

# Worry becomes hope in education for sustainable development

An action research study at a secondary school

*Lena Persson, Iann Lundegård & Per-Olof Wickman*

Researchers in environmental education and education for sustainable development (ESD) have discussed in what ways young people's experience in school may contribute to their action competence. This paper illustrates how an action research study centered on students' reflections can contribute to a change in teaching that supports their action competence in education for sustainable development (ESD). The emphasis is on a pluralistic approach to ESD in which problems concerning sustainable development are considered as open-ended where students' voices, action competence and decision-making play an important role. The researcher together with a teacher and her Year 9 class in a suburb of Stockholm carried out the action research study. The research corpus for the study was the students' reflections in log books and interviews. Interviews were conducted with a smaller group of five students, and an interview was also made with the teacher at the end of the project to document her experiences. The case illustrates how students' worries were made salient through their reflections, which in turn made a change in teaching possible that transformed students' worries into hope and supported their action competence. This way of working in the school practice may help teachers to think about ESD in new ways as well as in other areas of education.

Keywords: action research, reflection, action competence, pluralism, worry, hope.

---

*Lena Persson* is a teacher in Science Education. Her research was performed at Department of Maths and Science Education, Stockholm University, SE-106 91 Stockholm, Sweden. E-mail: lena.persson9@comhem.se

*Iann Lundegård* is a Senior Lecturer in Science Education at Department of Maths and Science Education, Stockholm University, SE-106 91 Stockholm, Sweden. E-mail: iann.lundegard@mnd.su.se

*Per-Olof Wickman* is a Professor in Science Education at Department of Maths and Science Education, Stockholm University, SE-106 91 Stockholm, Sweden. E-mail: per-olof.wickman@mnd.su.se

## Introduction

This paper illustrates how an action research study centered on students' reflections can contribute to a change in teaching that supports their action competence, i.e. their ability and will to take part in democratic processes concerning sustainable development in a critical way. The emphasis is on a pluralistic approach to education for sustainable development (ESD), in which environmental issues and problems concerning sustainable development are considered as open-ended where students' voices, action competence and decision-making play an important role. The action research study was carried out by the first author (hereafter referred to as "the school-based researcher"), together with a teacher and her Year 9 class in a suburb of Stockholm.

Evaluations, nationally (NU 2003) as well as internationally (Hart & Nolan 1999, OECD 2006) have shown that students' understanding of environmental issues is typically poor. An example is Mark Rickinson's (2001) description of how most students believe that pollution is the cause of all environmental problems and at the same time cannot state what kind of pollution is involved. Paul Hart and Kathleen Nolan (1998) also found that teachers are not generally comfortable with teaching environmental education, which may explain the poor results. Therefore, they argued that teachers need further education in environmental issues. To support teachers, more qualitative research is needed that illustrates alternative approaches that support teachers' change. Traditionally there has been a predominance of quantitative over qualitative studies in environmental education (Hart & Nolan 1999).

An important challenge for the future is to find new ways of teaching, which engage both students and teachers. In the major part of the research in the field, the researchers have been observers of the teaching-learning processes (Rickinson 2001). In this respect, the action research presents an alternative, in which the researcher and the teacher work on a more equal level and jointly support students' learning in ESD. Such an approach is based on democratic principles and is in accordance with the Swedish curriculum (The Swedish National Agency for Education 2006):

Democracy forms the base for the national school system and it is not enough to have knowledge about fundamental democratic values. These must be carried out by using democratic ways of working and preparing the students for active participation in a civil society (p. 7).

Johan Öhman (2008) claimed that if the purpose of education is to attain the aims of the Swedish steering documents, one way to address this is by making it pluralistic. Klas Sandell, Johan Öhman and Leif Östman

(2005) identified three dominant traditions of ESD in Sweden, namely the fact-based tradition, where teachers primarily treat environmental issues as knowledge problems, the normative tradition, where the important task of education is seen as supporting an environmentally friendly transformation of society, and a pluralistic tradition. According to Öhman (2008), the pluralistic tradition strives to emphasize different perspectives, views, and values, which concern different questions and problems about the world's future. To reach that aim, it is necessary to bring the environmental questions into the classroom, so that students have the opportunity to discuss them as authentic problems. Then they themselves can decide in which direction they want to further take the different messages. Such discussions are an important part of pluralistic education. This is one way to enhance the students' action competence so they are able to make their own decisions on environmental issues that may last after their formal education.

This action research study addresses the question of whether possibilities exist to arrange an educational situation at school according to Öhman's (2008) pluralistic view of ESD, which gives students enhanced action competence.

## Theoretical Framework

### Action Research and its Foundations

According to Reason and Bradbury (2001), an important aspect of action research is its participatory, democratic nature:

Action research is a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging at this historical moment. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to individual issues of pressing concern to people, and more generally the flourishing of individual persons and their communities (p. 256).

Peter Reason and Hillary Bradbury (2001) traced the inspiration for this holistic and eclectic understanding of how to develop practice to a number of different ways of thinking, for example, pragmatic philosophy, critical thinking, democratic practice and humanistic psychology. Action research depends on a process of development, the form of which emerges as knowledge-in-action in dealing with questions from the practice, with extra focus on human flourishing, participation and democracy (Figure 1).

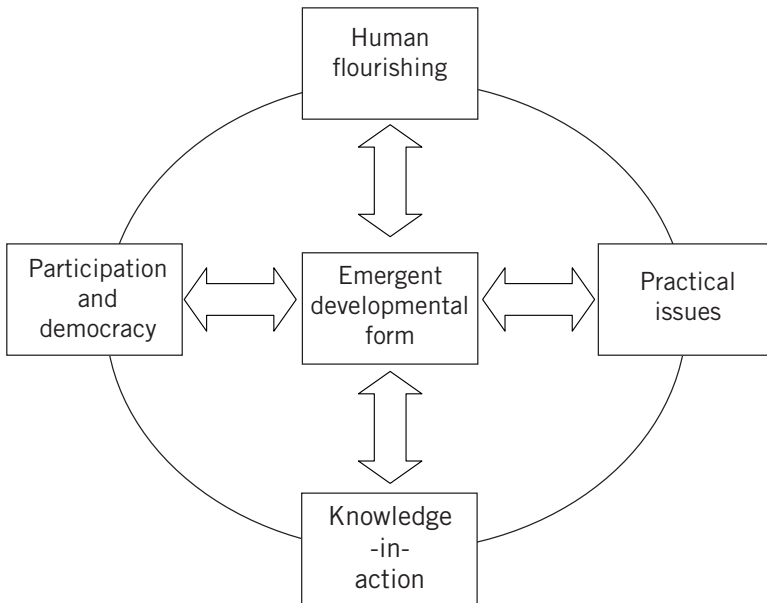


Figure 1. A summary of the action research aspects of Reason and Bradbury (2001, p.2) and how they may interact.

Ian Robottom and Lucie Sauv  (2003) described the action research they conducted in South Africa as being built on six guiding principles, which are closely related to the aspects described by Reason and Bradbury (2001). According to these principles, action research can be summarized as contextual, responsive, emergent, participatory, critical, and praxiological. These have been used as guiding principles and adapted to the situation in the suburb school outside of Stockholm:

Contextual: That professional development respects and relates closely to the particular workplaces and workplace issues of the participants (p. 113).

Hence, the school-based researcher in this study had to make it evident that she respected both the teacher and the students and that she related the questions closely to them.

Responsive: That the issues explored in the professional practice are of interest and concern for the participants themselves (p. 113).

In this study, it meant that the school-based researcher had to ensure that the questions she was using were issues of significance to the participants in their daily life.

Emergent: That the professional knowledge that carries most weight in discussions about how to improve professional practice is that which emerges from the case study work lying at the centre of the professional self-development process (p. 113).

To accomplish this and take care of that which emerges in the study from the participants' reflections, the school-based researcher selected the questions from log books and interviews, which the students found of importance to them and their self-development process. Then teaching that followed process was planned with those reflections as the point of departure.

Participatory: That the participants are involved directly and as equitably as possible in all dimensions of the professional development process, for example, identifying issues to be addressed; the collection and analysis of case study data; the development and dissemination of materials and reports (p. 113).

In this case, it involved the teacher and the school-based researcher working together on an equal level and using the students' reflections in their planning of the education process. This method democratically influenced the students in this project.

Critical: That professional processes look behind the surface level of activity at the levels of policy, organization and practice to identify and appraise the values, assumptions and interests that justify this activity (p. 113–114).

In South Africa, the influence of politicians was important at the time. However, in this study, other interests and values need to be taken into consideration. Of particular importance are those of the school culture, which Gunnar Berg (2002) found to be a barrier for school development, for example, the fact that the school in the study had one of the poorest results in the Swedish national school evaluations. The teacher and the school-based researcher decided not to let this fact influence their expectations from students, and they encouraged all of them to succeed and do their very best.

Praxiological: That the processes of professional development proceed through and are mediated by praxis, defined in this project as a reflective interaction between personal professional theory and practice and the professional settings within which these are intelligible (p. 114).

In this case, the students' reflections are the most important.

## Action Competence

Researchers on environmental education (EE) and education for sustainable development (ESD) have discussed the effects of lived experience on people's ability to develop action competence. Louise Chawla (1994), for example, pointed out the possible significance of early childhood outdoor experiences and defined competence as pupils' ability to take part in practical actions for the environment. Ellen Almers (2009) who did research on action competence focused on how students actually became involved in environmental questions, but also how they became critical on a political level against the way the society threat the environment. Almers (2009) studied the connection between young people's experiences and action competence. She asked: "How do young people experience that they have developed aspects of action competence for sustainable development?" Her definition of action competence was a "willingness and capability to act for changes in individual lifestyle, as well as for structural changes of society, in a way that includes responsibility for present and future generations" (p. 278).

Almers (2009) pointed to four different motives for young people to be committed to the environment:

1. Emotional reactions initiating a desire for change and a desire to act
2. Longing for meaningfulness
3. Desire to feel comfortable with what one can contribute
4. Longing for belongingness (p. 278)

These young people have been inspired to be interested in environmental issues by their parents, informal education in idealistic organizations or by other adults. One of Almer's informants also mentioned that one of her teachers had influenced her to be interested in questions concerning the environment. If one looks at Almer's (2009) results, it is evident that there are differences from Chawla's (1994) research on how the experience of nature and the outdoor environment in childhood influenced children. In Almer's (2009) study, action competence and social components are critical for environmental commitment. Kaplan (2000) made similar observations, finding that the most important factors in environmental engagement were to feel competent to act in questions about sustainable development, to be motivated to act, and to feel that it makes a difference to be able to make changes in one's life. Kaplan (2000) also suggested a way of teaching, where teachers shape the structures for students to understand the reasons for environmental problems, the possibility of conducting research around them and

participating in groups, and discussing how to solve those problems. In line with these findings, this action research study examined whether possibilities exist to arrange an educational situation at school where students acquire enhanced action competence.

Action competence can easily become a slogan, and it therefore needs to be made more precise: What kind of action competence do the students need so they can participate in discussions and decisions about the environment? Here, one specifically draws on the research and definitions of Sören Breiting and Finn Mogensen (1999), Iann Lundegård and Per-Olof Wickman (2007) and Karsten Schnack (1994). Breiting and Mogensen (1999) gave the following definition of action competence:

To develop the students' action competence means developing their ability and will to take part in democratic processes concerning man's exploitation of and dependence on natural resources in a critical way. This approach to environmental education is basically different from the mainstream environmental education, seen as a goal to improve and save the environment here and now through behavior modification of the students. In action competence approach we see environmental education as an educational effort benefitting the students here and now, but of course there is an intention that the students in the long run will be better qualified to handle environmental problems (p. 350).

The action competence approach is related to developing a critical, reflective and participatory attitude by which young people can cope with future problems concerning sustainable development (Figure 2).

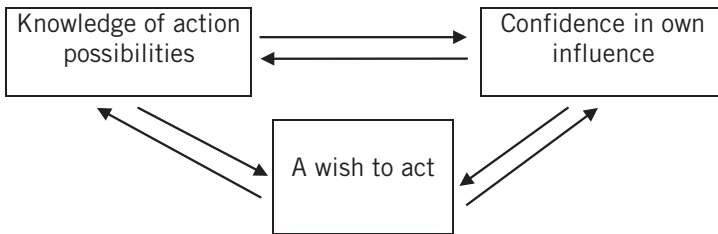


Figure 2. The important attitudes of action competence according to Breiting and Mogensen (1999).

Assessment of the students' progress must be considered in connection with whether they have developed the will and ability to become involved in environmental problems (Breiting & Mogensen 1999).

Lundegård (2007) and Lundegård and Wickman (2007) also discussed action competence and described the ways in which it is separated from the aims of traditional education. First, action competence means that the student can understand the human conflicts behind environmental problems and not just as ecological relationships. Second, the students need the possibility to realize their own role in relation to what is happening in society so they are able to propose suggestions for change. Students also need to gain knowledge about what a sustainable society might mean.

Schnack claimed that action competence (1994, p. 30) is “[a] capability based on critical thinking and incomplete knowledge – to involve you as a person with other people in responsible actions and counteractions for a more human world.” Here, he added the words “incomplete knowledge,” which is especially important in environmental education because the knowledge regarding environmental questions is always incomplete and uncertain. In this study Action competence is used in like with Breiting’s & Mogensen’s, Schnack’s and Lundegård’s definition.

Research will also continuously produce new knowledge. The things people believed as certain yesterday may change the next day. Anthony Giddens’s (2003) picture of a “runaway world” describes this situation very well.

## Worrying about the Future

When starting the action research study, students’ worries about the future were one of the first problems encountered by the school-based researcher and the teacher. This worry seemed to hamper the action competence of the students. Of interest in this respect are Maria Ojala’s (2007) studies about young people worrying about the future. She found that if they had hope for the future, they were able to cope with their worries. If the students’ beside the worries also experienced hope, their positive feelings could help them to be constructive and dedicated. It became a way for them to cope with their worries. Ojala also identified six strategies that could restore young people’s faith in the future and turn worry into hope:

1. Trust in modern technology
2. Trust in effective everyday actions
3. Trust in humanity
4. Put things in a historical perspective
5. Be optimistic by forcing oneself to think in positive ways
6. Trust in global solidarity



When the young persons in Ojala's study were trying to cope with their worries, it was positive for them to engage in and find new strategies to find hope for the future. Ojala's research reveals that both positive and negative feelings play an important role for young people's engagement with the environment. An important conclusion in Ojala's work is that in order to create both psychological well-being and active engagement, it cannot be accomplished by merely eliminating the worry, which earlier psychologists meant was irrational and not useful. Ojala claims that it is better to learn from the worry and turn it into constructive actions for the environment. In addition, both positive and negative feelings can help young people to become active in the future (Ojala 2007).

## Aim and Research Questions

The aim of this action research study is to investigate in what way the elaborations by Reason and Bradbury (2001) and Robottom and Sauvé (2003) on action-oriented environmental education can be combined with a pluralistic view of education for sustainable development (ESD). Within the framework of action research and pluralism and participation, the focus of this paper is on the following question:

How can action research about ESD be used to turn the students' worry about the future into action competence and hope?

## Design and the School Setting

The participants of this study include the school-based researcher, a science teacher and the students in a Year 9 class at a secondary school situated in a suburb outside of Stockholm. For many years, the school had produced poor results in all subjects of the national tests. The class had 23 students; most of them lived in a small village outside the suburb in the countryside.

The ethical aspects of the study were guided by Robottom and Sauvé's (2003) guiding principles (contextual, responsive, emergent, participatory, critical, and praxiological) described earlier. The science teacher was asked to work together with the researcher where the researchers task was to document the project. The whole project had to be planned out of the students' reflections. All the way from the beginning the teacher were well informed about the action research. Thus she was prepared when she accepted to attend the project. The teacher and the students' were also informed that their identities were to be protected, according to the principles of The Swedish Research Council (HFSR 1999 ).

The research corpus for the action research study was the students' reflections in logbooks and interviews with students. All student quotations reported in this paper originate from these two sources. Students' log book reflections are quoted according to their original wording. All students were asked to write logbook reflections on the given questions during this study. Interviews were also conducted with a smaller group of five students and were transcribed verbatim. The class was divided into five working groups facing different issues on lifestyle in relation to sustainable development (clothes, food, electricity distribution, cars and other transports). As we wanted to follow the process in all the working groups' closely, the group that was interviewed was made up of one student from each working group. Opportunities for reflection in log books and interviews were given on three different occasions during the study. After every occasion, all of the students' reflections were transcribed. These reflections were read by the teacher and used to plan the lessons that followed. An interview was also conducted with the teacher at the end of the project to document her experiences.

### The Action Research Cycle

Action research is being used in corporations and enterprises when the aim is to reach a change in practice. Action research in school settings is described by Harriet Axelsson (1997) as being shared on three levels:

- Students are action researchers when they reflect on their learning.
- Teachers are action researchers when they observe, reflect and change the education, and develop professionalism.
- The researcher is action researching when he/she is reflecting on what is happening in relation to the research question.

It needs to be pointed out that being an action researcher means alternating between the role of teacher and researcher. The border, by necessity, sometimes becomes blurred. However, the role of the researcher mainly means taking care of the aim of this study and analyzing the research question. The role of the teacher is present in all of the decisions and evaluations made in the classroom.

An action research study can be described as a spiraling cycle of four repeated phases: planning, action, reflection and revision. In the school situation, the teacher, researcher and students plan actions together, carry them out, observe what happens on the different levels and then reflect on the result. The reflections may identify new problems, which requires starting over again from phase one. The action research cycle tries to

both understand and meliorate the process. This study focuses on the first full cycle and then relates to the reflection phase in the remaining two cycles. The first cycle entails the following four phases:

**Phase 1:** In the planning phase, the teacher and the researcher planned the introduction to ESD, which was a lesson discussing Agenda 21 and what has happened since then. A visit to a science museum was also planned for later lessons.

**Phase 2:** In the action phase, the teacher predominantly taught. The researcher also taught, but also observed the students' actions in the classroom and at the museum.

**Phase 3:** In the reflection phase, all parties, including the teacher, researcher and students, reflected on the work. This part included the students' worried reflections after the visit to the museum, and the teacher and researcher's discussions on how to help the concerned students.

**Phase 4:** In the revision phase, the plans for the following lessons had to be changed because the teacher and researcher had to pay attention to the worried girls, so they were able to regain hope for the future of the world.

## Conducting the Study

This section chronologically presents the various phases of the action research study and what happened. The focus is on how students' reflections have made their worries salient and how these worries were transformed into hope. To make these findings easier to read, the first person is used. The "I" of this presentation refers to the first author of this paper. This narrative form also gives a better sense of how the events successively developed.

### Planning – the first cycle

The teacher and I planned the introduction for the unit on sustainable development. We worked on an equal level, like Robottom and Sauvé recommended (2001). At the start of the unit, we wanted to give the students a holistic view of the issues. Therefore, we started the first lesson with an introduction on the environmental situation, both from a local and global view. After that, a visit to a global change exhibition at the Swedish National Museum of Science was planned.

## Action – the first cycle

During the first lesson, the teacher introduced the students to the subject: environment and sustainable development. She was focused on the worldwide environmental problems and also talked about Agenda 21 and what has happened since that time. What the conference back in 1992 dealt with was for example acidification, eutrophication, greenhouse effect and the ozone problems. The teacher and the students noticed that all of those problems except for the greenhouse effect are now better in Sweden than 1992. She also showed the students that many aspects have improved since that time, although she presented a diagram on the atmospheric carbon dioxide content in relation to the rising carbon dioxide level and global temperature. At this moment the teacher did not talk about any solutions to the actual problem. Instead this was something the groups had to cope with as they worked further in their working groups with their own chosen projects.

During the second lesson, the teacher and the students discussed in what ways people's lifestyles have an impact on the environment, for example, regarding food, clothing and transportation. After that, the students were asked the question: "*What in our lifestyles and the impact of these on the environment do you want to further investigate?*" From this question, they then created interest groups.

The first two lessons were followed by a visit at a museum and the exhibition called Global Change. At the museum the students among other things attended a horrifying film presentation about the hurricane "Katrina" in New Orleans 2005. This movie showed the whole disaster and the human suffering, with people escaping to their rooftops and clinging to tree branches.

## Student reflections

After the visit to the museum, all the students in the class were given the opportunity to present their reflections. The first question for their logbooks was: "*What was your experience of the exhibition and what were your immediate thoughts?*" Judging from their answers, the visit to the museum was a worrisome experience for many students. Here the reflections are presented from five students who articulated worries about what they experienced at the exhibition.

Sussan: There were so much information that was really interesting, but I was shocked. It was so terrible, what they showed in the film. More people ought to think about the future and not just ignore serious problems, just because they are not affected by them.

Sanne: It was interesting to learn about all the things which impact our climate. It makes you realize how bad the situation really is. I thought it was terrible how we have destroyed the earth and made it an unsafe place to live in. More and more catastrophes are going to happen and more animals are dying out.

Albert: It was not good that USA had not signed the Kyoto agreement. The lifestyle is going to change and you should be prepared for that even if you don't like changes. You have to do it anyway.

Elsa: It was interesting and instructive, but it was also very frightening, because you really saw the difference now compared to 2000 years ago. I began to think about how the life will be for my grandchildren and great grandchildren – if they have to be floating on plastic boats because the ices are melting or if they dare not to go out because the ozone layer is disturbed and they are afraid of getting skin cancer.

Johan: We must do something with the environment. We must start driving environment friendly cars and stop the import of unnecessary articles from China, even if they are cheap because the transports are so long with carbon dioxide letting out.

### Reflections of the teacher and researcher

Many of the students' reflections emanated resignation and dejection. They used words like "shocked," "terrible," "destroyed," "unsafe" and "frightening." In her thesis, Ojala adopted a critical approach to the prevalent view on emotions, and worry in particular, as being negative or even irrational states. Instead, she started from theories focused on the constructive role of emotions. She found that worry about environmental problems was positively associated with other orientated values of both an altruistic biospheric kind and with trust in one's own and other actors' ability to contribute to the solution of the problems. She also identified factors that may help young people to deal constructively with their worry. Negative and positive emotions are not bipolar; young people who are very worried may also feel positive emotions to a high degree, which seems to have a positive impact on both their well-being and actions. In her research, she discovered that the best solution is to cope directly with negative emotions rather than attempting to eliminate them, is to transform

the energy connected with worry and other negative emotions such as anger into positive actions (Ojala 2007).

In this situation, the teacher and I found support in Ojala's (2007) doctoral thesis, which provided advice on how to help the students transform worry into hope. We followed those girls, most of whom were worried, all the way through the project. The boys cited earlier were also worried, but it is evident that they were also trying to find constructive ways to manage their concerns. We addressed the students' reflections by drawing on different researchers:

1. Using the students' reflections to capture the students' problems in the planning of the next cycle of our unit (Posch & Elliot 1994). The next lesson was dedicated to discussing the students' worry in relation to the actions to be taken.
2. Incorporating Ojala's (2007) ideas to help the students' find hope and thus give them action competence regarding the future of our globe.
3. We incorporated Reason and Bradbury's (2001) ideas that action research depends on a process of development, the form of which emerges as knowledge-in-action in dealing with questions from the practice. Here, this emergent knowledge drew on the questions from the students.
4. All six guiding principles of Robottom and Sauv e (2003) were helpful to me and the teacher in planning the rest of the unit.
  - a. Contextual: The issues of the worried students were closely related to the workplace issues of the participants that is, teaching and learning about sustainable development.
  - b. Responsive: These questions were of interest and concern to the participants.
  - c. Emergent: See item 3 above.
  - d. Participatory: The participants are directly involved as equitably as possible in all dimensions of the professional development process.
  - e. Critical: The teacher and I wanted all of the students to succeed. Therefore, we had to help the students gain hope for the future and think in more constructive ways. We also had to look behind the surface level of the activity as only dealing with learning facts.
  - f. Praxiologic: The processes proceed through and are mediated by praxis, while also being a situated reflective interaction between theory and practice.

The interviews focused on the students' worries, their reflections on their needs in the classroom, and their views on how we could best support their learning. Their responses helped us to plan the upcoming lessons.

### What Happened During the Rest of the Unit?

Before the second cycle of the action research the students' worries made us decide to bring the problems to a level, where the students did not have to feel as much individual responsibility. This stage of the process began with the teacher leading a class-room discussion about the responsibility of society in economics and politics. She also paid attention to organizations, with which people can engage in order to make an impact on politicians. All the students seemed to be very interested to take part in the discussion about who has the responsibility and who has to be blamed for the exploitation of the environment.

### Students' reflections during the second and third cycle

In the next cycle, we noticed that many students began to speak about possible solutions to problems concerning sustainable development. Overall, they worked effectively in their working groups on clothes, food, electricity distribution, cars and other transports in connection to life style and tried to seek concrete solutions to the problems at hand. This might also be one reason why some of the students now were more hopeful in their reflections on the future. The next time when we checked their reflections about the environment questions, the girls' thoughts were the following:

Sussan: Now after I learnt about food and clothes I am checking what kind of food and clothes I am buying. [Her own group worked with climate smart food and another group she shared interests with was working with clothes.] Before I was thinking that everything was depending on my actions but now I understand that everyone must help to take care of the globe. It's not only my responsibility.

Sanne: We must consider our every-day behavior so we are able to decrease our outlet and in that way save the environment. The most difficult barriers are, that we have been so comfortable and to be both comfortable and environment friendly is difficult. The biggest challenge for all people, in the future, will be to think and change their environmentally unfriendly habits, for example going by bike, by bus or train and eat and live in an ecologic way. Social, economic and political decisions are needed, which support the environment.

Elsa: I really don't know. I think that the damages done on earth are so enormous that there are no possibilities to repair them but we can reduce them by travelling and eating environmentally friendly. If we want to re-establish the globe we have to live like we did during the Stone Age. It's not enough if the individuals think and do the right things. It demands a decision that all people must live environmentally friendly.

It is evident that Sussan and Sanne were beginning to find hope and ways to act. Elsa still felt that there was little to do. However, this changed in the third cycle, after which the girls made the following reflections:

Sussan: I really think that I can follow the environment debate and take my own decision in the election in about two years.

Sanne: Everyone should help each other, our parents and we, everyone should be involved in decisions about the future.

Elsa: I can follow the debate about environmental issues and take my own decisions in next election. I have been more engaged and think it's interesting to study environmental issues now. We must all cooperate to do an effort for the environment but it's also important that every single person is engaged, that can make more difference than you think.

### Reflections of the teacher and researcher

Sussan's final reflections reveal the following changes: She was no longer feeling guilty, she had learned more about issues concerning sustainable development, and she was making active decisions about food and clothing. She also felt comfortable about making her own decisions in the next election. Did she gain action competence? She learned that other factors were responsible for the problems, but she was unaware of the structural problems (Lundegård & Wickman 2007). In addition, Sussan became motivated to learn more about action possibilities and wanted to act regarding the food and clothing questions (Breiting & Mogensen 1999). Therefore, she appears to have developed action competence in some respects, and was perhaps motivated to later learn more in other respects. Ojala (2007) wrote:

Young people who are highly worried can also feel positive emotions to high degree, which seems to have a positive impact on both well-being and behavior. In her research she found that the best thing is to cope directly with negative emotions – not to try to get



rid of them, but to transform the energy connected with worry and other negative emotions such as anger to positive actions. (p 84)

Sussan had turned her negative feelings into something positive; she was thinking of elements she could change and had gained self-confidence because she thought she could make her own decision in the next election (see the pluralistic view, Öhman 2008).

Sanne was sick and stayed home the last time the students were reflecting. This is why she did not answer the question of whether she would find it easier to vote in the next election. Although she offered suggestions for acting regarding questions concerning sustainable development, she also saw problems with convincing everyone to act. In addition, she was aware of the structural problems that are influencing the environmental problems (Lundegård & Wickman 2007). Some examples are her mentioning our comfortable way of living and that social, economic and political decisions are needed. Furthermore, she presented a democratic and also in a way pluralistic view (Öhman 2008) when stating that all people should be involved in decisions for the future. She was thinking in a critical way (Schnack 1994). Sanne will probably enhance action competence now and in the future, if one looks at both Lundegård's and Wickman's (2007) and Breiting's and Mogensen's (1999) definitions. Sanne's negative thoughts about the future were turned into something constructive when she realized, for example, that everyday behavior could help the environment now and in the future.

Elsa was most worried on the occasion of the first reflection. However, by the second cycle, she was beginning to find ways to eliminate her worry. Even though she did not think it was possible to re-establish a global environment, she believed that people could reduce the damage by doing the right things. She had begun to understand the structural problems and thought the key was in economics and politics. She wanted the politicians to solve the problems. She also wanted all people to be engaged and make a difference in issues concerning the environment and sustainable development. At the final instance of reflection, she was interested in the issues in a more hopeful way.

During the time between the second and third cycles the students participated in group-work on different topics as for example food, transports and clothes in relation to questions concerning sustainable development. One of the instructions in this session was to pay attention to the responsibility of the society in the question at hand. This choice that we made here could be one of the reasons why Elsa gradually changed her attitude to the problem and why she started to turn her initial worries to hope.

If one looks at the definitions of action competence proposed by Lundegård and Wickman (2007) and Breiting and Mogensen (1999), it is evident that Elsa had all of the qualities necessary for making decisions now and in the future. She was critical (Schnack 1994) of politicians because they did not act on problems concerning sustainable development. Regarding democratic issues (Öhman 2008), Elsa was capable of making her own decisions in the next election. Ojala (2007) also found that young people who were initially worried could gain hope for the future and become engaged in issues concerning the environment and sustainable development, just like Elsa did.

## Discussion

As mentioned in the introduction Sandell, Öhman and Östman (2005) identified three dominant traditions of ESD in Sweden: the fact-based-, normative- and pluralistic traditions. If the students had been taught according to the fact-based tradition, and had only been introduced to scientific facts, the significance of their worry about their action competence was overlooked. Regarding the normative tradition, Lundegård (2007) asked the following question:

Should education for sustainability make students behave in a certain appropriate way, or should the main subject for education for sustainability be to give students the ability to participate in democratic deliberations about the global future? (p 86)

In this quotation, Lundegård pointed to the problem of educating students in line with certain given norms instead of supporting their ability to take a stand on controversial issues. The pluralistic tradition, on the other hand, is more easily combined with the democratic, action-oriented approach used here. It makes it possible to acknowledge all aspects of students' voices, supporting them in gaining action competence in the classroom and for future deliberations so that they can form and give their own opinions on sustainable development issues. In an education align with the pluralistic tradition, the students have time to discuss with each other and make their own decisions about how to act in different situations. By following the students' reflections, teachers can also help them if they encounter any problems when proceeding with their work. In an education built on action research, the students had plenty of opportunities to reflect on the different questions concerning sustainable development and also discuss them in their working groups. Neither the teacher nor the school-based researcher told them the right actions regarding different environmental issues.

## Returning to the Research Question

What then is the answer to the research question: “How can action research about ESD be used to turn students’ worry about the future into action competence and hope?” In this action research study, the students’ reflections revealed that after the visit to the museum, they entertained much worry about the world’s future. This convinced us to help them think in more constructive ways. If we had educated them in a traditional way without their reflections, we may not have noticed their worries. However, by using education built on action research, we were also able to identify the girls’ worries and change the learning process in order to let them handle the issues of concern. Action research also helped us determine to what degree our steps to support the girls actually helped them.

The girls in this study went from worry to hope. By the second interview, they were thinking in more constructive ways. After the third interview, all of them were motivated and interested. They were also critical of how society was handling and making decisions on environmental issues concerning sustainable development. Two girls believed they would be able to follow the political debate on environment and sustainable development and make their own choices in the next election.

The girls have developed action competence, if one considers the pluralistic definitions of the term (Breiting & Mogensen 1999, Lundegård & Wickman 2007, Schnack 1994), because they are motivated, acting, interested to learn more and can deliver critical reasoning on some questions concerning sustainable development of significance to them. They are also able to make their own decisions in what direction they want to proceed with those questions.

In this situation, the education built on action research worked well because it helped the teacher and the researcher to focus on the worries and helped the girls to proceed further in order to use their energy to find ways to eliminate their worry and learn more. The worst case-scenario would have been if the students’ feelings had been deemed to be irrational and were therefore not considered a resource to further their engagement.

## Returning to Action Research and Pluralistic Education

The students’ reflections as part of the action research helped the teacher and researcher to understand what was happening in the democratic process, which was an important part of the setting for this unit. Posch (1991) pointed out that developing the environmental awareness of students through action research is reciprocally related

to developing certain dynamic qualities, for instance, initiative, independence, commitment to act, and readiness to take responsibility. In this project, the students were taking the initiatives; they decided what kind of lifestyle they wanted to study. They were also given the responsibility of developing independence when working in their interest groups. Furthermore, they were able to act, that is, talking, writing or doing practical things for the environment. The dynamic qualities are very similar to those of the pluralistic education tradition. Both the pluralistic tradition and action research have the same goal to provide citizens with the ability to participate and choose their own direction when encountering different complex questions in the society in which they are living.

### Final Reflections

This research has demonstrated some benefits of the pluralistic tradition in teaching young people about issues concerning sustainable development. It shows the importance of listening to the students' voices and adapting the education to their questions. The combination of the pluralistic tradition with the action research approach made this possible. New schools mean new contextual adaptations, different from those reported here. However, the general democratic stance of action research developed by Robottom and Sauv  (2003) worked just as well in a suburb of Stockholm as it did in South Africa. Participatory action research should be a democratic and fruitful way to track student development and also change teaching so that it works better with the students in any particular subject in any school.

## References

- Almers, Ellen (2009): *Action Competence for Sustainable Development: Three stories about the Path Leading There*. Doctoral dissertation. Jönköping: Jönköping School of Education and Communication.
- Axelsson, Harriet (1997): *Våga lära: Om lärare som förändrar sin undervisning* [Dare to Learn: About Teachers Changing their Teaching]. Göteborg: *Göteborg Studies in Educational Science*, 112.
- Berg, Gunnar (2004): *Skolkultur* [School Culture]. Lund: Gleerups.
- Breiting, Sören & Mogensen, Finn (1999): Action competence and environmental education. *Cambridge Journal of Education*, 29(3), 349–353.
- Chawla, Louise (1994): *In the First Country of Places: Nature, Poetry and Childhood Memory*. Albany, New York: Suny Press.
- Giddens, Anthony (2002): *Runaway World: How Globalization is Reshaping Our Lives*. London: Profile Books.
- Hart, Paul & Nolan, Kathleen (1999): A critical analysis of research in environmental education. *Studies in Science Education*, 34(1), 1–69.
- Humanistisk-samhällsvetenskapliga forskningsrådet (1999): *Forskningsetiska principer i humanistisk-samhällsvetenskaplig forskning*. Stockholm: HSFR.
- Kaplan, Stephen (1990): Human nature and environmentally responsible behavior. *Journal of Issues*, 56(3), 491–508.
- Lundegård, Iann (2007): *På väg mot pluralism. Elever i situerade samtal kring hållbar utveckling*. [Towards Pluralism – Students in Situated Deliberations on Sustainable Development]. Doctoral dissertation. HLS förlag, Lärarhögskolan, Stockholm.
- Lundegård, Iann & Wickman Per-Olof (2007): Conflicts of interest: an indispensable element of education for sustainable development. *Environmental Education Research*, 13(1), 1–15.
- Ojala, Maria (2007): *Hope and Worry: Exploring Young People's Values, Emotions, and Behavior Regarding Global Environmental Problems*. Örebro: Örebro Studies in Psychology, 11.
- OECD (2006): *Program for International Student Assessment, PISA* from: <http://www.skolverket.se/sb/d/3304/a/10547>
- Posch, Peter (1991): Environment and school initiatives: Background and basis premises of the project. In *Environment, Schools and Active Learning*, Part 1. Paris: OECD, CERI.

- Reason, Peter & Bradbury, Hilary (2001): Introduction: Inquiry and participation in search of the world worthy of human aspiration. In Peter Reason & Hillary Bradbury-Huang, eds: *Handbook of Action Research: Participative Inquiry and Practice*, pp 1–14. London: Sage.
- Rickinson, Mark (2001): Learners and learning in environmental education: A critical review of the evidence. *Environmental Education Research*, 7(3), 207–320.
- Robottom, Ian & Sauvé, Lucie (2003): Reflecting on participatory research in environmental education: some issues for mythology. *Canadian Journal of Environmental Education*, 8(1), 111–128.
- Sandell, Klas; Öhman, Johan & Östman, Leif (2005): *Education for Sustainable Development: Nature, School and Democracy*. Lund: Studentlitteratur.
- Schnack, Karsten (1994): Some further comments on the action competence debate. In Bjarne Bruun Jensen & Karsten Schnack, eds: *Action and Action Competence as Key Concepts in Critical Pedagogy*. Studies in Educational Theory and Curriculum, 12, pp 185–190. Copenhagen: The Royal Danish School of Educational Studies.
- The Swedish National Agency for Education (2006): *Curriculum for the Compulsory School System, the Pre-School Class and the Leisure-time Centre*. Lpo 94. Stockholm: The Swedish National Agency for Education.
- Öhman, Johan (2008): Environmental ethics and democratic responsibility – A pluralistic approach to ESD. In Johan Öhman, ed: *Values and Democracy in Education for Sustainable Development: Contributions from Swedish Research: Environmental Ethics and Responsibility*, pp 17–32. Malmö: Liber.