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Experienced ESD schoolteachers' teaching – an issue of complexity

Per Sund

Abstract

In educational settings, sustainable development (SD) is often handled with the aim of reducing the contested aspects of the concept. Issues like trade, conservation, public health and international relations are often presented in a simplified way so that they are easier for students to grasp. However, in education, this tendency to simplify sustainability issues can be a disadvantage. This study explores how Swedish upper secondary schoolteachers' education for sustainable development (ESD) in award-winning 'ESD-schools' supports students to become informed and autonomous democratic citizens by appreciating the complexity of the concept of SD. This empirical study is part of a larger research project studying progressive upper secondary schools and is a development of earlier research on teachers' starting points for long-term purposes beyond the teaching – which we have termed *objects of responsibility*.

In interviews of five teachers from two schools, experienced in ESD issues and working in teacher teams, an interesting commonality in their arguments for teaching sustainability emerged during the analytical process. The implications of the study's results are important for EE/ESD research into teaching continuity as well as for teachers in practice.

Keywords: education for sustainable development, teaching and learning approach, sustainability, teachers' objects of responsibility, complexity

Introduction

Researchers draw attention to the fact that many Scandinavian politicians, such as the Norwegian politician G.H. Brundtland, have occupied top positions within the UN and have thereby been heavily involved in the construction of the contested concept of sustainable development (Læssøe & Öhman, 2010). This could help to explain why the transition towards ESD has been relatively smooth in Scandinavian countries. In the new Swedish national curriculum (Education, 2011), SD has a much stronger position in many disciplines. For example, in biology, geography and home economics, SD is now one of the sixteen main national goals that schools are expected to achieve. In view of this, there is reason to believe that sustainability issues will continue to be an important part of the school curriculum. In Scandinavia, there is common support at many levels for an on-going change towards ESD. For example, the 'Green Flag Award', common for schools working with students between the ages of 6 and 16, has now been developed into a whole school approach that also includes social and economic issues. The 'national award for sustainable schools' emphasises such change. The 'national award for sustainable schools' is more difficult to achieve than the 'Green Flag', and is only awarded when specific criteria have been reached. The two upper secondary schools (age 16-19) in this study are all awarded. They work with criteria for school leadership such as democratic organisation involving all members of staff, introduction of new staff, in-service training, experience sharing with stakeholders outside school and careful documentation about change progress. These criteria also concern pedagogical work such as creating an organisation where all people are part of planning, conducting and

assessing the sustainability activities. Students are supported to have a clear and important role and have the right to exercise full participation and the schools are continuously interacting and co-operating with the surrounding society. Students are deeply involved in the assessment of the sustainability activities and report to the school leaders.

This study is a development of an earlier study of teachers' 'anchor points'.

The analysis of the teacher interviews do not aim to expose the teachers' beliefs or try to reveal how they think. Hence, this research is not about teacher thinking as such, even though it is conducted from a teacher's perspective (Hart, 2003; Scott & Gough, 2003). Rather, the focus is on teachers' repetitive argumentation regarding their purposes. In her research, Nikel (2005) observed habits, "running themes", or personal anchor points in interviews relating to student teachers' conceptions of ESD. A 'theme' is often a concept or term such as 'awareness' and 'tools' or specific expressions for example 'there are many rights' and 'the need to be personally involved', which are repeated regularly during the interview. Iterative readings of the interviews reveal habitual patterns that relate to an earlier study of *teachers' objects of responsibility* (Sund & Wickman, 2008).

Teachers' objects of responsibility provide responses to the question: What do teachers really care about in their environmental education? The answers are points of departure that form a coherent context for long-term purposes. Purposes expressed by the teachers, whether explicitly or implicitly, form coherent messages and build up and develop personal anchor points (Sund & Wickman, 2008). Teachers' teaching purposes unite to form objects of responsibility. An object of responsibility is something that a teacher especially fosters and can be assumed to be an illustration of what he or she feels to be the *most important* issues for ESD to develop, achieve or pay attention to. At the same time, such an object of responsibility

is the point of departure for a teacher's argument relating to the purposes and long-term consequences of his or her teaching. The object of responsibility gives teachers continuity in their teaching and builds up a consistent web of different purposes; the aims of which constitute an emphasis of purpose. The study objects in this study are the utterances of teachers working in nationally ESD-awarded upper secondary schools in Sweden.

Selective traditions

Research on the history of school subjects has shown that as there are different traditions of how content and methods are selected, they can therefore be termed *selective traditions* (Williams, 1973). Since the 1960s, three selective traditions (with reference to their roots in educational philosophy and how environmental and developmental problems are perceived by teachers) have evolved in environmental education in Sweden. Regardless of the subject they teach, all Swedish teachers work mainly within one of these traditions (Öhman, 2004). Similar traditions have been identified by research in other countries (Sauvé, 1999; Stables, 2006; Vare & Scott, 2007).

The three Swedish selective traditions referred to above are: the fact-based tradition, the normative tradition and the pluralistic tradition. In the *fact-based tradition*, environmental issues are regarded as ecological issues. Environmental problems are based on a lack of knowledge and can be solved by learning more science. The pedagogic task is to teach students the right and true knowledge. In the *normative tradition*, environmental issues are primarily a question of values, where people's lifestyles and their consequences are the main threats to the natural world. Scientific knowledge gives hints about the best ways of living and is regarded as prescribing. Increasing uncertainty about environmental issues is an important point of departure for the *pluralistic tradition*. Here, environmental issues are viewed as both

moral and political problems, and environmental problems are regarded as conflicts between human interests. Science does not provide guidance as to any privileged way of acting in environmental issues. The conflict-based perspective of ESD, in the pluralistic tradition, highlights the democratic processes of education.

These selective traditions are useful in the development of education for sustainable development because they act as tacit frameworks for teachers' content and method selection (Sund & Wickman, 2011a, 2011b). Within a Swedish EE/ESD research context, the discussion about ESD has been mainly concerned with the issue of changing a widely used normative EE teaching tradition (Education, 2002) into a pluralistic and more democratic approach to teaching and learning. This is a more developed view of ESD than that addressed in international policy documents (UNESCO, 2005). In their teaching practices, teachers in the pluralistic tradition include values such as interdisciplinary teaching, conflicting human interest, value clarifications, participation and working on real life issues (Lundegård & Wickman, 2007; McNaughton, 2007).

In the existing research, five objects of responsibility have been identified within the three selective traditions of environmental education (Sund & Wickman, 2008). Within the fact-based tradition the objects of responsibility are *society*, *students' knowledge* and the *survival of mankind*. Within the normative tradition *environmental consciousness* has been identified, and within the pluralistic tradition *student self and other people* are objects of responsibility in focus.

Selective traditions in environmental education can be understood as collective habits.

This way of approaching the traditions is based on the pragmatist tradition attributed to John Dewey, where the meanings of one's expressions are first understood from the way in which

they help people to move forward in their activities and lives. What are usually called beliefs or views are approached as habitual ways of arguing or acting. According to Dewey (1922), an analysis of such habits does not mean comparing actions, but rather looking at more complex activities and their meaning through their consequences. In this sense, a habit cannot always be explicitly articulated by the teacher, although it can be discerned through reflection in terms of the patterns of one's own actions. These habits should not be regarded as simple repetitive actions or expressions of well-established and fixed mental constructs. It is essential to realise that they are acquired, but contingent on circumstances. A habit is something that is continuously developed as a result of encounters between earlier and current experiences. If many individuals act in similar ways in similar situations, they can be described as having collective habits or a tradition. Individuals develop their personal habits on the basis of the contextual situations created by earlier generations. An individual does not live in a vacuum (Dewey, 1938/1997).

Background

The transition from environmental education (EE) towards education for sustainable development (ESD) has been thoroughly debated in research circles for more than twenty years (Hesselink, van Kempen, & Wals, 2000; Jickling & Wals, 2008). Many expectations and misgivings have been expressed and explained. Many schools in Sweden have tried to accomplish this transition process by working towards obtaining the national award for sustainable schools. Interesting questions have arisen from these attempts, such as: How do teachers deal with ESD expectations and misgivings in schools that have achieved an 'ESD-schools award' and have any specific shifts occurred in their teaching? In an attempt to answer these questions, this study has posed basic questions to teachers working in 'mature'

ESD-schools, such as: What is important for students to learn, and why? This is one way of approaching new knowledge about the teaching consequences of ESD implementation in practice. Studies relating to this implementation have so far been few and far between, although some recent studies have looked at teachers' positive experiences of the learner-centred approach and the participation benefits for all involved when working with ESD issues for the first time (McNaughton, 2012). This study aims to complement this picture by examining the teaching purposes expressed by very experienced ESD teachers.

In their teaching practice teachers often tend to simplify sustainability issues in order to make them easier for students to understand and handle. There is often an underlying desire to reach a consensus, which similarly tends to reduce the diversity of sustainability issues (Jickling & Wals, 2008; Öhman & Öhman, 2012). Complexity can also be reduced in an age of national measurements. Biesta (2009) argues that international comparative tests, in for example science, geography and reading skills, tend to focus on what can be measured and compared. 'Measuring what is measurable' can prevent sustainability education which is more open-ended that dares to take on complex societal issues without attempting to simplify or reduce the number of issues or alternatives. This type of request is also visible in mainstream international policy. Stakeholders, such as the International Monetary Fund (IMF) and the World Bank, are interested in reducing the political nature of sustainability issues (Knutsson, 2012). These examples imply that the role of education is often reduced to a normative often simplified activity that is supposed to deliver 'quick-action' solutions.

In this study, the concept of SD is used to describe how a desired societal process moves from an unsustainable present towards a more sustainable future. Simply teaching *about* SD does not per se mean that 'ESD-teaching' is taking place. It is not just a concern of subject matter

content, which is often described, aligning the three 'pillars' of SD, as incorporating economic and social issues into ecology. Here, the starting point for ESD is extended to include all school subjects, but involves more than just integrating subjects. ESD teaching often has its holistic starting points in community issues and is mainly taught by teacher teams. In this article, ESD is understood as a well-developed lifelong democratic approach to teaching and learning in society as a whole (Breiting, 2007).

Following this introduction the article discusses how teachers approach the complex issues of sustainability. A sophisticated teacher selection process and an analysis of the teachers' utterances show how a personal anchor point emerge through the need to achieve continuity in their sustainability teaching.

Purpose

One overall aim of this study is to find out how teachers working in ESD-schools are able to maintain continuity in their teaching while working on complex issues like sustainability. How are they answering questions about: what is important, what should students learn, why this – what is good teaching? The study's object is teachers' utterances pertaining to the purposes of their performed teaching. Thus, the main aim of this article is to identify experienced ESD teachers' specific starting points for their arguments regarding teaching purposes. This is a development of an earlier study and the research question is similar:

What do teachers really care about in their sustainability teaching?

The research is based on a pragmatist view (Wickman, 2004). The ambition is to deepen the understanding of teachers' personal anchor points and habits (Nikel, 2005) in sustainable development teaching and learning contexts. In this study, enhanced and/or new anchor points are regarded as a form of *norm* development that has occurred among teachers working in teams in 'mature' ESD schools. In contrast to an earlier study about teaching development from EE towards ESD (Sund & Wickman, 2008), in which only science teachers were interviewed, this study also includes teachers from other disciplines, for example philosophy, social- and political science.

Methodology

Theory

The reason for studying traditions is not to produce natural categories or the underlying views of individual teachers, but rather to find functional ways of reflecting on actions in order to possibly change them to better fit one's purposes. Individual habits are changed and developed within traditions, and at the same time, the individual affects traditions. Institutions often form collective habits that have been developed through the consolidation of individual habits. Dewey's (1922) discussion of individual habits, and their interplay at an individual and collective level, seems to be an accurate description of how teachers develop specific personal anchor points for their habitual argumentation regarding long-term teaching purposes. Anchor points evolve and are consolidated in the developing norm systems of ESD schools, which after recognition and reflection can be regarded as desirable.

Method

The method and methodology developed in Sund & Wickman (2008) with regard to *teachers' objects of responsibility* have been used in this study. This has involved data being gathered by means of 40-60 minute long semi-structured interviews with eleven upper secondary schoolteachers. Through a well-developed selection process, five teachers' answers were accurately chosen for deeper analysis (Fig. 1). The conversations were guided by questions (see the Appendix) closely related to previous research regarding selective teaching traditions (Sund & Wickman, 2011a, 2011b). These questions are related to five relations, *educational aspects*, which are useful for discerning and visualising teaching traditions (italics in the Appendix). Although the questions were not necessarily put to the teachers in any specific order, all the educational aspects were considered. In the interviews, the teachers were asked questions about content issues (what, how and why) and invited to describe their teaching methods. *Why-questions* were used to establish why students should learn about particular issues – those that the teachers stressed as being especially important. Teaching purposes can generally be framed at various organisational levels, such as specific lecture purposes (variation or specific concepts), subject purposes (to be able to cope with the next topic) or subject field purposes (to know chemistry and learn about acid rain in biology). They can also be goals for students' schooling beyond teaching (Nikel, 2005). In this study, the focus is on long-term purposes beyond teaching. All the interviews were audio-recorded and transcribed for analysis. In the first part of the study, the teachers were first of all categorised according to experience using the data in the web-enquiry, and secondly, through an initial analysis of the interviews, as working in specific selective traditions. In the first two steps a matrix was put on the data in order to discern experience and selective traditions.

In the interviews I was particularly keen to identify “topics of discussion”, i.e. topics or expressions that the teachers showed a special interest in (Kvale, 1996; Mishler, 1986;

Wolcott, 1994). Consecutive questions were asked about these topics in order to attain more nuanced answers. The more elaborate the discussions were about specific expressions, such as ‘you learn to be a little humble in these contexts’, or ‘there are many ‘rights’’, the easier the formation of objects of responsibility. The third step of the analysis was more open-ended, and here the ‘teachers’ voices’ were given a freer rein (see below).

Terms and expressions were identified in the teachers’ utterances and categorised into the five categories (not pre-determined) of long-term purposes (see below). This was done by the author, and the categorisation was later reviewed in two seminars by other researchers in the larger research project in order to reach consensus. This procedure was also used to ensure that the categories fitted the teachers’ statements and that they accurately represented the material. This method is similar to Grounded Theory (Strauss & Corbin, 1998) and is an open approach to empirical data, i.e. it does not force a matrix of predetermined categories, such as teachers’ anthropocentric or biocentric view, or views of what kinds of knowledge or skills students need to learn, on the data. The data was analysed and coded using an interpretive and iterative approach that allowed major themes to emerge from the data (Kvale & Brinkmann 2009). I did not examine changes in teachers’ practices directly through, for example, observations of classroom activity. However, as what teachers say in interviews may not always reflect their actual teaching, all the teachers were asked to bring their planning and study material to the interview so that these could be better linked to their daily teaching practices.

Selection of teachers

All the three upper secondary schools are popular, in that students compete for an opportunity to study in these urban schools. The schools have between 600-1000 students and the teachers

have worked there for many years. All the schools offer both vocational and theoretical educational programmes and have been awarded ESD-school status. At the beginning of this project a net-based enquiry was sent to all the principals and teachers at the schools, which included miscellaneous questions about teaching experience, educational programmes, purposes and motives. There was also a question about the possibility of being interviewed at a later date. The teachers who volunteered to take part in the study were selected from schools in two different parts of Sweden. I emailed the teachers personally using the information provided in the initial enquiry. At the time or just before the study was conducted the selected teachers were all working on specific projects and their educational backgrounds and teaching subjects varied greatly.

The process of selecting five experienced ESD-teachers and interviewing them resembled a funnel. The selection process involved a combination of selection and some initial analysis (Fig. 1). The first step was to use the net-based enquiry to make contact with 179 teachers working at three schools. The web enquiry then made it possible to acquire information about teaching experience and cooperation. The second step involved selecting four teachers from each of the three schools who were experienced in working with subject integrated projects for interviews. Subject integrated projects are for example Urban district development, International agreements (trade, fair trade, climate) and Borders (cultural, national, geographical). These twelve teachers were selected from more than twenty volunteer teachers (eleven teachers were actually interviewed – one teacher was not available at the time of the interview). The third step then involved an initial explorative analysis of the data generated from the interviews with the eleven teachers using the methodology developed by Sund and Wickman (2011a, 2011b) regarding selective traditions, as described above, and using an analytical tool developed in Sund (2008)[Cf to discern selective traditions in Sund &

Wickman, (2011a)]. This first screening showed that three teachers worked in the *fact-based* tradition, one in the *normative* and seven in the *pluralistic* tradition. In the fourth step, the responses of the seven teachers working in the pluralistic tradition were compared to results from an earlier study of *teachers' objects of responsibility*. Two teachers frequently used *student self and other people* as a starting point for their long-term purposes (see above), while five very experienced teachers seemed to have a new starting point – that of complexity – in common. The fifth step, mainly an open-ended analysis, focused on these five teachers' long-term purposes related to complexity. All five teachers have been given fictitious names for ethical reasons and are here known as: Rolf, who teaches social science and psychology, Simon, who teaches history, geography and social science, Alice, who teaches social science, David, who teaches maths and general science, and finally Louise, who teaches biology and geography. All these five teachers work in two ESD 'mature' schools, which mean that they have worked for many years in teaching teams and are very experienced ESD collaborators. These teaching teams connect diverse subject areas to a unifying theme or issue. The teams consist of teachers who are subject specialists (see above) and they collaborate with at least two peers at their school from another subject area, in themes such as 'Borders' and 'Urban development'.

Insert Fig. 1 here

Analysis and results

In order to answer the research questions the teachers' purposes beyond teaching were analysed. In their answers to interview questions about what different purposes they have in teaching sustainability issues lies the answer to what they really care about. Five categories of answers all related to the word *complexity* show that this is a vital starting point for their teaching. They really care about 'twisting and grinding' their sustainability teaching around the word/concept/approach – complexity. The findings from this study show that these experienced teachers approach the expectations and misgivings of ESD by tackling complexity, and do not aim to simplify or reduce it.

In the following analysis section I firstly present the five categories of the five teachers' teaching purposes one at the time: *humility*, *awareness*, *personal connection*, *develop tools* and *negotiable truth* (see Fig. 2, below). To each category are examples of excerpts and comments given to support the categorisation and show how the category is related to *complexity*. To sum up one specific excerpt describes what students are expected to cultivate in these complex learning environments. This aligns with earlier research relating to teachers' objects of responsibility (Sund & Wickman, 2008).

The five teachers mentioned in the previous section - Rolf, Simon, Alice, David and Louise - all have complexity as a common denominator. Their utterances are here further described and analysed. In the analysis, the leading research perspective is teachers' *use* of the concept *complexity*, given that all five teachers expressed the word four or five times during their interviews. The word complexity is not always present in the presented excerpts, but is commonly mentioned in connection with them – immediately preceding the excerpt or after it. However, exactly what the concept of complexity means for the teachers in this study has not been fully investigated. In general, the concept relates to different aspects of life, such as

human relations, lack of scientific answers, interdisciplinary teaching and global issues.

Teachers' use of the word complexity does not have to be especially complex or contested, but can be more a general description of a world that is difficult or challenging to understand.

Insert Fig. 2 here

Before going any further, it is important to say that I did not solely look for or count specific words like 'complexity' or 'awareness'. The use of excerpts is also often limiting and open to readers' criticism of over-interpretation. Most of the selected quotations are clear and easy-to-follow examples, although I do sometimes offer an interpretation of an expression within the larger context of the entire interview, which in the following sections are indicated within square brackets. In the examples I have included the (fictitious) names of the teachers and 'I', which stands for 'Interviewer'.

Humility

In the first example, Rolf answers my question about the main purpose of a course in international relations and sustainable development that is included in the ESD school's profile package. One frequently recurring purpose is to develop students' *humility* in various ways. Rolf describes how he helps students to approach these vast sustainability issues:

Rolf – To see how very big and *complex* everything is and that you learn to show a little *humility* in these contexts.

An overall observation is that *complexity* is an expression that is regularly connected with these five selected teachers' purposes. Simon talks about *humility* in relation to another issue – of how to approach people:

Simon – *Humility* is very important. To be able to listen to other people, even though you do not agree, and develop an empathic ability to be able to make yourself acquainted with other people's thoughts.

Even though David is concerned with what can be described as scientific truths, I asked him about his vision of what students ought to know when they leave the school. His first answer refers to the development of a critical approach and the discussion continues:

I – How do you answer the question – are there no rights or wrongs anymore?

David – You have to show *humility* towards science. In my subjects [science and maths] the view of truth differs.

I – Yes.

David – In maths it is quite different, but in science this actual knowledge is the best we have right now and it can be subject to revision.

Louise's purpose is to work on the development of students' views of the diversity of possible perspectives:

I – What do you want your students to learn? What is your aim? When they leave school, what should they know?

Louise – I want them to twist and turn arguments and issues around, to see the different perspectives and to develop *humility* in the light of this variety.

In the above examples of teachers' purposes beyond teaching, the development of students' *humility* towards issues related to sustainability is important. However, this category's relation to complexity is bridged over in the excerpts by discussing issues of vastness, human relations, lack of scientific answers and the variety of perspectives. While all these discussions of sustainability education are related to complexity in different ways, it is important to approach them with an open mind and a measure of humility. The word humility is always expressed explicitly in this category.

Awareness

The five teachers also refer to other purposes in a habitual way. It was observed that a more general form of *awareness*, in contrast to an environmental awareness found in earlier research (Sund & Wickman, 2008), was often stressed. Awareness is itself a complex concept that is difficult to delimit from e.g. understanding. However, as the teachers frequently used the term, I have included two examples of situations in which awareness is raised. Raising awareness is also a very common expression in school policy documents. In the following two examples the word awareness is not used explicitly, but implicitly to reflect on awareness that is directly connected to discussions about complexity.

In this first example, the development of *awareness* seems to be an important part of the teacher's own momentum and his ability to cope with everyday teaching:

Simon – As a teacher of science it will be hard if you always try to deliver truths; this is not possible. If you, yourself, have the goal to open the students' eyes [awareness] and make them see, introducing them to different ways of approaching a problem will be more interesting.

I – Now you said goal. What is your purpose with these large subject integrating co-operations? Why are they important?

Simon – This is perhaps too philosophical, but the reason why I am a teacher at all is the awesome feeling when students get a kind of ‘wow-experience’ [*awareness*] from your teaching. I think this is the driving force to becoming a teacher.

I – What kind of insights [*awareness*] - ‘wow-experiences’ do students get?

Simon – It might for example be about poverty. You can show the societal development and the historical roots of such a problem. Sweden has also been a developing country and has been developed to the stage we are in right now.

I – Yes.

Simon – That you can see that other countries are doing it right now and if you start to think in this way, you will soon recognise that development is closely related to ecological issues. The picture becomes more nuanced and it is perhaps not so surprising that, for example, Botswana does not want to lower its carbon dioxide emission right now [discussed in international agreements earlier].

I – No.

Simon – How would we in Sweden have reacted in a similar situation? It is *complex*, but it often gives them a ‘wow-experience’.

Simon seemed to gain energy from awareness discussions like this, which earlier research has shown to be a very important momentum for teachers’ involvement in sustainability issues (McNaughton, 2012).

One of the teachers, Rolf, said that the media often gives too simplified answers. David was of a similar opinion, but when describing his long-term vision for teaching he

considered that it was important to help students handle their *awareness* of the increased complexity:

David – The less you know the easier it is to see *complex* issues as ‘black or white’.

I – To be categorical.

David – precisely, and it can be rather confusing in the beginning when you deepen your knowledge about something.

I – you often think that it will become clearer, but it usually turns out to be even more complex. How do you tackle this with your students?

David –It [awareness] is a part of life – you can learn from it and as a teacher try to be a help and support in that process.

From a teacher perspective, the awareness examples presented above are somewhat emotional and personal. Although the ‘wow-experience’ seems to be positive, the second example is more about overcoming contradictory feelings of confusion. These examples show that teachers’ visions of students’ development are not strictly limited to cognitive aspects of learning, i.e. ‘factual’ knowledge development.

Personal connection

The following excerpts show how teachers aim to connect students more personally to complex issues in different contexts. Subject-integrated projects support students’ abilities to recognise their own role in development issues and thereby connect more personally:

I –What do they [the students] learn from working in projects?

Alice – It is important to understand the different details, but also how they are connected to each other. My starting point is that if you want to understand the development of society, which consists of a number of *complex* issues, you need an approach that is *complex*.

I – Yes.

Alice – As most questions can be approached by different perspectives, it is vital to enter and use each particular perspective.

I – Yes.

Alice – You should not just look at the whole picture and develop a sort of a general helicopter perspective; you also need to discern which questions are important and how they are *connected to me*.

I – Yes.

Alice – What is happening in our society? It is easier to grasp this if you start with questions that are often interdisciplinary and try to find ways to answer them from different viewpoints.

I – Yes.

Alice – They get *a feeling* of wholeness [personal connection] and that makes the issues meaningful to them.

When responding to my question about her aim for students after school (above), Louise said that she tried to support students' development of a critical approach that would enable them to connect the actual issues to their own lives. In that way, they are able to see that they can actually influence something for real:

Louise – critical approach – what is this in reality? What is [interests] behind it?

To find concrete examples of whatever they stumble over and ask ‘What is behind this?’ In other words, try to understand it and *connect yourself* to it.

I – Yes.

Louise – This is something that we put a lot of effort into in this school. We like to make things real.

I – Work with real life issues?

Louise – Being affirmed [as a student/individual] is one thing, but doing something that makes an impression on others, something that you can change and influence in the real, is quite another.

I – Yes.

Louise – They make a difference in the real – and they understand who they really are [*personally connected*].

David said that a strong belief in your possibility to influence is a long-term goal when teaching sustainability issues.

I – Students from this school – what have they learned? What is your vision of what they can do?

David – I hope they develop a passionate interest in these issues and a strong belief that they really can influence things [*personal connection*].

It is clear that the teachers interviewed in this study see the process in which students personally connect with the issues they are working on as very important. All five teachers mentioned complexity on repeated occasions, although in these three excerpts only Alice is explicit. Louise expresses this by discussing the need for a critical approach to the issues that

students encounter, while David emphasises complexity and students' capabilities to cope with it, and hope they develop a passion about to make changes in their own personal ways. In this purpose category, teachers aim to develop students as active subjects by committing them to personal involvement. This was often unfolded in the interviews as statements about students being able to feel that they are influential stakeholders who can really make a difference. This could also reflect teachers' own common desires to change societal practices.

Develop tools

The need for *tools* commonly arises as a purpose. These are often described as different abilities, such as analysing, organising, categorising, critical thinking, logic reasoning and looking for relevant information. All the five teachers regularly mentioned that complexity was a vital characteristic of the contemporary world and that students should be able to observe and deal with it fruitfully:

Simon – That they understand the point of working with many subjects simultaneously. That they get a more *complex* picture, which they can handle [develop a tool], that it will not end up in four different pictures from four subjects [the integrated subjects], but as one and the same issue, and that they understand many of the different connections.

The tools were sometimes more concretely referred to as different types of models:

I – You mentioned tools, what kind of tools should they take with them from school?

Rolf – An analytical *tool* in a political science could be a model.

I – Yes.

Rolf – and within international relations, we will sooner or later end up in the classical models of realism, liberalism and constructivism.

Louise talked about why students often blamed companies for working for un-sustainability. She wanted them to develop reflective abilities and to start analysing societal phenomena:

Louise – Why are they doing so? Are the workers there in the factory – not people? They [students] should understand mechanisms and through that start to *develop tools* so they can start up a decent analysis.

All the teachers continuously brought up the need to develop different *tools* in order to make the student more action-competent and more able to discern the complexity of sustainability issues. This is very common among teachers and is supported in the Swedish curriculum. In this category, the word tool is often mentioned explicitly, but also sometimes as a model or a general desire to be able to deal with complexity. These tools are usually different types of individual abilities needed in societal work as an informed citizen. However, the tools cannot be used without some kind of reflection on what we already know, as is shown below.

Negotiable truth

The final characteristic purpose to be presented here is how teachers deal with the view of *truth*, which is the fifth and last answer to the research questions regarding the long-term purposes teachers argue in a habitual way. The complexity of sustainability issues usually makes these teachers deal with *truth* in a way that is diverse and negotiable. Although they did not actually use the words ‘negotiable truth’, this is what they seem to indicate and can be summarised as. In this category, expressions like different truths in different perspectives and the lack of final answers were found.

In the following extract Simon talks about why the work in subject integrated projects has few given answers:

I – How do you deal with the fact that you embark on large projects like ‘Borders’ without knowing the answers to questions that might be raised?

Simon – This is the delight with working in my subjects [history and social sciences]. ‘If you see it from this particular perspective – you can explain it in this specific way’. It is a wonderful to be able to share this with students. This is social science! There are no rights or wrongs in social science. However, there are different ways of looking at things like development.

I – Is this good to learn?

Simon – If you want to explain why people behave the way they do at for example climate conferences. In these negotiations – people are not behaving badly towards other people on purpose, but looking at development in a different way [not lying - another *truth*].

I – Yes.

Simon – and relate to issues like carbon dioxide emission licences from different perspectives [interest of different countries] and I think that is good to illuminate this for students.

Some of these five teachers believed that young, informed people’s often simplistic *truths* needed to be challenged. Sustainability issues require students to work through and problematise their often initially clear-cut answers several times during their three years at upper secondary school.

I – you often meet young engaged people who can be called activists?

Louise – with a lot of preconceived *truths*, which is the best thing I know to try to challenge!

I – Do they sometimes come up with rather simple solutions?

Louise – Yes and I feel ... you have to pose further questions... mess around them, and this is very rewarding with the students in this school, because they really accept the challenge.

These five selected teachers' critical approaches and their pluralism make this category of teaching purposes closely related to these issues. There are no simple solutions, final answers or universal truths. In this category, we find teachers' expressions that can be characterised as purposes that aim to understand the 'either or' nature of these complex issues.

Humility, awareness, personal connection, develop tools and *negotiable truth* are all common purposes in five experienced teachers' sustainability teaching. Complexity is mentioned frequently in the interviews and is closely connected to these five purposes. It can be regarded as a common starting point for their arguments regarding subject-integrated projects. In this last excerpt, which incidentally actually provoked the search for a *teachers' object of responsibility* in this particular data, Rolf discusses and summarises all these specific purposes:

I – What do you learn in this course [i.e. international relations, which is part of the ESD profile package]? What is the main purpose?

Rolf – Yes, it is primarily to get tools [*develop tools*] with which to understand and explain world political occurrences.

I – Yes.

Rolf – We can see that the media offers simple structures and models. Most things are black or white and it is similar in public debates. Here it is about deepening, problematising and nuancing this picture [raising *awareness*]

I – Yes.

Rolf – It is often about *complex* issues. It is not always easy [*humility*], but you have to try to structure, categorise and see the *complexity*.

I – Yes.

Rolf – that there is not just one explanation [*negotiable truth*] – ‘here we have the cause, here we have the truth’ – but it is about interpreting concurrencies and understanding that they are interpretations [*personal connection*].

To sum up (Fig. 2), these excerpts show that teachers habitually describe five long-term teaching purposes. Students are expected to cultivate *humility, awareness, personal connection, develop tools* and *negotiable truth*. An overall finding in this study is that complexity in sustainability issues is the common starting point for these five purposes. The term is often closely related to questions about why students should develop different personal characteristics. It could be said that complexity is a new *teachers’ object of responsibility*, which is found teachers’ arguments in the pluralistic teaching tradition. *Complexity* is the starting point for teachers’ purposes regarding the consequences of their teaching beyond the actual teaching situations. There is a general tendency to use complexity as a uniting object for their arguments, in that it both supports and gives teachers continuity in their everyday practices. In comparison to earlier research, it is not about ecological issues such as saving mankind or the planet (Sund & Wickman, 2008), but is about not taking *complexity* out of educational situations by making simplifications or presenting ‘easy straight answers’.

Although complexity is a complex concept, these five teachers use the word mainly as a descriptive term. To them it is a way of approaching, describing and discerning complexity in vast issues such as globalisation, sustainable development, world politics and international relations. It is also about issues that are closer to students' lives, for example human relations and human ethics. Complex can also be used to mean diversity. A complex perspective on development issues involves using perspectives from many different disciplines: "there are many questions but also many answers" (Alice) and "students with easy answers are surprised when they encounter the complexity" (Louise). These teachers mainly use *complexity* as a general description, but in a way that these questions are recognised as a resource for their teaching, rather than a problem. In other words, it is an incentive for exploring the world together with the students.

Discussion

What do teachers really care about in their sustainability teaching? The notion of complexity offers a way of learning about and describing the world that students need to explore, and at the same time gives teachers consistency in their teaching. Complexity is a starting point for their answers as to why sustainability issues are important. The habitual references to complexity create continuity in the pluralistic teachers' teaching by acting as a type of personal anchor point (Dewey, 1922). Complexity is a new object of responsibility related to the pluralistic teaching tradition (Sund & Wickman, 2008, 2011a).

The teachers first of all refer to different approaches and the complex questions that arise in the project work. This seems to be the main difference in actual ESD teaching, rather than any

specific change in content or issue, which are common suggestions in policy documents (UNESCO, 2005). It is not solely about including more social and economic issues. This way of approaching complexity makes it an educational resource that governs teachers' pedagogical choices. Here, ESD-teaching is mainly a process-oriented, personal and individual development, although to some extent it is also 'tool' oriented. The latter orientation, related to specific action and change, is often the main aim in the normative teaching tradition and policy documents, but this is not the case here. In this study, the five selected teachers – Rolf and Simon (school A), Alice, David and Louise (school B) – all work in the pluralistic tradition and have complexity as a common point of departure for their five categories of long-term teaching purposes when working in collaborative projects. Thus, in the pluralistic teaching tradition, complexity appears as a teachers' new object of responsibility that directs sustainability teaching towards the enhancement of a personal approach towards a complex world and individual development. However, the focus on the individual does not have to stand in opposition to more collective needs to build and change societal institutions for a more sustainable future (Sumner, 2008).

Teachers in this study use expressions that are common in the Swedish curriculum (Education, 2011), such as *develop tools* and *raising awareness*. The quest for different tools is also common in EE/ESD research (Hart & Nolan, 1999). The more specific utterances found in this study, that lies outside the common curriculum aims, are *humility*, *negotiable truth* and *personal connections*. I have not been able to identify other studies in EE/ESD research that suggest that teachers support students' development of *humility*. This is not just towards other humans, either, but also relates to issues such as scientific answers and truths. In earlier research, teachers focus on the relations between people (Sund & Wickman, 2008),

in comparison in this study the teachers also expressed the importance of having a humbler approach towards ‘non-human’ issues, such as scientific answers and towards life in general.

Negotiable truth can be regarded as showing how pluralism or diversity appears in school practice [Cf Öhman & Öhman, 2012]. The five teachers who work in the pluralistic tradition are interested in student participation and group discussions, where different types of negotiations are common. In these discussions, the teachers also learn about sustainability issues (McNaughton, 2012). *Negotiable truth* can also be a practical consequence of a critical approach, which earlier research emphasises as being important in teaching (Breiting, 2007; Fergus & Rowney, 2005; Jickling & Wals, 2008; Scott & Gough, 2003). Critical questioning also throws up diverse and sometimes conflicting answers, which in turn make different truths visible.

Personal connection is often expressed by teachers in this study as a way of ‘making meaning’ or ‘feeling more meaningful’. In other recent teacher studies this is also found to be a common theme in teachers’ written reflections (McNaughton, 2012). In the excerpts presented here, the teachers refer to personal connections, such as developing a sense of importance about students’ roles and abilities in the work on real life problems.

This study is based on research into teachers’ objects of responsibility and examines teachers’ arguments relating to their ESD teaching practices. In these arguments, five long-term purposes become visible. Critical thinking and action skills are often mentioned in connection with student development. Although they could have been treated as specific purposes, they are here included in the purpose category of *tools*. These five categories are not completely delimited, but are unified through their common start in discussions of complexity. The

categories have somewhat different characters. *Negotiable truth* is more epistemological in nature and could be compared to, e.g. Roberts' (1982) curriculum emphases, which are different ways of approaching purposes in science education. This particular purpose shows students how to approach knowledge in general. The other four purposes generally concern more personal development and relations to complex content issues, and how to approach them in an informed way. This is similar to how science education content can be approached as a tool to become a scientist, or to learn from science how to cope with everyday life; the latter being about relating to science more personally (Fensham, 1988; Roberts, 2007).

As discussed in the introduction, complexity is often regarded as an obstacle in teaching. In learning situations, such as in studies of urban sustainable development, students can discern complexity, problematise, organise and interpret and make individual connections through reflection on personal renderings and limitations. It can also be said that purposes that are based on complexity enable students to enhance their action competence (Jensen & Schnack, 1997), although this is not an easy or straightforward task. Earlier studies of teachers and teacher students show that complexity is a real challenge in teaching situations (Education, 2002; Jonsson, 2008).

A shift in norms

Finding the reason(s) 'behind' the development of a new object of responsibility is not the intention of this article. However, one possible explanation for the shift towards complexity is *awareness*. In contrast to *environmental awareness* discussed in an earlier study, this purpose is more general and open-ended. In Sund & Wickman (2008), the selected science teacher's relation to nature is evident. However, the teachers in this present study refer to awareness as students' relations to the world at large. Here, the shift from a focus on nature ethics (human-nature relation) to human ethics (human-human relation) can be discerned. This shift is

unique when EE, which is often school-based teaching, is in transition towards an ESD approach, which is a general approach towards teaching and learning in all subjects (Sund, 2008). One reason for teachers arguing for a more open type of awareness is that the selection of teachers in this study is broadened to also include history and social science teachers. Their concern for complexity can be apprehended as a change in teaching norms. The change in data selection from individual science teachers in earlier studies (Sund & Wickman, 2008) to subject-integrated teacher teams make this shift – from science teachers focusing on the nature relation to teacher teams focusing on individuals' relations towards an increasingly complex world – visible. Here, the norm is to utilise *complexity* in the development of student's approach and relation to the surrounding world at large and other people, and not to focus solely on the development of students' environmental awareness.

Conclusions

This qualitative empirical study shows that attempts to implement ESD in practice can be valuable for experienced teacher teams with a multidisciplinary background. Teacher collaborations like this can appear in all types of schools and are not just limited to ESD-schools, as in this study. In the interviews, it becomes clear that although these teachers want to collaborate, they feel strongly that the work to achieve and keep the ESD school award provides them with important norm supportive structures (Wickenberg, 1999). Teachers feel that official support, and sometimes pressure, from the principals gives them the legitimacy to work in more interdisciplinary ways.

However, the common denominator for the actual five teachers, regardless of disciplinary background, appears to be humility towards students' views and expected solutions. This is a way of practising democracy *in* education (Öhman, 2004). Simple solutions to sustainability

issues can in fact threaten the very purpose of education, which is to build up students' confidence and self-esteem and "to enable students to debate, evaluate, and judge for themselves the relative merits of contesting positions" (Jickling, 1994). Education should qualify students through knowledge and socialise them through norms and values, but at the same time support their development into autonomous, emancipated subjects (Biesta, 2009). Through open-minded collaborations among experienced teachers in their attempts to achieve good education, contested and complex concepts like SD, EE, ESD, and even the very *complexity* of our global society, can be helpful and valuable in educational settings and not things to be feared. Formulated differently, a well reflected pluralistic teaching tradition that care about and appreciate the complexity of sustainability issues is something that is well worth for ESD teachers need to pay more attention to.

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Appendix

Teacher interview guide developed by Sund (2008). The relations and educational aspects in italics are connected to earlier research on teaching traditions.

Introduction

Which subjects/projects do you teach?

How does your teaching relate to sustainable development?

Are these issues important, and if so, why?

What?

What does ESD mean in your school?

What are you supposed to learn?

Give examples from your teaching.

What does your teaching aim to change? (*views about knowledge, knowledge-abilities, product or process-oriented*)

Why?

Follow-up questions from the initial en enquiry

Purpose, intentions, expectations, curriculum etc.

Why are development issues important? (*human-nature relation, human-human relation*)

What kinds of inter-human relations are considered? (*ethical shift towards human-human relation*)

How?

How do you work on SD issues in your teaching?

What characterises this type of teaching?

Activity space – where is the teaching conducted?

Working methods?

What is the role of students in teaching and societal work? (*teacher–student relation*)

How can students contribute?

Who is working on sustainability issues?

Usefulness of school knowledge (*school–society relation*)

How does the teaching interact with the surrounding world locally and globally?

Who in this school took the initiative to implement sustainability issues?

Who drives the process forward?

How does your teaching fulfil the expectations of education for sustainable development?