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ENVIRONMENTAL EDUCATION AT SECONDARY SCHOOL SYSTEM IN LITHUANIA

(Using Šilutė as a case)

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ABSTRACT

Scholars agree that environmental education has enormous influencing role in forming people's knowledge and attitude, and is highly practical in motivating to improve and protect environment. However, environmental education is limited in achieving its main goals by being institutionalized and disciplined within general education system.

This paper discusses environmental education situation at secondary school level in Lithuania and effects it has on pupils. More precisely, author aims to describe environmental education relevancy to our society and confronting challenges it deals with by being in relation with general education system. The study is based on a field work carried out in Šilutė district, Lithuania in the autumn of 2010, and will be presented as a case study.

The author analyzes environmental education from two perspectives: practical and institutional. It also studies possibilities for environmental education to improve its feasibility at curriculums, schools and pedagogical practices. Empirical results show that environmental education has been gradually integrated into Lithuania's national curriculum and teaching practices during the recent years, but is not fully applied. This is caused because environmental education in Lithuania is marginalized by general education discourse, and this part which is partially applied is limited by structural barriers. Even though, environmental education at secondary schools in Lithuania has the potential to influence pupils to behave pro-environmentally.

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1. INTRODUCTION

The role that knowledge about environment can have in the education of its youth is an important question for any society. In my home country, Lithuania, the development of the last decades has made this question even more urgent. This thesis examines the current situation of environmental education in Lithuania, based on both historical and empirical approaches. Its intention is to contribute knowledge that can lead to an eventual improvement in how our schools teach about environment and ecology.

1.1 BACKGROUND OF THE STUDY

The very idea of this thesis project was born from discussions with my Lithuanian friends. We were concerned about current environmental challenges that our country is facing, issues which are presented in media as environmental scandals, and those which are hiding behind people‘s daily life practices. Questions raised during plentiful discussions led into consideration of Lithuanians‘ecological behavior.

Following that, in order to grasp the stage when peoples‘ behavior is shaped and influenced most to act pro-environmentally, I attempted to ‘zoom in’ the whole picture of society, by leaving aside adults who have already shaped their attitude and values about environmentally-friendly lifestyle and/or contributes to environmental issues, and concentrate more on children. Thus I look at them as the most important part of society, generations from which Lithuanians as well as other nations expect highest environmental cultural values.

Even though children’s environmental values and attitude are highly affected by surrounding society, especially by the closest family members, this does not assure that children will grow up as socially and environmentally responsible citizens. This antithesis stimulated me to look deeper at the general education (GE) system, the stage where state has power to provide environmental and ecological knowledge to its citizens, and like-to-like shape their attitude, values, and motivate to act environmentally friendly and respect nature as a whole.

I started with an idea to make a research about primary school (1-4 grades) pupils, but then I found out that improvement of environmental education in this school level is much higher

than I expected. This is well illustrated by both my personal experience and reflection on current curriculum, methodologies and materials, as well as a number of research done in this field. Therefore I switched my focus and started looking further, this time at secondary school. While 5^{th}-8^{th} grades also have sufficient environmental education programs, I chose to conduct my research with pupils studying at 9^{th}-12^{th} grades, being within the age of 14-19 years old.

One of incentive for this decision was that pupils who seek to achieve extra two years in gymnasium secondary school in Lithuania, have to deal with higher education requirements. I also assumed that at this age pupils would have more knowledge about environment protection, ecology, compared to 5^{th}-8^{th} graders. Thus even more fascinating was to find out what attitude and values they have and how it reflects in their daily live practices. Other significant factor in choosing pupils at this range of age was that there is hardly any research done about it in Lithuania. Interestingly, such choice also lead to circumstance that made this research easier, as parents permission was not required to conduct the surveys.

In order to see the broader view of how environmental education works in this system, I 'zoomed out' this field from children up to national curriculum, including teachers as a linkage between those two.

1.2 PURPOSE AND RESEARCH QUESTIONS

The main purpose of this thesis is to analyze how environmental education (EE) at the secondary school level is structured in Lithuania and what effect it has on pupils. Additionally, thesis aims to describe environmental education relevancy to our society and confronting challenges it has to deal with. As mentioned above, the interest in this topic and country emerged for the fact that up to now hardly any research has been made on environmental education of secondary school for this particularly country. Under these circumstances, based on a fieldwork, this thesis attempts to deepen the current knowledge of environmental education in Lithuania. The information gathered in this paper might be useful to scholars interested in similar research, especially because there are very few papers written in English about environmental education in Lithuania.

The research questions are:

- How environmental education is conceived, integrated and applied into Lithuania's secondary school system?
- What assumptions underlie under environmental education integration into general education system?
- What effect environmental education has on pupils by looking at their knowledge, attitude and actions towards environmental lifestyle?

1.3 OUTLINE OF THE PAPER

This thesis presents environmental education at secondary schools in Lithuania exemplified by Lithuania's national curriculum, Šilutė and Švėkšna gymnasiums, teachers' and pupils' responses towards pro-environmental lifestyle. The Methodology chapter describes qualitative and quantitative methods used to collect data in the field work, methods applied in this study, and secondary data. Further chapter briefly introduces Lithuania and representative gymnasiums in historical and geographical context. In Theoretical framework chapter the concept of environmental education, its goals and potentiality for sustainability, and different conceptions and methodologies are discussed. This chapter also introduces two dimensions to perceive environmental education. First dimension analyses environmental education connection with general education; second dimension analyses environmental education problematic issues emerged when environmental education is in power of general education. In addition, this chapter introduces to suggestions how environmental education can be achieved. The Results chapter presents empirical and historical material. The Concluding discussion summarizes the thesis.

1.4 THESIS COHERENCE WITH CULTURE, POWER, AND SUSTAINABILITY

Human ecology is a trans-disciplinary study about relations between humans and their living environment (Marten 2001, Glaeser 1995). In master program Human Ecology: Culture, Power and Sustainability (CPS), human ecology is studied by focusing on cultural perceptions and social science perspectives on environment, economy and global distribution of environmental problems (Lund University). Consequently, this paper aims to reflect on

Lithuanian cultural dimensions of social and natural environments; it is also orientated towards power positions of the state, local schools, and individuals that are "shaping" environmental education; therefore seeking after sustainability is involved alongside thesis subject. Thus this thesis project - *Environmental education at secondary school system in Lithuania,* fully gets into a frame of Human Ecology involving all three aspects: culture, power, and sustainability.

2 METHODOLOGY

Data that was collected to complete this thesis consist both from primary and secondary sources. Primary data or empirical research was carried out in Šilutė district: 2 gymnasiums in Šilutė and 1 gymnasium in rural area – Švėkšna, in Lithuania. In order to make study more reliably, methods that were applied in empirical part of research were qualitative and quantitative, such as interviews, questionnaires, participating observation, focus groups, and informal talks. Secondary data involved study of archives of textbooks, and curriculums, books, articles, internet sources, reports and studies of environmental education.

2.1 INITIAL PLANS AND EXPERIENCED CHALLENGED

First ambition plan for this study was to make a research in all 4 secondary schools that are in Šilutė town, in Lithuania. By trying to make arrangements with principals of those schools I faced with difficulties such as one school was not sympathetic in my research topic. Hence, two gymnasium secondary schools approved me with permission to take interviews and questionnaires from pupils and teachers. Through the time I spend in those two gymnasiums I felt a need to apply more methods in order to make this study more reliable. Luckily, I was helped by some teachers and staff of schools which allowed me to enroll in some classes, and organize focus groups for discussions. Archives such as morally old books, teaching material was provided by school librarians. In the end of the fieldwork there were few extra days left and this led me into broadening research by going in the third gymnasium which is located in rural area. In the end I have got primary data from 3 gymnasiums out of 4 that are in Šilutė district, in Lithuania.

However, some challenges were faced during fieldwork at schools. Thought initial plan was to collect primary data by using probability methods in order minimize bias, accessibility and convenience methods were applied instead. Circumstance for choosing those methods was that I was outsider of those schools, did not belong to any governmental institution, and had no special pedagogical education which would allow me to make a research in my chosen ways. In addition to this chosen target population – pupils are secured by fundamentals law of protection of the rights of the child (Republic of Lithuania, Law on fundamentals of protection of the rights of the child, 1996). However, I had an ability to adjust to principals' and teachers' settings, which were that pupils were able to contact mostly during the classes. Thus it was convenient to give surveys for all pupils from chosen grades rather than randomly chosen pupils from any grade. This saved much time and gave 100% of responses. In addition to this accessibility much depended on teachers' willingness to cooperate, especially was hard to reach 12^{th} grade pupils as they were intensively preparing for final exams. Hence, in order to compensate bias that might come out of non-probability methods and be able to make generalizations about target population, I intended to increase number of respondents.

2.2 INTERVIEWS

Qualitative interviewing was chosen in order to gain deeper understanding of how environmental education is perceived by people closely related to this topic. According McLafferty (Clifford and Valentine 2003) personal contact between interviewer and respondent often results in more meaningful answers and generates a higher rate of response.

Semi-structures and some improvised face-to-face interviews were done with 14 teachers and 14 pupils; one interview with a teacher was in a form of e-mail (see Table 1 and Table 2). Prepared questions in some cases functioned as a support guide while in others interpretations were introduced depended on time, respondents' provided information and abandon to speak. Thus this interviewing method allowed collecting more additional and unexpected data (Deppert 2008). Respondents' talk was recorded in notes whereas interviews took time from 15 minutes to more than one hour

Sampling was taken according accessibility both of teachers and pupils. Teachers were chosen on the basis of their relations to the research topic (Cameron 2000 cited in Clifford and Valentine 2003). Thus the highest attention was taken on natural science teachers from

the fields of: chemistry, physics, biology, geography. With an intention to have a broader picture in environmental education teachers from humanities: English, moral education (ethics and religious), civic education, was also interviewed. Information from both sexes was taken, from teachers and pupils. Pupils from all grades were interviewed within range of age of 14 to 18 years old. Teachers' age was not in concern but their teaching experience which varied from 1 year up to more than 25 years.

Questions for pupils (see appendix A) were formulated in order to get better understanding of how they sense the world from environmental perspective (Longhurst cited in Clifford and Valentine 2003). While for teachers (see appendix B) it was made in order to explore their representation of environmental education issue (Bauer and Gaskell, 2000).

Table 1. Interviewed teachers from 3 gymnasiums in Šilutė district

	1st gymnasium of Šilutė		**Vydūnas gymnasium, Šilutė**		**Švėkšna gymnasium**	
	Total	Investigated in numbers	Total	Investigated in numbers	Total	Investigated in numbers
Teachers in schools	50	6	44	5	37	3
Teachers of Natural science	6	3	6	4	5	2

Table 2. Interviewed pupils from 3 gymnasiums in Šilutė district

	1st gymnasium of Šilutė	**Vydūnas gymnasium, Šilutė**	**Švėkšna gymnasium**
Pupils	9	5	-
9th grade	3	1	-
10th grade	1	1	-
11th grade	2	2	-
12th grade	3	1	-

2.3 QUESTIONNAIRES

The aim for questionnaires was to acquire quantitative and qualitative information about characteristics, behaviors, attitude and actions about environmental issues (McLafferty cited in Valentine and Clifford 2010) of pupils from Šilutė district in Lithuania. Grades were

stratified into 9th, 10th, 11th and 12th, and then chosen randomly out of all in its section. Questionnaires were given during the classes for all pupils of chosen grades. In order to gain precision in this research, questionnaires to 385 pupils were given or 31% of all pupils from 3 gymnasiums in Šilutė district. Age range varied from 14 to 18 years old within 9th-12th grades (see Table 3). 54% of respondent pupils were females, 45% - males, and 1% did not indicate their gender.

Table 3. Number of questionnaires given to pupils

Grades	**1st gymnasium of Šilutė**			**Vydūnas gymnasium, Šilutė**			**Švėkšna gymnasium**		
	Total	Investigated		Total	Investigated		Total	Investigated	
		In numbers	%		In numbers	%		In numbers	%
9th grade	137	57	42	109	24	22	76	28	37
10th grade	128	41	32	102	12	18	54	24	44
11th grade	155	72	47	117	30	26	38	15	40
12th grade	131	22	17	119	18	15	40	15	38
	551	**192**	**35**	447	**84**	**19**	208	**82**	**40**

Questionnaire (see appendix C) was constructed by my own imagination and inspiration of variety of scholarly written research articles, textbooks, and book: Buchcic E. & Grodzinska-Jurczak M. (2004), Cichy D. (2004), Gajus-Lankamer E. (2004), Grodzinska-Jurczak M. (2004), Lubomira D. (2004), Reinfried S (2004), Tarabula-Fiertak M., Gajus-Lankamer E.& Wojcik M.A. (2004), Valentine G., Clifford N. (2010). Questionnaire was constructed in order to sense pupils' knowledge, attitude and actions toward nature, environmental issues and possible protection for environment. Most questions were related with ecology and environmental lifestyle. As those subjects are very broad, the decision came out to make a question or few from each section of ecology: air, water, soil including waste. Questionnaire included closed and open ended questions as well ranking questions (see appendix C). This structure allowed getting factual information and assessing pupils' attitude (McLafferty cited in Valentine and Clifford 2010). Hence, most questions were about daily life practices that most pupils might be related with. Anonymity was chosen because of protection of pupils' rights that are less than 18 years old and a high number of respondents. Keeping the questionnaire simple, easy to fill and understandable for pupils was in the highest consideration. Material was processed with Microsoft Excel program.

2.4 PARTICIPANT OBSERVATION

Participant observation method was chosen in order to broaden overview of schools' life and strengthen qualitative and quantitative information that was gathered during the interviews and questionnaires. The strengths of this kind of method are, as Laurier argues (Valentine and Clifford 2010, 145), "it is easy to do and it provides a more direct access to phenomena". Participant observation in few Ethics classes, school libraries and popular pupils' gathering places during the brakes at school were done.

2.5 FOCUS GROUPS

Focus groups method was used as a supplement to other methods. Its main strength is that many people's opinion is gathered in comparatively little time (Longhurst cited in Valentine and Clifford 2010). Teacher helped to organize focus groups with pupils during their classes as it resulted in more attention from them. The aim of the focus groups was to discuss about environmental issues, reasons and possible solutions of it that participations think as most important to them.

2.6 INFORMAL TALKS

Number of informal talks was done during the fieldwork with people in some way related to environmental education topic. In some cases snow-ball method was used in order to make a contact, in others – people were chosen who in my opinion were interesting and important in order to explore this research topic in depth. Thus informants in informal talks were: pupils, teachers, schools' administrators, and principals, pupils' parents, represent of Šilutė municipality environmental sector, schools librarians, represents of Šilutė's municipality waste treatment company.

2.7 SECONDARY DATA

Secondary material included present and 'morally' old textbooks, archives of national curriculums and present curriculums of different subjects of Lithuanian secondary schools. The purpose of this material was to get the reflections and aspects of environmental education in Lithuania. There also has been obtained scientific literature analysis, printed and electronically accessible scholarly written articles and books. Lund University library

alongside ELIN and LOVISA databases were used to gather portion of information. Different materials enabled to analyze research questions from different perspectives.

3 RESEARCH CONTEXT

This chapter aims to describe Lithuania in short, its economical, political and environmental situations in order to put research topic in the greater context. Further more in addition to this, education system of Lithuania is introduced.

3.1 COUNTRY CONTEXT: LITHUANIA

Lithuania is located in Eastern shore of the Baltic Sea, in Europe (see figure 1). This small country holds about 3.2 million people. Lithuania was occupied during the Second World War in 1940 and gained independent only in 1990.

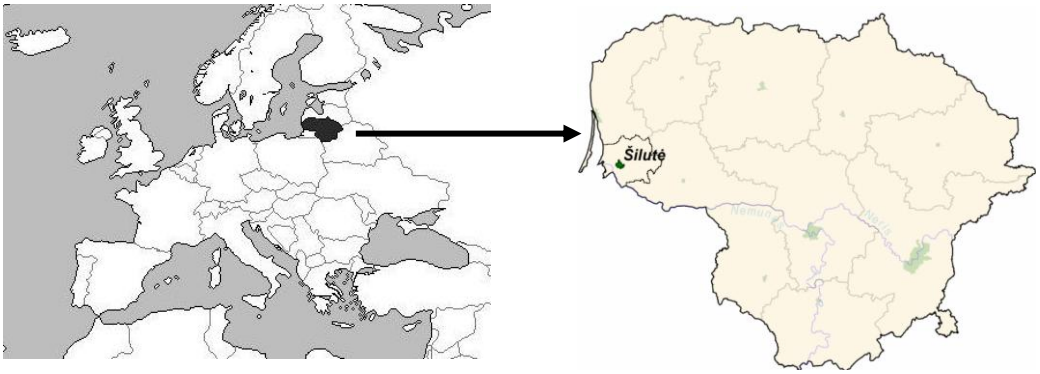

Figure 1. Map of Lithuania: showing the location of Šilutė district in Lithuania

Sources: First from the left: reprinted from Bengt Andrén, *Drag siffrorna till rätt land!* Karslkrona gymnasiet, Sweden. Second from the left: reprinted, by permission, Šilutė on the map of Lithuania.

Twenty years ago Lithuania faced huge changes in its life when economical, political, and social spheres transformed from socialistic republic within central collectivization and industrial economic system into democratic republic within market-based economic system.

During Soviet times Lithuania's economy was mostly based on industry and agriculture. The country's nature had suffered because of immense drainage on land for agricultural use

(Iwaskiw 1995). Intense industry at those times had also created many environmental problems, such as air pollution, rivers and lakes pollution.

After gaining independence, Lithuania legally legitimated environmental protection guidelines in 1992. During the last twenty years Lithuania improved environmental situation by reducing pollution and taking more into consideration quality of environment, and interests of residents for safe and clean environment (Bukantis A., Gedžiūnas P., Giedraitienė and al. 2008). Radical changes were influenced by appearance for more advanced technologies and production processed (Bukantis A., Gedžiūnas P., Giedraitienė and al. 2008). In addition to this current Lithuanian environmental policy is in integrity with principles of sustainable development.

Even though Lithuania made substantial alteration in state's sector for environmental condition improvement this does not mean that Lithuania is not facing any environmental issues. The fact is that in current developed technology, economics and industry times, economy is tightly related with demand for resources and environmental pollution (Bukantis A., Gedžiūnas P., Giedraitienė and al. 2008).

3.2 ŠILUTĖ DISTRICT AND ITS GYMNASIUMS

In Šilutė district (see figure 2) there are production plants of food and drinks, furniture, wood and products of wood, and peat. This area is rich of waters and rich soil which makes this area very cultivated land. There also should be mentioned that Curonian lagoon and Nemunas delta is the value of the international environmental territory, rich with fish and birds. Within rich fauna and flora this area has one national park and 9 conservation areas. Because of Šilutė district's distinctive environment it is very attractive place for tourists (Šilutės rajono savivaldybė 2010a).

Figyre 2. Map of Šilutė district
Reprinted, by permission, Šilutė district municipalit

The population in Šilutė district is around 55 thousand inhabitants. In Šilutė town there are ~ 21 thousand inhabitants, while in Švėkšna area there are about 4 thousand inhabitants. In Šilutė district there are 4 gymnasiums, 3 secondary schools and 26 other schools. 2 gymnasiums are in Šilutė town, 1 in Švėkšna and 1 in Žemaičių Naumiestis. Around 7000 students are in Šilutė district (Šilutės rajono savivaldybė 2007) from which 1400 are attending gymnasiums (Šilutės rajono savivaldybė 2010b).

3.3 EDUCATION SYSTEM IN LITHUANIA

Education in Lithuania is very important and valued by most people. Thus the result of this is that about 77 % of the population is in tertiary education (UNESCO 2008). According 2008 UNESCO statistics, 99.7 % of adults and 99.8 % of youth is literate in Lithuania.

Education system (see appendix D) in Lithuania is very similar to international standards with slightly small differences. In figure 3 there is visually described system of general education in Lithuania.

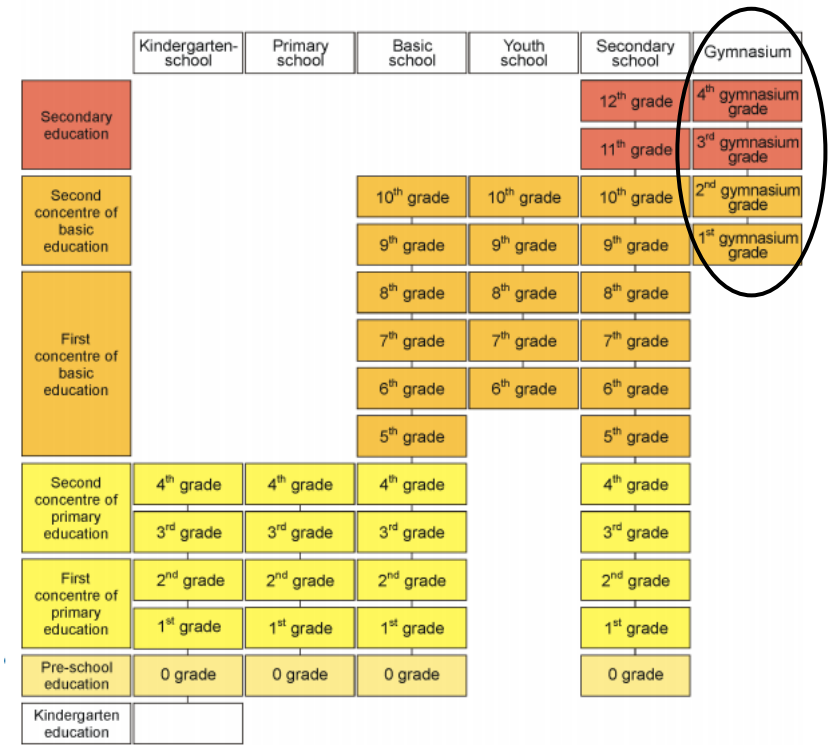

Figure 3. Main types of schools of general education showing gymnasium level

Source: *Education in Lithuania. Figures and trends 2003.* 2004. Vilnius, Ministry of Education and Science of the Republic of Lithuania.

Primary school begins at the age 6-7 and it takes four years in this level. Followed by primary school, another six years are compulsory of basic education. After 10 years in school pupil may take the final examination which leads into getting a basic education certificate. After completing 10 years in basic education, a two extra years may be taken in secondary education level. In grades 11 and 12, pupil are able to select subjects that interests them most and strengthen their knowledge in it. Gymnasiums are chosen after completing 8 years in basic education. This type of secondary school has higher educational requirements for pupils and seeks to prepare them for higher education.

4 THEORETICAL FRAMEWORK

In the following, the concept of environmental education, its goals and potentiality for sustainability, and different conceptions and methodologies are discussed. This chapter also introduces with two dimensions perceiving environmental education. First dimension analyses environmental education connection with general education; second dimension analyses environmental education problematic issues emerged when environmental education is in power of general education. In addition, this chapter introduces with suggestions how environmental education can be achieved.

4.1 THE CONCEPT OF ENVIRONMENTAL EDUCATION

4.1.1 The definition and goals

The definition of environmental education was introduced into academic society in 1969 by Stepp, Bennett, and Bryan. In this paper I use first definition of environmental education as it has not changed much in its nature until recent days. A little more than 40 years ago environmental education was defined as:

> *Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work towards their solution (William B. Stepp, et al. 1969:30).*

In addition to this, Stepp, Bennett, and Bryan (1969, 30-31) also briefly described targets of environmental education for individuals to acquire:

1. A clear understanding that man is an inseparable part of a system, consisting of man, culture, and the biophysical environment, ant that man has the ability to alter the interrelationships of this system.

Culture, in this circumstance, consists of technological processes, social strategies and arrangements, such as political, educational, managerial, through which both natural and man-made environments are interacted with. Thus environmental education aims to develop and maintain man's interaction with biophysical environment in the context of culture, to come along for human welfare.

2. A broad understanding of the biophysical environment, both natural and man-made, and its role in contemporary society.

Environmental education seeks to provide understanding of natural resources including its characteristics, distributions, present and potential uses, and how these resources are used by man. Not only natural environments, but also understanding of man-made environments, its qualities, statuses and influences for society. Understanding of these environments requires knowledge of the social, political, economic, technological processes.

3. A fundamental understanding of the biophysical environmental problems confronting man, how these problems can be solved, and the responsibility of citizens and government to work towards their solution.

Interaction between man, culture, and environment was the reason for biophysical environmental problems. Social, political and physical factors caused environmental problems such as pollution, insufficient management of natural resources, production and utilization, etc. Thus it is vital to understand how to work towards solutions via laws, policies, development of technologies, etc. Environmental education should help people to realize that responsibility of solving environmental problems belongs not only to governments, but themselves either.

4. Attitudes of concern for the quality of the biophysical environment which will motivate citizens to participate in biophysical environmental problem-solving.

Attitude, in this context, involves factual knowledge and emotional concern in a result of motivation to act. In short, environmental education must provide people with factual knowledge of biophysical environment in order to understand it; develop a concern which would lead people into motivation to work towards solution solving environmental problems; and provide citizens with information how they can achieve environmental education goals.

Six years after the appearance of the environmental education concept, international definition was adopted by United Nations Educational, Scientific, and Cultural Organization (UNESCO 1975) in Belgrade Working Conference on Environmental Education in 1975.

> *The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new one.*

There are three main aspects that involve environmental education goal: cognition, affect, and behavior. The cognitive aspect includes: knowledge of ecology, awareness of environmental problems; "knowledge of ecological systems that connect human action and consequences across space and time; knowledge of one's locality or "place" and its human and cultural components; and knowledge of action strategies" (Clayton and Myers 2009, 182-18). The affect aspect includes: motivation to change, emotional attachment, and feeling that "one can make a difference, and commitment to continue one's effort" (Clayton and Myers 2009, 182), even though it might seem that one can do very little, collectively people can do a lot. Behavior aspect includes: green consumerism, pro-environmental policy support, citizenship behaviors, activism, land management choices, collective actions and so forth.

There should be mentioned two important things that might be confused in analyzing environmental education. First one is that information and knowledge should not be

conceived as the same thing. Knowledge in this case, as Clayton and Myers (2009, 183) explains, is "integrated into the person's wider framework of concepts and orientations". Second, there is no linear model of: Environmental knowledge – Environmental attitude – Pro-environmental behavior. Though it might seem that increase in knowledge and awareness might lead to pro-environmental behavior, researchers have proved it to be wrong in many cases (Kollmuss and Agyeman 2002).As recent studies shown, model is much more complicated, in a way as it is interconnected with internal and external factors such as personality traits, value system, infrastructure, political, social and cultural factors, economic situation, and etc. (Kollmuss and Agyeman 2002). More over, there is no one accredited model created, though those three main aspects, knowledge, attitude, and behavior, figure in all suggested ones.

4.1.2 Potential and necessity

For more than 40 years environmental education has been raised and asked to help create literate society, society which would be engaged, motivated to act towards solving current problems of humans and nonhumans, and preventing from creating new ones. In 1972 The Stockholm Declaration on the Human Environment fist time introduced declaration about sustainability referring to higher education. In this conference there were introduced 24 principles on which sustainability should be achieved. "Principal 19, according to Wright (2002, 204), stated the need for environmental education from grade school to adulthood". Later on, Tbilisi Conference on Environmental Education also contributed to importance of environmental education as it was one of the starting point for it. The Tbilisi Declaration repeated the Stockholm Declaration in stating that "environmental education should be provided to people by all ages, all levels" (Wright 2002, 204).

In addition to this, there are many scholars who discuss the need for environmental education: Clayton and Myers (2009) claims that environmental education has the potential to affect a wide range of individuals and provide an important opportunity to promote human-environment harmony. Economists Bogovič and Čegar (2010, 920) argues that environmental education is "essential for development of critical thinking on ecological questions and acquiring ability in individuals for responsible decision making". Sauvé (1996, 7) discuss environmental education and sustainable development as closely associated by promoting development model based on "the wise use of resources, with concerns for equity and

durability". Meanwhile Reason (2007, 27) sees the crisis of sustainability as a crisis of mind and therefore he joins environmental educator David Orr in believing that "current educational forms are at the centre of our ecological problems". To sum up, international scholars are on an agreement that environmental education has enormous influencing role in forming peoples' knowledge and attitude, is highly practical in motivating to improve and protect environment (Clayton & Myers 2009).

4.1.3 Conceptions of the environment

Depending on how environment is perceived, there might be different strategies for teaching and learning environmental education. Following, a typology of conceptions of the environment in environmental education, in table 4, is presented which helps to picture variety of conceptions, relationships and thereby according to those, practices used in teaching and learning process.

Table 4. A typology of conceptions of the environment in environmental education

Environment…	type of relationship	principal characteristics	examples of teaching/learning strategies
as nature	to be appreciated, respected, preserved	the original, "pure" environment; nature-as-a-cathedral; nature-as-a-uterus	• nature exhibitions; • immersion in nature
as a resource	to be managed	our collective biophysical heritage, sustaining quality of life	• 3Rs campaigns; • audit of energy consumption
as a problem	to be solved	the biophysical environment, supporter of life, threatened by pollution, deterioration	• problem-solving strategies; • case study
as a place to live	to know and learn about, to plan for, to take care of	our daily living environment with its sociocultural, technological and historical components	• environmental story of our place; • eco-gardening project
as the biosphere	in which we all live together, into the future	the spaceship Earth, object of planetary consciousness, a world of interdependence between beings and things	• case study on a global issue; • storytelling illustrating different cosmologies
as a community project	in which to get involved	a shared living milieu; the focus of socially critical analysis; a political concern for the community	• integral action-research (participatory process aimed at transformation); • environmental issue forums

Source: Sauvé (1996, 13)

The historical sketch of the table above is as follows:
Environment as a *nature* education have its roots in 1920's, as a *resource* with conservation education movement started in the middle of 20th century. In early 1970's environment was seen as a *problem* and around the same time environment as a *place to live* was more popular with environmental psychologists. In '80's – '90's environment as the *biosphere* emerged in Northern countries, stimulated by "globalization of information and markets and by the growing awareness of the interrelationship between global and local environmental phenomenons" (Sauvé 1996, 14). Meanwhile in Southern countries environment as a *community project* became dominant.

Even though those concepts of environmental education evolved during different times, it does not mean that earliest were forgotten and the latest concepts are taken for granted. Sauvé (1996) explains that those separate conceptions of environmental education often complement each other and can be combined in many ways. Ideally, as Sauvé (1996) claims, the best would be to connect all those six environmental visions in environmental education processes.

4.1.4 Methods used in environmental education

Environmental education is a long-run learning process. According to Clayton and Myers (2009, 181-182) environmental education seeks to affect "worldviews, attitude, and behavior". They also describe variety of methods that may be used in environmental education such as traditional courses, instructional units, supplement material, fieldtrips to community investigations (Volk & MacBeth 1998 cited in Clayton and Myers 2009). Informal sector includes nature centers, environmental learning centers, residential camps, zoos, aquaria, park interpretive programs, outdoor learning, extension programs, community projects, citizen science projects, service learning, professional development, industry-based training, peer groups around kitchen table, and more. Information sources that may help in learning process are such as performing arts, radio, television, digital technologies, movies, fliers, posters, newspapers, magazines, and books. And most importantly, as Clayton and Myers (2009, 182) discuss, that "individuals educate themselves by reflecting on their own observations and actively seeking new kinds of experience from which to learn across their lifespan".

4.2 ENVIRONMENTAL EDUCATION VS GENERAL EDUCATION

In the context of this paper, environmental education is questioned in two aspects. At first, when environmental education is institutionalized and disciplined within general education system (others called dominant education system), and second, when environmental education (in this case is often used interchangeably with the term ecological education) is as transformative educational practice which goals are mentioned above, produced by UNESCO. Environmental education is distinguished from practice and from institutions in order to get deeper understanding of how environmental education works within general education system. Thus, in the first situation environmental education is analyzed at the perspective of environmental education discourse which is in power of general educational discourse. Meanwhile, in the second situation environmental education involves analysis of educational discourse which appears within environmental education integration in general education. However, there is no doubt that some cases fall in between these two or overlap.

Discourse, according to Cots (2006, 339) can be understood as a "different ways of talking/writing about (and structuring) areas of knowledge or social practice", and from critical point of view as a "mode of social practice that is both structured by society and, at the same time, contributed to structuring that same society". Then discourse analysis from a critical point of view can be stated as an "explanation of how discourse is shaped by relations of power and ideology and, at the same time, is used to construct social identities, social relations, and systems of knowledge and belief".

4.2.1 Environmental education discourse within general education

In the following section I analyze environmental education relation with general education system. To this end, I follow the work of David Gruenewald (2003, 2004) about interactions of environmental and general educational discourses.

General education, as it is now, has a status of dominant educational discourse. As a consequence, environmental education is often accepted as a sub-discourse of the general education system. The relationship that environmental education has with general education is criticized by Gruenewald where he argues that environmental education legitimizes general

education's normalization discourses, institutionalizes standards and therefore this enables to solve problematic issues which are created by general education system, and which in fact raise the need for environmental education. In other words institutionalized environmental education legitimizes general education's problematic practices, rather challenges it. Consequently, Gruenewald (2004, 74) argues that environmental education values are undermined; moreover environmental education becomes ineffective because it is "dwarfed by the power of the dominant educational discourse". In this way environmental education can not reach its main goals because general education system is anti-environmental, and serves different aims. In an aside, it is interesting to note that Gruenewald himself finds Foucault's metaphor and example of the prison system as useful in discussing the way that environmental education is embedded in the general education system.

Those aims are closely related with those in the discourses of political economy and are widely discussed by many scholars. Thereby Spring (1998, 151 quoted in Gruenewald 2004, 77) argues that "now the common call is to educate students to meet the needs of the global economy". Gruenewald (2004) adds that corporations, government, and the media constantly reinforce the connection between education and successful competition in the global, capitalist economy or in other words preparing youth for employment in the competitive, high-tech world of the 21st century. Here Gruenewald envisages that huge importance of economic factors in education narrows its purpose by creating competitive workforce. Sauvé (1996, 19) brings an insight that because of current education system close relation with economic system information which is given in schools is made to "ensure environmental "conformity" to economically acceptable norms'. In this instance general education discourse usually keeps in silence of environmental issues with relations of these economics.

Gruenewald (2004) also sees double silence noticing that many critiques of general education discourse also ignore to stress environment. The result of this double silence keeps environmental discourse marginalized from sociopolitical concerns; thereby environmental education has low influence in framing social and educational issues.

In summary, environmental education in a relationship within general education risks loosing its transformative goals and at the same time satisfies general education's problematic learning objectives. It happens in a result of environmental education being restricted by norms, codes, routines of schools, by the same token that school system supports uncritical

thinking, inequitable, individualistic, and unsustainable economics of general education (Gruenewald 2004). In addition to this, Gruenewald (2004, 73) remarks, that ineffectiveness of environmental education are determined with standards of general education as it tends to neglect "the social, economic, political, and deeper cultural aspects of the economic problems".

4.2.2 Environmental education as transformative educational discourse

As it was mentioned in previous section, environmental educators agree that environmental education is lacking connection between social and ecological aspects. Some limitations are caused by general education discourse. As Gruenewald (2004, 83) explains, environmental education is undermined by general education discourse in a way of being as "another fragmented content area […] covered and assessed – if there is time". In other words, environmental education is often added only when all other priorities have first been met. Other limitations emerge within educational discourse. Thus educational discourse of environmental education does not lack critique as it is closely interlaced with general educational discourse.

Environmental education as transformative practice with goals produced by UNESCO, mentioned in a previous section, according to Barrett (2007, 209), appears only when there is a motivated and passionate teacher who, "despite frequent barriers, maintain environmental education as a priority". Structural barriers that teachers are often facing are such as: too much curriculum material to cover, difficulty working across disciplines, lack of resources, time or the ability to take students outside, insufficient methods and knowledge used in how to teach about environment, small amount of teachers having expertise in this, and so forth. If those barriers are significant, as Barrett (2007) discusses, general education discourse makes it difficult, and sometimes even impossible, for teachers to engage in environmental education. Barrett (2007) argues that general education discourse works insidiously in undermining ways, for even engaged and motivated teachers to teach environmental education.

Anyhow, sometimes it is confusing to catch whether environmental education is working on its 'highest gear' or uses small fractions of it. Often happens that any practice that is in some way related to the goal of environmental education is likely to be called 'doing'

environmental education. Gruenewald (2004, 74) explains it arguing that "one could make the claim that one is 'doing' environmental education even if only a small fraction of the curriculum is devoted to studying the environment and people's relationships to it". For example when children do outdoor activities participating into national environmental events once a year (cleaning surrounding environment), in class teachers remind necessity of recycling, or according to curriculum do scientific measurements of water, air or soil quality. But often it is desultory, not systematically done and mainly, as mentioned above, by engaged teachers. Thus small and often isolated fractions of environmental education activities lead in sacrificing depth of meaning of pupils experience with the environment (Sobel 1996, quoted in Gruenewald 2004), moreover cultural, social and economical factors are often left unexamined (Gruenewald 2004). In this instance all this indirectly contributes into promoting uncritical thinking.

Following this, much knowledge is subjugated and neglected as it reflects in situation when (1) there is no time, knowledge and commitment to explore ecological concepts, relate to educational and social aspects, and (2) environmental education practice neglects social and ecological conflicts (Gruenewald 2004).

Moreover, Sauvé (1996) argues that environmental education limits itself as it does not take into account the total environmental reality and different concentration on relations of person-society-environmental networks. Following this, Bower (cited in Gruenewald 2003) believes that 'eco-justice' is a critical part of ecological education theories and practices. The eco-justice has the aim to "develop an ethic of social and ecological justice where issues of race, class, gender, language, politics, and economics must be worked out in terms of people's relationship to their own environments, human and non-human" (cited in Gruenewald 2003, 6). In addition, production, distribution, consumption and disposal are not just related with wealth, 'good' life (for some) but also with consumption and destruction of living nature, disposal of humans (Salleh 2009). Therefore *social* (extraction of labor, exploitation of bodies and minds by capitalistic industrials, services and workers for surplus value), *ecological* (global North's extraction of natural resources, livelihoods from the global South) and *embodied* (unpaid reproductive workers who provide use value) debts hardly reach majority of those who are involved in 'economic game' (Salleh 2009, 4-5).

4.2.3 Achieving environmental education goals

To that end, environmental educators are divided into two directions of how environmental education could achieve its main goals. On the one hand there are scholars (Illich and Holt, Weston 1996 quoted in Gruenewald 2004, 81) who suggests "deschooling" environmental education, with an argument that "the educational processes needed to gain environmental awareness are much larger than schools can provide". In that case, as Weston (1996 quoted in Gruenewald 2004, 81) points out, environmental educational process "must involve citizens at all levels becoming more consistently engaged with the more-than-human world". On the other hand there are environmental educators who support idea to impact schooling from inside, but at the same time tends toward legitimizing standards of general education. Thus, according to Gruenewald (2004, 83) acts of legitimization of environmental education field "may have the effect that they distract environmental educators from the goals of transforming education and culture". As it was explained above, environmental education is undermined by general education discourse "rather constituting itself as a lens through which all content areas – and the purpose of education itself – might be viewed" (Gruenewald 2004, 83).

It is appropriate at this point to draw a preliminary conclusion that will be returned to below, in the concluding discussion section of this paper. From the above, a reasonable approach to pursue would be to neither fully agree with, nor neglect, each the above mentioned ideas of how to achieve environmental education goals but rather combine some aspects of each other that might help to solve socio-ecological crisis.

I borrow thoughts from supporters of "deschooling" that schools alone with its educational practices are not feasible to provide pro-environmental consciousness and awareness that environmental education is seeking for, but also suggest not to undervalue the potential of 'impacting schooling', despite much critique on it, though there is much to improve in schooling in a field of environmental education. Thus, in a combination of those two aspects, environmental education should be systematically introduced in all public and private sectors, including strengthening at schools.

Environmental educators suggest solution that in order to prevent increasing socio-ecological crisis, changes in both, education and social systems are essential. The idea is to make a shift

from industrial worldview, which in fact is 'mountaining' socio-ecological crisis, into ecological worldview. Following there is presented suggestion where changes should be done:

- Economic policy – challenge the assumptions that formalize the logic of the market (Gruenewald 2004, Reason 2007);
- Educational policy – challenge assumptions of the purpose of education with preparing for economic competition in the global market (Cannella 1999, Gruenewald 2004);
- Environmental education – challenge discourse that conforms to the conventional stand of general education (Gruenewald 2004, Barrett 2007).

Changes in economic policy should not be understood as total changes of the system, but the perception of the logic of this system. Educational policy should challenge general education standards. This would lead into changing our social practices, our thoughts and actions (Gruenewald 2004). And finally, environmental educators should start take a substantial step in confronting with general education discourse.

4.2.4 Critical pedagogy of place

One of the solutions of how environmental education could be more effective as a transformative educational discourse is an idea about bounding critical pedagogy and place-based pedagogy into critical pedagogy of place (Gruenewald 2003).

Place-based pedagogy is concerned about social and ecological places people inhabit, analysis how "economic and political decisions impact particular places" (Gruenewald 2003, 3). Meanwhile, according to Gruenewald (2003, 3), critical pedagogy "challenges assumptions, practices, and outcomes taken for granted in dominant culture and in conventional education".

Articulating critical pedagogy of place is thus a response against universalizing educational reform policies and practices, that disregard places and leave assumptions about the relationship between education and the politics of economic development unexamined (Gruenewald 2003). Critical pedagogy of place is a pedagogy linked to cultural and ecological politics, informed by an ethic of eco-justice (Bower 2001 cited in Gruenewald 2003), and

other socio-ecological traditions that interrogate the intersection between cultures and ecosystems (Gruenewald 2003).

The idea for Gruenewald to combine those two theories and practices came from the understanding that both have critical points, but at the same time each misses part which could be crucial in order to achieve main goals of reforming education system. In place-based education there are approaches which hesitant topics of urbanization, culture homogenization, while critical pedagogy often give up including human culture into ecological systems. Thus critical pedagogy of place, according Gruenewald (2003, 3), stands for "a response against educational reform policies and practices that disregard places and that leave assumptions about the relationship between education and the politics of economic development unexamined".
However, according to Gruenewald (2003, 7) idea about critical pedagogy of place is quite radical having in mind that educational discourses seek to "standardize the experience of students from diverse geographical and cultural places so that they may compete in the global economy".

Hart, Jickling, and Kool (1999 quoted in Gruenewald 2004, 80) have argued that "rather than establish normative criteria [for EE], it may be more fruitful to find ways to engage teachers in critical reflection about their own practice and thinking". Like-for-like scholars discuss that teachers' role in environmental education is very important as in a ways they engage their own practice into environmental education and their critical thinking (Hart, Jickling, & Kool 1999:115). Teachers in this way can be promoters in changing education practices, therefore promote changes in environmental education.

With this theoretical framework in mind, I then proceeded with my study of a number of schools in Lithuania, in order to learn what they could tell us that could lead to an improvement in environmental education there. The next section related the results of that study.

5 RESULTS

Following there are the results of my historical and empirical analysis of Lithuanian education system, including description of national curriculum, teachers' and pupils' responses towards environmental education at secondary school in Lithuania.

5.1 LITHUANIAN NATIONAL CURRICULUM

After the fall of "Iron Curtain", there was a major shift of socio-politics and economy in Lithuania. This transition brought changes in economics and politics, social and cultural areas alongside education system. After gaining the independence, in 1990, well-grounded new and intensive changes took place in the education system of Lithuania (Lamanauskas 2007). (Here the term *education* is used as a general education of secondary school).

So far there have been 2 national educational reforms made in Lithuania, and many more transformations of national curriculum. Further, curriculums will be analyzed in two stages, before Lithuania joined the European Union (EU) and the second reform after joining the European Union.

Twenty years ago, Lithuanian education system was rebuilt from the base, which meant that it had to be created with a new model of education. In early years of independence, during the 1990-1992 years, national curriculum was reformed with an assistance of the foreign educator partners, both from America and Western European countries (Želvys 2004, 562).

During the national education reform in 1992-1997, Lithuania was very open to Western ideas, while at the same time rethinking about nationalistic and traditional educational ideas that were before state's occupation. Therefore there appeared an expression of "national" and "cosmopolitan" orientations of education policy makers (Želvys 2004). In other words, as Želvys (2004) points out, dualist idea of "returning to the roots" and "borrowing from abroad" of national education system and curriculum. Thus, in 1994, when a new national curriculum was created, choosing new textbooks was one of the major challenge at that time, because of the "new look" at the fields of social sciences and humanities. Hence many books were translated from foreign writers, moreover reform also included decentralization process when

teachers were allowed to create individual syllabuses, schools had a right to develop school-based curriculum, and at the same time the decisions of basis of curriculum were done at national level (Želvys 2004, 564; LR Švietimo ir mokslo ministerija 2008). The main idea was to create a "modern school in a newly independent state" with principals of "humanism, democracy, renewal, commitment to Lithuanian culture and conservation of its identity and historic continuity" (Želvys 2004, 562). Later on, as Želvys (2004) notices, this tendency lasted until first half of the last decade of twentieth century, and after this educational reform became more independent from historical sentiments and foreign influences (Želvys 2004).

The "second phase" of the reform involves years from 1998-2003. In 1997, curriculum was much more pragmatic and economically grounded (Želvys 2004). There was more attention to criticism, from idealistic first version to a more positivistic version.

The second reform was divided in to phases as previous one, in 2004-2007 and 2008-2012. Thus accordingly, national curriculum was once again re-examined in 2002 and 2003 years. To this end vocabulary of globalization penetrated through all educational programs. In curriculums appeared broader discussions about social diversity, equality, globalization, localization; alarm about consumerism, ecological degradation, healthy lifestyle, migration, and national identity. This was influenced by the standards of the European Union (EU) (Lithuania joined EU in 2004), as it was a first part of major modernization of education system on common the European Union purpose. Environmental education has its role in the European Union and therefore in Lithuania's national curriculum. There are legal acts, aims and goals of environmental protection in environmental policy and therefore in education. After Lithuania joined the European Union, environmental education became a "part of the efficient implementation of the environmental protection policy" (Bogovič & Čegar 2010:920). Despite those 'refreshments' education was becoming more and more problematical in Lithuania. According to Lithuanian Curriculum Analysis Report (LR Švietimo ir mokslo ministerija 2008:10) educator profession became unpopular, teacher's job devaluated and school life problematic. In order to solve those multi problems, modernization and management of education were taken.

Although a number of steps were taken in order to attempt to rectify those issues. In 2007, the national curriculum was once more re-examined as a following-up to the modernization of education, for the second phase of reform, for 2008-2012 years, to perform. There was no

word ‘standards’ left, therefore changed and recalled as an ‘achievement’. Moreover, content of curriculum was dispersed into considerations of attitude, ability, understanding, knowledge and education. Those objectives are quite typical in many countries (Lithuanian Curriculum Analysis Report 2008). Moreover, there was an attempt to refresh nationality, identity, and public spirit. Meanwhile, the Strategies for sustainable development of EU involved incorporation of sustainable development in all educational systems (UNECE 2005). These themes, namely included, essential issues: human rights, health, social equity, cultural diversity, economy, environmental protection, natural resource management, poverty alleviation, peace, ethics, democracy, justice Pidlisnyuk 2010, 63, UNECE 2005, 27). The Strategy also mentions transition to an „economically and socially focused model of education based on wide interdisciplinary knowledge and a complex approach to the development of society, economy and environment“(Pidlisnyuk 2010:63).

5.2 TEACHERS

5.2.1 Teachers’ perception of environmental education

In the beginning of interviews all teachers were asked to describe their teaching subject. Most of them explained that, for instance, chemistry, biology, physics or geography is not dogmatic subjects in purpose to teach just about physical characteristics of nature, but rather it connects physical environment, social, political and philosophical spheres.

Teachers were asked if they thought there is a need for environmental education in Lithuania. All teachers agreed with it, arguing that it might help to deal with promoting people to be more concerned for keeping environment clean, expanded consumerism, often occurred unreasonable and irresponsible usage of natural resources, and pollution. Though, geography teacher noticed that now there is extremeness in peoples’ beliefs and acts, when ones become ‘deep ecologists’ and others do not care about it at all. Thus environmental education, according to this teacher, is crucial in shaping eco-culture of youth, arguing that “literate human is responsible human”. Other teachers explained that the aim of environmental education would be to prepare pupils to act pro-environmentally both, in their daily routine, and as future employees. As one of biology teachers said, “it does not matter if pupils do not

behave pro-environmentally now, it matters that they remember what they were taught at school, and then, most probably, they will act pro-environmentally later".

Following this, teachers were asked questions in which grades and disciplines environmental education should be integrated. In sequence, 12 teachers out of 14 (86%) agreed that environmental education should be taught from early grades (kinder garden or primary school) until the last ones, while 2 teachers thought that ecology is too broad and hard for young children to learn thus it should be taught in the last few years of school. 13 teachers (93%) said that environmental education should be integrated in all subjects/disciplines, including history, literature, civic education, economic and all natural sciences. Though, one teacher (English language) thought that environmental education should be taught only by natural science teachers.

5.2.2 Teachers' integration of environmental education

In order to find out how each teacher integrates environmental education in their teaching subject/discipline, questions were asked about: usable methods, how do they think pupils receive ecological/environmental information, and difficulties or limitations teachers have to face with.

5.2.2.1 Methods

Textbooks, by most teachers, are used as the main material. Natural science teachers most often use methods such as: narrate the text, sets the text analysis, and theoretical exercises. Some teachers quite often use discussion groups, brainstorming, self-analysis, and practical exercises. Recently the use of video material became quite popular. For instance documentary movie about Chernobyl is shown within topic about nuclear reactions, or documentary movie HOME within topic about relationship of people and nature. Much rarely, excursions outside school for practical exercises or special environmental events are made. Also, by some engaged natural science teachers, there are extra curriculum or activities after school in relation with environment, and attend with pupils to regional or national environmental events, such as recycling action, young scientists contest, and so forth.

The humanities teachers said they do not talk about ecology or environmental issues as a separate topic because it is not included into their curriculums. According the humanities teachers, they themselves indirectly include some themes about ecology or environmental issues in their teaching subject. For instance, civic and moral education teachers relate morality, culture, or responsible citizen topics with pro-environmental behavior or environmental issues. Natural science teachers come into contact directly with ecology, human ecology, environment protection topics because it is integrated into their curriculums. Though, some natural science teachers integrate environmental aspect themselves in topics which in textbooks says very little or nothing about it. For instance, physics teachers having a topic about energy/electricity, gives exercises and examples from daily life by counting how much energy is used in every pupil's homes, how much energy, and money they would save by using energy-saving light bulbs and etc. In the meanwhile biology teachers encourage pupils to think about damage of pollution, for both, human kind and environment, by making quality analysis of water from the local river, or air pollution analysis from different places of the town. Majority of teachers claimed taking examples of daily life, local phenomenon, as it is most perceptible for pupils to understand.

One geography teacher stressed that it is very important to propose ecological topics in more positive manner, not always as a catastrophes or hardly solved environmental issues, as he had noticed, pupils become more pessimistic. Biology teacher added, that "it is hard to teach pupils about ecology, because it is hard to find arguments why behaving environmentally-friendly is worth". Whereas physics teacher stressed on the need to include philosophical aspects in all subjects in order to encourage pupils to think about the world as a broader picture.

5.2.2.2 Teachers about pupils

There is a minority of pupils who, according to biology teacher, notice the beauty of the nature and want to know more about it. While, according to geography teacher, pupils in his classes are very curious, "ask for more information than textbooks can provide", he also said that "pupils from higher grades are more interested in reasons; why something happens in one or another way", though, often in cases of complex issues "pupils suggest very radical decisions in how to solve problems". Debate about ecological food (organic food), according

to biology teachers, is on top in these days, as pupils themselves are very interested in when and what kind of food is 'healthy'. Geography, physics and biology teachers also noticed that many pupils are very interested in economical factors of human-environment relationship.
Physics teacher noticed that pupils do not acquire critical and analytical thinking, giving an example that many of pupils think that depletion of ozone layer is the same as global warming. This teacher also added that pupils do not make connections between causes and consequences. Though ecological/environmental topics might seem very complex and hard to understand, according to physics teacher, "pupils' don't need to understand everything, they need to be interested in things they don't understand, and then their curiosity will lead into literate and responsible citizens".

5.2.2.3 Limitations

During interviews, mostly biology and chemistry teachers were complaining that there is no time to develop deeper conversations of ecological themes, and in many cases they lack of technical material for practical exercises to engage and explain ecological/environmental topics. In addition to this, most natural science teachers complained that they do not get special training or methodology guide for teaching ecology. They felt that searching for effective methods to apply in classes takes lots of time. There also are financial limitations of schools in providing pupils with technical material, excursions outside school or new books. One teacher argued, that she has to teach pupils with 15 years old textbooks, where some statistical numbers are no longer reliable, or in some cases extra information is needed as natural science is evolving rapidly. Interestingly, moral education teacher noticed that very first textbooks (after country's independence) were translated from foreign authors, where ecological topics were put on much higher attention, than recent textbooks, written by Lithuanian authors.

Geography teacher highlighted school curriculum tightness, structuralism, and seeking for keeping pupils in competition, while one of physics teacher put an emphasis on current school system as competition makes pupils to be more creative. However, many natural science teachers, with reluctance, admitted that in many cases they do not fully expound on ecological topics, explaining that these topics in most textbooks are put as the last chapter, and teachers usually lack time to study those topics. Moreover, tightness of curriculum, and purposing to

prepare pupils for final exams, where ecology is not at its highest priority, leaves it partly examined.

5.2.3 Teachers' suggestions how to improve ecological culture in Lithuanians

In the end of interview with teachers, they were asked what, thinking their opinion, could improve environmental education in Lithuania. In the following figure 4 shows teachers' advices of what or who should encourage Lithuanians to act pro-environmentally.

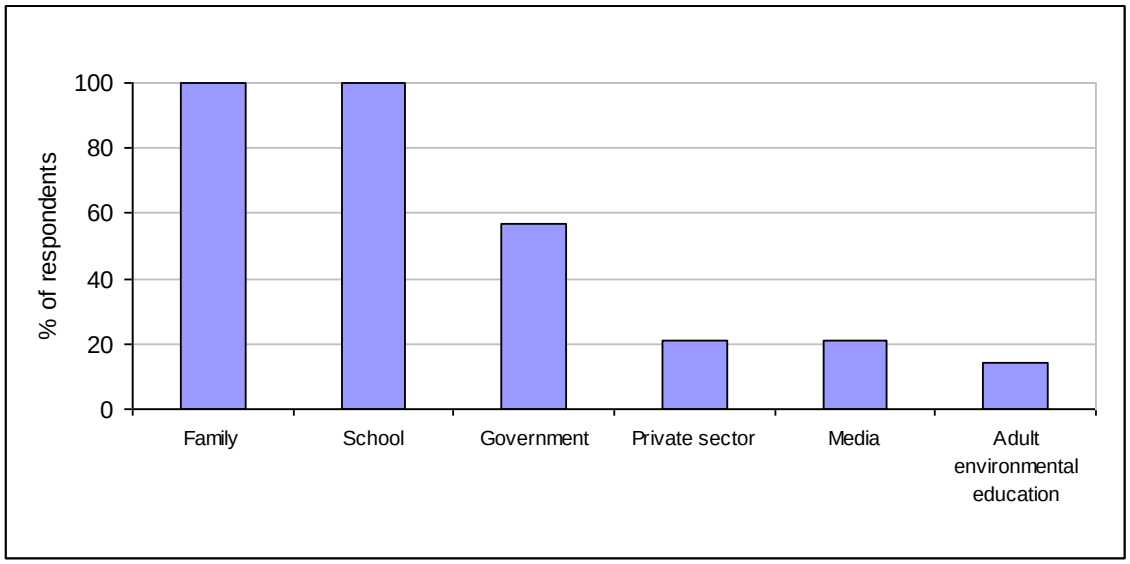

Figure 4. Teachers' advices of what and who should encourage Lithuanians to act pro-environmentally (n=14)

All 14 teachers, without exception, stated school and family at highest importance in order to improve environmental education and educate responsible, pro-environmentally behaving youth. Family was mentioned as a very important surrounding for pupils where they learn, emulate and apply their knowledge, attitude and behavior. Many teachers said that according to pupils attitude they can say that many parents do no teach their children very basis of ecology or environment protection. Though 2 (14%) of interviewed teachers pointed the need for environmental education of adults, arguing that people in all age level should be informed and taught about environmental friendly lifestyle.

After family, according to teachers starts school's job. Teachers explained that schools "purposefully help to educate skills", and "school is the place where some habitual corrections might be made". By 8 teachers (57%), government was pointed out as "people working in the government should show an example, as people tend to follow them (directly or indirectly)", "government should act more responsible, show the example for people".
Private sector and media were mentioned by 3 teachers (21%). They thought that the spread of more objective information, and pro-environmental commercials would be helpful. And 1 teacher (7%) added that there is a need for new attentive people thinking towards environmental, who could spread their ideas all along society.

In general, many teachers highlighted the need for the system in all social spheres, as the school alone is not effective.

5.3 PUPILS

5.3.1 Environmental knowledge and attitude

During interviews and discussions with pupils about environmental issues I found out that many pupils were not able to define the concept 'ecology' and 'sustainability'. Many pupils related 'ecology' with waste, recycling, ecological (in English called organic) food, some pupils could define ecology in more academic way, as "a relationship between human and non-human environments", and some related it with ecosystems in general. The concept 'sustainability' in Lithuania is very often used in English language, thus in this circumstance it was asked in both languages, English and Lithuanian. Even so, none of my interacted pupil was able to define the concept 'sustainability', most of them claimed never heard about it.

In order to find out if pupils know about environmental issues and what they know, the open-ended question was asked "List local and global environmental issues you know" (question 21 in questionnaire, see appendix C). Figure 5 shows environmental issues indicated by pupils.

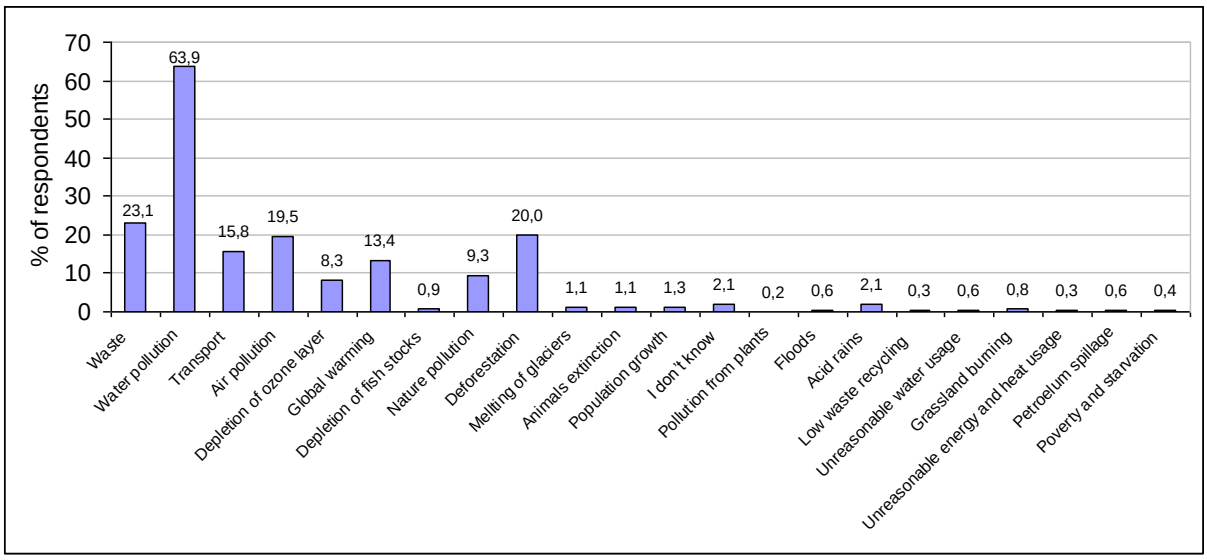

Figure 5. Local and global environmental issues mentioned by pupils (n=358)

Waste, waste, and air pollution, and deforestation were most commonly known by pupils. Though, many other environmental issues were also mentioned such as global warming, depletion of ozone layer, nature's pollution, melting of glaciers, etc. Besides this, social issues by some pupils were also added to environmental issues such as population growth, and poverty and starvation.

In the following figure 6, indicated answers of pupils are shown in a response of, the question "from what kind of information sources pupils think they get most knowledge about ecology and environment" (question 16 in a questionnaire, see appendix C).

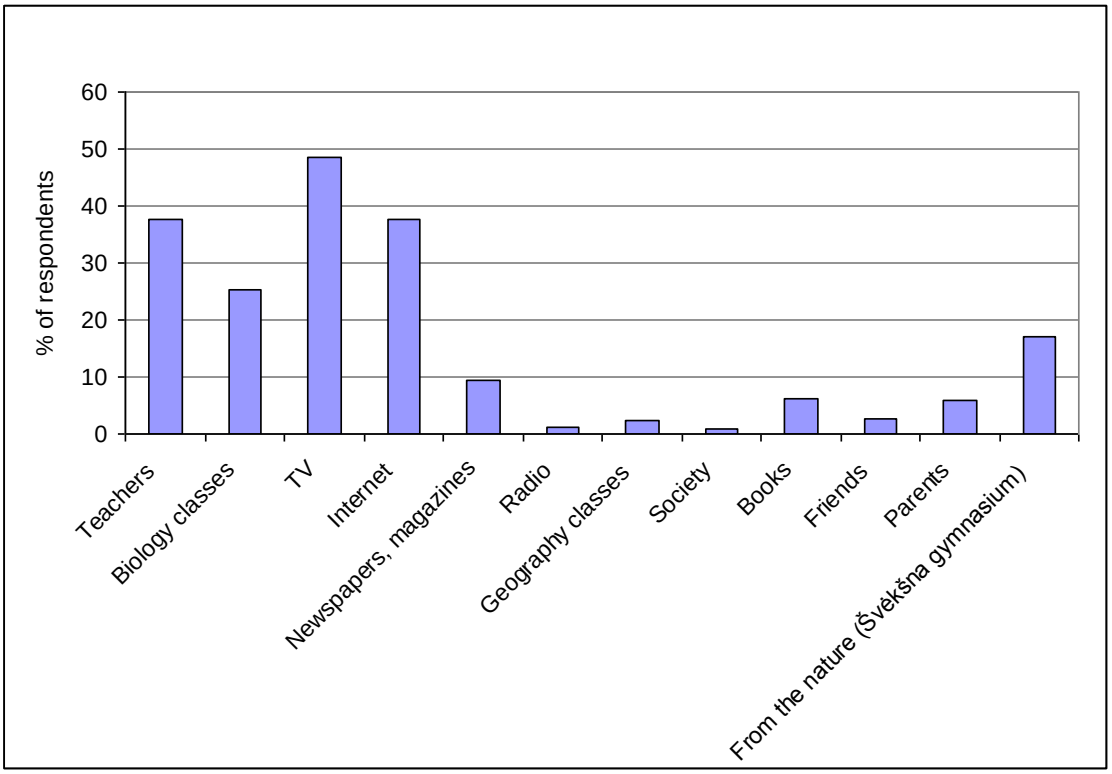

Figure 6. Sources of information where pupils get to know about ecology/environment (n=358)

Most popular information source were mentioned as TV (48%) and internet (38%). In the meanwhile teachers (38%), more specifically biology (25%) and geography (2%), according pupils also are important 'information source' that announcing about ecology, environment, environmental issues and solution strategies. Some pupils mentioned radio, society, books, friends and parents. There were 17% of pupils from rural gymnasium who mentioned that they learn about ecology/environment from the nature, while from town gymnasium there were only 1% of pupils who included 'nature' as their information source.

Continuing the theme, what specific influence schools have to pupils' pro-environmental attitude and action, pupils were asked to answer if they tend to apply their gotten knowledge obtained from school to their daily life and if yes, what specifically they apply (questions 18 and 18.1 in a questionnaire, see appendix C). About 60% of pupils answered that they apply some ecological advices in their daily life practices; 32% indicated negative answer within an explanation of one third of pupils that they do not have right conditions to do so (for instance there are no recycling containers around their homes).

Figure 7 shows distribution of applied advices got from schools by pupils in their daily life practice.

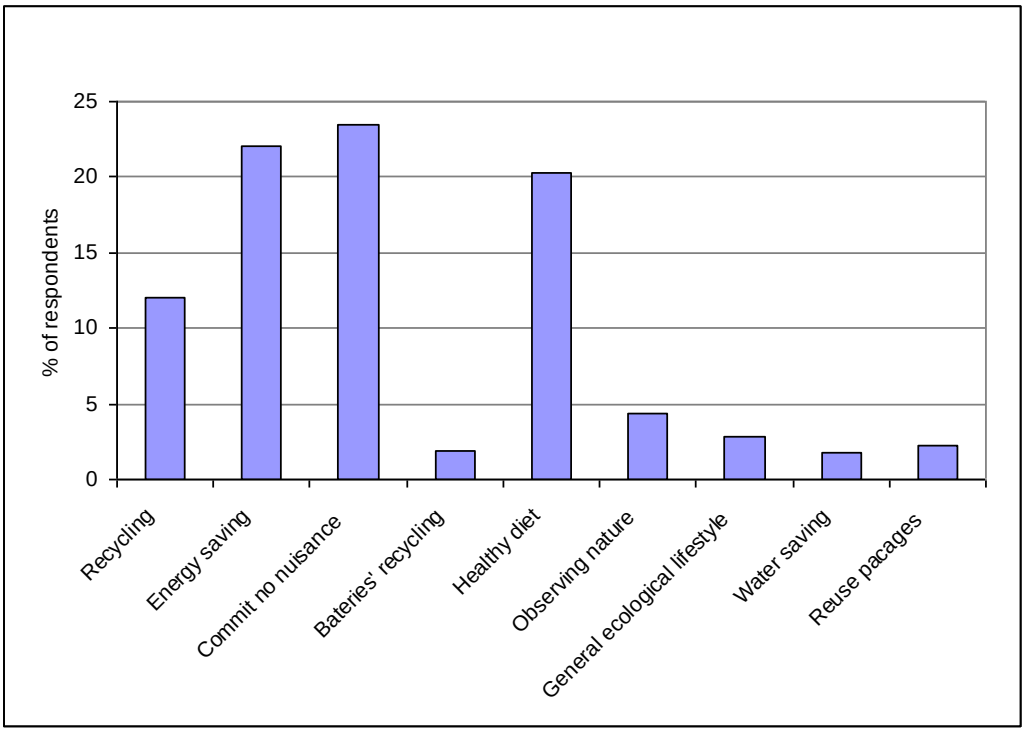

Figure 7. Fields of practices where ecological/environmental information was obtained from school and applied in practice (n=358)

Most popular answers that were given shows that pupils learned from school about recycling, energy saving, commit no nuisance, and healthy diet. Others learned things such as recycling batteries, observing/watching nature, saving water, reusing packages and general ecological lifestyle.

5.3.2 'Daily' ecology

5.3.2.1 Residence

Figure 8 shows pupils' distribution of residence from Šilutė 1st, Vydūnas, and Švėkšna gymnasiums.

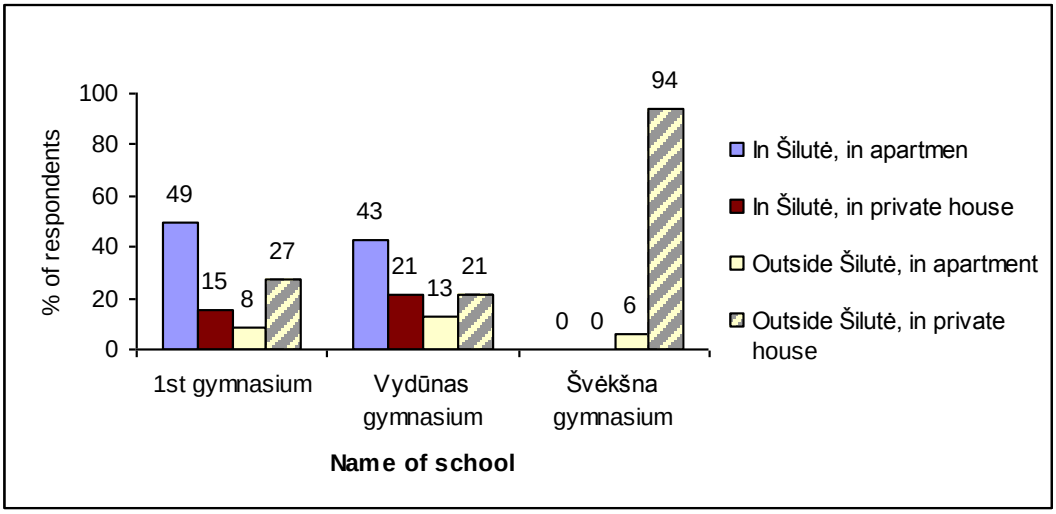

Figure 8. Pupils' distribution of residence in Šilutė district (n=358)

Two gymnasiums that are in Šilutė town: 1st gymnasium and Vydūnas gymnasium, have a majority of pupils from Šilutė, most of them live in apartments. A little more than one third of pupils from those gymnasiums are from other small towns and villages around Šilutė. Those pupils live mostly in private houses. Almost all pupils that study at Švėkšna gymnasium live in private houses. This distribution between residence versus apartments and private houses is very similar in most towns and villages in Lithuania.

5.3.2.2 Waste

To a question whether pupils and/or their family members recycle waste (question 5 in a questionnaire, see appendix C), one third (33%) answered positively. Those, who recycle, started to do so just recently (28%) or few years ago (43%). Figure 9 shows percentage distribution of types of recycled waste by pupils and their family members (question 5.1 in a questionnaire, see appendix C).

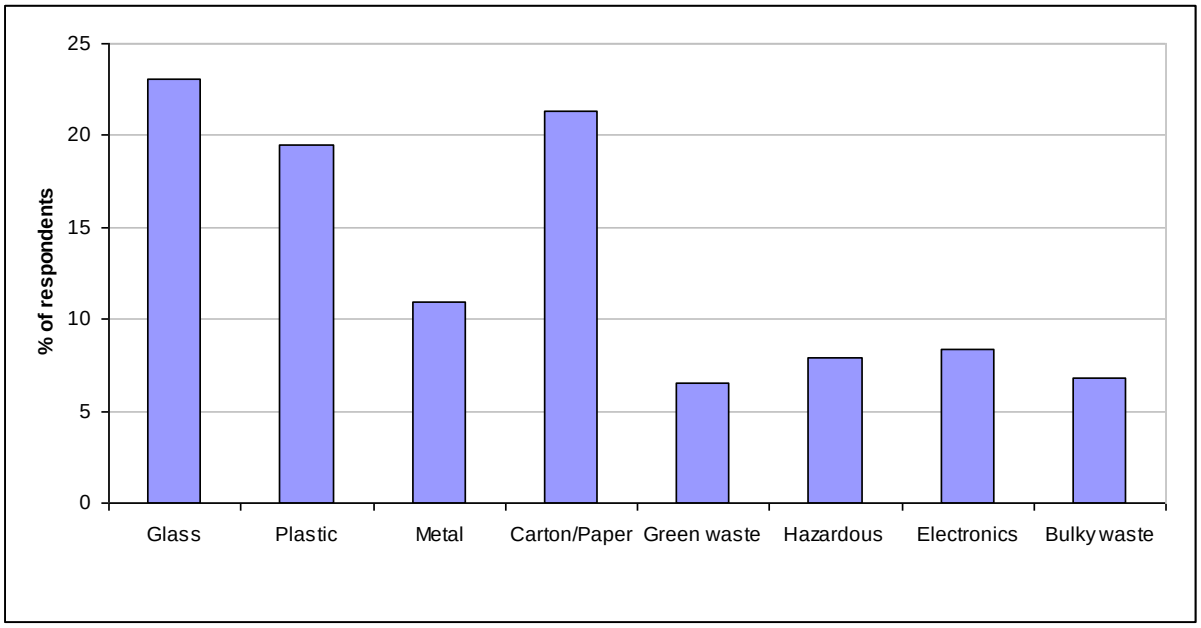

Figure 9. Types of waste that respondents recycle (n=358)

Most popular waste that is recycled is glass, plastic, and paper/carton. Containers that are provided in Šilutė district are intended for mixed municipal waste, glass, paper/carton, plastic and metal. Green waste (organics) is composted mostly by people living in private houses. Hazardous, electronics and bulky waste are more inconvenient to recycle as people have to give it away to special companies or landfill sites by themselves.

When asking why pupils (and/or their family members) recycle or do not recycle, open-ended question was left in order to let pupils to explain or give an argument for their decision (question 6 in a questionnaire, see appendix C). Following figure 10 shows percentage distribution of pupils' answers and arguments. Notice that the same meaning answers were generalized due to high number of respondents.

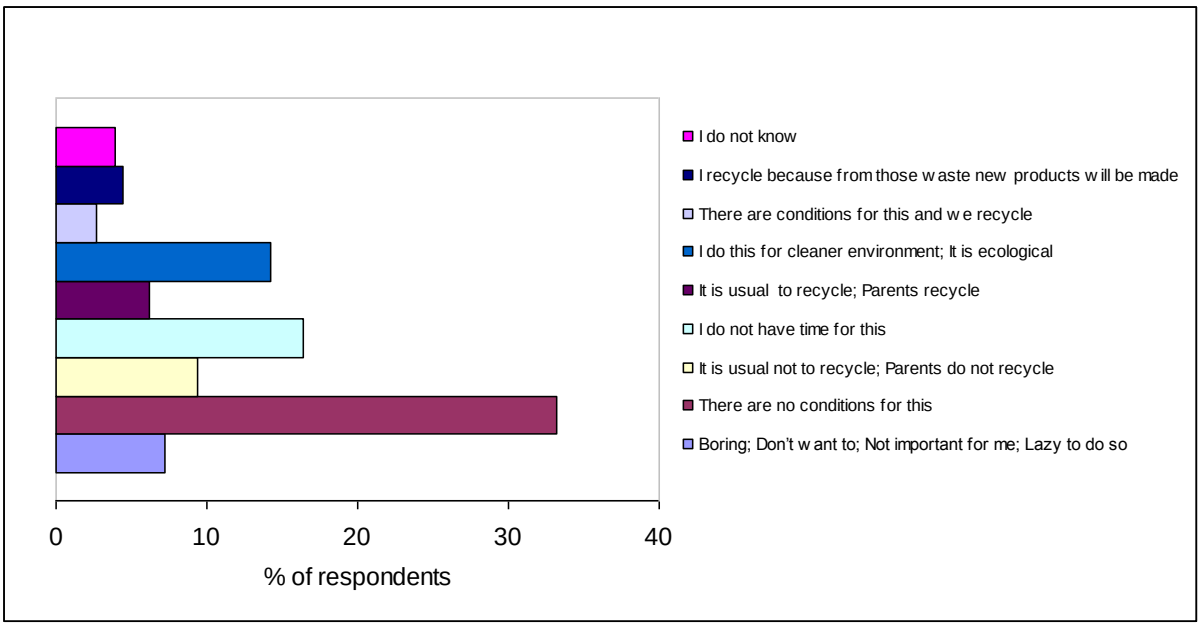

Figure 10. Reasons for recycling and not recycling given by pupils

The most popular answer from questionnaires was that there are no conditions for recycling, including space limit in a kitchen and lack of recycling containers. Though, recycling containers might be ordered by people's request in any village or town area. According to Šilutė municipality waste management company "Ecoservice", number of recycling containers varies depending on how people recycle. For example there are villages that recycling containers are empted twice a year, while in other villages the need to empty recycling containers is twice a month.

During focus group discussions and interviews recycling topic was debated by both pupils and teachers almost all the time focusing on whether it is worth to recycle or not. Some pupil stated that municipality's waste management company is confusing people by mixing all recycling waste into one garbage truck thus leading into believing that recycling is meaningless, while for some those 'whispers' or 'myths' was not a reason for not recycling. In addition to this, some pupils argued that decision they made not to recycle because of their teacher's argument that it is not worth it. However, none of my asked pupil or teacher ever tried to find out how Šilutė waste management company is treating recyclable waste by calling or visiting them directly. According to pupils, ecological discussions among them almost in all cases stays at recycling or keeping environment clean (no littering) level.

There was also a question whether pupils ever picked litter (not as a daily routine) from public spaces such as streets, parks, beaches and etc. (questions 7 and 8 in a questionnaire, see appendix C). 65% of pupils answered sometimes doing this. More than half (52%) who pick litter do this because of esthetic view, to make environment more beautiful, cleaner, and safer to be in. 3% of pupils explained their choice not to pick litters because of shame or ignoble feeling, while 2% of pupils do this due to willingness to show an example to others.

5.3.2.3 Water

In a question "Do you, your family members often buy water/mineral water in plastic bottles?" (questions 10 and 11 in a questionnaire, see appendix C) different distribution of answers was gotten from town and rural gymnasium pupils. 66% of pupils from Šilutė gymnasiums answered that they often buy water/mineral water in plastic bottles, while pupils from Švėkšna – rural gymnasium, positively answered 46%.

From rural gymnasium the main argument for not buying water was that they have their own water at homes; it is in most cases for free as many of them still use water from a well. From all pupils about 10% argued that they need to buy water because their tap water at home is not clean enough. There were also some other arguments for buying water in plastic bottles such as "I buy water in plastic bottles because those bottles can be reused, recycled", or "water in plastic bottles is cheaper", while some argued that plastic bottle is safer than glass bottle as it doesn't break. In general there were those pupils who argument their decision for not buying from economical perspectives, and those for buying as it is healthier and comfortable for them. There also should be mentioned that 1% of pupils mentioned that buying water in plastic bottles is not ecological act.

5.3.2.4 Transport

There were almost equal distributions between pupils who go to school by public transport (34%) and those who uses public transport just few times a year (37%), and 12 % of pupils answered not using public transport at all. Majority of pupils uses bicycle, mostly (48%) in summer time, just 4% of pupils do not use bicycle at all. Reasons for using bicycles were: for fun, to meet friends, to travel some distance and so forth. One fifth argued using it for making exercises and as it is healthy part of their lifestyle (questions 12, 13 and 13.1 in a

questionnaire, see appendix C). Noticing, very few pupils go to school by bicycle, first because just 1st gymnasium in Šilutė has 5-place parking place for bicycles (appeared in 2010 autumn by request of one pupil), second, there is no habitude to bike to school, as pupils feel ashamed, uncomfortable (mostly girls argued that their clothing would make it uncomfortable) or are afraid that bicycle will be stolen.

5.3.2.5 Extra curriculum

Present schools offer many kinds of extra-curriculum for pupils. In visited gymnasiums there were around 20 different options to choose extra curriculum activities. While most of them are related with dancing, singing and sports, there are still some closely related with pro-environmental activities such as 'travelers', 'photography', 'ecologists', the last one was offered just in Vydūnas gymnasium in Šilutė. Extra curriculum related with pro-environmental activity was chosen by 4% of pupils (question 14 in a questionnaire, see appendix C).

In a question whether pupils attend to ecological events, environmental action days, there were half and half of pupils who attend to it and those who never attend. 33% of pupils attend ecological events on their own will and 26% are encouraged by teachers. Some pupils (11%) also mentioned 'friends' as their encouragers to attend ecological events while family members were mentioned just by 3% of pupils (question 17 and 17.1 in a questionnaire, see appendix C).

Finally, in Figure 11 'advices and suggestions' of pupils are shown which might help to promote Lithuanians to act pro-environmentally (question 23 in a questionnaire, see appendix C).

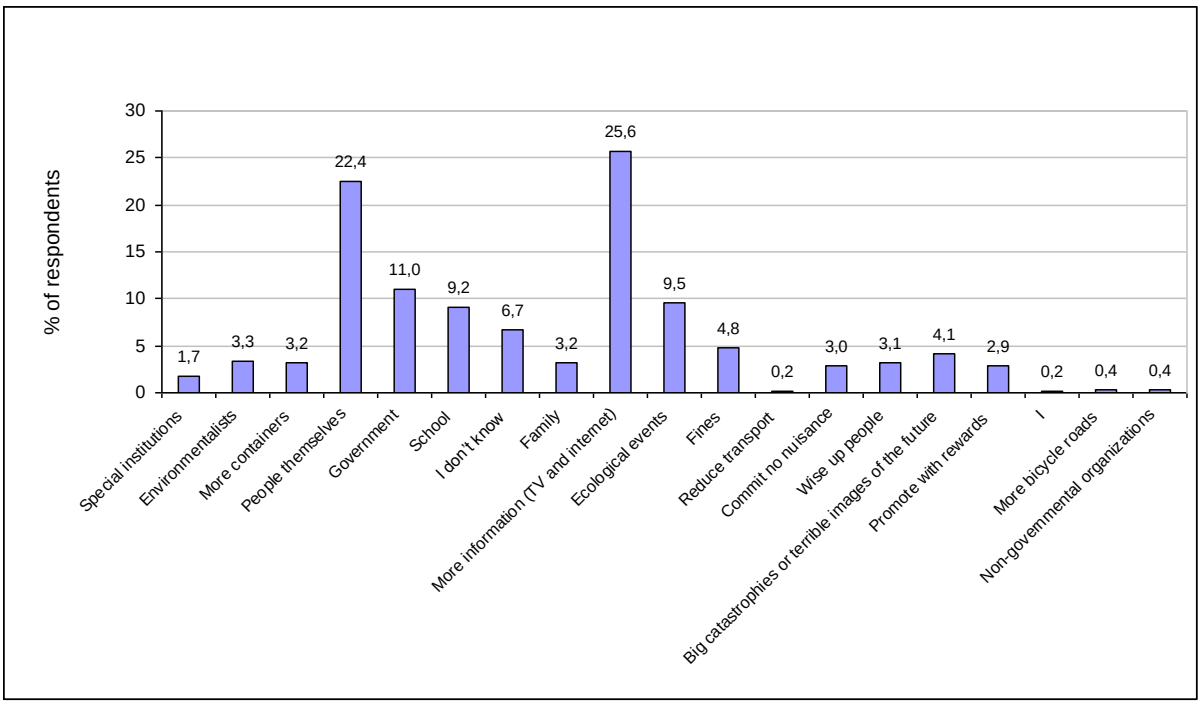

Figure 11. Pupils' advices of what and who should encourage Lithuanians to act pro-environmentally (n=358)

Many pupils (22%) suggested that in order to make Lithuanians act more pro-environmentally people should change their attitude and their habits themselves. 26% of pupils was suggested that that more information about ecology and environmental issues could be provided on TV and internet. The role of government (11%), schools (9%), and ecological events (10%) was also seen as important for pupils.

6 CONCLUDING DISCUSSION

This thesis aims to analyze how environmental education at secondary school is structured in Lithuania and what effect it has on pupils. Accordingly, three research questions were asked:

- How environmental education is conceived, integrated and applied into Lithuania's secondary school system?
- What assumptions underlie under environmental education integration into general education system?
- What effect environmental education has on pupils by looking at their knowledge, attitude and actions towards environmental lifestyle?

In order to answer those questions, empirical and theoretical analysis was done. Empirical data was collected during fieldwork at 3 gymnasiums in Šilutė district, Lithuania, in 2010 autumn. Methods that were applied in a fieldwork were interviews, with both teachers and pupils, surveys of pupils, participation in classes, focus groups with pupils, and analysis of secondary data – current textbooks and national curriculums of the last twenty years. Theoretical analysis of environmental education relationship with general education was mainly based on Gruenewald's work. Following, described results will be discussed in the context of the research questions.

6.1 HOW ENVIRONMENTAL EDUCATION IS CONCEIVED, INTEGRATED AND APPLIED INTO LITHUANIA'S SECONDARY SCHOOL SYSTEM?

Curriculum analysis shows that during twenty years of Lithuanian national curriculum reformation, fractions of environmental education were gradually integrated. In the beginning of country's independence, in early '90's, new flush of Western ideas appeared in the textbooks. Some teachers highlighted that the earliest textbooks, for instance those of ethics or English, were translated from foreign authors, and emphasized ecological topics more than any textbook written by Lithuanian authors at that time. Before joining the European Union, in 2002, curriculum replenished its 'vocabulary' with higher attention to sustainable development, peace, justice, human right, social equity etc. Nowadays natural science textbooks hold separate ecological chapters with topics such as ecology, human and environment, and environmental issues. Though in ethics textbooks, which are newly written by Lithuanian authors, opposite to its earliest textbooks, ecological topics are barely touched.

In order to identify how environmental education is conceived, Sauvé's table (see page 16) of conceptions of environment was compared with textbooks and teaching practices. According to my analysis of textbooks and fieldwork in Šilutė district, in Lithuania, I found out that environment is mostly understood as a *resource*, as a *problem* and as a *place to live*. This conclusion was carried out according to highlighted importance for recycling, problem solving cases, eco-gardening, eco-food and etc. In the meanwhile, textbooks, teachers and pupils did not show high importance to nature as a 'pure' original environment (environment as *nature*), concern for global issues, making interconnection between one and another societies (environment as the *biosphere*), community projects, political concern (environment

as a community *project*). What is more, many of interviewed teachers claimed 'doing' environmental education, both directly and indirectly, by doing practical exercises, encouraging pupils to participate in environmental events, discussing relationship between economy and ecology etc. Though, none of natural science teacher discussed socio-ecological problems, or related environmental issues with cultural, economical, and political aspects in their classes.

Thus this thesis' results contribute to scholars (Hart, Jickling & Kool 1999, Sauvé 1996, Clayton & Myers 2009) by stating that different teaching and learning practices are used depending on the ways environment is conceived as a concept. The way the environment is conceived in textbooks, as well as by teachers and pupils, explains why there is so little attention for making connections between cultural, social, ecological, political and economical aspects, which are inseparable in environmental education. However, this is not the only reason for environmental education being only partially applied at secondary school system in Lithuania. In a further section I will discuss more about limitations of environmental education caused by general education system.

Summing up this section, the above observations contribute to my conclusion below, that environmental education is not fully integrated and applied in current secondary education in Lithuania.

6.2 WHAT ASSUMPTIONS UNDERLIE UNDER ENVIRONMENTAL EDUCATION INTEGRATION INTO GENERAL EDUCATION SYSTEM?

Environmental education and general education discourses are not perceived and applied equally in the current education system in Lithuania. General education discourse is a dominant one, whereas environmental education discourse is integrated into general education as a sub-discourse. Thus environmental education is in ambiguous situation: on the one hand it is officially integrated and applied into national curriculum; while on the other hand it is left marginalized by general education system. On the strength of Gruenewald's (2004) thoughts, marginalization of environmental education appears when environmental education legitimizes general education normalization discourses and institutionalizes its standards. In the sequence of this, environmental education discourse has low power in keeping its goals

prioritized as it is being shaded by general education discourse. In addition to this environmental education struggles with structural barriers caused by general education.

The analysis of Lithuanian textbooks has shown that almost in all natural science textbooks ecological and environmental chapters are placed as the last ones. Though important fact is, that natural science teachers admitted that the last chapters are usually left unexamined. The reasons for keeping environmental topics unofficially marginalized, as explained by teachers, were as follows: tightness of curriculum, time limitation, and priority to prepare pupils for final exams. Since current general education system prioritizes aims which differ from environmental education aims, it hardly lets environmental education to achieve its goals. As I pointed out in Lithuanian national curriculum historical analysis (see page 25), from 1997 educational attention was focused more on economic factors. Therefore education has been orientated towards preparing youth for competitive market-based economics. There was no doubt, by being at my visited gymnasiums, that pupils directly or indirectly were encouraged for individualism, competitiveness, and most importantly for holding highest attention to pass final exams at highest grades. However, my intention is not to deny importance of this school target, but rather observe that dominance of it, shadows environmental education targets. To this end a question for further research is whether ecological/environmental topics are set in this way on purpose or not.

In the meanwhile, teachers themselves expressed the understanding that there is a need to increase the application of environmental education at schools, while at the same time pointed out to structural barriers that limit them for 'doing' so. Most common barriers are: time limitation, technical limitations, lack of knowledge to make relations between environmental issues with social and cultural aspects. In pursue to this matter, according to analysis of textbooks, and expressions of teachers and pupils, the time devoted to environmental education is very modest. Technical limitations, according to teachers, are usually based on financial situation of schools. Lack of knowledge to make connections between ecological, social, economical, cultural and political aspects is influenced, as I discussed above, by particularly applied conceptions of the environment. In that case most teachers would like to have special training or more comprehensive methodologies to apply in teaching environmental education. Even though, some teachers look for extra information or new methods by themselves, but as they claimed, it takes a lot of personal time and resources, as most of it are done without schools' financial support. Thus it is not a surprise that only

engaged and passionate teachers ‘cross over’ those structural barriers caused by general education discourse.

In this section I discussed another element of my conclusion, that environmental education in Lithuania is marginalized by general education discourse, moreover this part, which is partially applied, is limited by structural barriers.

6.3 WHAT EFFECT ENVIRONMENTAL EDUCATION HAS ON PUPILS BY LOOKING AT THEIR KNOWLEDGE, ATTITUDE AND BEHAVIOR TOWARDS ENVIRONMENTAL LIFESTYLE?

In order to find out if environmental education at schools has influence in shaping pupils attitude and behavior towards pro-environmental lifestyle, ‘three question steps’ were used in a survey. First step was to find out if pupils know about environmental issues and what do they know. Second step was to find out from where they know about environmental issues and/or environmentally friendly lifestyle. And third step was to find out what particular advices from school pupils use in their daily life practice. As results show, pupils exposed much of information from many sources, including schools, and most importantly, a large number of pupils do apply environmental/ecological advices from schools in their daily life practices.

Even though it might seem that pupils know a lot, many of them are unable to make deeper connections and lack orientation how particular causes and consequences are related. For instance pupils could describe environmental problems in Šilutė district, in Lithuania, but most of them failed to find connections with theirs daily actions. According to survey results, two thirds of pupils occasionally pick up litter from public places for cleaner environment and improving esthetic view, while the same number of pupils refuses to recycle. Pupils least related with ecology buying water in plastic bottles and using bicycle. While ‘water’ was more connected to health and economic factors, ‘bicycle’ was mostly understood as a mean of transport used in summer time. In addition to this, pupils were asked to list local and/or global environmental issues; all together they gave more than twenty different answers. The same situation was when pupils were asked to give a suggestions or solutions in what or who should encourage Lithuanians to take care more for their nature/environment; they all together gave more than twenty suggestions and solutions. Out of 358 pupils that were asked, just one

pupil gave the answer – *Me*. Only one pupil identified himself as a person who is able and responsible to make changes towards participating in solving environmental issues in Lithuania. By being among pupils, observing them and connecting with their answers, it can be generalized that pupils see polluters as anonymous agents, as machines or 'others' that are responsible for environmental problems, but not themselves. In other words pupils dissociate themselves from environmental issues.

Thus just providing people with information, in this case about environmental issues and environmental-friendly lifestyle, is not enough. Information, as a standing alone tool, won't make people aware, motivated or lead them towards more responsible action. The idea is that the failure to connect causes and consequences of environmental degradation and the lack of incentives to takeover individual responsibility are the main reasons for irresponsible behavior of the society towards environment (Bogovič and Čegar 2009). In other words schools alone are not feasible to achieve environmental education goals, as other factors outside school also influence pupils' attitude and behavior. As it was mentioned in chapter 4, in order to behave more responsible, environmental issues should matter personally and there should be the feeling that you, as an individual, can make a difference. Moreover, scholars (Chawka & Cushing 2007, 444 quoted in Clayton and Myers 2009, 193) echoed within recommendations that children should be "engaged in public issues at the local level, where they can see democratic processes in action and the effect of their contributions". Thus a model of knowledge – attitude – behavior, mentioned in chapter 4, is a complex phenomenon, as internal (e.g. personal values) and external (e.g. cultural, economic, political) factors interact, and each of them has hardly countable weight on pro-environmental decision making process.

The discussion in this section attaches to conclusion below, that environmental education at secondary schools in Lithuania has the potential to influence pupils to act pro-environmentally, though effect is not very high, as it is also influenced by internal and external factors.

6.4 FINAL REFLECTIONS ABOUT ENVIRONMENTAL EDUCATION AT SECONDARY SCHOOL SYSTEM IN LITHUANIA

6.4.1 Generalized conclusion

During the last twenty years of Lithuanian independence environmental education was gradually integrated into secondary school system. Even though environmental education is officially considered as important element leading people towards environmentally-friendly lifestyle it is not fully applied in curriculum and therefore by teachers. The reason for incomplete environmental education application is marginalization caused by general education discourse. Moreover, structural barriers often limit teachers to apply that part of environmental education which is provided by general education system. Consequently, pupils as a 'product' of general education system which partially applies environmental education in its curriculum, risk loosing potential to be developed as aware, concerned, skilled, motivated, and committed individuals to work towards current environmental issues and prevent from new ones.

This thesis reveals complexity of environmental education relationship with general education system. Therefore I bring suggestions what and how should be done on behalf of environmental education.

Despite much critique on environmental education relationship with general education system, I do not discount the possibility of environmental education development at secondary school system. As I discussed above, with limitations caused by general education system, environmental education still proves having an ability to influence pupils to act pro-environmentally. Thus to ignore the importance of school is unreasonable. Even so, effectiveness of environmental education greatly depends on its relationship with general education system, simultaneously with the purposes of curriculum, ways of teaching and learning, teachers' competence, partnership and finances with public and private sectors.

6.4.2 Suggestions

As I discussed above, environmental education relations as it is now with general education system, is being trapped by its own determination to legitimize standards of general education

discourse. Therefore educators have to challenge discourses which suppress it and demand for being more prioritized in general education system by changing relationship with it. It is substantial because working alone just on environmental education discourse may lead all attempts to closed-end. As I already mentioned before, discourses that are related with environmental education have to be re-examined and if necessary challenge their assumptions which confront with environmental education discourse. To this end, educational and economic policy discourses are closely related with environmental education. Therefore, as scholars echoed, assumptions, such as purpose to prepare youth for economic competition in the global market, and formalization of the logic of the market, of those discourses have to be challenged.

Accordingly, it is essential to re-examine education system, not just develop programs without going out of current education frames. My conclusion also builds upon and supports Gruenewald (2004, 94) who states that the new framework of education should be able to "negotiate the complex ecological interactions between science, politics, and culture, between social and ecological systems, and their impact on humans and nonhuman life", otherwise environmental education keeps being marginalized.

While above mentioned suggestions reflect more in the long-term, further I discuss about possible solutions in the short-term. One of the parts of my conclusions was that pupils, despite disguised limitations of general education discourse and structural barriers, were still influenced by environmental education. Thus diminished structural barriers on behalf of environmental education has to be done by re-examining priorities of education and therefore increasing resources of time, technical material and financial support for environmental education.

Teachers' role in shaping pupils knowledge, attitude and behavior is also significant. Thus, on the grounds on my own insights and scholars (Hart, Jicking, and Kool 1999, Gruenewald 2003, Reinfried 2004, Lamanauskas 2007) arguments, the compulsory competence upgrading for the teacher would be conspicuously important in developing environmental education at secondary school system. Hereby, teachers would critically examine theirs educational philosophy, re-look theirs intentions and practices applied at schools. Thereby I agree with Hart, Jicking, and Kool (1999) that teachers by criticizing, participating and debating could

reflect on a possibility to find the best practices of environmental education, and to transmit knowledge, attitude and values to pupils.

And finally, school alone has no possibility to make great changes in creating pro-environmentally behaving society. In addition influencing role in shaping peoples' attitude and behavior has personal, social, economical, cultural, and political dimensions. Thus the highest involvement and participation of society, private and public sectors, and government are needed towards developing environmental education.

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APPENDIX A

Interview questions for pupils

1. What does it mean ecology and sustainability?
2. Do you have hobbies related with environment?
3. From where do get information about ecology/environment? Which information sources reach you most in relation with ecology? Do you additionally look for information related with ecology/environment topics? Who should provide this information?
4. Is enough for ecological/environmental topics to be taught at schools? Which topics at school you like most? Which learning methods you like most? Do you think to learn about ecology/environment is useful?
5. What exactly you have learned from school? What new pro-environmental habits you accepted (not from family)? Is it hard to apply those habits in your family? How family members react? Do they 'follow' you or not?
6. Are ecological/environmental topics being discussed in your family, or among your friends? What do you discuss most?
7. What do you think which environmental issues are most important and why?
8. When do you think situation of Lithuanians ecological mentality will change? Do you personally contribute to development of ecological culture in Lithuania? What engages you and what limits you? What exactly you do? Why?
9. Do you think Lithuanians have to learn more about environmentally-friendly lifestyle?
10. How and what do you think has to be done, changed, in order to develop new pro-environmental ecological habits in Lithuania?

APPENDIX B

Interview questions for teachers

1. Briefly describe what your teaching course subject means.
2. What methods do you use in teaching pupils? When pupils show the highest interest, in concern of methodology.
3. Is environmental education at secondary school system necessary to integrate and teach? In which grades it should be done? Which teaching subjects should do this?
4. Is your teaching subject involves ecological/environmental topics? How much and in what ways it is integrated? Do you need to look for extra information or what is provided by school is enough?
5. How do you think pupils accept ecological/environmental information? Are they interested in those topics? Do you focus more on ecological/environmental topics?
6. How do you think school can help to promote people towards pro-environmentalism?
7. What do you think, from where people should know about ecology/environment, who should 'shape' and who is 'shaping' their attitude and behavior?
8. How and what do you think has to be done, changed, in order to develop new pro-environmental ecological habits in Lithuania?
9. What ecology means to you? Are you personally interested in ecological/environmental topics? From where do you get most information about it?
10. Are ecological/environmental topics being discussed in your family, or among your friends?
11. Had been ecological habit changes life before and after country's independence in your personally?
12. Have you noticed any difference in pupils' attitude and behavior during the last 10 or more years? (depends on teaching years)

APPENDIX C

Questionnaire for pupils

1. Age ___
2. Grade: 9 □ 10 □ 11 □ 12 □
3. Sex: Girl □ Boy □
4. Residence:

Šilutė:	Not Šilutė (smaller town, village):
□ Apartment	□ Apartment
□ House	□ House

5. Do you, your parents recycle?

□ Yes (go to the question 5.1 and 5.2)
□ No (go to the question 6)

5.1. Mark waste you recycle: **(you may mark few answers)**

□ Glass
□ Plastic
□ Metal
□ Paper/carton paper
□ Green waste (garden and kitchen waste)
□ Hazardous waste (batteries, drugs, old fat, chemical products and etc.)
□ Electronic waste
□ Bulky waste (furniture, tires and etc.)

5. 2 How long you recycle waste?

□ Just started
□ 1 – 3 years
□ 3 – 5years
□ Longer than 5 years

6. Briefly answer why you recycle or don‘t recycle waste?

_____

_____

7. Have you picked litter from the public place? (e.g. street, wayside, the outer wood, beach)

□ sometimes □ always
□ often □ never

8. Briefly answer why do you take or do not take ‚others‘ litter?

_____

_____

9. Do you reuse bags for the shopping? (you may mark few answers)

□ Yes, I reuse plastic bags
□ Yes, I reuse fabric bags
□ Yes, I reuse paper bags
□ No, I buy new one every time

10. Do you often buy water/mineral water in platic bottles?

□ Yes
□ No

11. Briefly answer why do you buy or do not buy water in plastic bottles?

_____

_____

12. How often do you use public transport (bus, train and other)?

- □ Everyday
- □ Once a week
- □ Once a month
- □ Few times a year
- □ I don‘t use public transport

13. How often do you use bicycle?

- □ Everyday
- □ Once a week
- □ Few times a month
- □ Few times a year
- □ Only in summer time
- □ I do not use a bike (go to question 14)

13.1 For what purpose do you use bicycle?

_____

_____

14. Have you chosen extra curricular activity at school/outside school related with ecology, nature?

- □ Yes If yes, what kind is this activity? _____
- □ No

15. Where and for what purpose you spend time in nature: (the place write in the abstract, for instance in the forest, near the water, mountains, field and the like)

_____

_____

_____

16. Write from which sources do you mostly get information about nature, ecology:

_____

_____

17. Do you attend ecological/environmental events?

- □ Sometimes
- □ Always
- □ Often
- □ No (go to question 18)

17.1 If you answered yes, then who encourages you to attend those events?

- □ Teachers
- □ Friends
- □ family members
- □ I do it by myself

18. Have you used advices from school in your daily life at home? (for instance: waste sorting, energy saving, healthy food, observation of nature and etc.)

- □ Yes, many advices
- □ Yes, some advices
- □ No, there are no conditions for this
- □ No

18.1 If you answered yes, please write what exactly you use in your daily life?

_____

_____

19. Rank those ecological issues from 1 to 7, when 1 is most important and 7 is least important:

___Deforestation
___The depletion of ozone layer
___Climate change/global warming
___Transport
___Water pollution
___Growth of population
___Acid rain

20. From which of those sources about nature are:
(rank in order of importance from 1 to 3, when 1 – most important, 2 – important, 3 – less important.)

Most interesting to learn:
___Parents/relatives
___Friends
___Teachers
___Television
___Advertisements
___Newspapers/magazines
___Articles from internet
___Social Websites
___Books
___Textbooks

Most valuable to learn**:**
___ Parents/relatives
___ Friends
___ Teachers
___Televisions
___ Advertisements
___ Newspapers/magazines
___ Articles from internet
___ Social Websites
___ Books
___ Textbooks

Also rank least important sources with '-' sign.

21. List local and global ecological issues you know:

_____
_____
_____

22. Sign most interesting topics with '+' and least interesting topics with '–,.

Biologiy
□ Cell
□ Main organism functions
□ Genetics of organisms, evolution
□ Human health
□ Energy
□ Human ecology and environment

Geography
□ Derivation of Earth, inside and outside
□ Weather and climate
□ Geography of continents
□ Geography of Lithuania
□ Urbanization
□ Agriculture, energy and food resources
□ World's social economic development

English
□ Personal identity, home
□ Health
□ Daily life and work
□ Leisure time
□ Travels, transport, holidays

Chemistry
□ Non metals (O, H, S, N)
□ Living and non living nature's compounds (Si, C)
□ Chemistry of carbon's Compounds (organic chemistry)

Physics
□ Mechanic
□ Electricity, electromagnetism
□ Magnetism
□ Light propagation, reflection
□ Optical device

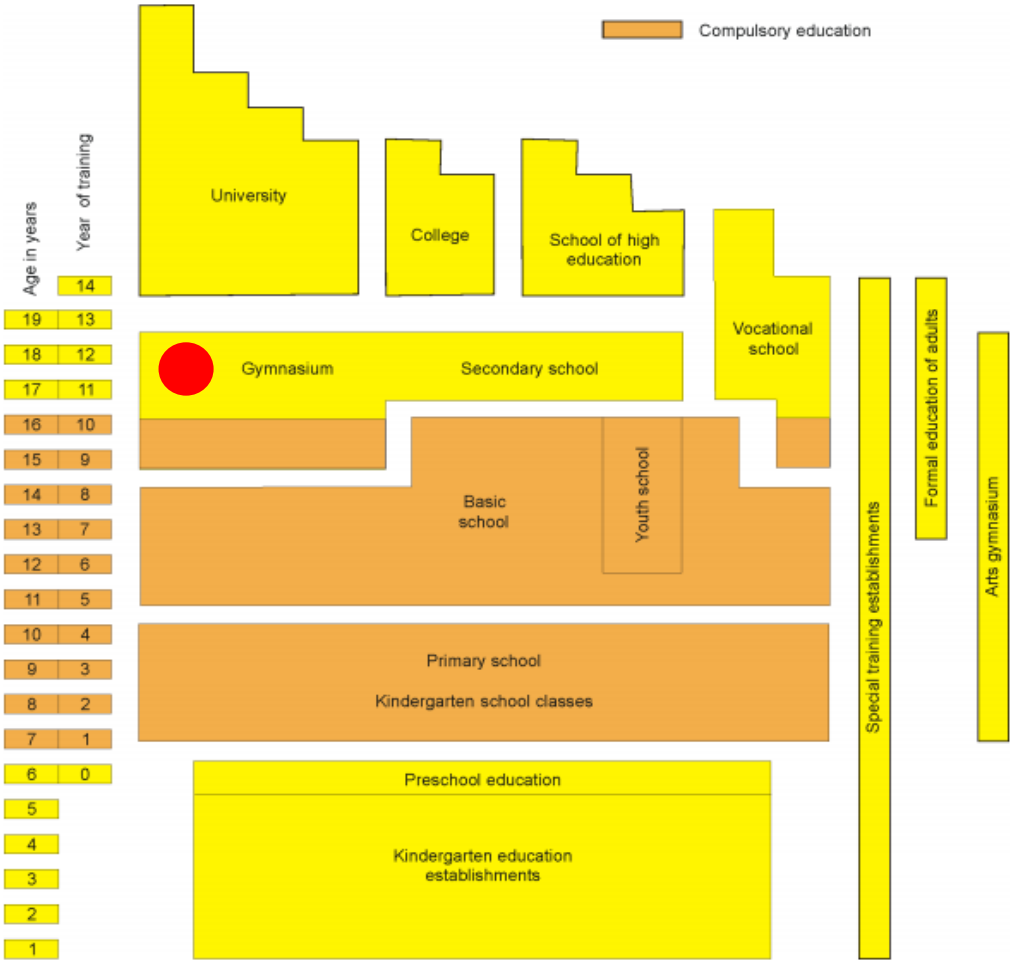
□ Food and drinks
□ Environment, nature
□ Media, computers
□ Political, social issues
□ Chemistry and environment
□ Structure of atom, nuclear energy
□ Molecular physics
□ Astronomy

23. Who and/or what, in your opinion, could help and/or promote Lithuanians to take care more of nature/environment?

_____
_____
_____

APPENDIX D

Illustrated system of education in Lithuania



Source: Education in Lithuania. Figures and trends, 2003. (2004). Vilnius, Ministry of Education and Science of the Republic of Lithuania.