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ENVIRONMENTAL EDUCATION IN KVARNGÄRDESSKOLAN, UPPSALA

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ABSTRACT

This paper is based on a project I conducted in Kvarngärdesskolan in Uppsala, which focused on the topic of environmental education. In order to fulfill the project, I had interviews with a teacher and a number of ninth grade students. My aim is to investigate the perceptions and opinions of teachers and pupils involving teaching and learning environmental issues at comprehensive school context. The paper describes and discusses about the data of those interviews, the method which I have done as well as the theory used in my interpretation of the materials. The paper ends with some general conclusions, based on the discussion and interpretation part.

BACKGROUND

During one of my study courses, I and some of my classmates we had an exercise relating to the methods that we had been introduced. The topic of this group task we chose was factors that affected people's perceptions toward the environment. So we listed the names of the factors that we thought had influence and then ordered them in relation to the level of significance. I remembered that the two most influential issues we agreed upon were family and education. Indeed, to the young people, education has a considerable impact not only on their knowledge of the environmental issues, but also on their perceptions about them. That is one of the main reasons which motivated me to do this project investigating about environmental education.

I think how environmental education is happening now at schools is an interesting question. Having answered this question, we can harvest some useful issues involving communicative aspects. Activities at schools, most notably teaching and learning, are communicative practices in which teachers and students participate in processes of transferring knowledge, experiences and ideas. Whether environmental education is fruitful or not, we can say, depends considerably on how actors communicate. Thus, investigating about environmental education at schools, on the one hand, provides us practical information, such as which environmental problems are being discussed, which activities students often do in classrooms, on the other hand, reflects how communicative process works: what are the preconditions for the communication, what are the interpretations of the actors, how language is used, and many other aspects. Also, it reveals young people's perceptions and opinions about nature today, as well as how such matters like social norms, cultures, and news media affect their attitudes and behaviors.

Another reason motivates me to do this project is its particular context. Compare to other kinds of environmental communication, environmental education has its own characteristics. Environmental education identifies with a particular context: school, with two major actors, respectively teachers and learners. In environmental education, presumably the teacher plays a significant role and takes a great deal of responsibility, while the learners are more passive as the ones who are taught; otherwise, the educative

approach is also different from other communicative approaches. Studying this particular context, I think, may facilitate understanding many aspects of how actors communicate.

CONTEXT

Environmental issues have been introduced into Swedish schools for quite a long time. In the Curriculum for the Compulsory School System (Lpo 94), a framework for environmental education with general guidelines is prescribed, such as 'It is important that education provides general perspectives...An environmental perspective provides them with opportunities not only to take responsibility for the environment in areas where they themselves can have a direct influence, but also to form a personal position with respect to global environmental issues. Teaching should illuminate how the functions of society and how our ways of living and working can best be adapted to create conditions for sustainable development' (Lpo 94, p. 6). This project was conducted in a comprehensive school in spring 2009 in Uppsala, Sweden. It was Kvarngärdesskolan, an international school. The pupils of this school came from different nations and cultures, and here lessons were taught 50% in Swedish, 50% in English.

Environmental education in a developed country like Sweden might be very different from a developing country like my own country Vietnam. In my opinion, environmental education is affected by environmental concern of people and the latter has a strong connection to the sources of information that people can access. My pre-understanding was that Swedish students had great opportunities in accessing sources environmental information, such as newspapers, TV, Internet, environmental organizations and other sources.

AIM AND RESEARCH QUESTION

The aim of this paper is to investigate the perceptions and opinions of teachers and pupils involving teaching and learning environmental issues at comprehensive school context, which approaches are being applied and what actors think about them. It is also needed to note that there is a slight difference in relation to the aim between teachers and school students. For the teachers, the aim of the paper focuses more on exploring such issues like their intention and hope in teaching environmental issues and the reasons they choose a certain pedagogic approach in class. General research questions for the teachers include:

What are your aims and hopes in teaching environmental issues?
What are the advantages as well as disadvantages you have faced in your work?
Which approaches are you using in the class? Why do you do in that way?
What are the pupils' reactions according to your opinions?
What can people do to improve the current situation?

For the pupils, along with their opinions and feelings about environmental education that they receive at school, their perceptions about the environment in general and environmental problems in particular will also be investigated. General research questions for the pupils are:

What does the environment mean to you?
What do you know about environmental problems?
Where do you get information about them?
What do you think about environmental lessons you get at school?
What activities do you have in class? How do they work?
Which factors affect your perception toward the environment?
Which behaviors do you perceive are not sustainable? Why do you think they happen?

Another aim of this thesis is to study how environmental communication is conducted in this specific context and to what extent theories and methods can be applied in practical situations. Otherwise, it also aims to discuss and reflect on how the actors perceive environmental education and the role of it to students' attitudes and behaviors in regards to the environment nowadays. Besides, this paper should be a qualitative research, so it will not attempt to represent a large number of people, or delve into scientific information like which environmental issues are taught, why they happen, but it aims to provide a discussion about why and how actors are doing in a certain way.

METHOD

I began my work by looking up contact information of the comprehensive schools in Uppsala on the Internet. The reason I chose to conduct my project in Kvarngärdesskolan mostly based on the fact that it is an international school, where students were taught in English and they could speak English fluently. I thought it would be much more convenient for me to realize my work here. So I sent an email to the principal of the school presenting my wish to conduct my project there and was introduced to a science teacher. I contacted her and got a reply expressing that she was interested in my topic. I made an appointment to interview her and asked for her help to interview some students. She arranged for me several meetings with three groups of ninth graders who were having some exercises related to environmental issues given by her at that time. So my project was conducted by interviewing a science teacher and three groups of ninth grade students, each group contained of 3 – 4 participants. I wished I could have interviewed more people but there were a few difficulties. The pupils had a one-week holiday; furthermore, I had to get permissions from their parents to interview them, according to Swedish policy. Therefore, the time was quite constrained, but on the other hand, I was able to make preparations before meeting them.

My project was fulfilled mainly by interviewing participants, consisting of one interview with the teacher and three interviews with the students. The interview with the teacher was conducted first. I came to the school to make the interview. It took place in a small room near one classroom. Most of the questions I asked the teacher were semi-structured, which concentrated on the topic of environmental education and followed my aim. The interview lasted around one hour and I asked the interviewee most of the questions which I had prepared before I met her. These formulated questions largely based on the aim of the project and my pre-understanding of the situation. During the interview, according to her answers, I also made some clarifications and follow-up questions, which I believed was

helpful for the conversation. For her answers, I wrote down key words or phrases on my notebook. This way of taking notes revealed a few disadvantages: for instance, it took more time to write down; many expressions and gestures were left out; the flow of conversation might be hindered; and it was difficult to quote her speech (these things could be managed if I had a recorder), yet it helped me a lot in asking for clarification because I could look into my notes and asked the interviewee if I was not sure I understood her answer or if I wanted to investigate more about some issues. After the interview, in order to prevent missing relevant information, I also elaborated my notes and added some field notes about the process, the atmosphere of the interview, and the expressions of the interviewee.

The interviews with the pupils took place in the meantime of their lessons at school next week. Some of them were assigned by the teacher to join the interview with me in a small room near the classroom; the others had the lesson with the teacher as usual. For the interviews with the students, I applied the focus group interview approach. This method assisted me to interview many pupils at the same time; and considered that participants were teenagers, it could be a good choice as 'some young people need company to be emboldened to talk' (Glesne & Peshkin 1992, recited in Lewis 2000). On the other side, I could not only observe the interaction between me (as the interviewer) and the pupils but also the interaction among them. The questions which were used were diverse: they were a combination of open-ended questions, semi-structured questions, and miracle questions, but they also followed my research questions and had been prepared before the meetings. I began each of the group interviews by introducing myself and had each pupil introduced themselves as a way of 'breaking the ice' because I assumed that the students might be a bit reserved at the beginning. After the introduction session, I used the miracle question to ask what they would see if a miracle happened. Miracle questions are often used in solution building as a tool for encouraging clients to find the answer for their own problems. I did not use the miracle question for this purpose; rather I thought it might be an interesting way to commence the interview with young people and to know what their main concerns were. Although initially they were often a little confused with this kind of question, yet depending on their answers, I could steer the question to the topic I wanted to know: about environmental issues. I also aimed to practice learned methods, and I assumed that the pupils at that age might prefer to have some exercises rather than just answering the questions, thus I assigned for each group a specific task using PRA methods. The questions I asked them were almost the same, but the tasks I gave them were different. For the first group, I introduced to them the force-field analysis in order to investigate their knowledge and perception about environmental issues. I told them to name three issues/behaviors which they perceived were good for the environment and three which were bad for the environment, and then ordered them in level of importance or consequence. For the second group, I would like to know which factors had influence on their perceptions and behaviors toward the environment, so I suggested them to do a Venn diagram, identifying the factors, their level of influence and the relationships among these factors. Most of the students did not have difficulty doing these tasks, according to my observation. Having participants fulfilled these exercises, on the one hand, provided me the information I would like to investigate, on the other hand it encouraged every pupil to contribute and express their opinions (since I asked them about their diagram). They also provided me written materials as well. However, for the last group, I could not use these tasks, largely due to the

availability of time. I could not apply the miracle question for this group, either. I had shorter time for this group in relation to two previous groups, thus I decided to take a more direct approach and concentrated on the questions I would like to ask.

During the interviews with the students, I tried to encourage everyone to participate in the interview by asking follow-up questions and asking those who did not talk much about their own opinions as well as comment on others' opinions. Similar to the interview with the teacher, I did not use a recorder but wrote down notes on my notebook. The advantages and disadvantages of this method, I have discussed above.

For the data that I have collected, including written information I got from the interviews as well as my observations in these processes, I choose hermeneutics approach to interpret and reflect the whole and individual parts in mutual relation, taking into consideration my pre-assumptions of the situation, the language and other symbols actors have used and making reference to relevant theories.

THEORY

Symbolic interactionism

Symbolic interactionism succinctly is a description of a social psychology that focuses on the importance of interaction as the basis for what individuals and societies are made of, and that interaction is always symbolic (Charon 2007). Symbolic interactionists argue that we as human beings always see reality through our perspectives, therefore 'we cannot know it [reality] completely or in any perfectly accurate way' (Charon 2007, p. 6). Perspectives – as products of society – influence and guide what we see, and thus influence what we do. Each individual is regarded as a social being, which has interaction with other individuals and interaction with herself. Each individual aligns his action to the action of others by getting the meaning of their acts or 'taking the role' of others (Blumer 1969). Society is created by social interaction among individuals. Human interaction is mediated through symbols, in which language plays a pivotal role. Symbols are used by human beings in communication and one's used symbols are often interpreted by the others. On the whole, symbolic interactionism views human beings in a dynamical viewpoint, stresses the relationship between individuals and their environment, in which we do not simply respond to our environment, but we define, 'act toward it according to our ongoing definitions arising from perspectives' (Charon 2007, p. 42), which originated from social interaction.

Symbolic interactionism will take the role of a cognitive frame for my discussion and interpretation in this paper. It provides insights to analyze participants' perspectives and actions, language they use as well as their interactions.

Attitude and behavior

Attitudes and behaviors have a mutual impact but none of them decide entirely the other. The consistency between them is not always recognizable, and sporadically some people'

behaviors are not in tandem with their attitudes. There are various theoretical approaches regarding attitudes, for example, learning approach views attitudes are learnt as habits, whereas incentive approach views them as the products of cost-benefit calculations by individuals (see Sears et al, 1985). We know that someone's attitudes have influence on their behaviors, yet to what extent it depends on attitudes themselves: whether attitudes are strong, clear, and salient or not. Certain theories, such as cognitive dissonance theory and self-perception theory, also shed light on some aspects of the influence of attitude-discrepant behaviors on attitudes. A model of persuasion to change attitudes developed by Hovland (quoted in Sears et al, 1985) classifies factors to the successful level of the persuasion. They are: communicator, communication, and situational and target variables. The persuasion to attitude change may have greater chance of success if the communicator is viewed as credible, trustworthy, and favorable; the discrepancy, fear arousal of the communication; the forewarning and distraction situations; and the commitment of the target. However, a persuasive attempt may also get negative responses from the target such as source derogation or blanket rejection.

Theories of attitudes and behaviors will be applied to some extent in my discussion, mostly about the pupils' attitudes toward the environment and environmental issues and which may affect them to have pro-environmental behaviors.

Sociology of the environment. Social constructionism and critical realism

Environmental sociologists oppose the view that considers society and the natural environment as separate entities. They claim for a better way of thinking about the relationship between nature and society and take it as the main research focus. To investigate environmental issues, two notably sociological methods have often been applied: social constructionism and critical realism.

Social constructionists investigate how some environmental issues come to be seen as urgent social problems, whilst others fail to be taken seriously (Sutton 2007, p. 26). They argue that all environmental problems are partly socially constructed and the process of construction can be examined and explained (p. 27). This leads them to a conclusion that environmental problems seem to be ranked in order of their perceived significance. I will turn back to this theory later in the discussion part about the task I had with the pupils, in which I asked them to rank some environmental problems.

Critical realism is a method of scientific inquiry that potentially brings together social and natural scientific evidence to better understanding why environmental problems occur (Sutton 2007, p. 32). Based on criticism of social constructionism as failure to acknowledge the reality of the natural environment, environmental realists demonstrate that environmental issues cannot be properly understood and explained by natural and environmental sciences alone (p. 36). I will debate more elaborately about this method in my interview with the pupils about their perceptions of the origin of environmental problems.

Pedagogic practice

Bergqvist and Säljö, in an article (2004), remark that 'during recent decades there has been an increasing emphasis on approaches to teaching and learning in which students are expected to assume responsibility for their own learning'. Teaching and learning, now are considered as 'communicative practices in which people participate and co-operate'. 'From the communicative point of view, schooling can be understood as an ongoing conversation and as a continuous production/reproduction of interactional patterns within discourse communities' (Bergqvist & Säljö 2004, p. 110).

The role of teachers and pupils have changed in the way that pupils 'no longer expected merely to come to class and be prepared to listen and work actively on the tasks presented' but 'there are expectations of being able to make plans for how this work should be carried out and to structure and communicate these plans in explicit forms in language'; while teachers are assumed 'the role of tutor in the planning of the work of students' (Bergqvist & Säljö 2004, p. 112).

The emphasis on learning to plan – as an alternative pedagogy approach – in order to develop students' meta-cognitive skills and self-discipline will be resorted to discuss in my project about what involved teacher and students are doing in their class, as well as their opinions relating to it.

EMPIRICAL DISCUSSION AND INTERPRETATION

This part will be divided into two main sections: one involving the interview with a teacher, the other involving my interviews with three groups of ninth grade students. For the latter, it will be a combination of the interview sessions with three different groups of students respectively. I put them together into one section to avoid unnecessary repetition because the questions I asked them basically were the same.

For the data that I have collected from all interviews, it will be classified into relevant themes, which reflect my knowledge interest and aim in this project. In these respective themes, empirical materials will be presented and discussed simultaneously wherever possible.

First section: Interview with a teacher

Background

The teacher that I contacted and interviewed was a science teacher, who had worked in Kvarngärdesskolan for just more than one year. She taught math and science to fourth to ninth grade students. Environmental issues were included in science and social science lessons and there was not an independent subject in relation to environmental issues. Thus she was responsible of environmental education to students in her work.

Environmental education is prescribed in the Curriculum for the compulsory school system (Lpo 94), though not very specific. One of the goals it identifies is the school should strive

to ensure that all pupils 'show respect and care for the immediate environment as well for the environment in a wider context' (Lpo 94, p. 8). Therefore, according to her, the curriculum gave a lot of space for teachers to determine which environmental matters they would like to transfer to their pupils as well as how they should do it. This was an opportunity for the teachers as they did not have to follow a rigid way of teaching but were able to choose an approach they considered appropriate. However, it also rose up some challenges. The instructions from the Curriculum were not very specific, so there were differences among schools in relation to environmental education. She told that she had a daughter who was learning in another school and there they were having an altogether different approach to environmental education compare to hers. Another challenge was that it demanded efforts from the teachers in their work.

She also commented that although environmental issues were educated in both science and social science, she did not perceive a considerable difference between these two subjects. They were quite similar in their syllabi. Nevertheless, the pupils perceived this matter a bit differently. I will return to it later, in the discussion with the students, where I got another view.

Aim and hope

Her answer to the question about her aim and hope in teaching environmental issues was that she would like her pupils to be informed about environmental issues but more important to be able to develop their skills in argument and discussion. Instead of just providing scientific facts, she aimed to show different views related to a certain issue, so that many opinions were considered at the same time. She wanted the pupils to have their own opinions and to be able to participate in discussion about each matter. She said 'It is wrong to tell them which they should choose [a certain view]…They should not just accept what they are told but be able to apply a critical thinking'.

We can see that she aimed to a change in relation to the responsibility between teacher and pupils, in which the teacher, apart from giving scientific knowledge, just takes the role of guiding her pupils how to work, whereas the pupils will take the main responsibility in organizing their study: have a discussion about one issue, present and listen their opinions, and then have feedback and make an evaluation. Having done so, they can develop their skills in planning their work, learning from interaction with other classmates, and improve a critical viewpoint to various information they get from news media, school, etc. It is also the main argument from modern pedagogic practices, which have been mentioned above, in the theory part. It bases on the definition of knowledge as 'knowledge is neither "accumulated" nor "discovered" by the individual. It is jointly construed through communicative practices in which people participate and co-operate' (Bergqvist & Säljö 2004, p. 110).

Advantages and disadvantages

In regards to the advantages in teaching environmental issues, she listed a few factors she perceived as favorable: supports from colleagues; new researches in environmental education in connection with schools; and there are quite a number of people who are

interested in environmental issues. All of them seem to be external factors, and contextual factor was not mentioned: the availability of acquiring information, for instance in a developed country like Sweden, where people can access a variety of information sources, from newspapers, TV, documentaries, Internet to alternative sources, it might be a vantage. In addition, the closeness to the environment (forests, lakes…) might be advantageous for education.

The disadvantages, according to her, were plenty of information about environmental issues today, so it was not easy which one to choose. Likewise, the teachers need to keep track of information: facts were different from opinions and they should recognize this problem. It was not simple to distinguish them and sometimes it could evoke confusion. So, one of her main concerns was how to deal with the flux of information we were receiving day by day. Another problem was that not everyone was interested in these environmental matters. Even the pupils, many of them had more concern about other subjects like math. Furthermore, environmental education itself was just partly science subject and it could not be given too much time. She also argued that environmental education now is not very popular as it was several years ago, when it had a strong connection with political issues and attracted a lot of debates. At the moment (spring 2009), the focus is involving other issues, like educational system. Nevertheless, she agreed that there were more advantages than disadvantages in teaching environmental issues, and schools need to address these issues.

Teaching

She chose an educational approach which had a close relationship to her aim in teaching environmental issues. She said that she had her students formed into groups to study the argumentation regarding certain topics which connected to environmental issues. They also were recommended to find environmental claims on the news media and discussed about them, applying critical thinking method. She also said that in her teaching, she tried to be flexible and let pupils lead their own discussion. It was necessary to mix various methods as 'no approach is the best'. In addition, she regarded 'there's no point in teaching things they do know' and 'it is more interesting to have discussion more about things rather than just easy to have a correct answer'.

Different approaches were applied according to pupils' age. For the younger pupils, she gave more scientific facts because she thought 'younger ones need more information from the teachers'. For higher grade students, they had much more information, so they needed to have more discussions. She also mentioned that she needed modifications in her teaching, depend on each subject and group. So the way to teach environmental issues might not be the same as they way to teach other subjects, such as math or science, for example.

On the whole, her approach to some extent reflects the central idea of student-centeredness. In a broader perspective, it also reflects that 'social activities are always dialogical. People act in response to other people's actions and in response to institutional practices' (Bergqvist & Säljö 2004, p. 122).

Perception of pupils

Regarding pupils' performance in activities that they were assigned, she thought that they worked quite well in discussions. According to her observation, the pupils were ambitious and committed to their study. Although they came from different backgrounds, but she did not experience this difference as a big problem in teaching as the pupils were co-operative and had knowledge. She also recognized that after these discussions the pupils 'have feeling everyone contribute' and instead of passively receiving information, they 'become more active than before'.

However, she also made a comment that some pupils who were a bit passive and quiet might get some problems in working in this way. She said that 'certainly we cannot force any pupils to speak' in the discussions but she tried to encourage everyone to be as much active as possible and contribute something. According to her observation, those pupils were often more active afterwards. Another point she realized was that some pupils seemed to be more engaged when it came to environmental issues than others, while some seemed to be more engaged in other topics. They had different priorities to their knowledge interests. Their attitudes toward the environment were not in the same level and this depended on various factors.

For the matter of influences on pupils' perception of the environment, she ranked them as follow: media, family, and to some extent school, in which media was the most influential factor. This concurred to the pupils' answer (I will discuss about this in the second section).

Improvement

When being asked what the interviewee would like to change, she did not give a very clear answer. From her perspective, one way to improve environmental education in schools was increasing of teaching time; however it was not an independent subject yet included in other subjects, so it could not take too much time. My perception was that she was quite satisfied with the current situation and would not like to change anything much.

Second section: Interview with pupils

Background

I interviewed three groups of pupils, in total ten participants. Representatives of gender were equal: five male pupils and five female pupils. They were in ninth grade, and most of them were around 15 years old. They were in the same class, and I thought, they knew each other quite well. Because Kvarngärdesskolan was an international school, as I mentioned before, then the pupils I interviewed came from different cultures and nations. Language instructions in the school were both Swedish and English, so all participants could speak English quite fluently. This made the interviews become more convenient and I thought the participants did not have much difficulty expressing their opinions. Besides, regarding Kvarngärdesskolan was a comprehensive school, the participants may have had various vocations for occupation which were not necessary to be affiliated to environmental issues.

Another matter which also needs paying attention is that regarding all interviewees were school students, they might have different characteristics compare to adults, for example if we think about adolescent psychology. Some metaphors for interview (Alvesson 1999) likewise require being aware of, such as social scene and the interviewee. They may make assumptions about me (as the interviewer) like what information I want to hear from them or whether they judge me as a teacher; social norms for expression are also mobilized. All of these things may guide their responses in the interview. In addition, as Alvesson points out, the interview may be considered as identity work, and as individual and organizational impression management, which suggests that the interviewees may express themselves in relation to their teacher, school, and other institutions (seeing that the students understood that their teacher knew they were having an interview with me, talking about issues which were related to their teacher's work). We will see to some extent how these assumptions will be touched upon in next parts.

Wish

When being asked miracle questions, the answers from the interviewees (which we can regard as their wishes) were diverse. Some of them were connected to environmental issues, such as efficient use of energy sources, reduction of global warming, trees would not be cut down. The other issues were end of poverty, enough food for everyone, African kids got education. These answers, to some extent, reflect the participants' perceptions and feelings. However, against my anticipation, a number of interviewees mentioned environmental issues when talking about what they would see after a miracle happened. My anticipation was that they would mention various things and maybe one would be connected to the environment. Especially, all of the answers from the first group in this question were related to environmental issues. Perhaps it is because they knew that the topic of the interview was about environmental issues, then instead of giving an answer they normally would do if they did not know the topic of the interview in advance, the pupils gave those answers that they might perceive as the ones I would like to hear. This is what Alvesson (1999) considers a metaphor of the interview 'framing the situation'.

Things were different when I had another approach to the third group. I did not ask them a miracle question but a more direct question 'What is important to you?' None of the answers I got was closely related to the environment. Instead, they mentioned family, friends, education, enjoy life, make others happy and being happy. Those factors like family and education were repeated in different answers, which more or less mirrored the pupils' thinking, while the environment seemed not to be one of the biggest concerns of them. In regards to education, participants shared the idea that it was the easiest way to have a good future, to get a good job (which is quite pragmatic, I think), as well it made people become more committed and know 'where they are'.

Perception of environmental issues

To investigate the pupils' knowledge about environmental issues as well as their perceptions related to the impact of these issues to the environment, I assigned them a task

using force-field analysis, in which they identified three positive issues and three negative issues, and ranked them in order of influence. Below I present the materials I got from three of them, which reflected their perception toward environmental issues.

Positive issues (1. means the best):

1. Renewable energy sources; 2. Recycling as much as possible; 3. Smaller dependency on paper;
1. Using less energy or saving more energy, for example using low-energy lights; 2. Recycling; 3. Walk/bike more, to reduce pollution;
1. Renewable energy sources; 2. Recycling; 3. Less use of energy;

Negative issues (1. means the worst):

1. Spilling waste products into the oceans, rivers, etc.; 2. Not disposing of waste properly; 3. Leaving lights and electronics on when they are not in use;
1. Polluting; 2. Driving cars in short distances when you can walk because it makes a great impact on global warming; 3. Cutting down trees, burning forests, etc.;
1. Long distance transport; 2. Petrol cars. Using cars at short distances instead of bikes, for example; 3. Cutting down trees;

As we can see, the materials from the interviewees are fairly similar, which to some extent provide us their common perception in relation to certain environmental issues. Admittedly the number of interviewees here are only a few, still we can find something interesting. Environmental issues, according to the pupils' input, fall loosely into three major issues: energy, pollution, and logging. When it comes to positive issues, renewable energy sources are often ranked highest and next is recycling. The popularity of renewable energy sources like wind power, solar power, ocean energy, etc. has raised over the years together with advancements in technologies, as well the increasing dependency of humankind on energy. It seems to be the explanation why they attract lots of attention. When it comes to negative issues, polluting seems to be the biggest threat. This opinion may come from the fear of the detrimental effects of polluting on living organisms and the ecosystem. Attitude theories (Sears et al, 1985) often mention the impact of fear arousal on peoples' attitude about something. Social constructionists also point out that how an environmental claim is labeled and presented can play a significant role in capturing attentions to that claim (Sutton 2007). Names, visuals, pictures, films, etc. relating to pollution phenomena often have great impact.

Global warming, which is covered very much on the news media, was not the most severe problem for these interviewees, as one of them said it had 'long impact'. It seems that for these pupils, problems with more direct and observable consequences are more serious.

When it comes to the reasons why environmental problems like emissions, flooding, and pollution occur, the interviewees gave a variety of explanations. Some problems were natural; some were combinations of natural and man-made factors; and many of them were because of man-made causes. So, according to the pupils' perception, a number of

environmental problems happening today are created by human activity. However, they also shared the opinion that we need to be cautious as it was still not sure between natural and man-made reasons, and more inspections were required, for example, regarding global warming. This opinion, to some extent, reflects critical realist argument that environmental problems are both natural and social, and natural scientific and social evidence should be investigated together in order to understand underlying causal mechanisms which give rise to observable phenomena better (Sutton 2007).

Behaviors

As to the reasons why some people experience unfriendly environmental behaviors, an array of accounts were rendered by the interviewees, some were internal, while others were external. Some internal factors were:

- They are lazy and greedy
- They don't see the consequences
- They don't think that their actions will make a big difference
- Not willing to sacrifice their interests
- Take things for granted

Some external factors were:

- They are uninformed
- They don't see the problems, don't realize the problems
- Overpopulation
- Pressure of economy, especially in poor countries

In these factors, 'uninformed' or 'lack of knowledge' was repeated in different groups. It seems that due to the students' perspectives, this factor was quite concerned, as it had relation with communication and education. However, whether it was the biggest reason or not, was unclear.

The interviewees suggested some ways to address the problem of unsustainable acts. It seems to be not an easy problem to solve, as one them remarked 'it is often more expensive to choose the right things', for instance, organic food is often more expensive than conventional food. In order to change people's unsustainable behaviors, here are their solutions:

- Finding information, planning approaches to environmental issues
- Inform, educate people about these issues
- People have to sacrifice their interests
- Regulation, policy
- Lower taxes on good things
- Incentives for sustainable behaviors

Connected to their view on the reasons of unfriendly behaviors, finding information and inform people were likely the biggest concern of the interviewees with regards to the solutions. The students' view on reasons and initiatives needed to do was quite consistent. Besides, economic inventions like taxes and incentives were usually mentioned, too.

When it comes to the interviewees' own behaviors, they expressed that they have adopted some behaviors which were friendlier, such as:

- Walk or bike instead of using cars or buses if the distance is short
- Save up electricity, for example, turn off lights when leave out of rooms
- Use computers to save up paper, which leads to reduction of cutting trees
- Recycling more
- Decrease of buying unnecessary things

Such practices like turning off lights and walk/bike instead of using buses seemed to be more common than others. A few less environmentally friendly behaviors were also identified, such as using much cars/buses, waste of electricity. Nevertheless, in comparison to pro-environmental behaviors, they are much fewer.

Sources of environmental information

The students approach to environmental information via a number of sources:

- Newspapers
- Science lessons at school
- Family members
- Friends
- Internet, television, radio
- Al Gore's films

In these sources, the news media seems to be the most important source of environmental information for the students, as it was mentioned most. Other sources, like previous experiences within the environment and environmental non-governmental organizations (NGOs), were hardly mentioned.

Influences

I had an exercise with a group, asking them to use Venn diagram to illustrate the influence of information sources to their environmental perceptions and attitudes. I will try to provide the outcomes of this exercise below, though they are not depicted in diagrams.

Influences of information sources on four interviewees' perception to the environment (from most to least influential factors):

1. The press; News; Internet, pop-ups, etc.; TV/Film (Al Gore); School; Friends and family; Food chains; Lectures
2. The press; Newspapers and media; Documentaries (Al Gore); Internet, pop up, commercial; School; Family, friends; Lectures
3. The press; Documentaries, films (Al Gore); News; Newspapers; Internet, commercials; Scientific studies; School/Education, class work, lectures, projects; Family conservations
4. The unknown consequences; The costs/Prizes; News media (Al Gore); Listening to scientists; Education at school; Family

The data are quite unanimous since three out of four participants agreed on the news media (especially the press) as the most influential factor, while school/education often was the next, then family and friends. To other groups this question also brought to similar results. Their teacher as well believed that the media was the most important source of environmental information to the students. This concurrence seems to be not a surprising issue. Nonetheless, when it comes to the degree of reliability, media was not appreciated as the credible source by the students. School was often considered as more reliable in the students' perspectives. For example, when talking about media, one participant said 'they only want to get more attention to sell their products', while another remarked 'media is only one-side'. Those comments may reflect some of the constraints of news production, which are often debated, such as the influence of ownership and economic interests of the owners of news station and television networks on the news content, or requirements of newsworthiness (Cox 2006).

A pretty interesting result from the interviews with different groups of pupils was that documentary films, in particular Al Gore's films, were frequently mentioned. Popular people, like celebrities, leaders, public officials…may have a considerable impact on young people. The participants, when were asked how to improve environmental communication, apart from mentioning that they wanted to see more pictures, films, and arguments, they also suggested celebrities' encouragement and actions.

The second most important source of influence on the pupils' perceptions and attitudes toward environmental issues – school/education – will be discussed in the next part, where the interviewees expressed their opinions and feelings about environmental education at their class. Through which, we can see the influence of friends, classmates on each others as well.

Class work

The pupils engaged in various activities in their class related to environmental issues. On the whole, they had groups projects, finding environmental articles, discuss in their groups, then had presentations of their arguments to other groups. To the environmental issues reported on the media, critical thinking was applied to discuss the validity of each claim: looking into both sides of the story, then 'figure out one you will believe'. They also had lectures, from science and social science teachers, as well as other lecturers from outside their school. Other activities, like school trips, were not mentioned.

The participants' general responses to environmental lessons they received at school were positive. Most of them thought that they were 'enough'; though some wanted they had 'more often in discussion'. One interviewee said that they had a lot of room in deciding what they want to do without being constrained, as 'the teacher does not decide on her own', and anytime they wanted to know more, they felt free to ask their teacher. Another interviewee wanted to have a combination of science and social science in those lessons. According to the participants, there was a difference between science and social science in approaching environmental issues. Environmental lessons in science were considered to be more engaged in scientific part, while in social science they focused more on ethical and political aspects.

Reflecting on the way they were doing, the interviewees believed that they could learn more and see the problems from both sides. While media was often regarded as 'one side', through arguments with each other in groups, they could obtain different aspects of each problem. Therefore, they could improve their own opinions from the basic information. On the other hand, they got other opinions; they could know what everyone thought and decide if they wanted to save or change their own opinions. The interaction among class members brought out a lot of information and everyone could determine which information to choose.

Seemingly the pedagogic approach that emphasis on student-centeredness and interaction among learners was quite favored by the participants as they reflected various advantages of this method. The pupils were opposed to be told what they had to do, but preferred to which information to choose and have open discussions with others, where they could present their opinions and listen to others'.

CONCLUSION

From the discussion and interpretation part above, I draw some conclusions, which also serve as my answers to the aim and research questions of this paper.

For the perceptions and opinions of the actors involving teaching and learning environmental issues at school, the actors generally have a positive view about what they are doing. The role of education on communicating environmental issues is respected by both the teacher and the students. The pedagogic method, which encourages the learners' skills in discussion and argument, as well the interaction between learners themselves and their teacher, gets positive responses from the participants. The communication between teacher and students to some extent is open, two-way as the students have a lot of room to determine their own study.

To a closer extent, from the teacher's perspective, environmental education is partly scientific subject, but has a considerable relation with political issues. She experiences more advantages than disadvantages in teaching environmental issues and emphasizes the role of school in addressing these issues. Involving environmental lessons, she aims to develop students' skills in critical thinking and discussion, so that they can have their own

opinions, rather than just listening to scientific facts. Reflect on the teaching method, the teacher finds her students work quite well in the discussions, and some students become more active after these activities. However, she also admits that students' attitudes and commitments to environmental issues are not at the same level, some are more engaged while others are less.

Regarding the students, my interpretation is that generally they perceive the environment as being under threat and have a pro-environmental attitude. Students' knowledge about environmental issues is diverse; some issues attract their attention more than the others. They recognize various anti-environmental behaviors and emphasize the role of providing information and education in changing these behaviors. Regarding the sources of knowledge, they receive environmental information from a number of sources, in which news media is considered as the most important source. Nevertheless, the students respect school more than media when it comes to the degree of reliability. In fact, they are quite criticized of the news media reports of environmental issues. In regards to environmental education at school, the students seem to be satisfied and can reflect many advantages of the activities they are doing. The interaction with other classmates and with the teacher is also considered as very helpful for their learning.

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