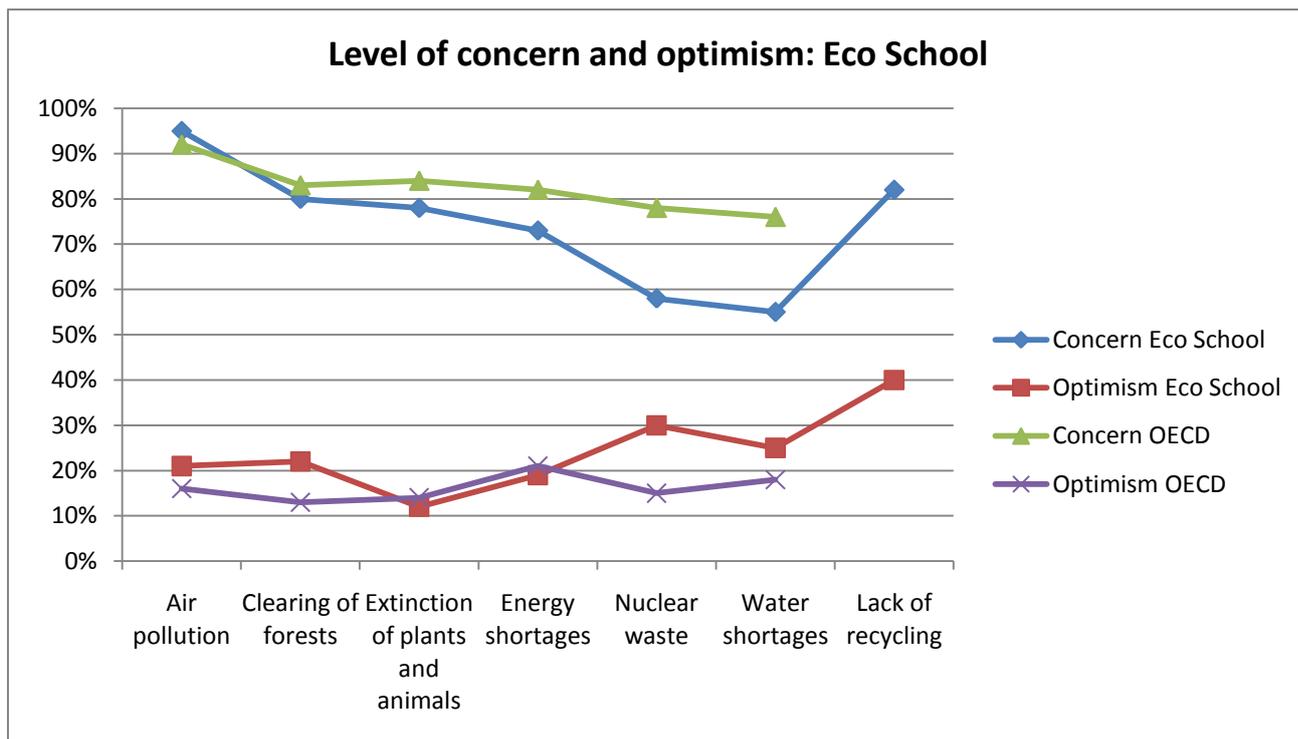


Figure 23: Comparison of concern and optimism of ES and OECD responses regarding environmental issues

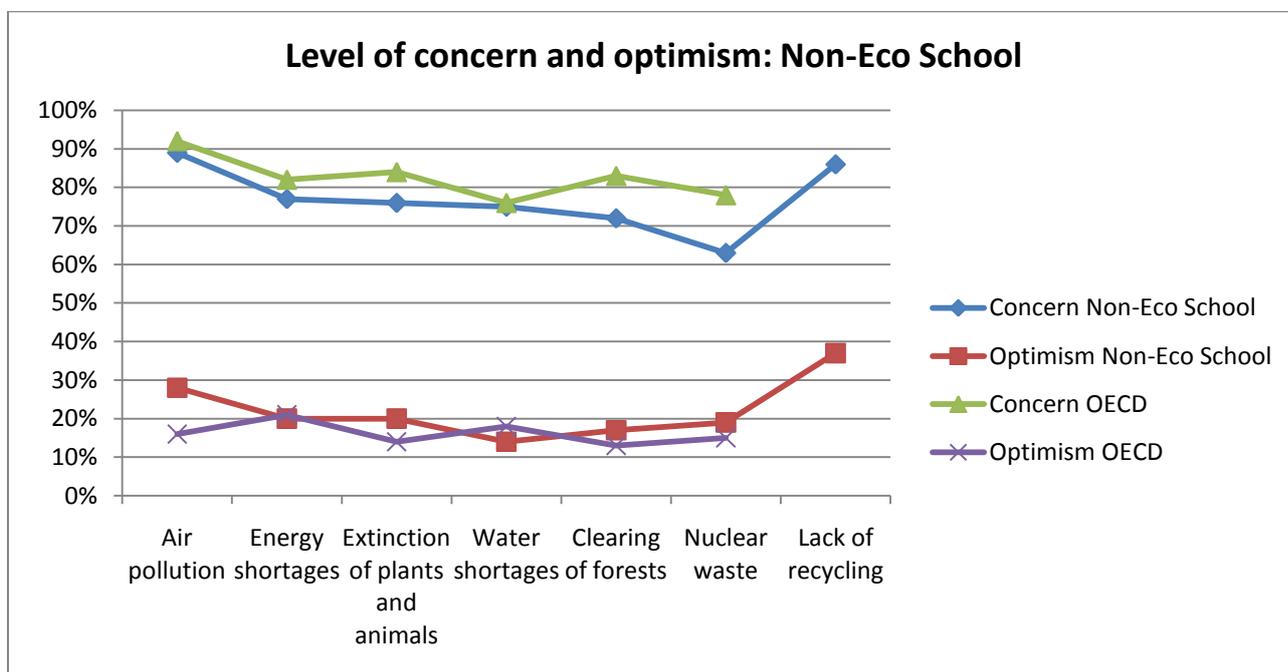


Figure 24: Comparison of concern and optimism of NES and OECD responses regarding environmental issues

3.4 Pro-Environmental Action

The last section of the survey aimed to establish which actions and environmentally responsible behavior and action the respondents engaged in. The first question was about the respondents' actions towards specific statements, the two following questions were about the respondents' actions on recycling, both at home and at school, and the last questions were about the respondents' responsibility towards SD.

3.4.1 Frequency of Action

The most frequent pro-environmental behavior is seen in responses to the statement “When I am outside and need to throw away litter, I carry it with me until I find a bin” to which 58% of ES responses and 47% of the NES responses, responded that they always or often did so (figure 25). Both ES and NES responses indicate that students are more willing (compared to the ‘always’ and ‘often’ percentage) to save water and energy at home rather than at school, though ES students measure 6% higher than NES students of performing that task in school. The lowest ranked behavior was to the statement regarding eco-labeled products where 87% of ES students never or seldom look at the label compared to the 82% NES students (figure 26).

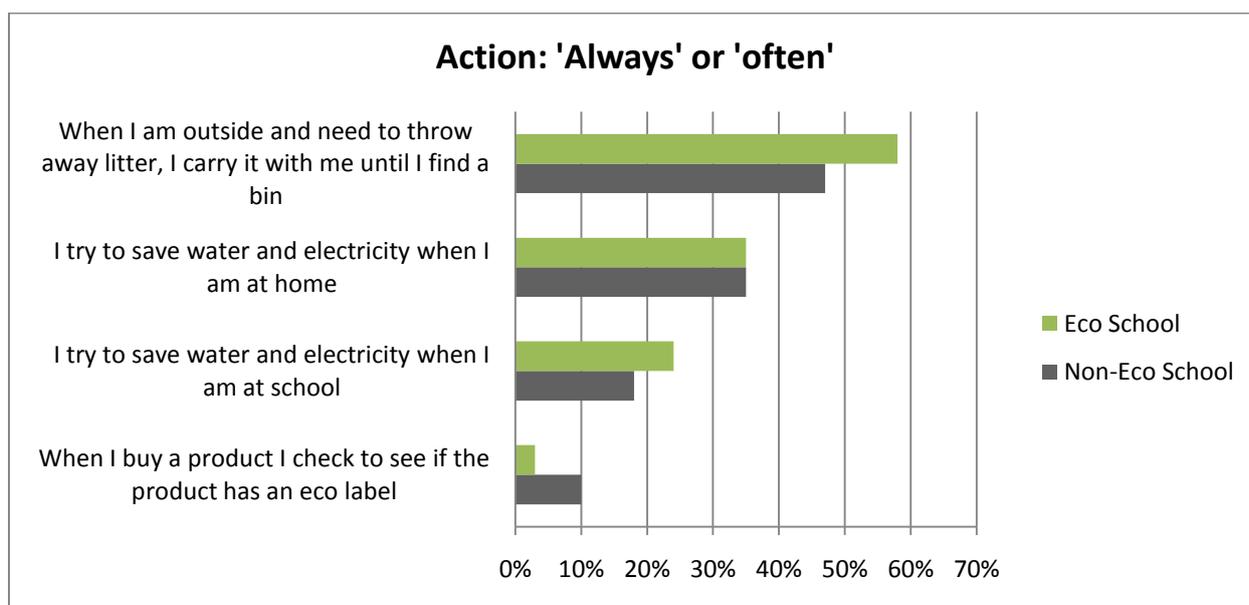


Figure 25: Respondents who answered ‘always’ or ‘often’ to specific statements of environmental behavior

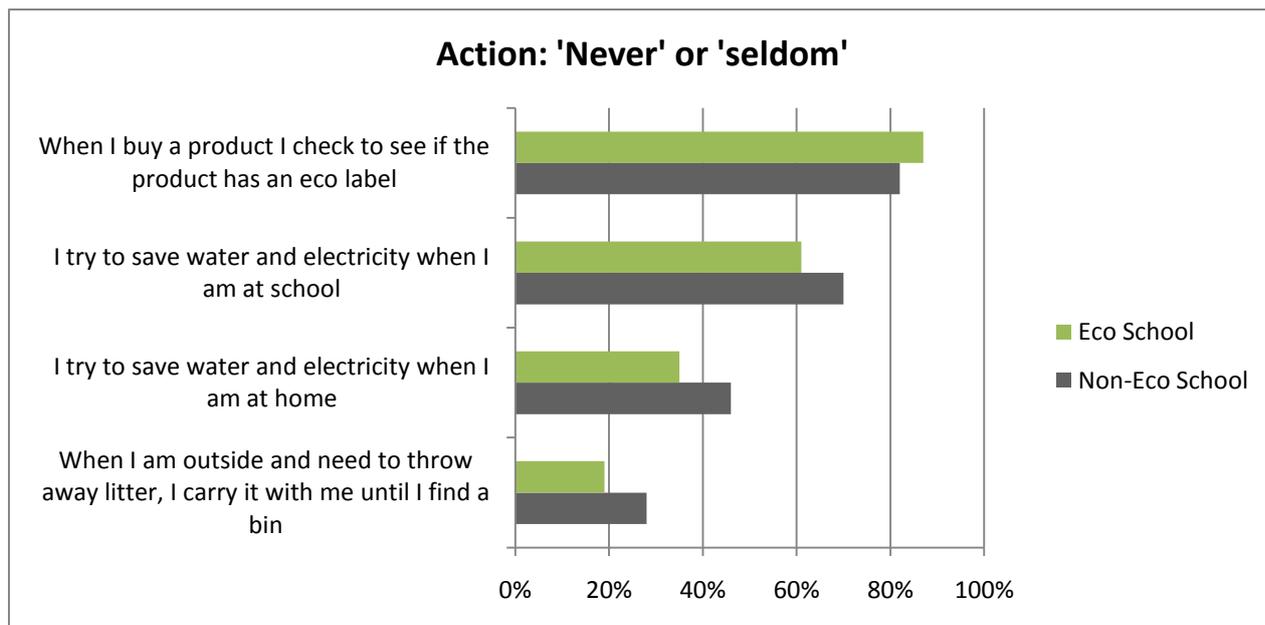


Figure 26: Respondents who answered 'never' or 'seldom' to specific statements of environmental behavior

3.4.2 Recycling at School

In all cases the ES students scored much higher than the NES students when it comes to recycling at school (figure 27). The difference ranges from 10% (glass and metal) up to 42% (newspapers, magazines, paper). When it comes to recycling newspapers, magazines and paper at school, 60% of the ES students responded that they 'always' or 'often' did so, while only 18% NES students responded in the same way. It can also be seen that 56% of ES students recycle organic waste at school, compared to 16% of the NES students. Furthermore, in all categories there are more NES students that answer with 'never' or 'seldom' when it comes to recycling at school (figure 28).

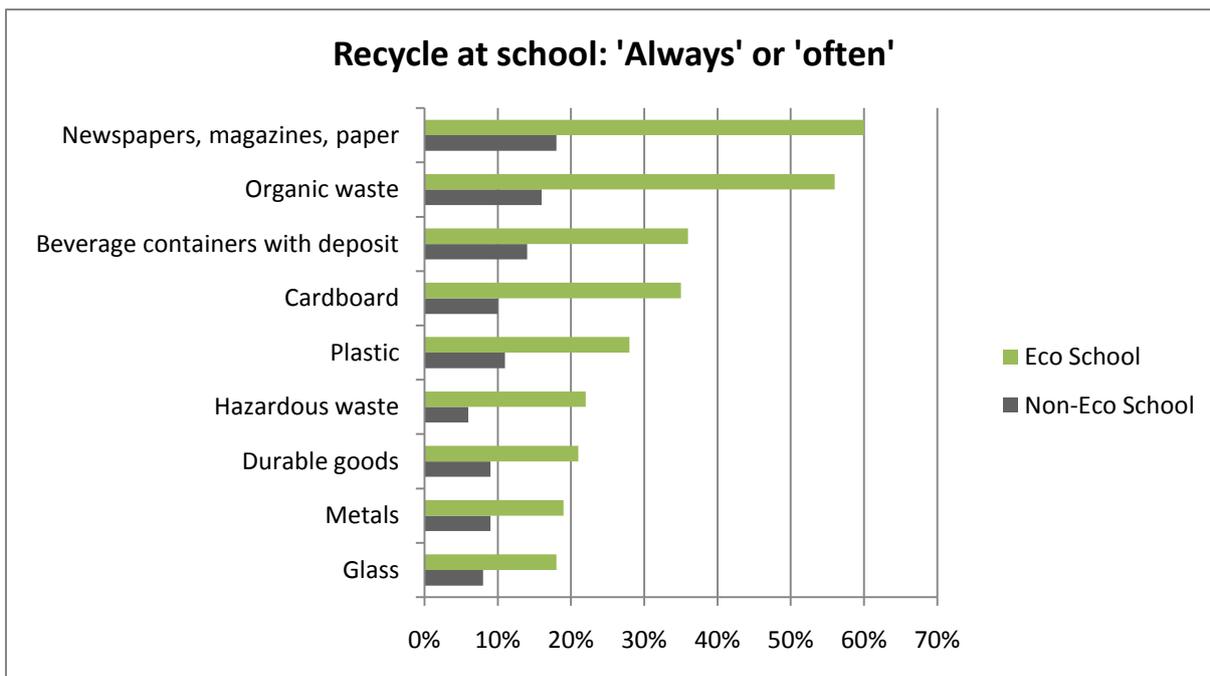


Figure 27: Percentages of students' responses on which of the following materials they, themselves, 'always' or 'often' recycle at school

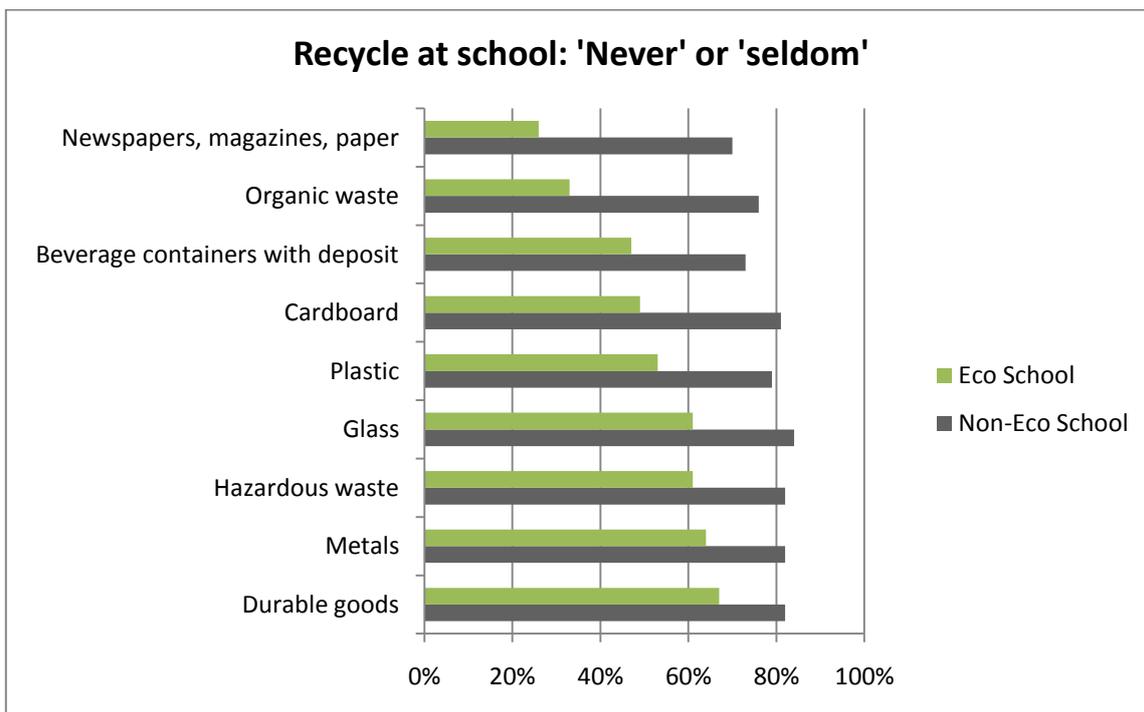


Figure 28: Percentages of students' responses on which of the following materials they, themselves, 'never' or 'seldom' recycle at school

3.4.3 Recycling at Home

In all cases the ES students score higher than NES students when it comes to recycling at home (figure 29). The difference ranges from 7% (hazardous waste) to 20% (glass). It can also be seen that in all cases there are more NES students that answer ‘never’ or ‘seldom’ when it comes to recycling at home.

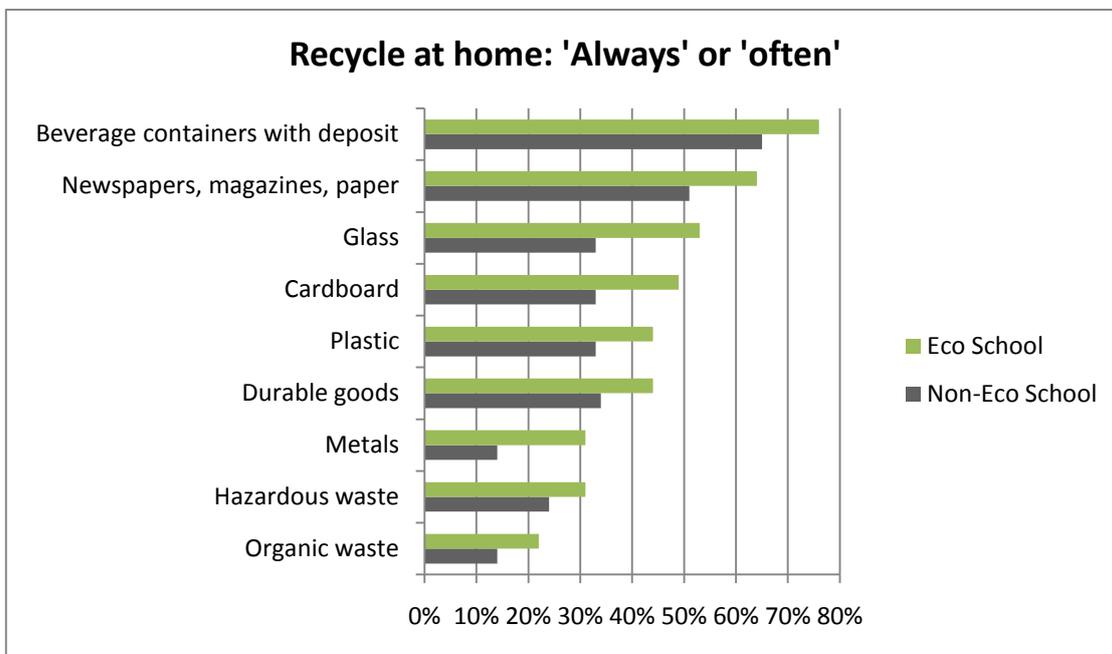


Figure 29: Percentages of students’ responses on which of the following materials they, themselves, ‘always’ or ‘often’ recycle at home

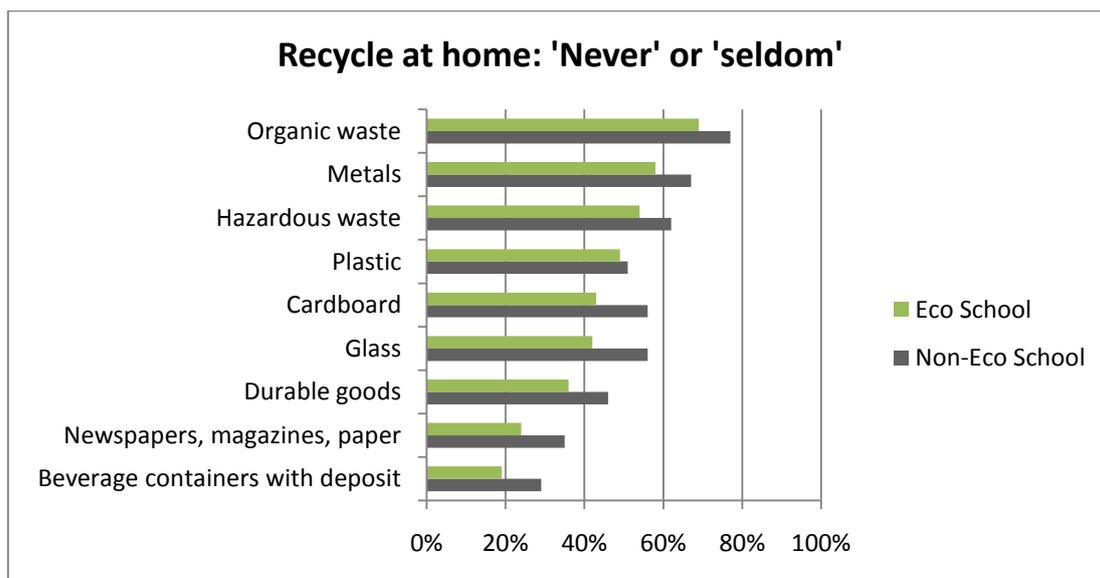


Figure 30: Percentages of students’ responses on which of the following materials they, themselves, ‘never’ or ‘seldom’ recycle at home

3.4.4 Responsibility for Sustainable Development

3.4.4.1 Total responses

Figure 31 shows the proportion of the total responses of all the 153 students. It can clearly be seen how many students did not have a particular opinion about the statements in question. The highest proportion was to the statement “It disturbs me when energy is wasted through the unnecessary use of electrical appliances” where 8% strongly disagreed and 15% disagreed.

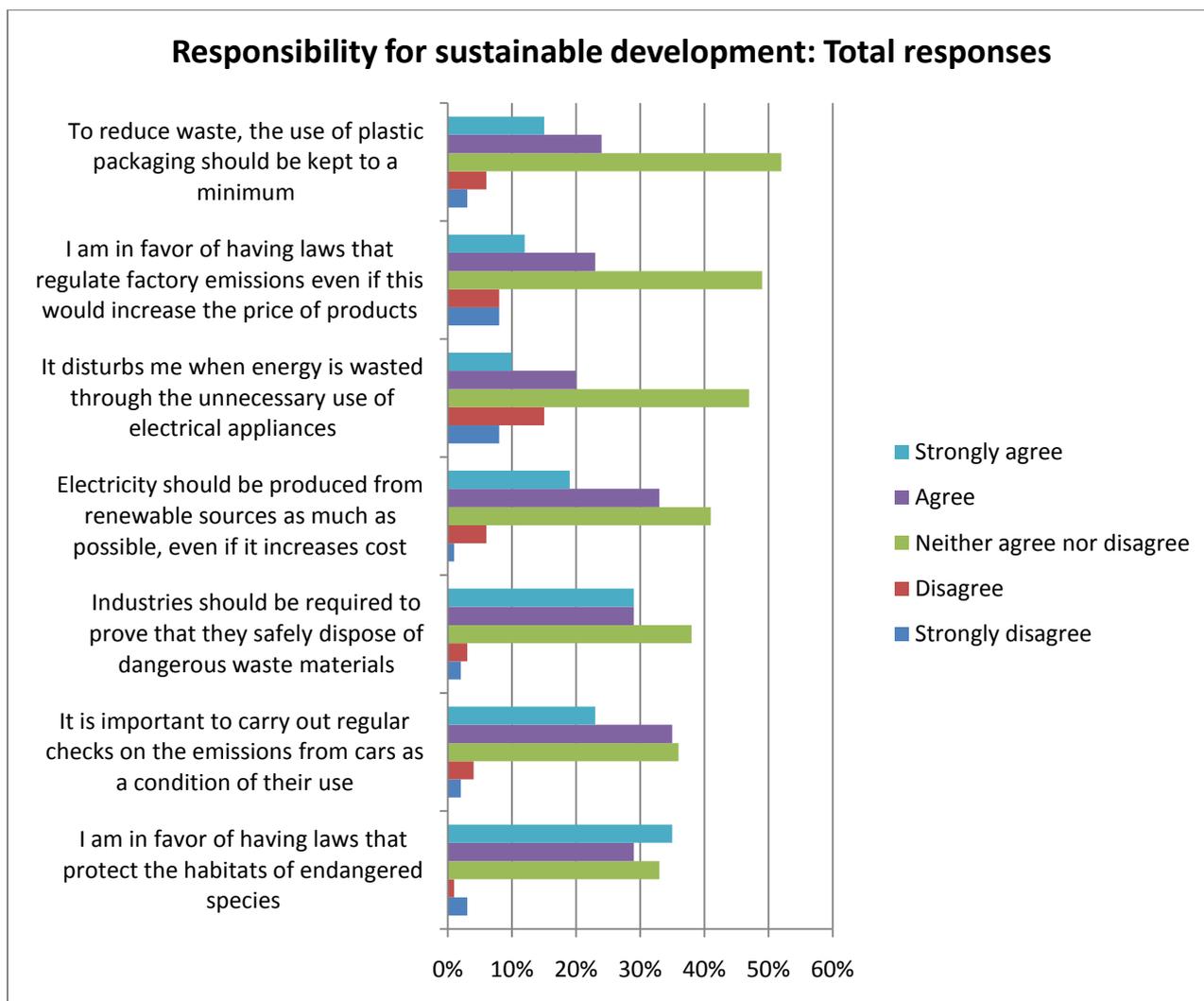


Figure 31: Percentage of students' total response with the statements regarding responsibility for SD

3.4.4.2 Comparison between ES and NES

In all instances the ES and NES students measure lower than both the OECD and Iceland average in 2006 (figure 32). The statement that both ES and NES students felt their most responsibility towards was the statement “I am in favor of having laws that protect the habitats of endangered species” to which 68% of ES responses and 59% of the NES responses agreed or strongly agreed to. The lowest ranked statement was “It disturbs me when energy is wasted through the unnecessary use of electrical appliances” to which 29% of ES responses and 30% of the NES responses agreed or strongly agreed to.

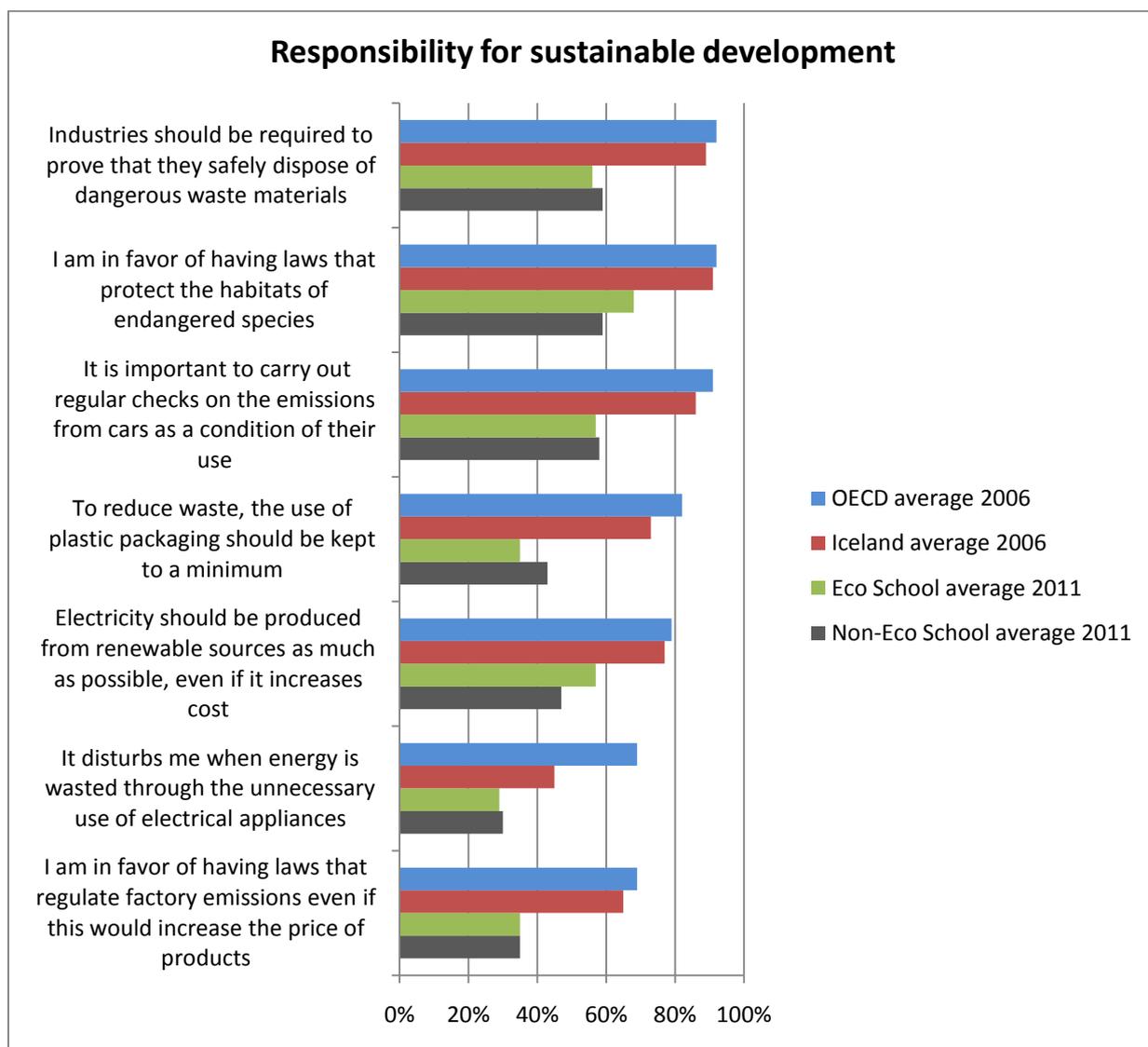


Figure 32: Percentage of students who ‘strongly agree’ or ‘agree’ with the statements regarding responsibility for SD (adapted from OECD, 2007b, p. 163)

4. Discussion

In this research, the focus was kept on students' knowledge and awareness of environmental issues, their attitudes towards the environment and their actions and responsibility towards SD, in order to further understand students' ecological literacy. In this chapter, the general results of the survey will be explained. The main trends in the data will be addressed and the trends in the responses from the ES and NES students explored. In order to attempt to answer the three proposed hypothesis, ES students will be compared with NES student in order to see whether or not the Eco School program is increasing students' environmental knowledge, positive attitudes towards the environment and pro-environmental behavior and actions.

4.1 General Survey Results

4.1.1 Environmental Knowledge and Awareness

The data showed that a third of the students believed they would not be able to explain what the mentioned environmental issues were really about whilst one third believed they knew something about it and could explain it in general. One category, i.e. recycling, however stood out where more than half of the students thought they would be able to explain the matter very well (figure 16). Environmental awareness among Icelandic students is increasing compared with the 2006 PISA test. Despite this increase, the OECD average from 2006 is still higher than the average of the students in this research in all categories except one, which is the increase of greenhouse gases in the atmosphere, which shows that awareness among Icelandic students is going up, but not enough to catch up with the average of OECD countries in 2006. Both ES and NES students measured much higher than Icelandic students did in 2006 and the ES students even measure 16% higher than the OECD average in 2006.

One can speculate about the reasons for this increase. Extensive media coverage on the matter is very likely to have had its influence and it should be noted that it is not long since COP15, the United Nations Climate Change Conference, was held in Copenhagen. Another likely factor is that in 2009 the National Centre for Educational Materials issued comprehensive educational material entitled 'CO² – The future in our hands' (is. *CO² – Framtíðin í okkar höndum*) intended for students in the upper stages of primary school. The material consists of

a teacher's book, students' book, an interactive web site and an educational video, and this is the first Icelandic student material of this kind to address climate change so intensively.

In the factual questions section of the survey the average score of correct answers among all of the 153 students was 7.9 correct answers out of 16, which means that the average students answered just under half of the questions correctly. This low score of correct answers really raises some questions and gives way for concerns. It should be noted though that question 8 (appendix 1, page 4) about from where a tree gets the majority of what it needs in order to grow, could have been confusing for the students, based on how many of them asked about this particular question (6% of ES students and 8% of NES students answered this question correctly).

A large majority (82%) knew the answer to the question 4 about particulate matter in Reykjavík (figure 17). This is not something that is addressed in the NCGCS, but it has been a recurring matter in Icelandic media for many years along with a discussion about the effect that congestion of traffic has on the quality of air in Reykjavik and whether or not studded tires should be forbidden in order to reduce particulate matter. This question can therefore be viewed as an example of the effect the media and homes can have on knowledge.

A large proportion of the students, or 71%, knew that batteries are considered to be a hazardous waste (question 13), and 63% of students knew the correct answer to question 3 about the ozone layer. According to the NCGCS, students start learning about the ozone layer at the age of 10, and the subject is a part of the goals for graduation in biosciences at the age of 15-16 (Ministry of Education, 2007b). One can also wonder why the knowledge regarding eco labels is so much higher among ES students than NES students (question 14). A part of the reason might be that 86% of ES students knew that their school held the Green Flag (figure 11) and therefore one can assume that they know what a Green Flag looks like. In addition, when the Eco Schools were visited in order for the survey to be submitted, the Green Flag was flying outside the schools and the schools halls were decorated with pictures and assignments the students had done, related to the Eco School project.

According to the data, issues that need more emphasis in education include question 5 why phosphorus is considered dangerous, since only 22% knew the correct answer, as well as question 6 of what the Kyoto Protocol is, where only 15% the correct answer. It was also very

interesting to see how the students answered when asked what happens to most of the domestic waste that is not sorted in Icelandic households (question 12). The right answer to the questions is that it is buried, but only 28% could answer it correctly. However, 47% answered that it goes to an incinerator. This can probably be attributed to a debate that took place in Icelandic media about two months before the survey was submitted, about dioxin pollution from waste incinerators in Iceland, which far exceeded the EU's reference levels. This is an example of misled knowledge where the students come to the wrong conclusions based on the social and media discussion, so it needs to be emphasized that schools have an important task in giving a rounded knowledge of scientific issues beyond those with greatest attention from the media.

4.1.2 Environmental Attitude

The data showed relatively positive attitude when it comes to the environment; more than half the respondents felt that it was their duty to lessen their impact on the environment. The data showed that the level of concern regarding environmental issues is increasing in Iceland. When the results from the 2006 PISA test are compared with the results from this survey, it shows an increase in concern towards environmental issues among Icelandic students. It should be noted though, that the students from this survey were not more concerned than students in other OECD countries in 2006 in any category except for air pollution, where ES students had a higher level of concern than OECD students. However, even though Icelandic students believe they are more concerned about air pollution, they are more optimistic about the matter than OECD students.

It was prominent how much more optimistic the Icelandic students were compared to both the OECD average and the Icelandic average from 2006 (figure 22). A very high proportion, or over 80%, was concerned about the lack of recycling in Iceland, but in turn the students were very optimistic regarding improvements in the area. The Icelandic students were least concerned about the matters to which they can least relate, i.e. nuclear waste and water shortages (there are no nuclear plants in Iceland and water is considered to be an abundant resource), they were also very optimistic regarding these issues, especially nuclear waste.

These results indicate that the less concerned the students are about environmental issues, the more optimistic they are regarding improvements of the same issues. This can very well be

seen in figures 23 and 24, where the results from this survey are compared with the OECD average from 2006. The results are in full accordance with the 2006 PISA results, which show that students that reported high concern for environmental issues and a strong desire to address them, are generally pessimistic about them improving (OECD, 2007b).

4.1.3 Environmental Action

The data showed that students were more willing to save water and electricity at home than at school and the students were rather positive towards not littering, as more than half of the students claimed to carry their litter with them until they found a bin to throw it in (figures 25 & 26). The students are not accustomed to check for environmental labels when they buy a product, which is in accordance with the fact that few students, and especially few NES students, had knowledge of the environmental labels that was asked about in the knowledge section of the survey.

There was much variation in how and/or whether or not the students recycled waste at home or at schools, and it seemed as if the students were much more willing to sort and recycle waste at home than at school (figures 27-30). It should be noted though, that the students are unlikely to find some of the materials listed at school, such as metals and hazardous waste, which is likely to be a factor in the low score these materials got. It should also be mentioned that not all the schools offer facilities for sorting and recycling waste, which could explain the big difference between waste sorting at school between ES students and NES students.

The most frequent behavior in recycling at school is recycling paper and organic waste, and the two most frequent kinds of behavior in recycling at home is recycling beverage containers with deposit (70% of students always/often do so) and recycling paper/newspapers (60% of students always/often do so). One can speculate why so many recycle these two kinds of materials at home. It ought to be kept in mind that people are paid a deposit for beverage containers. In addition to that, many households have two different waste bins, provided by the municipalities and emptied every 10 days (one is for general garbage and one for paper/newspapers/milk cartons/cardboard), which can be considered to be a strong situational factor that strengthens this pro-environmental behavior. This is in accordance with Fliegenschnee and Schelakovsky (as cited in Kollmuss & Agyeman, 2002) who found in their research that 80% of the motives for behavior are situational factors (and other internal

factors). This of course raises the question whether it would be possible to encourage sorting even further by providing more sorting bins, such as for glass, plastic and metal.

When waste sorting and recycling at home among NES students is compared to their waste sorting and recycling at school, it can be seen that they sort and recycle more at home than at school. It should be stated though that the NES do not provide recycling facilities, which shows how important the situational factor is regarding actions and behavior. In addition, it can be pointed out that the students conduct the 'right behavior' at home when it comes to recycling, but at school, where the facilities for recycling are non-existing, their behavior changes, all because of the situational factor. This is also in accordance with Orr's argument that "environmental education ought to change the way people live, not just how they talk" (1990, p. 50). If students are taught at school that they should sort and recycle, but the school itself does not engage in the same behavior, it teaches the students that it is sufficient to "intellectualize, emote, or posture about such things without having to live differently" (Orr, 1990, p. 50).

In the section about responsibility for SD, the students did not seem to have strong views about the given statements (figures 32 & 33). A large proportion of the students, from one third to just over half, answered to the statements with 'neither agree nor disagree'. It should be kept in mind though, that this question, or matrix of choices, was the last one in the survey and therefore there was a risk that the students did not put much effort into taking a position to the statements. Among those who did take a position, there seemed to be rather strong agreement with questions that related to governmental intervention and top-down regulations, such as "I am in favor of having laws that protect the habitats of endangered species", where 84% agreed to the statement. 76% agreed to the statement that "Industries should be required to prove that they safely dispose of dangerous waste material", and 76% agreed to the statement "It is important to carry out regular checks on the emissions from cars as a condition of their use".

The respondents were a little less willing to make personal sacrifices, as can be seen by the responds to those statements where the top-down governmental intervention would directly affect the respondents themselves, such as "I am in favor of having laws that regulate factory emissions even if this would increase the price of products", where 46% agreed. This is fully in accordance with Diekmann & Preisendoerfer (as cited in Kollmuss & Agyeman, 2002)

which showed that the more the ‘right behavior’ costs, the less likely people are to behave in that manner.

The lowest ranked statement regarding responsibility for SD was the statement “It disturbs me when energy is wasted through the unnecessary use of electrical appliances”, where only 39% agreed. That is in accordance with the result that only 28% of the students try to save energy and water at school, but slightly more try to do so at home, or 46%. This also shows the trend that becomes apparent when behavior at home is compared to behavior at school. It is interesting to compare these results with the results from the section about environmental attitude where 72% of students agreed to the statement “I feel like it is my duty to lessen my impact on the environment”. As can be seen their actions do not always follow their words, which supports the theory that there is not always a direct relation between attitude and actions.

4.2 Eco School and Non-Eco School Results

4.2.1 Hypothesis 1: Environmental Knowledge and Awareness

Hypothesis 1: Student *knowledge* about environmental issues is higher in Eco Schools than Non-Eco Schools.

When environmental awareness is compared between ES and NES, it can be seen that ES students are in general, more aware of environmental issues, and the difference ranges from 6% to 19% (figure 16). If only the questions that had more than 10% difference between ES and NES are taken into account, we see that we only have four questions to compare, out of six. The four questions are listed in table 3 below. As can be seen, in all the four questions where the difference was more than 10%, the ES students had a higher level of environmental awareness than NES students, and the difference ranges from 10% to 19%.

<i>Questions</i>	<i>Eco School (%)</i>	<i>Non-Eco School (%)</i>	<i>Difference (%)</i>
Q1a: The increase of greenhouse gases in the atmosphere	74	55	19
Q1e: The consequences of clearing forests for other land use	71	54	17
Q1b: The use of genetically modified organisms (GMO)	33	21	12
Q1d: Nuclear waste	49	39	10

Table 3: Comparison between ES and NES students when it comes to environmental awareness

As for the knowledge section, the average number of correct responses out of 16 from the ES students was slightly higher (8.2 +/- 2.4 SD) than the NES students (7.7 +/- 2.7 SD). This difference is not statistically significant (p-value = 0.24). These results show that there is a slight but not significant difference in environmental knowledge between students in ES and NES; thus, the results did not support Hypothesis 1 about environmental knowledge.

4.2.2 Hypothesis 2: Environmental Attitude

Hypothesis 2: Student pro-environmental *attitude* is higher in Eco Schools than Non-Eco Schools.

The results from the attitude section is threefold, i.e. the attitude-statements, concern and optimisms regarding environmental issues. The total number of questions in this section was 19, and when the answers are summarized it can be seen that in most of them the difference was too little to be considered significant. In table 4, the questions where the difference was 10% or more are listed.

	<i>Statements</i>	<i>Eco School (%)</i>	<i>Non-Eco School (%)</i>	<i>Difference (%)</i>
<i>Concern</i>	Respondents who believe water shortages to be a serious concern for ‘themselves’ or ‘other people in their country’	55	75	20
<i>Attitude</i>	Respondents who feel like it is their duty to lessen their impact on the environment	47	63	16
<i>Optimism</i>	Respondents who believe the problems associated with water shortages will ‘improve’ over the next 20 years	25	14	11
<i>Optimism</i>	Respondents who believe the problems associated with nuclear waste will ‘improve’ over the next 20 years	30	19	11

Table 4: Comparison between ES and NES students when it comes to environmental attitude

As table 4 shows, 63% of NES students believe it is their duty to lessen their impact on the environment, compared to 47% of ES students, which makes for a difference of 16%. This is a very important question because it shows clearly whether or not the respondent realizes each individual’s importance regarding environmental issues. It can also be seen that ES students are slightly more optimistic towards the statements, and 20% more NES students are concerned about water shortages. The table shows that in two questions, i.e. regarding concern and attitude, the NES students scored higher. In the other two, regarding optimism, the ES students scored higher. These results show that there is a slight but not significant difference in pro-environmental attitude between ES students and NES students; thus, the results did not support Hypothesis 2 about environmental attitude.

4.2.3 Hypothesis 3: Environmental Action

Hypothesis 3: Student pro-environmental *action* is higher in Eco Schools than Non-Eco Schools.

When environmental actions are compared between ES and NES students, it can be seen that there is not much difference between the two groups when it comes to the four ‘action statements’ (figures 25 & 26) and the statements on responsibility for SD (figure 33). However, there was a clear difference regarding recycling action at school and at home (figures 27-30). As for the ‘action statements’, only one question out of four had more than 10% difference, i.e. “When I am outside and need to throw away litter, I ‘always’ or ‘often’ carry it with me until I find a bin”, where 11% more ES students than NES students said they ‘always’ or ‘often’ did so (table 5). As for the section about responsibility for SD, only one question out of eight had a more than 10% difference, i.e. “Electricity should be produced from renewable sources as much as possible, even if it increases cost”, where 10% more ES students than NES students ‘strongly agreed’ or ‘agreed’ to the statement (table 6).

<i>‘Action statement’</i>	<i>Eco School (%)</i>	<i>Non-Eco School (%)</i>	<i>Difference (%)</i>
Q1d: When I am outside and need to throw away litter, I ‘always’ or ‘often’ carry it with me until I find a bin	58	47	11

Table 5: Comparison between ES and NES students when it comes to ‘action statements’

<i>Responsibility for SD</i>	<i>Eco School (%)</i>	<i>Non-Eco School (%)</i>	<i>Difference (%)</i>
Q6g: Respondents who ‘strongly agree’ or ‘agree’ that electricity should be produced from renewable sources as much as possible, even if it increases cost	57	47	10

Table 6: Comparison between ES and NES students when it comes to responsibility for SD

When it comes to recycling action, the ES students scored much higher than the NES students, both at home and at school (tables 7 & 8). In all cases regarding recycling at school the difference was 10% or more, and the difference was up to 42% (in the case of recycling newspapers/paper/magazines at school). As for recycling at home, there was a 10% or more difference in all cases except two, i.e. regarding hazardous waste and durable goods, and the difference was up to 20%.

<i>Recycle at school</i>	<i>Eco School (%)</i>	<i>Non-Eco School (%)</i>	<i>Difference (%)</i>
Newspapers, magazines, paper	60	18	42
Organic waste	56	16	40
Cardboard	35	10	25
Beverage containers with deposit	36	14	22
Plastic	28	11	17
Hazardous waste	22	6	16
Durable goods	21	9	12
Metals	19	9	10
Glass	18	8	10

Table 7: Comparison between ES and NES students when it comes to recycling at school

<i>Recycle at home</i>	<i>Eco School (%)</i>	<i>Non-Eco School (%)</i>	<i>Difference (%)</i>
Glass	53	33	20
Metals	31	14	17
Cardboard	49	33	16
Newspapers, magazines, paper	64	51	13
Beverage containers with deposit	76	65	11
Plastic	44	33	10

Table 8: Comparison between ES and NES students when it comes to recycling at home

Overall, the results show that pro-environmental action is higher among ES students than NES students, especially when it comes to recycling, and therefore support Hypothesis 3.

4.2.4 Final Results

The research supported Hypothesis 3, while it did not support Hypothesis 1 and 2. The results from this research indicate that if situational factors, such as a recycling station, are available and emphasized, as it is for the ES student but not as much for the NES students, it encourages pro-environmental behavior. The ES students did sort and recycle more than NES students both at home and at school, and therefore these results indicate that if students are used to sorting and recycling at school, they are more willing to do the same at home (though this research cannot determine whether or not the ES students are living in more eco minded homes). It can also be pointed out that, according to the findings of this research, the relation between the students' environmental knowledge and their pro-environmental attitude cannot be determined, because there was little or no difference between ES and NES students. However, the ES students had a slightly higher level of environmental awareness than the NES students, and that could play a part in their pro-environmental actions. However, it is very likely that the situational factor plays the biggest part therein. Therefore, it can be concluded that the Eco School program provides the recycling facilities and emphasis on recycling, but fails on increasing students' knowledge and foster 'pro-environmental consciousness'.

5. Conclusion

It is important to integrate the themes of sustainability into all levels of education so that SD forms a guiding principle throughout the entire period of education. Huckle and Sterling (1996) argue that sustainability education is essential for students to appreciate, understand and think critically about complex environmental, social and economic problems. As seen in this research, and as stated by Orr (1990), it is not enough to only put the objectives and goals in a well defined curriculum, as the infrastructure and facilities must be built as a role model for sustainability thinking. It is important to keep in mind the effect that the environment in which students learn has on the students. This can be connected with Vygotsky's approach that social interaction leads to social learning, which reflects on the cognitive development of

the child. The child learns; “If the school does not act pro-environmentally, then why should I?”. The results of this research also indicated that Sterns’ (2000) ‘habit and routine’ plays a part as well as the situational factor (as for recycling) that needs to exist when it comes to pro-environmental actions.

The NCGCE in Iceland is composed by the authorities, and as has been said, ESD has now been added. That means that ESD has become a common thread throughout the whole educational system in Iceland. An initiative like the Eco School program is an example of a bottom-up approach where the schools themselves take matters into their own hands and try to lessen their environmental impact. The big question is whether or not it works. It can be assumed that the environmental management system is working, because if it were not, then the schools would not be awarded with the recognition. However, when we look at the effect (or lack thereof) the Eco School program has on environmental knowledge and pro-environmental attitude and action of students (other than recycling), the results show that the program fails in its objective. If the program does not have more effect on students and faculty than this, one can wonder about the methodology of the program and whether its measures need to be revised

This research showed that the students’ environmental knowledge was rather limited and that low environmental knowledge, low level of concern regarding environmental issues and a high level of optimism regarding the same issues go hand in hand. This can lead to environmental issues going unnoticed by many citizens. Knowledge is important because it arouses concern and awakes attention. Therefore it can be assumed that by increasing environmental knowledge, ecological literacy will also increase. According to the PISA assessment the levels of awareness of environmental issues are implicitly linked with students’ scientific knowledge and there is a strong association between students’ level of environmental awareness and science performance.

According to Rotmans et al. (2000), transition management, participatory decision making and education can help to create support for policies, where both bottom-up and top-down approaches are needed. No single actor can steer the transition alone. One very important component for the transition of a society is by addressing the social and cultural norms. One way of doing that is within the educational system, both the infrastructure and the curriculum, in all stages in the child’s cognitive development. That is only half the truth though, because

as the data showed (figures 14 and 15), the media plays a big part in shaping people's knowledge, along with other factors, such as friends and family and the general social discourse. Education can therefore not be expected to solve the world's environmental problems, but it can be an important step in that direction to do everything in our power to educate and graduate ecologically literate citizens prepared to tackle the substantial environmental challenges of the 21st century.

6. Policy Recommendations

Below are a few points that were summarized as a policy recommendation for environmental education (EE) within the formal educational system.

The Eco School Project and the Whole School Approach: As a bottom-up initiative, the project is good in many ways: it fosters community, it reduces the environmental impact of the school, it teaches and encourages students' behavior regarding recycling, and shows the schools' will to take steps towards sustainability. However, this research found that the program does not successfully achieve EE in practice, although students who participated in the program had a slightly higher level of environmental awareness. In order for the Eco School project to be more successful, there needs to be a consensus among teachers and school administrators about its importance, and everybody must play their part and constantly implement the Eco Schools 'curriculum'. The criteria of the Eco School project could be changed, putting more emphasis on EE within the school. Environmental awareness could be increased, and environmental impact of the school lessened, through management of resources, operations and facilities such as adding water and energy conservation signs, recycling stations, having the school serve food produced in a 'green' way, etc. Besides that, there needs to be a discourse within the school about why these actions are taken. It needs to be emphasized which environmental issues are being addressed, what causes them and what the strategies for change are. It needs to be set up in a way that makes the students themselves feel they have a certain power to make a change (empowering the students to effect change). Even though it is important to teach students about recycling, sorting, energy and water saving, etc., behavior modification should not be the basis of education. There needs to be an emphasis on students' understanding of environmental problems as conflicting interests, and

their capability to discuss possible changes and their motivation to take an active part in the solutions of them.

Environmental Education and Systems Thinking: Within EE and ESD it is important to strengthen the understanding of systems thinking where the education focuses on the linkage between the environmental, economical and social systems. This will help students in understanding how the 'whole system' works and it will teach them to think broadly, understand connection, patterns and root of causes. This could be implemented into the Eco School 'curriculum' in order to enhance environmental knowledge and awareness.

Professional Development: All teachers, no matter what subject they teach, should be equipped with the knowledge and skills to effectively teach ESD. In order to ensure that teachers are able to provide teaching in ESD across the different areas of the curriculum, there is a need to strengthen teachers' education and retraining when it comes to EE and ESD.

Curriculum Content and Cross-Curricular Integration: EE needs to be visible within and across the curriculum and it needs to be embedded within the curriculum for all subjects and disciplines. In addition to that, EE should be an individual subject, particularly within the primary and secondary school, where the existence and scope of the environment and environmental problems are addressed, as well as strategies for change. It is important that ESD starts in the first stage of the individual's education, i.e. preschool, and is continuous throughout the education, all the way up to the highest level of university education.

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Survey

1. General questions

* **1. School:**

1

2

3

4

* **2. Gender:**

Male

Female

* **3. On average, how many times a week do you go to school by:**

	1	2	3	4	5
Car	<input type="radio"/>				
Bus	<input type="radio"/>				
Bicycle	<input type="radio"/>				
Foot	<input type="radio"/>				

* **4. Does your school have the Green Flag?**

Yes

No

I don't know

* **5. Does your school have an outdoor class room?**

Yes

No

I don't know

6. If yes, how often does your class use it?

Once a week

2-3 times a month

Once a month or less often

* **7. On average throughout the year, how many hours a week do you engage in any outdoor activities in your spare time (such as hiking, climbing, bicycling, horseback riding, skiing etc.)?**

Less than two hour

2-4 hours

5-7 hours

8 hours or more

8. What is the highest level of schooling completed by your parents?

	Mother	Father
Elementary school	<input type="radio"/>	<input type="radio"/>
High school	<input type="radio"/>	<input type="radio"/>
Vocational training	<input type="radio"/>	<input type="radio"/>
Undergraduate school	<input type="radio"/>	<input type="radio"/>
Graduate school	<input type="radio"/>	<input type="radio"/>
I don't know	<input type="radio"/>	<input type="radio"/>

* **9. From which source(s) did you MAINLY learn about each of these environmental issues? (Please tick as many boxes as apply in each row.)**

	None of these, I am not sure what this is	My school	The TV, radio, newspaper or magazines	My friends	My family	The internet or books
a) Air pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Energy shortages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Extinction of plants and animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Clearing of forests for other land use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Water shortages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Nuclear waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Recycling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Environmental knowledge and awareness

★ **1. How informed are you about the following environmental issues?**

	I have never heard of this	I have heard about this but I would not be able to explain what it is really about	I know something about this and could explain the general issues	I am familiar with this and I would be able to explain this well
a) The increase of greenhouse gases in the atmosphere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Use of genetically modified organisms (GMO)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Acid rain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Nuclear waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) The consequences of clearing forests for other land use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Recycling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

★ **2. What is the name of the primary governmental agency in Iceland that works to protect the environment?**

- a. The Environment Agency
- b. The Icelandic Nature Conservation Association
- c. Natural Iceland
- d. Saving Iceland

★ **3. The ozone is a protective layer in the earth's upper atmosphere. What does the ozone layer protect us from? Is it:**

- a. Acid rain
- b. Global warming
- c. Harmful, cancer-causing sunlight
- d. Sudden changes in temperature

★ **4. Particulate matter in Reykjavik is because of (amongst other things):**

- a. Pollen grain in the air
- b. Greenhouse gasses
- c. Automobile traffic, studded tires, unfinished construction projects
- d. Animal cruelty

Survey

★ **5. Many household cleaning products contain phosphorous which makes them hazardous for the environment. Why is phosphorous considered dangerous?**

- a. Phosphorous is toxic for plants and animals, and it poisons them when it gets into the water supply
- b. When it gets into the water supply, too much phosphorous causes excessive growth of algae, which takes oxygen from other organisms that need it
- c. When it reacts with other chemicals in the water supply, phosphorous causes acid rain
- d. Phosphorous is very sticky, so it can block natural waterways

★ **6. What is the international agreement that attempts to regulate the amount of greenhouse gasses which nations produce called?**

- a. The Kyoto Protocol
- b. The Montreal Protocol
- c. The Basel Convention
- d. The UN Global Climate Convention

★ **7. Which of the following is a renewable resource?**

- a. Coal
- b. Gasoline
- c. Iron Ore
- d. Timber

★ **8. A seed weighs next to nothing, but trees weigh a lot. From where does the tree get the MAJORITY of the stuff that makes up a wooden desk?**

- a. The air
- b. The ground
- c. The Sun
- d. Water

★ **9. What is the primary benefit of wetlands? Do they:**

- a. Promote flooding
- b. Help filter water before it enters lakes, rivers, streams, or oceans
- c. Help keep the number of undesirable plants and animals low
- d. Act as breeding ground for endangered species

Survey

* **10. Approximately what percentage of the earth's water is available as fresh drinking water?**

a. More than 90%

b. Around 45%

c. Around 20%

d. Less than 3%

* **11. Sustainable fishery means:**

a. fishing reasonably so that the fish stocks always manage to renew themselves

b. fishing very little so that the fish do not become fewer

c. fishing as much as possible in as short a time as possible

d. when the fishermen have to carry (sustain) their fishing gear themselves

* **12. What happens to most of the domestic waste that is not sorted in Icelandic households?**

a. It goes to an incinerator

b. It is exported

c. It is buried

d. It gets sorted at the recycling station

* **13. Which of the following household wastes is considered hazardous waste? Is it:**

a. Plastic packaging

b. Aluminum

c. Batteries

d. Spoiled food

* **14. What does each sign stand for?**

a. The wrapping/the product is made from recyclable material

b. Nordic ecolabel

c. Fair Trade

d. The Green Flag

1.



2.



3.



4.



Survey

3. Environmental attitude

* **1. Please read the following statements carefully and check the appropriate field in accordance with how much you agree or disagree with the statement.**

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a) I feel like it is my duty to lessen my impact on the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I care about the environment but I don't think that one person's behavior can make much of a difference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I am interested in learning more about environmental issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) People in Iceland are more aware of environmental issues than people in neighboring countries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) I feel that lack of recycling in Iceland is a problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* **2. Do you see the environmental issues below as a serious concern for yourself and/or others?**

	This is serious concern for me personally as well as others	This is a serious concern for other people in my country but not me personally	This is a serious concern only for people in other countries	This is not a serious concern for anyone
a) Air pollution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Energy shortages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Extinction of plants and animals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Clearing of forests for other land use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Water shortages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Nuclear waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Lack of recycling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 3. Do you think problems associated with the environmental issues below will improve or get worse the next 20 years?**

	Improve	Stay about the same	Get worse
a) Air pollution	jm	jm	jm
b) Energy shortages	jm	jm	jm
c) Extinction of plants and animals	jm	jm	jm
d) Clearing of forests for other land use	jm	jm	jm
e) Water shortages	jm	jm	jm
f) Nuclear waste	jm	jm	jm
g) Lack of recycling	jm	jm	jm

4. Environmental actions

* 1. Please answer the following questions as well as you can:

	Always	Often	Sometimes	Seldom	Never
a) When I buy a product (such as clothes, food, and other things) I check to see if the product has an environmental label	<input type="radio"/>				
b) I try to save water and electricity when I am at school	<input type="radio"/>				
c) I try to save water and electricity when I am at home	<input type="radio"/>				
d) When I am outside and need to throw away litter, I carry it with me until I find a bin	<input type="radio"/>				

* 2. Which of the following do you recycle at school?

	Always	Often	Sometimes	Seldom	Never
a) Newspapers, magazines, paper, cartons	<input type="radio"/>				
b) Cardboard (e.g. pizza cartons)	<input type="radio"/>				
c) Plastic (e.g. yoghurt pots, plastic bottles)	<input type="radio"/>				
d) Metals (e.g. tin cans, jar lids)	<input type="radio"/>				
e) Glass (e.g. jars)	<input type="radio"/>				
f) Organic waste (e.g. leftover food)	<input type="radio"/>				
g) Beverage containers with deposit (e.g. soda bottles)	<input type="radio"/>				
h) Hazardous waste (e.g. paint, medicine)	<input type="radio"/>				
i) Durable goods (e.g. clothing)	<input type="radio"/>				

3. Is there something you would like to add?

Survey

* 4. Which of the following do you recycle at home?

	Always	Often	Sometimes	Seldom	Never
a) Newspapers, magazines, paper, cartons	jn	jn	jn	jn	jn
b) Cardboard (e.g. pizza cartons)	jn	jn	jn	jn	jn
c) Plastic (e.g. yoghurt pots, plastic bottles)	jn	jn	jn	jn	jn
d) Metals (e.g. tin cans, jar lids)	jn	jn	jn	jn	jn
e) Glass (e.g. jars)	jn	jn	jn	jn	jn
f) Organic waste (e.g. leftover food)	jn	jn	jn	jn	jn
g) Beverage containers with deposit (e.g. soda bottles)	jn	jn	jn	jn	jn
h) Hazardous waste (e.g. paint, medicine)	jn	jn	jn	jn	jn
i) Durable goods (e.g. clothing)	jn	jn	jn	jn	jn

5. Is there something you would like to add?

	5
	6

* 6. How much do you agree or disagree with the statement below?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a) It is important to carry out regular checks on the emissions from cars as a condition of their use	jn	jn	jn	jn	jn
b) It disturbs me when energy is wasted through the unnecessary use of electrical appliances	jn	jn	jn	jn	jn
c) I am in favor of having laws that regulate factory emissions even if this would increase the price of products	jn	jn	jn	jn	jn
d) To reduce waste, the use of plastic packaging should be kept to a minimum	jn	jn	jn	jn	jn
e) Industries should be required to prove that they safely dispose of dangerous waste materials	jn	jn	jn	jn	jn
f) I am in favor of having laws that protect the habitats of endangered species	jn	jn	jn	jn	jn
g) Electricity should be produced from renewable sources as much as possible, even if it increases cost	jn	jn	jn	jn	jn

Könnun

1. Almennar spurningar

* 1. Skóli:

1

2

3

4

* 2. Kyn:

Karlkyn

Kvenkyn

* 3. Að meðaltali, hversu oft á viku ferð þú í skólann:

	0	1	2	3	4	5
Með bíl	<input type="checkbox"/>					
Með strætó	<input type="checkbox"/>					
Á hjóli	<input type="checkbox"/>					
Gangandi	<input type="checkbox"/>					

* 4. Er skólinn þinn með Grænfána?

Já

Nei

Veit ekki

* 5. Er útikennslustofa í skólanum þínum?

Já

Nei

Veit ekki

6. Ef já, hversu oft er hún notuð í þínum bekk?

1x í viku eða oftar

2-3x í mánuði

1x í mánuði eða sjaldnar

* **7. Að meðaltali yfir árið, hversu mörgum klukkustundum af frítíma þínum verð þú vikulega í útivist (s.s. gönguferðir, fjallgöngur, hjólreiðar, hestamennsku, skíði o.s.frv.)?**

Minna en 2 klst

2-4 klst

5-7 klst

8 klst eða meira

8. Hvert af efirtöldum námsstigum er það hæsta sem foreldrar þínir hafa lokið?

	Móðir	Faðir
Grunnskóli	€	€
Stúdentspróf	€	€
Iðnnám/verknám	€	€
Háskólanám (grunnám)	€	€
Háskólanám (framhaldsnám)	€	€
Veit ekki	€	€

* **9. Hvaðan hefur þú AÐALLEGA fengið upplýsingar um eftirfarandi málefni tengd umhverfinu? (Ath. að það má merkja við fleiri en einn möguleika.)**

	Ekkert af þessu, ég er ekki viss um hvað þetta er	Í skólanum	Í fjölmiðlum (sjónvarpi, blöðum, tímaritum)	Hjá vinum mínum	Hjá ættingjum mínum	Á internetinu eða í bókum
Loftmengun	€	€	€	€	€	€
Skortur á orku	€	€	€	€	€	€
Útdauði plöntu- og dýrategunda	€	€	€	€	€	€
Eyðing skóga til að nýta landið í annað	€	€	€	€	€	€
Vatnsskortur	€	€	€	€	€	€
Loftslagsbreytingar	€	€	€	€	€	€
Kjarnorkuúrgangur	€	€	€	€	€	€
Endurvinnsla	€	€	€	€	€	€

2. Umhverfisþekking og meðvitund um umhverfismál

* 1. Hversu vel þekkirðu til eftirfarandi atriða?

	Ég hef aldrei heyrt um þetta	Ég hef heyrt um þetta en ég gæti ekki útskýrt um hvað það snýst	Ég veit hvað þetta er og gæti útskýrt um hvað það snýst almennt	Ég þekki þetta og gæti útskýrt það nokkuð vel
Loftslagsbreytingar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hagnýting erfðabreyttra lífvera	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Súrt regn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geislavirkur úrgangur	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Afleiðing þess að skógum er eytt til að nýta landið í annað	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Endurvinnsla	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 2. Hvað nefnist íslenska ríkisstofnunin sem vinnur að verndun umhverfisins?

- a. Umhverfisstofnun
- b. Náttúruverndarsamtök Íslands
- c. Náttúra Íslands
- d. Saving Iceland

* 3. Ósonlagið er varnarlag í efri hluta loftþjúps jarðarinnar. Fyrir hverju ver ósonlagið okkur?

- a. Súru regni
- b. Hlýnun jarðar
- c. Krabbameinsvaldandi sólargeislum
- d. Skyndilegum hitastigsbreytingum

* 4. Svifryk í Reykjavík er m.a. vegna:

- a. frjókorna í loftinu
- b. gróðurhúsalofttegunda
- c. bílaumferðar, nagladekkja, ófrágenginna framkvæmda
- d. illrar meðferðar á dýrum

* **5. Margar gerðir hreinsiefna innihalda fosfór sem gerir vöruna hættulega umhverfinu. Hvers vegna er fosfór álitid hættulegt?**

a. Fosfór virkar sem eitrefni fyrir plöntur og dýr ef það kemst í vatnsból.

b. Óhóflegt magn fosfórs í vatnsbóli veldur ofvexti þörungna, sem taka súrefni frá öðrum lífverum sem þurfa á því að halda.

c. Ef fosfór gengur í efnasamband við önnur efni í vatnsbóli verður súrt regn.

d. Fosfór er mjög límkennður og getur stíflað náttúrulegt vatnsflæði.

* **6. Alþjóðlegi samningurinn um takmörkun á losun gróðurhúsalofttegunda kallast:**

a. Kyoto bókunin

b. Montreal ritið

c. Basel ráðstefnan

d. Bókin um umhverfið

* **7. Hvert eftirfarandi er endurnýjanleg auðlind?**

a. Kol

b. Bensín

c. Járn

d. Timbur

* **8. Fræ eru smá en tré eru stór. Hvaðan fá tré BRÓÐURPARTINN af því sem til þarf til að verða t.d. að efni í skrifborð?**

a. Úr loftinu

b. Úr jörðu

c. Frá sólinni

d. Úr vatni

* **9. Hver er meginávinningur af mýrum fyrir umhverfið?**

- a. Auka líkur á flóðum
- b. Að sía vatn áður en það berst í vötn og ár og fellur til sjávar
- c. Að lágmarka fjölda óæskilegra plantna og lífvera
- d. Enginn ávinningur

* **10. Hvaða hlutfall alls vatns á jörðinni er drykkjarhæft?**

- a. Meira en 90%
- b. Um 45%
- c. Um 20%
- d. Minna en 3%

* **11. Sjálfbærar fiskveiðar eru:**

- a. þegar veitt er hæfilega mikið svo að fiskistofnar nái alltaf að endurnýjast aftur
- b. þegar veitt er mjög lítið þannig að fiskum fækkar ekki
- c. þegar veitt er eins mikið og hægt er á sem stytum tíma
- d. þegar menn þurfa að bera veiðarfærin sín sjálfir

* **12. Hvað verður um meirihluta þess heimilissorps sem ekki er flokkað á Íslandi?**

- a. Það fer í sorpbrenslu
- b. Það er flutt úr landi
- c. Það er urðað
- d. Það er flokkað á endurvinnslustöðvum

* **13. Hvað af eftirfarandi heimilisúrgangi telst til spilliefna?**

- a. Plastumbúðir
- b. Ál
- c. Rafhlöður
- d. Rotinn matur

* 14. Hvað táknar hvert merki? (Skrifaðu viðeigandi tölu í reitinn)

a.

Umbúðir/varan

er úr

endurvinnanlegu

hræfni

b. Norrænt

umhverfismerki

c. Samngjörn

viðskipti

d. Grænfáni

1.



2.



3.



4.



3. Viðhorf til umhverfismála

- * **1. Vinsamlegast lestu eftirfarandi staðhæfingu vandlega og merktu við reitina eftir því hversu sammála eða ósammála þú ert hverju sinni.**

	Algjörlega sammála	Sammála	Hvorki sammála né ósammála	Ósammála	Algjörlega ósammála
Mér finnst skylda mín að minnka áhrif mín á umhverfið	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mér er umhugað um umhverfið en tel að hegðun einnar manneskju geti ekki skipt svo miklu máli	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mig langar að fræðast meira um umhverfismál	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fólk á Íslandi er meira meðvitað um umhverfismál en fólk í nágrannalöndum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég tel að það sé vandamál hversu lítið er endurunnið á Íslandi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- * **2. Telur þú að eftirfarandi umhverfismál séu alvarlegt áhyggjuefni fyrir þig og/eða aðra?**

	Þetta er alvarlegt bæði fyrir mig persónulega og fyrir aðra	Þetta er alvarlegt fyrir aðra í mínu landi en ekki fyrir mig persónulega	Þetta er eingöngu alvarlegt fyrir fólk í öðrum löndum	Þetta er ekki alvarlegt fyrir neinn
Loftmengun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skortur á orku	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Útdauði á plöntu- og dýrategundum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eyðing skóga til að nýta landið í annað	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vatnsskortur	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kjarnorkuúrgangur	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skortur á endurvinnslu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* **3. Telur þú að vandamál sem tengjast eftirfarandi málefnum muni minnka eða aukast á næstu 20 árum?**

	Minnka	Standa í stað	Aukast
Loftmengun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skortur á orku	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Útdauði plöntu- og dýrategunda	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eyðing skóga til að nýta landið í annað	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vatnsskortur	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kjarnorkuúrgangur	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skortur á enduvinnslu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Hegðun/aðgerðir

* 1. Vinsamlegast svaraðu eftirfarandi spurningum eftir bestu getu:

	Alltaf	Oft	Stundum	Sjaldan	Aldrei
Þegar ég kaupi vöru (t.d. föt, mat eða annað) athuga ég hvort varan sé umhverfismerkt	<input type="radio"/>				
Ég reyni að spara vatn og rafmagn þegar ég er í skólanum	<input type="radio"/>				
Ég reyni að spara vatn og rafmagn þegar ég er heima	<input type="radio"/>				
Þegar ég er úti og þarf að henda rusli held ég á því þangað til ég finn ruslatunnu	<input type="radio"/>				

* 2. Hvað af eftirtöldu endurvinnur þú í skólanum?

	Alltaf	Oft	Stundum	Sjaldan	Aldrei
Dagblöð, tímarit, blöð, fernur	<input type="radio"/>				
Bylgjupappi (t.d. pítsukassar)	<input type="radio"/>				
Plast (t.d. skyrdollur, plastflöskur)	<input type="radio"/>				
Málmar (t.d. niðursuðudósir, krukkulok)	<input type="radio"/>				
Gler (t.d. krukkur)	<input type="radio"/>				
Lífrænn úrgangur (t.d. matarleifar)	<input type="radio"/>				
Drykkjarumbúðir með skilagjaldi (t.d. gosflöskur)	<input type="radio"/>				
Spilliefni (t.d. málning, lyf)	<input type="radio"/>				
Nytjahlutir (t.d. föt, skór)	<input type="radio"/>				

3. Er eitthvað sem þú vilt bæta við?

* 4. Hvað af eftirtöldu endurvinnur þú heima:

	Alltaf	Oft	Stundum	Sjaldan	Aldrei
Dagblöð, tímarit, blöð, fernur	<input type="radio"/>				
Bylgjupappi (t.d. pítsukassar)	<input type="radio"/>				
Plast (t.d. skyrdollur, plastflöskur)	<input type="radio"/>				
Málmar (t.d. niðursuðudósir, krukkuök)	<input type="radio"/>				
Gler (t.d. krukkur)	<input type="radio"/>				
Lífrænn úrgangur (t.d. matarleifar)	<input type="radio"/>				
Drykkjarumbúðir með skilagjaldi (t.d. gosflöskur)	<input type="radio"/>				
Spilliefni (t.d. málning, lyf)	<input type="radio"/>				
Nytjahlutir (t.d. föt, skór)	<input type="radio"/>				

5. Er eitthvað sem þú vilt bæta við?

* 6. Hversu sammála ertu eftirfarandi staðhæfingum?

	Mjög sammála	Sammála	Hvorki sammála né ósammála	Ósammála	Mjög ósammála
Mikilvægt skilyrði fyrir notkun bifreiða er að reglulegt eftirlit sé með útblæstri þeirra	jn	jn	jn	jn	jn
Það fer í taugarnar á mér þegar orku er sóað með því að nota rafmagnstæki að óþörfu	jn	jn	jn	jn	jn
Ég er hlynnt(ur) því að hafa lög sem takmarka verksmiðjureyk jafnvel þó að það hækki vöruverðið	jn	jn	jn	jn	jn
Til að draga úr úrgangi ætti að halda notkun plastumbúða í lágmarki	jn	jn	jn	jn	jn
Iðnfyrirtæki ættu að þurfa að sanna að þau losi sig á öruggan hátt við hættuleg úrgangsefni	jn	jn	jn	jn	jn
Ég er hlynnt(ur) því að hafa lög sem vernda umhverfi tegunda sem eru í útrýmingarhættu	jn	jn	jn	jn	jn
Það ætti að framleiða rafmagn úr endurnýjanlegum auðlindum eins mikið og hægt er, jafnvel þó að það auki kostnað	jn	jn	jn	jn	jn