Sustainable development for tomorrow

Enabling local implementations of global issues in Swedish schools

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By

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Abstract
This study investigates forces and organizational structures that facilitate or hinder sustainable development to be introduced and integrated in the core activities of public institutions. Specifically, the way global national sustainable development goals find their way into the local curriculum and overall-encompassing strategy of a few Swedish high-schools is identified.

To facilitate the search, the study is assisted by actor-network theory to find human and non-human “power-brokers” that can ensure the adoption and continuous application of new concepts in a school. A pre-study of several schools, consisting of explorative interviews, located and classified factors and processes of potential importance for the implementation of activities related to sustainable development. At the same time, the large variety of definitions of sustainable development encountered was recorded.

The main study expanded on the findings from the pre-study and provided a more detailed analysis of one senior high-school (upper secondary school). Several examples of organizational structures and other factors– macro-actors in the theoretical model - were located with the potential to influence the furthering of the cause of sustainable development in that particular school. The possibility is discussed that the school would profit from developing a common mode of communication based on exploring experiences from applying the many issues that can be related to sustainable development. Such an endeavor could result in organizational change typical of a learning organization. In that case, the resilience and capacity of the organization to handle abrupt changes in national policy would be increased as well as the preparedness of its students – our future – to handle rapidly changing situations in tomorrow’s society.

The study further suggest that a similar “tool-box” of theoretical models could be applied to the local implementation of other national issues in an institutional setting.

Key terms: “Sustainable development”; “Resilience”; “Learning organization”; “Actor-Network Theory”; Neo-institutional theory; “School”;
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1. Introduction
1. 1. Background: Issues of concern

The concept of sustainable development (SD) has been utilized in politics and policy making in Sweden for a long time, starting for many with the publication of the UN-commissioned Brundtland report of 1987, Our Common Future (WCED,1987).

Today in particular “sustainable development issues” related to “global warming” certainly evoke bad tidings in the minds of many of us. The anthropogenic contributions to climate change and the ozone layer issue, provide dramatic examples of what can go wrong.

The obvious question is, however, why do we often react slowly? What prevented us then and what prevents us today, locally as well as globally, to systematically implement drastic measures leading to a more sustainable development? In particular, what will enable today’s young generation to better deal with sustainable development issues we have left for them, related to increasing rates of global warming, increasing unwanted immigration, rising social inequities and possible conflicts around the world?

To learn more about underlying causes it would be valuable to have access to a battery of methods that could be used to investigate how, where and why, what specific sustainable development issues are implemented efficiently and pursued consistently and continuously by some organizations, whilst others are merely adopting SD-policies for “window-dressing”, if at all. It would then be an added advantage if these methods could be applied to other issues of similar strategic and ethical dignity.

This study proposes such a method and will apply it to observe and analyze the local implementation of global policies related to sustainable development.
1.2. Purpose and scope of this study

The ease by which enterprises of any kind adapt to new conditions of operations and incorporate changes in long term goals, is often said to be related to their learning capacity. Sustainable development (SD) is such a long term goal, individually, locally and for the entire society. Many definitions of sustainable development include statements related to the fate of future generations and to what we leave for them to share. It therefore makes sense to study the application of SD-related goals in organizations aimed to educate those very members of future generations - schools, teaching children – and observe their learning capacity.

In some instances, a certain lack of identification with SD-related issues can be found in schools as well as in many other organizations, whether private or public. This could be related to the way “sustainable development” has been defined and presented in official policies and documents and then interpreted – or not – by the local organization in question. It was decided to investigate this possibility further. One way to verify the response to SD-issues would be to identify globally declared definitions and political ambitions related to that subject and follow the path of implementation all the way to the local organization in question, in our case schools.

Consequently, one ambition of this study will be to focus on distinguishing policies and official tools as well as major, potential SD-enabling actors that may together facilitate the introduction and continuous pursuit of SD related activities in schools or in any other local, public institution.

To do this, we need a tool, a method that can be used to follow the path mentioned from global or national strategic policy formulations to local implementations of SD.

The second ambition of this thesis will therefore be to demonstrate an investigative tool with a wide enough scope to allow for the possibility of including most aspects and factors of any importance leading to the final implementation of SD-related programs.

Furthermore, it is claimed that this method should be generally successful in informing on the local implementation of globally formulated policies in institutional organizations, whether these policies are related to sustainable development or not.
1.3 Questions this thesis will answer

The two main ambitions of this thesis can be translated into the following research questions:

Questions related to ambition 1: distinguishing policies, official tools and actors that may together facilitate the implementation of in public institution such as schools.
- What were some important changes in the formulation of policy that were executed to allow the local implementation of SD-issues?
- Why and when are certain forces and power-relations leading to the implementation of SD-related activities, whilst others are not?
- Which are in this context and in this respect some major organizational factors contributing – or not - to the successful integration and continuous implementation of activities related to sustainable development?

Questions related to ambition 2: demonstrate an investigative tool which uncovers factors of importance leading to the local implementation and continuous pursuit of global SD-related programs and policies
- How – using what method - can we observe and analyze the local interpretation and implementation of sustainable development policies according to this study?
- What are some general implications of these results regarding the usefulness of this method to study the local implementation of sustainable development policies in a school?
- Finally, what are some general implications of these results regarding the usefulness of this method to study the local implementation of other global, strategic goals in schools as well as in other institutional organizations?

In order to answer these questions a combination of tools will be introduced considered to be optimal to trace the stages of implementations of global issues in local institutions such as schools. The theoretical basis for these tools is the combination of Actor Network Theory with Scandinavian Neo-institutional Theory and a Communities of Practice model.

These tools will constructively identify complications due to the very large amount of ways – more than 300 hundred according to one source (Dobson, 1996) - that sustainable development can be defined. To ascertain what local interpretations of specific definitions of SD lead to concrete activities, within and without the school-curriculum, can therefore be seen as an important effort of this study. Implications that these results might have for any other issue-related change processes in institutional organizations will also be discussed.
1.4 Questions this thesis will not answer

Whether or not the content of the various local definitions identified – the actual implementation providing school-children with the ways and means to learn or the way knowledge is conveyed are compatible with sustainable development goals as defined by the Swedish government is not a concern of this study.

Likewise, whether or not the curriculum portion of SD – education for sustainable development (ESD) – is the “right way” to prepare our children for the future is not discussed.
2. Theoretical frame-work, central concepts and earlier research.

2.1. The theoretical framework for the analytical tools of this study.

The second ambition mentioned in the introduction was to define methods that can be used to explore local implementations of global or national strategic policy formulations. This study suggests that Actor Network Theory (ANT) assisted by Scandinavian neo-institutional theory (SNIT) and by “Communities of practice” theory (Co-op) constitute the theoretical framework for the analytical tools of this method. In this section these theories are presented as well as arguments for their application to the case-study presented in this thesis.

2.2 Actor Network Theory (ANT)

Introduction

ANT was originally developed by the French sociologists Michel Callon and Bruno Latour and has in particular been applied to the analysis of the path chosen for the introduction of innovations (Latour&Mauguin&Teil, 1990, 1991), the work of scientists (Latour, 1987) and to analyze the success and failure of new technologies (Law & Callon, 1992c; Latour, 1992). A well-known example is the analysis of the grandiose intentions, love-affair and ultimate failure of the individualised public transportation system for Paris known as Aramis (Latour, 1992). Callon has furthermore clarified the fundamental translation concept – see section 2.2.4 – and has provided many insights into the application of ANT to markets (Callon, 1997). Latour has refined many of the ANT-tools applicable to the examination of organizations, including the roles of actants, actors and macro-actors and the concept of mediation. Both have been assisted by many followers, not the least John Law (Law, 2000) and in Sweden Barbara Czarniawska (Czarniawska & Hernes, 2005), among many others.

2.2.1 Earlier research implications for this study in Sweden

As mentioned, many followers have ensued, not the least in the Scandinavian academic world (see e.g. Czarniawska & Hernes, 2005). Swedish studies have e.g. applied ANT to issues involving the introduction of new technology, the design of habitable space or the classification of information. Even issues related to SD, such as the analysis of and support for Corporate Social Responsibility-based activities and the use of ANT to analyze environmental classification systems have been reported (Catasús, 2001).

Furthermore several environmental studies have used ANT to analyse social systems related to the application of environmental protection activities (see e.g. Ernstson, 2008). As far as I am aware, however, ANT has not been used to follow the entire decision-making process – from national policy to local implementation levels– of issues of strategic national importance with a high ethical content such as SD-issues.
2.2.2. Follow the translations of every important actor!

The entire method used in this study can be seen as first using ANT to follow the paths – the network - of all translations of SD from one entity – an actant or actor - to another; from global to local, from the principal to the working group to e.g. a teacher actually implementing it. Then take note of the various translations actually made and use SNIT and Co-oP to analyze the content of these and its locally negotiated meaning (by various actors). A first important step is therefore obviously to define what is meant by the terms actant/actor, actor-network and translation.

2.2.3 Actant, Actor and Actor Network defined

To apply ANT truly means considering all entities, artifacts and humans, including the self, society, nature, every relation, every person involved, every action, every meeting, memorandum, statement, environment; terms used, explanations made; curricula changes, project redefinitions; coffee-breaks, school-buildings and bulletin-boards alike: “An actant can literally be anything provided it is granted to be the source of an action” AND “…implies no special motivation of human individual actors, nor of humans in general” (Latour, 1997a).

Latour is here influenced by the semiotic actant theory from Algirdas Greimas, stating that an actant – in a text - is a “change of state produced by any subject affecting any other subject”. In other words = an actant is “that which accomplishes or undergoes an act” (Greimas & Courtés, 1982). What then is the difference between actor and actant?

Unfortunately, ANT disciples have either used the terms interchangeably, actor = actant; reserved the term actant for non-human actors or defined a process of promotion from actant to actor in their definition of an actor-network. This latter logic is appealing to this study and will, following Czarniawska, be applied here: “an actant may acquire a character and become an actor or may” – as an actant – “remain an object of some actor’s action” (Czarniawska & Hernes 2005, p.8). “The actor is any element which endeavors to bend space around itself, to make other elements dependent upon itself and to translate all wants and wishes into a language of its own”. (Callon & Latour, 1981, p.18). This actor-definition will be further refined in the next section.
Now it should be possible to define an actor-network. In fact, any connection between actants and/or actors for a common cause is an actor network. If you define a goal, e.g. increasing the use of ecological packaging, you form a network consisting of all entities, including politicians, TV-commercials and trash-collecting systems that “agree” on the same operational definition of ecological packaging. Obviously, the more actants and actors involved, the more important is the network. In fact, this is the only criterion! All actors involved in a network contribute their own connections from actors/actants in other networks to this particular network, the actors in these latter networks in turn contribute their connections and so on... In other words, to define a network is simply to ask whether or not a connection is established between two elements or more.

2.2.4 The translation process

In French, the language of Latour and Callon, the word “translation” specifically means the movement of an entity in space and/or time. The term “translation” as it is employed in ANT retains this geometric meaning as well as the semiotic definition (in English) referring to the translation from one context to another, e.g. from one language to another, with the necessary transformation of meaning that this always implies (Gherardi & Nicolini, 2005). The translation – transport and transformation of meaning – actually enacted, however, will entirely depend on the actors involved. This battle of wills and persuasion process to impose ONE particular translation is at the core of ANT as well as of the theoretical framework of this study: “By translation we understand all the negotiations, intrigues, calculations, acts of persuasion and violence thanks to which an actor or force allows itself, or causes to be conferred on itself the authority to speak or act on behalf of another actor or force.”(Callon & Latour, 1981, p12). The spread of global ideas to local practices could also be explained and analyzed using a diffusion model. This represents the common rationalist way of viewing the dissemination of new knowledge (Nilsen & Martinussen, 2003).

According to the diffusion model, knowledge is contained in a package with enough energy to explain its spread and distribution with the knowledge content remaining unchanged during the entire transfer process. To allow this latter process to work the policy or idea has to have “a strong and autonomous position that (cannot be) contested. The idea …spreads very quickly and although some actors might discredit the idea, it will always survive” (Callon&Latour,1981;Callon,1986;Latour,1996:118ff;Latour, 1998).
Johnson claims that such a model would find its best application in situations where a considerable consensus is in place or the realm of possible interpretations is easily recognizable or finally in those situations where the various applications of the idea or policy are easily identifiable. If on the other hand, “the original idea is rather weak, not clearly formulated and is hardly structured” (Johnson, 2003), the translation model is to be preferred. Due to its many definitions and applications it certainly appears that SD most successfully would be studied using the translation process.

In the translation model, the innovation or new global issue etc lacks its own force and is dependent on others becoming enough interested in it to relate to it and formulate alliances with it. Every time someone is interested in the idea, however, it may change in character. In other words, such ideas can spread only if interested parties can “translate” the ideas to their own vocabularies and interpret them in accordance with lexicons existing in their particular organizational fields. (Tatnall, 2002, p. 1493). The key to a successful innovation is therefore the creation of a powerful enough consortium of actors - the network – with enough continuous supply of energy (interest!) to carry it through and keep it alive.

There are four intertwined phases to ANT’s translation process that will be used in this study as indications of the construction of powerful actor-networks. A detailed definition of the clearly “Frenglish” terms used for these phases – problematization, interessment, enrollment and mobilization (Callon, 1986a) is not important for this study. To discover any activities related to these phases and their status, however, is essential!
2.2.5 Activities to watch for in the translation process (see also fig 2.1)

These are the most important steps in the translation process – activities to be watched carefully:

- Actors imposing themselves as being indispensable by defining a problem & suggest its solution.
- Actors constantly on the outlook for new allies to “buy” their definition of a certain idea.
- Actors trying to define the role of other actors.
- Widespread negotiation initiatives & trials of strength between actors aimed at control.
- The ending of a controversy by the elimination of competing ideas & acceptance of own concept.
- In a later phase, the continuous execution of an accepted translation rendering it indisputable and eventually becoming an unspoken, “silent rule”. The translation then becomes black-boxed (BB).
- Efforts to assure stable & reliable representations of a solution by its durable inscription.

Fig 2.1: Major Components of the translation process: The growth of a network
(Growth in direction of arrows: increase of connectivity, stability and durability)
Actors which succeed in all phases of this translation process have enabled the formation of a stable actor-network with themselves as entities defining the ideas/strategies the network represents. The actors in question have become obligatory passage points (OPP).

How strong and powerful is the network constructed? This is entirely dependent on the quantity of connections and how stable and durable each connection is. Each time an actor manages to eliminate competing ideas and establish its own version of the idea as the only valid one together with enough energy for its execution, stability increases. Eventually, once this concept – for example sustainable development - has been totally accepted by a group of people, a community or an entire organization, it is integrated into their culture and made part of those things that are so obvious to anyone being a member of that very group, community or organization that it need not be mentioned. The inherent complexities of all the different aspects of SD are no more discussed since accepted procedures have been adopted to implement it in all situations that are encountered. SD as been put in a black-box (BB) and only the input and output of that “SD-Black-box” is of interest anymore.

Each time these same procedures are documented e.g. as routines in an accessible and permanent way, they become more durable and stability increases even more. Through inscription, actors therefore embed their social agendas – their translation of it - into technical artifacts such as formal discussions, public declarations, memoranda, guidelines and other texts and in technical objects (Callon, 1991). These inscriptions make action at a distance possible by allowing travel across space and time – e.g. via a website - and allow them to be combined with other concepts (Van House, 1999). The idea which was born in one, local network can now travel to other communities and provide new connections for its actors.

What then is a macro-actor? Obviously it must be a large and well-connected actor. "Whenever an actor speaks of "us”, we have reached the situation where it translates other actors into a single will, of which it becomes the spirit or the spokesman. It begins to act for several actors, no longer for one (actor only). It becomes stronger. It grows". (Callon & Latour, 1981, p12). It is now on its way to become a macro-actor.

With all fundamental terms clarified, it is now possible to summarize the definitions of all of ANT components that will be used in this study:
We will define an actant as any node, human or not, participating in a translation process in any actor-network who keeps contributing to its construction by virtue of its own relations. We will reserve the term actor, for any actant (human or not) which constitutes an obligatory passage point (OPP). Macro-actors will be actors that are clearly dominant in the organisation/school studied by either providing several different OPP:s or by constituting a major actor-network which overlaps several different institutions or communities of practice (see section 2.4 for this latter definition). By studying translation processes, involving the identification of OPP:s, the creation of BB:s and the inscription of SD-related terms we will map networks with the potential power to introduce, implement and control the continuous use of SD-related concepts in the organization studied.

Finally the following note of caution must be added. ANT has a truly phenomenologist stance. You cannot and shall not analyze the individual actors and try to draw conclusions as to their properties, how and why certain actors take part in the network and what this says about the actors in question and about the network studied. The only thing you can do is to OBSERVE. The more quantity of durable support (=connections) you have, the stronger you are. The individual actors themselves in that specific network show their individual strengths by the quantity of durable actants and actors they can align from their network. Outside the network connections there is nothing: “The surface 'in between' networks is either connected - but then the network is expanding- or non-existing. Literally, a network has no outside...It has no shadow” (Latour, 1997a). Obviously this means that our work to a great extent simply consists in locating the key-actors, essentially macro-actors, observe the network they have constructed and its components, compare the various networks/macro-actors and the translation they have provided and simply conclude: voilà what happened! The processes and networks we will identify, however, obviously lend themselves to hermeneutics: what if a different path or process was chosen, what would then be the result? What conclusions can we make about the observed processes and events? Here we acknowledge the power of the actors - their connections - in the individual networks and seek different combinations. To analyze these, this study recruits the assistance of two powerful actors, Scandinavian Neo-Institutional Theory (SNIT) and Communities of Practice Theory (Co-oP).
2.3 Scandinavian Neo-institutional Theory (SNIT) As the name implies, Scandinavian neo-institutionalism deals with institutions, which makes the theory attractive for studying schools (which are institutions). In essence, an institution can be any black-boxed feature that has reached maturity and becomes an integral part of the organization’s culture. This applies equally to different physical attributes (usually a school has class-rooms), functional features (teacher-teams) and administrative artifacts (coffee-break) – all of them obviously potential actants or actors in ANT. Some institutional features are common to many different kinds of institutions (coffee-breaks) some are school-specific (teacher-teams). The entire school is of course an institution, but so are various functional and/or physical departments such as the library and the science-lab etc. In this paper SNIT will mainly be applied to the translation process. As it were, SNIT uses a translation concept very similar to ANT’s, by SNIT often called “transfer” (Czarniawska & Sevon, 1996; Sahlin-Andersson, 1996, Røvik, 1996).

Also in SNIT, translation thus describes a process which leads to transformation instead of unscathed transmission or diffusion of the knowledge in question. The knowledge will only be transferred as long as there is a chain of actors/actants willing (= with energy) to translate it. This relationship between ANT and SNIT constitutes a welcome bridge between the two theories, making it that much easier to apply them both to the same empirical material.

Nilsen, quoting Sahlin-Andersson, (Nilsen, 2007; Sahlin-Andersson1996, 2002; Røvik, 1996) explains why institutions often seem to imitate each other and how organizational concepts are circulated, adopted and handled in both local organizations and between organizational fields – arenas that organization share or meet in. In SNIT, the circulation of organizational – imitated successes – are often explained as an editing process: The editing rules restrict the process of translation. The first and only editing rule of interest for this study concerns context, suggesting that concepts are edited so that they appear as prototypes that can be applied to almost any situation. This is understood as a process of de-contextualization by which the knowledge is made available for others to imitate or adopt. When a concept is adopted in a new specific setting, in one of the school’s community groups for example – see section 2.4 - it has to be contextualized again.

In this study SNIT will efficiently be used to define and analyze the format and the contents of the knowledge itself in some of the identified translations. The tools to do this then, is the de-contextualizing/ contextualizing status of the message – its abstraction level relative to national policy and relative to different local implementations in the school – see also fig 3.1
2.4 Communities of Practice Theory (Co-oP)

The theory of communities of practice (Co-oP) should contribute to this analysis by helping to identify institutions, groups, departments, action-teams within the school, which may apply the same translation of SD-policy and the translators allowing that: the groups in question would be specific “communities of practice” (Wenger, 1998). The approach assumes that knowledge functions locally (through interpretation and legitimization) within particular communities of practice, that have participants that share a common ground (e.g. similar political/professional background or sharing a similar education) (Lave & Wenger, 1991, p. 98, Wenger, 1997). For each specific implementation (within specific communities) there will be a particular social setting “allowing” one particular translation of meaning via its local culture and language. Someone then, has to provide a translation to that particular language and this actor must have access to the definitions of the same concept in several different communities and be capable of negotiating between them. In this way that actor can reach a consensus between the different communities as to which actual translation to adopt. Clearly a typical step in the translation process of ANT outlined earlier. Even in the case of Co-oP then, we realize congruence with ANT. This speaks well for the potential effectiveness of the theoretical framework of this study, see also fig 3.1.

2.5 Adapting to rapid change: Organizational learning (OL)

In terms of the earth’s geological age or the age of humanity, the steps from agricultural society to industrial to post-industrial society and now hopefully to a society and human culture based on a sustainable global development is probably taken faster and faster. The human mind, however, does not always change as fast. This is reflected in the societal structures and organizations we surround ourselves with. Learning rapidly to adapt better – and more rapidly – to change is necessary. How this will be possible is often discussed.

Theories abound to explain how human nature and organizations – consisting of social relations built by humans to achieve a goal they have in common - can learn to adapt more rapidly (see e.g. the excellent reviews in Granberg, Ohlsson, 2004 or Czarniawska, 2006). It is not the intention, however, to make a detailed review of such theories in this study, merely to mention a few avenues that could be entered – once ANT has helped us to find the actors – to interpret our findings. As mentioned, SNIT and Co-oP have been selected in order to assist interpretations.
Many other analytical tools could be used, of course: The orientation of this study towards SD would make it logical to look at organizational learning models based on ecosystem theories such as Darwinist natural selection and Malthusian survival of the fittest concepts. Related to these is the notion of complex adaptive systems (CAS), working on different functional levels and different space-time scale as well as Panarchy and the Resilience theory attached to it (Holling, Gunderson, and Peterson, 2002). More traditional organization models such as Argyris’ single and double-loop learning, Schön’s analysis of the dialogue, Swieringa’s & Wierdsma’s (1992) triple-loop, the Learning Company Model (Granberg,Ohlsson,2004) or Senge’s Five disciplines (Senge, 2006) represent just a few of many organizational learning theories well worth mentioning.

In this study, however, it is assumed that all learning of any importance related to SD can be defined as being socially constructed. In agreement with ANT in general and Bruno Latour in particular it is important to note, however, that this study understands social-constructivism in this case to mean the construction of *associations between any entities* – whether human or non-human – through the continuously changing process of mediation we here call translation (Latour, 2005).
3. Methodology

In this section all methodological components of the study will be presented. At first, the criteria for case-selection are related, then the cases themselves – the schools. How the theoretical frame-work is applied in the analysis of the schools is the next subject. Finding components involved in the implementation of any policy in such a complex organization as a school requires good detective-work to find many clues. To know what clues to look for two major approaches were selected: First a pre-study is presented which was made to understand what factors were or could be decisive in other schools to implement SD-activities. Then practical guidelines and working-groups statements related to SD policies for schools were researched in national ministries and in the township government of the schools selected. The best information, found in various SD-related awards, is outlined. The methodology is summarized in a 14-step procedure.

3.1 Case-study selection-criteria

3.1.1 One main school and one reference

The study is for practical reasons focused on one school to enable a more intensive study of channels, relationships and organizational structures leading (or not) to the implementation of sustainable development. It should therefore be possible to identify all major, potential SD-enabling actors in the school selected. This means that any policy or official tool of any importance that may facilitate the introduction of SD activities has hopefully been identified.

An effort has also been made to distinguish between locally colored features and those results that are of a more general character. To allow this, a limited control study has been made in another school known to actively be involved in SD-related activities, located in a different township. Due to the difference in age of students, subsequent curricula, background of personnel, size and location of school and of township, these two schools may not have much more in common than the ambition to implement SD-related activities. This fact increases the probability that any important result related to the main school of this study believed to apply more generally and consistently, should also create some resonance in the school of the control-study. Likewise, any influential factor considered to be of a very temporary or local nature should not appear in a similar situation in the reference school.
3.1.2 Selecting schools implementing sustainable development policies

Obviously the schools selected had to be involved in sustainable development to some extent in the past and/or at the time of the study to enable comprehensible and relevant results. The degree of involvement, the what, why, how and when was part of our study – that they were indeed involved was the only concern. Since the implementation of national policy was the theme, it was logical to look for schools actually being officially recognized to be involved in SD by Swedish national authorities. Such recognition is given by the distribution of the Sustainable Development Award (SDA) – “Utmärkelsen Hållbar Utveckling” in Swedish. The prize is distributed by the Swedish National Agency for Education (SNAE). By selecting two awarded schools it could be presumed from the start that SD actually should be a well-known concept and that activities related to sustainable development could and would be identified.

3.2 Presenting the case-study: Main school and reference school

The Swedish senior high-school (upper-secondary school) of the main study is a public school, the only senior high-school in its community with a complete national curriculum. The school is of a fairly standard size for high-schools with about a thousand students. The school – here called Senior - went more or less automatically from being awarded the environmental school award – a predecessor - to receiving the succeeding sustainable development award. The school has high pretentions and a high profile as it pertains to sustainable development (SD). It is aware of the usefulness of the SD-award as a marketing tool to attract new students. Senior will be the protagonist of this story about the many efforts of SD to persist in a school under changing conditions and environments.

Junior, the reference and sounding-board is not surprisingly, a junior high-school of a fairly standard size with around six hundred students. It is located in a different and much larger township. It received the sustainable development award but unlike Senior, not its predecessor. This fact is a definite advantage when we try to eliminate results that are specific to Senior only. Junior also has high pretentions and a high profile as it pertains to sustainable development and is certainly aware of the usefulness of the SD-award as a marketing tool to attract new students. Junior will be used to check the applicability of some of the findings at Senior. A total of 29 exploratory interviews were made with personnel from Senior & Junior and from various authorities, varying in length from 20 to 45 minutes. An analysis was made of all the documentation available at the schools from Jan 1999 to April 2009 of relevance to the study. This includes national and local policy statements, web-site information, meeting-minutes and educational activities related to the programs of the school. The information cannot be detailed since it is discretionariy.
3.3: The fusion of three theories - a forceful analytical tool

The method of investigation and analysis is mainly an application of Actor Network Theory (ANT) assisted in the interpretation phase by the Scandinavian version of neo-institutional theory (SNIT) and by Communities of practice theory (Co-oP). In section 2 the main features of these theories have been dealt with and it only remains to indicate how they have been transformed into efficient tools for this investigation.

3.4 ANT as an investigative methodology: looking for power.

ANT will of course be the search-light identifying how the concept of SD was born, developed and managed – or not – in the school-environment to become a stabilized concept and maybe even become black-boxed. Who where were the actants – and actors – who built a network enabling SD to be implemented and continuously employed – so that SD itself maybe becomes a macro-actor? How and where does the recruitment for SD take place, which actors constitute obligatory passage points in the process of establishing SD-routines? Once established – if this is the case – what (new?) actors/actants will then make sure it stays that way – that SD will be continuously employed and if so in what way? What translations are required, what inscriptions?

Nilsen (Nilsen, 2007) notes that there is an important distinction to be made between actors enrolled to initiate and spread the good word (in our case of SD) – they are often human – and actors enabling control. Since control often is the result of inscriptions (e.g. of SD) into routines, work-plans and curricula and in the formulation and implementation of specific projects, clearly inscriptions into non-human actors, Nilsen’s comment is highly relevant for this study. Here, it can be expected to be a long way to go from the introduction of SD-related concept to the acceptance of it as practice. To enable this, ”other allies have to be brought in and most of them do not look like men or women”(Latour 1987, p. 121). It is therefore as important in this study to “interrogate” documents and other non-humans, as it is to interview human actors. You never know where you will find the actor or macro-actor which will finally assure stability!

3.5 Validity and relevance of using our model

This model was selected, very much inspired by Latour, Nilsen and Wenger since it seemed to be the only realistic way to follow the many versions of the term —sustainable development — on its road to implementation in any particular part of any institution.
Only this model seemed to be able to answer the three questions below needed to be able to follow and find the various translations of SD and then also be able to put them in the right perspective.

*Respectively based on the central tenets of Scandinavian neo-institutional theory Co-oP and ANT it should therefore be possible to find out (see also fig 3.1):*

**3.5.1 How are schools making sure SD is understood as a local concept?**

(a) SD is given content – by actors - through processes of *de-contextualizing and contextualizing*

(b) SD gains *meaning locally* in order to be implemented at all in various communities through *boundary-work* – by actors- using a particular translation.

It is suggested that these two types of translations – let’s call them the Nilsen translation method- are central features to study how a global idea is formulated and re-formulated to enable it to be integrated with local practice. Accordingly, SNT and Co-oP are used to put the locally applied SD-formulation in perspective and compare it for example to national policy statements

**3.5.2 How are schools making sure SD-policy is initiated and implemented?**

This requires *power.*

(c) Enabling SD to become powerful enough to be implemented at all is of course realized through ANT:s network-building activities. Without the right actors building the right networks, there will be no translations to be made.

**3.5.3 How are schools ensuring that SD-policies remain alive?**

(d) The concept of *black-boxing* and subsequent opening of black-boxes is central to the concept of controlling that SD-policies will stay alive. This “maintenance-work” must receive continuous inputs of energy. By using ANT this study will identify the actors, networks and macro-actors that will make this possible and suggest where (but not how!) to “feed them”. This activity will necessarily entail some form of progression. Of central importance at this stage – a macro-actor having gained substantial power by providing multiple OPP:s and/or closed many black-boxes - is the increased assistance of those non-human actors providing *inscriptions* to ensure continuity for that particular macro-actor. Locating and counting these inscriptions will give a measure of the consistent control provided by the macro-actor in question.
Combining Co-oP and SNT to assist in analyzing translations efficiently observed in the various actor-networks of ANT, the resulting methodological model should be relevant to obtain answers on the major questions of this study with a high validity.
3.6 Defining sustainable development (SD)

SD is as rich in definitions as it is in applications to various sectors of life, educational institutions and political instances. The way sustainable development is defined in specific instances could be of great importance to the outcome of the survival of the concept in the school studied and several definitions will compete for attention. Together with the awards mentioned below, two operational definitions will be provided, one focusing on environmental and ecological issues and their implementation, the other bringing up all the three “legs” of SD by preparing the students’ ability to participate in a democratic society, confronted with social and economic as well as ecological issues. Thus the student should be provided with sufficient action competence to be able to adapt to an ever-changing society.

Other definitions will be commented on as they are mentioned in the result section of our study, showing the possible consequence of selections made. Already in the description of our pre-study we will encounter the most well-known definition of them all – the Brundtland definition - which will be described with some detail. As we will show, different definitions of SD are major actors in this study, all with their own particular audience and flavor. Defining actors, then, is of utmost importance since they constitute the protagonists of this study, furthering the cause of sustainable development, simply by building networks.

3.7. Defining actants and actors to look for.

In order to enhance the ability to locate SD-related actants, issues, curricula, documents and activities, a pre-study including four schools was performed. This research provided an important input by making it possible to organize and classify the type of information to look for in the main study. As a result, the analytical tools of the methodology were from the start given a classification of actants to be applied in the main study – all of them potential actors or even macro-actors. Put differently, elements of a map as well as a compass were at hand as the main study commenced. It is certain that this input increased the precision, effectiveness and above all relevance and validity of the results obtained in the main study. For sure, far more actors and subsequently macro-actors were located much more rapidly than would otherwise have been the case.
3.71 The schools of the pre-study and the shopping-list.

During 2007, two junior high-schools (lower secondary schools – grades 6-9) and two senior high-schools (upper secondary school, grades 10-12) in Stockholm and in the vicinity of Stockholm were visited. Upper and middle management were interviewed as well as teachers in various subjects with emphasis on science and social studies. Both senior high-schools are public schools. One is actively and very clearly involved in implementing SD, while the other is not officially involved in SD to any greater extent. They both have more than a 1000 students and contain education programs for all the main core subjects in the Swedish high-school curriculum.

The two junior high-schools are very different. One is a major size public school in the centre of Stockholm with a new, dynamic management and over a 1000 students and a distinct SD-profile in the making, the other a small, privately owned school located in a lush country-side environment surrounded by farms with more or less the same personnel (how big?) for the last 10 years or so. The small school is well-known for its use of innovative pedagogic tools without, however, emphasizing SD as a stated policy or part of its educational themes. Both schools also house primary school students.

Approximately 30 short interviews were made to discover the actors likely to be enrolled in empowering any aspect of SD – as a concept or/and as a concrete activity – in the school in question. The list of over 100 typical actants and actors frequently identified can be found in appendix 3 for the interested reader. Fortunately the actants/actors could be summarized in 10 admittedly arbitrary categories, well adjusted, however, for the purpose of our more detailed study – again see appendix 3. A few brief comments on some of the more fundamental categories are necessary. The remaining ones are brought up when they become relevant references for the main study below.

3.7.2 Definitions of sustainable development as actants, becoming actors

Obviously, a most important category of actors involved in creating networks for/against SD would be the ones carrying a specific definition or part of a definition of SD. Since these definitions are all different versions of SD-statements they are all specific translations of SD and in most cases therefore important obligatory passage points. It is, however, well worth noting that the SD-definitions are not at all the only translations made of SD to give it power – se further below – but certainly of major importance just the same.
Accordingly, one of the first steps in the pre-study was to assemble the different definitions used by the personnel in the schools surveyed and to inquire what sources for those definitions they used. The formal chain of command – the political trail closely tied to the economic power from national government to the local community was found to contain few actants with direct influence on the actual formulations of SD (or ESD) applied by all the schools investigated. Much more important sources of information were different sections of the Ministry of Education such as SS and formerly MSU, the Ministry of Environment in a much lesser degree and various sites related to the professional background and curriculum of the teachers to a great degree.

3.7.3 The Brundtland commission report definition of SD as actant

The obvious general reference on the highest abstraction level was not surprisingly the widespread, often misleadingly quoted or translated statement of only the beginning of §27 in chapter 2 of Our Common Future, the Brundtland commission report (WCED, 1987):

“Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Specific sources for the definitions found in the schools were usually some translated version of the Brundtland quote used in:

- one of the many publications on the subject of environmental issues that they had read or in particular,
- Publications on SD published by Swedish National Agency for Education or before them by MSU(SS) or
- The SD definition used in publications related to the ESD-award or the SD definition used in publications related to its predecessor, the Environmental school award.

It is unfortunate, however, that most publications quoting the Brundtland definition of SD do not take the time to allow the inclusion of the rest of the same § 27 and the subsequent §28:
§27. “The concept of sustainable development does imply limits – not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth. The commission believes that widespread poverty is no longer inevitable. Poverty is not only an evil in itself, but sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfil their inspirations for a better life. A world in which poverty is endemic will always be prone to ecological and other catastrophes.

§28. Meeting essential needs require not only a new era of economic growth for nations in which the majority are poor, but an assurance that those poor get their fair share of the resources required to sustain that growth. Such equity would be aided by political systems that secure effective citizen participation in decision making and by greater democracy in international decision making.” (all bold added by this author).

The text continues with further paragraphs (see Bruntland 1987, chapt 2) but it is quite clear already that the distribution of resources between the richer countries and the poor was a dominant feature of that definition; that the basic need of all should be met and furthermore that large reliance at the time was given to economic growth to solve problems in poor as in rich countries.

Finally greater democracy in international decision making was essential to make this possible as well as to enable limitations to be set on environmental resources used to allow this economic growth. By simply including this admittedly a little longer text in the definition some confusion might have been avoided, leaving, for better and for worse less room for personal interpretations of SD as far as Brundtland goes.

“Translating” and applying, SD to a particular reality in the school-world, can also be said to have been tempered, if not hindered, by the lack of context-related definitions in the national laws, ordinances and the goal-based curriculum content descriptions intended for high-schools. Sustainable development is simply mentioned, not explained. Thus the need to revert to often out-of-context definitions on usually higher abstraction levels such as the Brundtland definition.
In particular among Science teachers, however, several definitely more contextualized definitions of SD were found, mainly related to Environmental Education (EE) or some version of Education for Sustainable Development (ESD). These teachers would often either have a totally ecological, normative approach (“ecological sustainable development”) or point out the importance of relating to democracy and to use a pluralistic approach, rather than a preaching one. We refer the interested reader to a much more penetrating study on these issues led by John Öhman (Öhman & Östman, 2002) and referred to by many of the teachers interviewed.

3.7.4 Components of Environmental Education (EE) and Education for Sustainable Development (ESD) in the curriculum as actants
These actants apply SD in specific contexts and communities of practices with particular groups in the schools. They will reveal their true colors in the main study below, among other things by the way they are attracted or not to the receipt of the SD-award at Senior.

3.7.5 Meeting-groups, meetings and meeting minutes as actants
The name of these groups will vary from school to school, but the role of these for furthering the cause of SD will often depend on the same basic reasons – actors they can enroll and the position of same in the line of decision and implementation enabling processes.

3.7.6 Major Personnel Competence Enhancement groups/courses/seminars as actants
Often revealed as starting points with importing/exporting functions for new ideas

3.7.7 Working/meeting environment actants
Two short typical comments from those surveyed will suffice: empty coffee-machines and drafty, drab and murky meeting-places set the stage for poor decision-making; noisy overloaded classes stress the teachers and put creativity on stand-by….

3.7.8 Administrative/Organizational actants
Includes all the policy and activity documentation and administration. It is a station where SD needs to enroll many actants for successful inscriptions. The challenge here is to distinguish superficial window-dressing actants from the powerful ones with strong linguistic actants and large networks. The right editing capabilities are of utmost importance says SNT.
3.7.9 Implementation Actants

Decisions have to be implemented to have any value. Busy teachers with their own agendas and community groups are capable of ignoring decisions for quite a while if not otherwise motivated. The assistance of actors with carrots and sticks are needed!

3.7.10 Local context actants

Obviously this is where the help of Co-oP is required. In the pre-study, good translators with one foot in one particular practice and one in another were found, but they were surprisingly few.

3.7.11 Stake-holder actants / External communications

These include not only parents and local industry with student recruiting capabilities. The main SD stake-holders are unfortunately not born yet – what actors can reach them? Various higher-education facilities providing courses in SD related subjects and the local community politicians are also surprisingly active suppliers of actors assisting – or not – SD-implementation in schools.

To summarize, a very comprehensive list of actants were identified in the pre-study, which greatly facilitated the detection of actors and macro-actors in the main study.

3.8 Awards related to sustainable development

The ambition to be officially recognized for efforts made in their work with sustainable development is of course attractive to many schools, certainly as this research has found not only for marketing purposes but due to a strong believe in the necessity to steer the future generation in the right direction. An important step to complete the tools of this methodology was therefore very obviously to identify all the components – potential actors - in awards related to SD.

3.8.1 Green flag (Eco-school program – www.hsr.se)

The most important award in Sweden, in particular for pre-school and primary school, is the green flag (in English often called the Eco-school program), administered by the “Keep Sweden Tidy” Foundation. The award was founded by the Swedish Environmental Protection Agency. They also provide “blue flag awards” for environmental marine efforts and education courses. The emphasis here is obviously on the ecological one of the three legs of SD.
3.8.2 The Environmental School Award (ESA) – see also appendix 1

Created in 1998, ESA is the predecessor to the sustainable development award (SDA) with some characteristic differences compared with SDA. These differences will be discussed, when relating the story of Senior in section 4. Basically, ESA stipulates that the candidate school has to fulfill requirements according to criteria divided into four categories listed in sections A, B, C and D:

**Section A** contains the *global criteria*:
- identify environmental impact of school;
- action-plan showing management supported activities proposed to enhance SD;
- confirming total school involvement in the activities, including all personnel and all students; **The B-section** criteria deal with *educational activities in ecological applications of SD* stressing: - the importance of student involvement;
- the need for personnel to acquire competence in relevant issues;
- cooperation between the different parts of the school;
- the need for parent involvement;
- that activities should be coordinated with other parts of the community.

**The C-section** deals with *working environment* and *health-issues*.

**The very comprehensive D-section**, finally, deals with the need to manage the physical environment in terms compatible with an ecological SD. Basically personnel and students are required to *monitor at least 15 aspects of the physical environment* and suggest improvements very much in the same spirit as private companies make environmental audits e.g. in accordance with the specifications of ISO 14001.

3.8.3. Sustainable development award (SDA) - see also appendix 2

In an effort to enroll more schools in the award-seeking process, a survey was commissioned by the Swedish Education Department to find out how the criteria of the award could be improved and attract more interest (see Ramböll Management AB, 2008). The end result was a substantial reduction of specific tasks to be performed related to the operation of the school, its working environment, health issues and the physical environment. In fact such activities became optional. The emphasis instead was entirely on aspects related to section B of the former award, here divided into two sections: *the education leadership criteria* and the *teaching approach criteria*. 
It could therefore be more correct to call that award an award in Education for Sustainable Development (ESD). It is not the ambition of this paper to relate the many definitions available of ESD. For those interested, an excellent review of ESD is published in Scott, W., Gough, S. (2003). Sustainable development as presented by the Swedish National Agency for Education (SNAE) in the Sustainable development award information-kits, can be divided into three main areas for the focus of educational efforts:

**The three main areas of SDA:**

- *Economic and social conditions*;
- *Social and legal rights* – providing protection & the liberty to choose;
- *Ecological issues*.

Here, compared to ESA, the illustrations of issues related to sustainable development are more in tune with many established definitions that usually include three “legs” requiring improvements: issues related to social, economic and ecological conditions in society and nature.

The process enabling learning related to these issues includes a democratic attitude in all aspects, studies allowing subject integrations, the opportunity to communicate and act and critical thinking. SDA replaced ESA in July 2004, with detailed criteria published in 2005. Recently (April 2009) the requirements and criteria of the SD award were further condensed, relaxing the references to learning or education for sustainable development – see appendix 2.

**3.9 Investigative procedure – assembling all the tools of our study.**

*With all the analytical tools assembled, with access to compasses with lists of potential actors, it is now possible to summarize the investigative procedure of this study in 14 steps – see fig 3.2*

*The search can begin – follow the actors!*
**Fig 3-2: Investigative Procedure – follow the actors!**

1. Start with the stated policy of the Swedish government relating to the issue at hand: sustainable development (SD).

2. Locate authorities down the chain of command to whom the enforcing of SD policies has been delegated as it pertains to schools. Their definition(s) of SD?

3. Select 4 schools, 2 in junior-high – classes 6-8 and 2 in senior-high – classes 10-12 (senior classes 1-3) to identify potential actors and actors related to SD. Concentrate on short, exploratory interviews of middle management and then teachers directly involved in SD-curricula at the time according to said management.

4. Based on survey above, make a “shopping-list” of potential actors and actors with no preconceived notions as to who might be the more or less “important” ones. Purpose is only to get a starting point check-list as a reference and background to the next step.

5. Select two schools that have received the SD-award. Purpose is to make sure that SD is an active issue in the schools. Plan intensive survey in one school and one for back-up. The latter provides references for current issues.

6. Locate funding authorities for the schools. Definitions of SD? Inscriptions?

7. Use intensive exploratory interviews, websites, relevant documents such as policy instruments and minutes from relevant meetings as well as physical visits to identify actors and actors involved and determine macro-actors with major networks in the school selected for the intensive study. Compare globally with back-up/reference school.

8. Note definitions/translations in-practice of SD made in the dominant networks leading to obligatory passage points (OPP) and actors involved. Note network links outside the school’s operation along the different paths leading to and from the local implementations of SD. Make follow-up interviews, when necessary in the school used as a reference.

9. Note context level of specific SD-translations for specific activities/policy declarations. Inscriptions?

10. Practizes involved, leading to what community? Note local community groups for that particular translation/practice pair – common for several implementations? Inscriptions?


12. Verify your findings with follow-up interviews and/or survey to confirm networks, translations and resonance groups identified. Is perception of macro-actors and major translations consistent among people interviewed/surveyed. Discrepancies?

13. Implications for the local implementation of global policy – Macro-actors involved?

14. Implications for organizational change – influence of identified macro-actors?
4. Results: Unfolding the story of Senior furthering the cause of sustaining development.

4.1 Introduction:

*Dominating macro-actors with their actor-networks very much intertwined, were located. In essence, sustainable development (SD) to survive has to keep providing as many as possible of these macro-actors with new energy. One of the most interesting findings in this study is arguably the fact that SD, at least in the short–term, will have to manage to enrol a major macro-actor not yet related to SD – to survive. Why this might be true will be related in our story below. In section 5 suggestions for solutions abound.*

For convenience, figures 4-1 to 4-7 will be referred to as the story of the actors and macro-actors promoting SD at Senior – or not - is told. The tables under each figure provide definitions, and explanations to the terms used in the networks of the figures. Text in **bold** in the tables correspond to the names of actors used in the figures. *Text in italics* in the core text of this section, subsections included, correspond to those same actors presented in these figures and tables. Actants in the various networks of the actors are not listed.

The Macro-actor networks in these figures and tables are presented *strictly for pedagogic purposes* to make it easier to follow our story and do not contain all the details of the translation and inscription processes involved nor of actants – those without own initiatives but valuable intermediaries none the less.

ANT is all about power, not social-relationships: Any organization is likely to contain, at any moment of time, a complex and multi-layered web of active or latent power-structures in scales of different sizes, with different time-constants and inertia. ANT does not recognize hierarchy. To ANT all organizations are flat (Latour, 1987). Actors located e.g. in the upper part of our figures are therefore not assumed to be on an upper hierarchical echelon compared to others! “Upper part location”, however, can be related to the abstraction level of the message, as interpreted by the SNIT-actor – see further below. Depending on the subject that the power will be exercised upon, in our case furthering the cause of sustainable development (SD), the different power-relations will be built-up, often through the initiative of more than one person/non-person. In ANT-terminology this means that new SD-related actors could start to construct new webs leading to macro-actor status at any given point in time. It is therefore important to realize that the figures and tables are merely today’s time-limited snapshot illustrations of some power-relations that hopefully still are relevant at the publication of this study.
A different approach would have been to illustrate all the macro-actors prevalent in each phase and show the historical development of all actor-networks during the 10 years of our story. This would run the risk, however, of adding confusion more than clarity. Instead, former macro-actors will be mentioned below, when and if they become relevant for our story. Obviously, macro-actors that are powerful today are the ones that can be worked on – today. This is important to realize if and when this study is followed up.

In a similar fashion, the pretention is certainly not to have located every potential actant and actor but a large enough amount of major actors to give an idea of the relative importance of the macro-actors identified. Since the peaks and troughs in the amount of enrolled actors and actants is constantly changing, however, these macro-actors could admittedly vanish into a black-box or into thin air without prior warning. Finally, to be identified and illustrated as a macro-actor you will have to constitute several obligatory passage points (OPP: s) and/or have closed several black-boxes for the cause at hand. Although other macro-actors may already exist in parallel, furthering the same cause, a serious effort has been made to locate a good portion of them. Again, it should be stressed that the specific intentions of actors and macro-actors included in a network is of no interest to ANT – the only thing that matters is how well, i.e. by how many actors the cause at hand is furthered, not why.

Two examples will be provided to clarify the pedagogic role of the illustrations:

- **Macro-actors today:** The environmental school award (ESA = “miljöskola” in Swedish) as concept and criteria for sustainable development (SD), was a tremendously important actor at the beginning of this story, with macro-actor status. Today, however, it is dead but certainly not buried. ESA speaks through its records and past performance for the furthering of SD. So today ESA is not a macro-actor, but certainly a very active, well-documented historical actor. Now, to move SD forward, in the case of ESA mainly the ecological portion of it, it depends on environmental education (EE) as an obligatory passage point (OPP). So today EE – is a macro-actor – see figure & table 4-1.

- **To see power relations – count the amount of actors/actants:** The relative sizes of the boxes and the length of the connections between them in the figures should not be interpreted as illustrations of the relative importance of specific actors and macro-actors in a given network.

- Size/length variations are purely related to lay-out technicalities with one exception: macro-actors included bring along all their actants/actors, illustrated with a larger font.
As mentioned in section 2, to see the relative importance of a given macro-actor network there is only one measure - count the actors in the network itself and in the networks of other enrolled actors/actant and especially macro-actors.

It is also important to remind the reader that the term “community” as that term is employed in “communities of practice (Co-oP), can be confused with “community”, meaning local town or township, an actor for its contacts and an important stakeholder in this story, representing all local authorities, financially and legally the “boss” of Senior and junior. To minimize confusion such terms as “town”, “township” and “local government” will be employed for the stakeholder; “community” or “community group” will be used in discussions related to Co-oP theory. In each phase of this story related by ANT, Co-oP will be used to comment on the status of community groups and SNIT: s editing faculties will show context.

4.2 Following the actors, observing connections, finding context and situating meaning

4.2.1 Phase 1: Empowering EE - the growth of Macro-actor1

The story begins with the recruitment in the late 1990’s of a science teacher, teacher A of duo A & B in fig. & table 4.1 – then working for the local community that Senior belonged to. On a voluntary basis she had been teaching about environmental issues related to marine life – the criteria for obtaining the “blue flag” of the Keep Sweden Tidy Foundation. The students in this class belonged to Senior. She was then recruited by an assistant Principal of Senior at the time to help increase Senor’s environmental profile with a larger environmental education (EE) output. The school received information in the same time-period about a university environmental course that could be tailored for particular teacher requirements. The course was financed with funds from the teacher competence enhancement program at the Swedish National Agency for Education (SNAE). 12 teachers, half of them in science subjects and the rest of them teachers mainly in social studies, English and media were sent to the course financed by a scholarship from SNAE.

4.2.2 Status of Co-oP community groups: In a manner very much resembling the case in e.g. many American high-schools, teachers in related subjects were physically operating out of the same department in the school – Science teachers in one place, Social studies teachers in another etc. This provided working environment with potentially optimal discourse within the same community group albeit automatically with some isolation from teacher groups specialized in other disciplines.
4.2.3 Phase 2: Receiving the environmental award:
A major feature of the university course was the study of Environmental management and monitoring systems like EMAS and ISO 14001. SNAE had recently announced the availability of the environmental school award – ESA - and the idea was born to include the exam of the university course – a documented survey – in the application to ESA, by making an environmental survey of the school itself. The execution of the survey and its documentation, strongly lead by science teachers A and B, lasted for three years. It resulted – with the addition of a pedagogic plan for the inclusion of environment in the entire curriculum - in the receipt of the environmental school award – ESA, in 2003. Just about all students and personnel participated in the survey and often with great enthusiasm, in particular in the tasks outlined in section D of ESA.

4.2.4. Comments regarding macro-actor 1: Environmental Education (EE)–fig & table 4-1: Environmental profile in action plan 1: There were plenty of learning implementations in the curriculum of the working groups that the science teacher duo belonged to - the NV and TE –programs and also elsewhere.

Township: No other schools in the local township applied to the ES award, nor later to the SD-award, so there was no specific township initiative, besides the fact that the local government strongly encouraged politically correct activities such as environmental awareness based on Agenda 21 and applied environmental management systems themselves.

In Senior, many teachers, especially science teachers, related definitions of SD to activities leading to the improvement of the environment by preventing pollution, reducing green-house gas emissions and issues related to maintaining or improving the balance of e.g. climate or pollution sensitive eco-systems. Increasing the use of renewable energy-sources was logically an important part of those solutions. Added to this focus, some teachers in the social studies dept. of that school would add discussions of Social Justice and Equity.
Figure & Table 4-1: Macro-actor 1 - Environmental Education (EE)

Mechanical Actor 1: Environmental Education (EE) – see fig above
- School policy and action plan: School has a strong environmental profile with strong support in many departments
- Teacher duo, A & B: Initial and continuous efforts by two Science teachers “burning” for the environmental issue to move EE and ESA forward
- Environmental School Award (ESA)
- Teacher C: A social studies teacher with strong opinions on SD
- Adm A: Administrator taking over the responsibility for implementing ESA after duo A&B
- Environment and environmental politics are today optional subjects in one of three branches of science program and mandatory in another, the latter branch called “environmental science”
- Contacts with township: Experience of environmental management systems
- Environmental monitoring (EM)
- Environmental University Course (12 teachers from Senior participated)
- SNAE-program: Swedish National Agency for Education funds teacher competence enhancements
- ISO 14001, the environmental auditing standard, is a model for one of the science teachers
- Environmental survey as a concept appealing to many teachers
- Environmental meeting group (MG) – staff function with no line-responsibility, produces minutes
- ES-Senior: “Environmental school” is the official name of the environmental group
- All teachers and students participating in practical portion (section D) of ESA study.
- University course, survey and report of survey performed on paid, scheduled time
- Lpf94 – the national school curriculum and national curriculum goals include “environment”
- Ecologically sustainable development as concept (Eco-SD)
- Library environmental shelf
- ESD pedagogic plan (document)
- Working environment (WE)
4.2.5 Change of Status of Co-oP: dismantling community groups:

Teacher working teams and the new programs: In order to physically and functionally align teacher allocation in the school department with the way the national curriculum was outlined by the SNAE, a major change was introduced by management at the end of phase 2. New departments related to the major orientation of studies and career paths were formed and called programs. All students would then, depending on their orientation and chosen career path select and belong to one particular program and mainly be educated by teachers who belonged to the same program. Some cross-over of teachers between different student groups was still necessary since core subjects such as Swedish, English and Math as well as basics in Science and social studies were part of the curriculum of each theoretical program. (There were also programs with specific vocational orientations but they are not included in this study for two reasons: minor involvement in the progression of SD with one notable exception – eco-driving in the curriculum of the vehicle program – and remote physical location, in other parts of the town).

The programs included are:

- The science program - NV; the media program - MP; the engineering program – TE and finally the social studies program – SP. Within SP it is possible to specialize from the 2nd year in either the business administration & economics branch – SPEI or in the government branch – SPSK. SP is by far the largest program with more teachers in each of its two branches than in any other theoretical program. New program working teams with specific team leaders - TL were defined. One in particular, teacher C, was an avid EE spokesman.

The reorganization greatly influenced community group contacts since teacher A and B were moved to different programs (NV and TE). This would soon increase the need to enroll new actors to translate and provide meaningful local applications of SD. This problem was not as great for EE, which already had strong normative applications in all departments (Öhman, 2002) and was easier to define. If anything ESA certainly spelled out – see appendix 1 – what EE was all about. During this period the only active context of SD was Ecological SD, in line with its operational definition in ESA.

EE & SD arena- the environmental group - MG: Decisions related to the implementations required by ESA and the development of EE and later ESD all required a forum. A wide arena with all personnel involved would blur comprehension of issues and retard decision-making.
The union-related cooperation group and/or the student council were suggested. As an example, major decisions about the implementation of IT had been made by the cooperation group.

- The decision was finally made to form a specific environmental meeting group (MG) - to further the cause of EE and SD. One member of each teacher team was selected to represent them in MG, unfortunately none one of them a working-team leader (TL). MG would advice management, but had no direct line function. In parallel, there was another group called the working environment group (WE) with strong union affiliations. A quick look at appendix 1 reveals working environment to actually be an ESA issue. For clarity(?) MG was therefore baptized “the environmental school”, as we shall see thereby creating an unfortunate linguistic actant (ES-Senior). The members of MG had no particular practice in common: Only teacher A and B belonged to the original group of 12 teachers participating in the university course mentioned in phase 1.

4.2.6 Phase 3: Applying and receiving the Sustainable development award

The year after receiving ESA, the award was dismantled by SNAE for reasons outlined in section 3.8.3 and new criteria were produced for a new award - the sustainable development award – SDA. This created some havoc at the wrong time:

- Teacher A and B had provided the momentum with their energy and burning interest for 5 years now and wanted to hand over the responsibility to someone else. This responsibility was given to Administrator A, who mainly, as the name implies, had administrative and economic duties but also was responsible for curricula/teacher scheduling: AdmA “got all sorts of crap thrown at him incl. following up SD”(teacher B, March 27, 2009)

- When the criteria of SDA were spelled out and distributed, they were recognized as being mainly related to the curriculum – as section B1 was in ESA - not to the overall operation of the school. In particular “the ESA section D about applications” was missing (or rather as earlier mentioned was not mandatory, but still had a “hands on“ pedagogic value for those so inclined). The new award obviously required implementing Educational for Sustainable Development (ESD) - rather than an environmental management program.

- Instead of ecological sustainable development one now had to deal with all the three “legs” of SD – social, economic and ecological aspects of SD. This would mean taking guidance from the many examples outlined in the information pamphlets and
application guides provided by SNAE and related earlier or from some other established SD-definition of the many to choose from – see appendix 2.

- In addition: In an ambitious effort to focus on education for SD rather than in SD the stakes were raised even further by SNAE and its affiliate organization MSU, stressing above all the ambition to prepare the students for an ever changing world and provide action competence for dealing with it. The approach should be pluralistic rather than normative, says SNAE via SDA, allowing the student to produce his own map with paths of life to uncover in his own time. The jest of this for a majority of the teachers, confirmed in my interviews, was that the need for compliance with the new SDA criteria, required that they:
  - not only teach democracy but also give students more opportunities to apply it
  - work even more actively with subject integration by cooperating in projects with other teachers in the same curriculum program

If SDA would be so implemented, democracy and subject integration, already important actors at Senior, would become OPP:s for SDA and logically for applying ESD.

**Figure & Table 4-2 : Macro-actor 2 - Democracy at Senior**
4.2.7 Comments about macro-actor 2: Democracy in the shape of student power:

Discussions about how to increase the possibilities for students to influence the condition of their working environment as well as the content of their curricula, ways to study, to report results and to be graded are hot potatoes in most schools today. As far as implementing democracy, this certainly is the main route chosen by Senior and eventually a very active one.

**Figure & Table 4-3: Macro-actor 3 – Education for Sustainable development (ESD)**

4.2.8 Comments about macro-actor 3: Education for Sustainable Development (ESD) in the costume of democracy.

It might be an enormous simplification to reduce the wide and multiple-faceted concept of Education for Sustainable Development to a discourse on democracy, but there it is. Without the subject of democracy on the agenda of the teaching staff as well as on that of at least part of management, there would simply be no ESD at Senior. There are many reasons for this, but the main focus revolves around the conflict with the proponents of the other main issue in Senior related to ESD - environmental issues – including global warming. Simply put, in this phase democracy is needed to implement ESD at the same time as this dependence might result in the complete dilution of ESD and even of SD as a concept if the backing from the democracy issue is too strong. It remains to be seen if this status will reside within a black-box. Several factors mentioned as criteria in the SD-award exist as actors mainly due to their linkage to students enacting democracy. It includes action competence, critical evaluation of issues including future generations and globalizations and of course aspects of learning democracy & using that knowledge.
4.2.9 Comments - macro-actor 4: Subject integration projects.

Subject integration is a natural for SD and a recommended procedure by SDA. A more important impetus for subject integration in phase 2 and 3, however, is PBS, macro-actor 7, by providing context: teachers of different disciplines together with students in learning groups formulate texts and activities lending themselves to subject-integration. In phase 4 SPSK plans to integrate SD as ESD, but not all teachers at SPSK see subject integration – macro-actor 4 - as the given format for ESD. Teacher C, the strongest supporter of SD at SPSK could prefer a more independent route. This would ironically mean that the increased implementation of ESD would weaken one of the strongest allies of SD – macro-actor 4.

Also, SPSK is in this choice independent of AP, the assistant principal and program director for the other theoretical programs of the school. This gains importance in phase 4, below.
The importance of the macro-actors 2, 3 and 4 as they are outlined in fig 4-2, 4-3 and 4-4 now becomes clear. Without these macro-actors it will be difficult to further the cause of the new award or that of *sustainable development* per se, in any shape or form. As can be seen from the networks of macro-actors 3 and 4, these in turn are both intertwined with macro-actor 7 – coming up later in the story. The earlier award - ESA, on the other hand, had via *EE as macro-actor1*, an excellent support from a linguistic actor – the name itself of MG – “environmental school”(*ES-Senior*). That name unfortunately does not promote SDA or the concept of SD at all….

Assisted by the macro-actors mentioned, SDA becomes a strong actor, but not at all a macro-actor as ESA managed to be in phase 1(before it died). After all, *sustainable development* is not dependent on SDA to make it at Senior. SDA is, in other words not an obligatory passage point for SD. This becomes clarified by teachers now concluding that the requirements of SDA – *democracy and subject integration* – were already complied with as a natural part of their day-to-day activities, so no additional efforts were required to implement SDA!

In addition, the essence of the pedagogic plan produced in 2004 as the next step for ESA – to show how environmental issues and *ecological SD* were integrated in every subject, already contained most of the information required for receiving the *SD award*(SDA).

Slightly revised in 2006, mainly adding contributions from MP, this pedagogic plan was supplied to *SNAE* in 2006 **resulting in the SD award(SDA) in 2007**. A key-word search and close examination of that pedagogic plan not surprisingly confirms that it mainly deals with the integration of environmental issues in the curriculum. The plan – still officially valid in Aril 2009 - may therefore not necessarily reflect the many applications now actually implemented by the teachers in the new spirit of education *for SD*.

4.2.10 Status of SD context and community groups - a serious editing problem:

**Co-op**: Teachers with a similar professional background – with a more similar discourse than would otherwise be the case – now meet in curriculum-planning meetings once every month rather than every day – mainly to resolve practical issues. The larger working-teams in SP have several teachers of the same discipline but cross-talk with other programs is limited.
More surprisingly, cooperation and communication between the two branches of SP – SPEI and SPSK is also lower than it otherwise could be due to the competition for customers – the students - since these latter choose their career path first in the 2nd year. This also means that the representatives in MG could lack a common language when dealing with SD.

**SNIT:** Not only the pedagogic plan and the name of the group planning for the enforcement of SDA ("environmental school") – and ESD – need serious editing. EE, in many documents now officially transformed into SD is then seriously de-contextualized and has no natural home and no obvious arena in the school. This, of course, doesn’t prevent criteria usually related to SD in the shape of ESD to be implemented, but there is scant dialogue in the name of SD or ESD and the concept, for lack of a clear concretization could therefore be slowly fading out of daily discourse.

**Figure & Table 4-5: Macro-actor 5 - Sustainable Development as a concept (SD)**

**Macro-actor 5 : Sustainable Development as a concept (SD) - see figure above**
- Annual Report including Quality-reporting from school to local government to SNAE
- Macro-actors 1-3
- Pedagogic Development Group (PDG) – line function and its minutes
- Revised, not yet approved School policy 3 and action plan 3 document (main formal planning instrument)
- AP: Specified line-responsibility for implementing SD = assistant principal in charge of TE,MP,NV
- Teacher D, a working-team leader and teacher
- Teacher E, a social studies teacher
- Teacher C
- Globalization seminar (Teacher C participating and reporting on SD related themes)
- SDA : Sustainable development award
- SL : sustainable leadership
4.2.11 Comments – Macro-actor 5: Sustainable Development as a concept (SD):
SD by itself achieves some inscription but is far from black-boxed. Context is virtually only defined by other macro-actors. In Senior, SD therefore has a high-profile, but all actors in the network are not necessarily loyal, they may join other macro-actors. SD is a macro-actor by its many connections, but with fading features and slippery feet! This is clearly so since the macro-actors 1-4 that SD depends on the most, are capable of producing many anti-programs not related to SD. It is also noteworthy that the local government version of the Annual Report including Quality-reporting to the Swedish National Agency for Education for all the schools in the district has deleted the SDA-inscription from its Senior portion of the report.
But there is hope, SL is new and uncommitted and many actors connected are powerful (= have many connections). If SD only could find more reliable actors for context and to negotiate meaning…. Figure & Table 4-6: Macro-actor 6 - Definitions of Sustainable Development

![Diagram of Macro-actor 6: Definitions of Sustainable Development]

**Macro-actor 6 : Definitions of Sustainable Development (see figure above)**
EE-Eco: Environmental Education as education IN Ecological Sustainable Development
ESD-1: Education FOR Sustainable Development
ESD-2: Education IN Sustainable Development
OSD: Other definitions of Sustainable Development at Senior
Democracy: for Sustainable Development
AC: Action Competence to enable Sustainable Development
Brundtland: Commission definition of Sustainable Development
Resource: allocation as Economic "leg" of Sustainable Development
WE: working environment as criteria in ESA
Fire: protection and safety activities to improve WE
SO: Sustainable organization to endure a rapidly changing society
SL: Sustainable leadership to enable a more Sustainable Development
4.2.12 Comments- Macro-actor 6: Sustainable Development Definitions.
The many definitions available at Senior, depending on who you talked to or what actant or actor you interrogated are concretized by the linguistic actor 6, which in Senior has acquired enough nodes of powerful actors (= the different definitions of SD and their connections) to become a macro-actor. Actor 6 thereby provides substantial hindrance to the implementation of SD and is an anti-program that SD has to beat. This requires allies who can assist by implementing focused definitions of SD aligned with context-providers and negotiators of meaning, before the many definitions of Macro-actors 6 renders SD – meaningless.

4.2.13 Phase 4 – where we are today: Reassembling the actors to build new networks?
Eventually Adm A left Senior and MG was discontinued. As a result, with the SDA in hand without too much extra effort, there was no pronounced concern for a long time for the whereabouts of SD. Teachers often felt that they already had implemented what SDA required – before applying for SDA – and there was no strong escalation nor explicit definition of what was required by SDA to take the next step. “Requirements have been lowered tremendously for the SD award compared to the tasks stipulated to receive the Environmental School Award” (teacher A, March 27, 2009)

New themes related to the SDA examples of criteria were already implemented and there was probably only a need to document same to keep the award. SDA, due to a lack of concrete stipulations directed to an audience who apparently required such, was according to some teachers slowly killing SD, as perceived by many teachers. This together with the anti-program of macro-actor 6 – definitions of SD was taking its toll on SD:s survival. In 2009, however, SD is possibly making a come-back in the shape of sustainable leadership - SL (see e.g Hargreaves, A., Fink, D.,2008). One of the three assistant principals – AP has now become directly responsible for the implementation of SD. As we have seen, AP is also responsible for the operation of programs TE, NV and MP, the boss of all the teachers in these programs and an avid supporter of SD as a management program based on SL.

The actual implementation and furthering of the cause of SD and SDA has been moved to the Pedagogic Development Group(PDG) – a line function assembling all upper management and all working team leaders. Potentially this group is a strong enforcer of SD – it has many powerful connections – if and when enrolled. A major preoccupation of PDG has this far been PBS – a problem based school development program.
Figure & Table 4-7: Macro-actor 7 – Problem-based School Development (PBS)

Macro-actor 7 : PBS – Problem-Based School development (see figure above)
- Strong incentive from stakeholder (township initiative involving all schools)
- Many teachers, in particular social studies and media-teachers
- Teachers C and E
- PBS-competence enhancement, a community initiative
- PBS learning group for student participation
- PBS minutes of several learning groups
- Annual Report including Quality-reported by Senior via township to SNAE
- Swedish National Agency for Education (SNAE)
- For Macro-actors 2 & 4, macroactor 7 is OPP as border negotiator to some TL and WT
- The teacher working group leaders (TL), incl. AP, are all members of PDG and have final say on PBS issues
- The teacher working teams (WT) independently determine issues to work with in PBS learning groups
- Pedagogic Development Group (PDG) – line function led by AP
- Pedagogic Development Group minutes (PDG minutes) – inscriptions influenced by PBS, AP
- Approved school policy and action plan document (main formal planning instrument)
- Main stated issues in action plan (not only in document)
- Line-responsibility for implementing SD has AP (=assistant principal in charge of TE, MP, NV)
The detailed content and intent of this actor is not important says ANT – the connections it contains that could be of value for SD, however, definitely are worth counting!

PBS is macro-actor 7. – see fig. & table 4-7 below. In particular the training in PBS and the planning of the work of the cross-program based learning groups applying PBS has required a considerable amount of time. Adding to this the actual work performed in the learning groups themselves, many teachers, however, start to think that there is just too much PBS around and not enough time to deal with it! As SD is weakened by too many definitions of SD – macro-actor 6 - and maybe by too much emphasis on the connection SD = ESD = Democracy, so is PBS – macro-actor weakened but in this case by sheer exhaustion – too much of a good thing. SD – macro-actor 5, will have to compete on the same arena – PDG – as macro-actor 7, both weakened but for very different reasons. SD and ESD do not have their own forum as EE and ESA did.

Can a weakened SD eliminate a weakened PBS? PBS has been very successful as a vehicle for bringing up (and bringing in from the outside world) issues that the personnel considered to be important at the time. The basic idea of PBS is that learning should very much be related to day-to-day activities, problems identified and experiences gained from dealing with these. By reflecting together on their experiences in the learning group meetings, solutions leading to improved realization of issues and how to deal with them can be reached.

Two of these learning groups dealt with student power (student influence on curriculum and school operation decisions) – our macro-actor 2, and subject integration efforts – macro-actor 4, see fig. & table 4-2 and 4-4. These Macro-actors are certainly not without interest for furthering the cause of macro-actor 5, SD (fig. & table 4-5).

PDG has already given AP and teacher D the task (together with teacher C who didn’t have the time for it) to add SD to Senior’s official policy documents. This has resulted in the inscription of SD in the main policy document of the school – the yet unofficial new action plan 3. Even if this is merely a case of “window-dressing” – the text of the action-plan is barely changed – the intention of AP and teacher D – based on the concept of Sustainable leadership (SL) – is definitely to allow SD in the words of teacher D— “to be the raster” through which all activities of the school can be viewed (teacher D, March 25, 2009).

The next step – PDG willing – could be to merge the (modified?) EE-actor inspired pedagogic plan actor with the next generation of the action plan 3 actor.
4.2.14 Status of SD today-context and community groups–border-crossing negotiators?
As already mentioned, several departments have since 2007 implemented projects involving SD, including TE and NV. SPSK is planning one for next semester. Many more projects involving democratic or ecological issues and student power is implemented in many instances. This is good. The “raster” teacher D mentioned, however, may soon vanish due to a lack of definition and overall grounding. Editing efforts to give SD context are needed: few of those interviewed have as mentioned, provided the same definition of sustainable development verbally or in their educational material. Also, the recent inscription of SD in action plan 3 is fairly de-contextualized. The inscription is, however, certainly a definition compatible with SNAE and SDA formulations of typical ESD themes. Before a merger with the pedagogic plan has taken place, it is still not clear how SD is to be implemented. As we can see by looking at the network of macro-actor 6, figure & table 4-6, there is no lack of definitions of SD floating around in Senior. They all have their potential vehicles of implementation. The problem is, these vehicles are often incompatible. A Volvo worker seldom drives a SAAB, so macro-actor 6 is not as powerful as it may seem. On close inspection we are therefore not surprised to discover that macro-actor 6 is the only macro-actor without strong general support of other macro-actors: macro actor 1 likes one part, macro actor 2 quite another and so on. Quite obviously, defining SD is not the optimal starting point at Senior and the inscription of one of these definitions in action plan 3 will not guarantee survival. Furthermore, border-crossing actors providing meaning – a necessary condition for worthwhile and teacher-coordinated implementation – may be lacking even if a definition of SD is agreed upon. As an example, students in SD-related projects often complain that teachers cooperating in subject integrative efforts provide criteria and/or instructions that are incompatible, overlapping and/or unclear. And where are the community group borders? Traditional community groups related to professional background may have to be exchanged for the sharing of other practices and in Senior e.g. the working team groups do not seem to be able to provide an alternative. To enable successful creation of community grounded meaning therefore require new structures. This could entail a fundamental reorganization of Senior, functionally and physically, or maybe not. Dropping SD after some initial efforts with SL is of course always the option. We will leave these questions in the air until we reach the section 5, where we will propose a meeting with some of the macro-actors not yet enrolled by SD and discuss possible outcomes of such a meeting.
5. Discussion of the results

5.1 The power to enforce: Translations, contextualization & boundary work in practice

Adding Sustainable Development (SD) to the action plan – action plan 3 - is of course a notable as well as a very noticeable effort of inscription, indeed. Implementing the policy in all aspects of Senior’s operation is apparently quite another thing. Question is – what macro-actors will support this?

Teacher D is a working-team leader and an initiator of many innovative efforts, but she is not a macro-actor. She is a teacher with two natural, linguistic community groups associations. Assistant Principal (AP) was a teacher for 8 years in Senior and was also a working-team leader before becoming assistant principal. This provides AP with several potential networks in different community groups and the potential to become an important border negotiator.

Will they be joined by science teachers A&B, both having a link in common with teacher D – meaning Ap as OPP – but a weaker association to SDA? Teachers A&B are after all definitely tied to SD: “SD should be part of everyday life in school and at home” (teacher A, March 27, 2009, 10:03 a.m.). The question is, do they have the same SD-definition as an OPP for SD-related work as e.g. Ap? A potential solution to broaden the network is to enroll teacher E to provide border negotiations, since he is coming from TE joining NV- where teacher A is located. Unfortunately we have already established in section 4.3.4 that even a well agreed upon, contextualised definition of SD, given meaning e.g. by the joined forces of AP and teacher D and may-thinks also by teacher A, might still not be the right starting point.

And what engagement can we hope for from the other programs including SPSK and SPEI? They are the two largest theoretical programs and teacher C is the TL- the teacher-team leader - of one of them. Obviously a macro-actor to be successful has to be capable of creating “interessment” for the merging of implementation efforts of the different programs, which means, including SPSK and SPEI.

Upper management consisting of the three assistant principals, the principal and Senior’s treasurer (AdmA: s successor, not involved in SDA) could formulate and enforce implementations by themselves, but would then probably lose the support of many macro-actors including obviously macro-actor 6 - democracy.
This would complicate implementation for lack of vehicles – actors accepting this implementation as an OPP - and lack of border negotiators.

Sustainable development (SD) - macro-actor 5 – could, however, gain considerable power by enrolling the network of a macro-actor now competing within the arena of the Pedagogic Development Group (PDG): Macro actor 7 – the Problem-Based School Development Method (PBS). This enrolment would lead to strongly increased networks provide by macro-actors 1, 2, 3, and 4, earlier enrolled by either SD or PBS–compare fig 4-5/4-7!

The obvious question is if this is realistic. Is there an obligatory passage point (OPP) that would coerce macro-actor7 – already powerful and less pliable? Are there energy supplies macro-actor 5 could provide to make this possible? PBS is a 5 year project that was started in 2005 by the township that Senior belongs to. Thus it will end in 2010. This is a definite weakness of PBS. What will happen then? All schools in the community were involved in PBS at one point or another, less and less now. The strength of PBS is to be a major facilitator of cross-border dialogue, providing feed-back to each community group. Should it be eliminated or enrolled in 2010?

The fact that PBS was a township-initiative, in a town historically committed to enforce agenda 21, with a clear statement to that fact is, however, no guarantee that a local government-based initiative will be taken also in regards to SDA, now when the PBS initiative expires. As a matter of fact, Senior today seems to be the main actor involved in PBS in a township, which already has ceased all other major involvements with it (principal, May 17, 2009, 11 a.m.). Usually, schools anyway take all the steps independently of the township or city it belongs to. As already noted, however, SDA is not a macro-actor in the school of our study – Senior – so renewing SDA and spreading the acquisition of SDA to other parts of the community may not be a guarantee for the survival of SD as a concept at Senior. So, where are the OPP and the border negotiators needed to further the cause of SD?

The following scenario, which should not to be taken as the only possible solution, can illustrate one of many ways of applying the results found in this study:
5.2. A proposed solution for a stable and durable local implementation of SD

In the learning groups applying PBS a semblance of a common practice has been developed and will continue to be developed until 2010. Furthermore, the issues treated have been extremely varied exposing the members of the groups to a large diversity of experiences. The propensity and capability to treat new situations successfully has probably improved amongst its members. Of course this would only be a start, but:

- aligning macro-actor 2 – democracy, with macro-actor 4 – subject integration, within PBS
- would mean the possibility of applying PBS- macro-actor 7 - to a growing common discourse – that of the learning-group members
- and contextualize sustainability – macro-actor 5 - to provide it with content.

Due to the fact that these groups contain members from different disciplines, border negotiators might be found capable of then providing meaning to SD for specific community groups. And here, organizational learning is at home!

In this scenario, macro-actor 5 would become an obligatory passage point for PBS – not more financed by the community after 2010 – allowing macro-actor 7 to not only survive but eventually become the obvious form of discourse for problem-solving. Becoming a tacit house-rule at Senior, PBS could automatically be provided as a tool to formulate and inscribe strategic, de-contextualised priorities in action-plans based on experiences reached from handling everyday problems. Thus black-boxed, PBS would be stabilized and at least survive until events require reopening the black-box. Would this suffice to make sustainable development durable? The need for local inscriptions should not be forgotten. In particular routines contextualised in PBS-meetings and then inscribed in specific (program-related?) guidelines would increase stability and durability. Also, the PBS-meetings should be excellent arenas for developing border negotiators then aligning contextualised routines between community groups.
5.3 Sustainable development imbibed in every fibre of the organization?

It is a well-known fact confirmed in this study as well as in other studies with a much larger scope – see e.g. Ramböll, 2008, Skolverket, 1999 – that the success of innovative efforts in schools require the support of a large part of management. One question would be – which part, in any is the priority? Principals introducing policies with pedagogic content are not necessarily supported by a majority of the teachers. On the other hand, in this study we have seen that teachers burning for an issue – here environmental education – will not easily endure if they don’t have the ear of upper management (the environmental meeting group was only advisory with no line-responsibility). This is also a very common situation in organizations (Senge, 2006).

Ramböll (Ramböll, 2008) also confirmed that the success of SDA – the award, had been hampered by the lack of incentives and definitions on how to progress to higher levels of attainment of SD-related qualities in schools as it also has by the lack of specific instructions compared to ESA - the environmental award. These results were echoed at Senior.

Enters on the scene AP – the assistant principal – with the potential to become a (human) macro-actor due to a long history in Senior and an extensive power-network as a boss and member of several different community groups. As already noted, however, top-down enforcing of SD might still not succeed due to a weak macro-actor 6: there are too many SD-definitions added to the resistance provided by democracy – macro-actor 2.

The above-mentioned enrolment of macro-actor 7, however, might be promising. Changing the scope, it would be possible for example, to have all learning groups look at their experiences of applying not only democracy and subject-integration, but even more aspects of sustainable development – providing power to macro-actor 3, education for sustainable development - in regular PBS-based meetings. The discourse then developed would have but one common denominator – a new practice, the practice of sustainable development. Even macro-actor 6 might be able to join if one particular, de-contextualized definition such as the SL-actor (sustainable leadership) might be chosen as a springboard, having already the support of AP. Adding SL to democracy and subject-integration might then be a tenable starting point for finding context and specific meaning within the PBS leaning groups of particular working teams.
Realistic? Again, this is merely an illustration of a possible way to use tools and results provided in this study, but not quite without foundation. Inextricably linked to SD-issues, however, is the fear that here comes yet another task, another subject, for which there is no (paid!) time to prepare and unclear directions as to how to add it to the curriculum. Here teacher E speaks for many other teachers, not only at Senior: “Efforts (to incorporate SD) slow down, since SD cannot be an extra burden, there is no allocated time to organize it” (teacher E, March 27, 10:58 a.m.). One of the important reasons for the success of ESA – the environmental award was, as you may recall that the university courses were financed and the environmental audits executed during regularly scheduled (paid) time.

Sustainable development would certainly be more successfully integrated if it was clear to all that: “it is not about adding new assignments, but about designing what you usually already do in a different way” (Scherp, 2003, p24 ;). The interesting thing about that quote, however, is the fact that the source is the founder of PBS, writing about PBS… In other words, PBS just like SD, is really about handling the curriculum differently – not adding to it - and reflecting more extensively on how you work and how you think about how you think when you reflect on experiences made.

Extending the scope of the reflective work further, students could be enrolled in similar discourses in the program-councils, thus further concretizing e.g. democracy – not as a subject but as an active, working principle as required by SNAE, doubly providing an OPP for macro-actor 2 via macro-actor 5, sustainable development. Thus “Education could be more strongly orientated to developing increased meta-awareness of….the cultural practices of others”. (Scott 2004, p.44).

Such a venture might take time and will certainly require the full support of all TL: s – the often disagreeing teacher working-team leaders, since they assign tasks and issues to the learning groups and to a large extent monitor issues dealt with at the program-councils. This in turn puts the weight on PDG, the pedagogic development group, where TL: s regularly meet upper management and more pressure on the ultimate bosses – the principal and her boss, the community leadership.
The new principal – the study was made in the middle of her 2nd semester – seems to be fully aware of her role as well as that of the TL: s: “The most important organizational change is to get the leadership team to work more tightly together. Teachers are too independent, all doing their own thing” (Principal, April 1, 2009 12:08). The principal has also developed excellent contacts with leaders of the local government. There is hope.

With power wielded by the large network of Macro-actors assembled by Macro-actor SD if it can provide an obligatory passage point for the PBS Macro-actor; with the ambitions of the new leadership – represented by AP as well as the new Principal, there is still a looming question:

Where is the motivation to adopt SD? We discussed earlier, in section 3.8.3, that the approach when applying SD according to the award criteria (of SDA): “…..should be pluralistic rather than normative, allowing the student to produce his own map with paths of life to uncover in his own time”. John Öhman at the Örebro University led an investigation together with Leif Östman of the University of Uppsala in 2000/2001 of 31 schools of which 9 were senior high-schools. The objective was to determine if the education in environmental issues and sustainable development had a fact-based or normative(mostly) approach or rather was based on sustainable development issues with a more pluralistic approach and a democratic outlook(for those interested in the results, see Öhman, Östman, 2002).

In his doctoral thesis Öhman claims that: “In a traditional moralistic-philosophical framework where the alternative possibilities are either objectivism or relativism, pluralism will fall in the relativistic trap. This produces an important, critical question: how can you create a strong interest for environmental issues and sustainable development in an education where all “are” are equally true and all “should” are equally correct?” (Öhman, 2006, p.123).

A possible answer to this lies in the question posed: sustainable development for Senior may not merely be an “issue” to deal with, but rather requires a different state of mind, leading to other ways of approaching any issues and all solutions – another culture, quite simply. That would require at least (see beginning of section 2.2.5):

- The ending of controversy by the elimination of competing ideas.
- The continuous execution of an accepted translation of SD rendering it indisputable and eventually becoming an unspoken, “silent rule” – part of the new culture of all of Senior. This calls for organizational learning……
5.4 Organizational change typical of a learning organisation?

This study could indicate that one possible scenario for the successful inscription and black-boxing of sustainable development would be to develop a new practice with a common language – a new discourse for the school by using the common raster of sustainable development through which all issues would be interpreted and provided with meaning. This implies organizational learning of at least double-loop character as defined by Argyris (Argyris, 1976 in Czarniawska 2006, p 221-233) requiring a change in behaviour, made possible by new organizational norms and culture.

Or expressed by two of the seven principles of sustainable leadership – breadth and diversity (Hargreaves, 2008, p27-28): “sustainable change would be dependent on distributed leadership and would encourage diversity by promoting cohesion and networking between a rich variety of components and structure in its organization”.

The diversity of experiences related to SD acquired in the learning groups (and hopefully in the program-councils) could be a first step towards developing such a new practice via shared experiences, building up a broad repertoire of competences and opportunities for different roles. It would ensure multiple stabilizing inscriptions of SD in minutes and policy statement and other actors and a width of responses to new, unexpected situations. Our future generation as well as existing staff, might thus, at least in this school, acquire action competences to adapt to rapidly changing developments in society. The organization, its teachers and its students – our future – would be more “empower(ed) …. to draw their own conclusions in circumstances .. bound to be different from our own”. (Stables, 2001).

In fact, they would have increased their “ability to withstand and recover from stresses, such as environmental change or social, economic or political upheaval, of crucial importance for maintaining options for future human development”– they would all have become more resilient (based on definition of social resilience, Resilience center, 2009). If implemented as suggested above, it appears that Senior would indeed be imbibed by sustainable development throughout the entire organization, SD being inscribed enough to be a part of the new tacit rules with its content black-boxed, becoming “the normal way of doing things” (Latour, 1987).
6. Conclusion

It is time to consider if this study has managed to answer the questions raised in the introduction – first those related to the implementation of sustainable development, then those related to the usefulness of the method used. Finally, some possibilities for future research will be considered.

6.1 Questions related to ambition 1: distinguishing policies, official tools and actors that may together facilitate the implementation of SD in public institution such as schools.

What were some important changes in the formulation of policy that were executed to allow the local implementation of SD-issues?

A considerable amount of reformulations and different definitions related to SD and SD-policy were uncovered. In fact, enough was found to make the definition-variability itself into a macro-actor with an anti-program – macro-actor 6. As to national SD-statements based mainly on the Brundtland definition and more practical guidelines provided via ESA and later SDA – the awards from SNAE, it is clear that they were reformulated for implementation via environmental auditing and environmental education – EE as well as via democratic activities – macro-actor 2. Other reformulations actually leading to implementation had been few. Major changes in the future related to formulations based on SL have been discussed.

Why and when are certain forces and power-relations leading to the implementation of SD-related activities, whilst others are not?

These forces varied in the different phases, very much depending on the existence of potential anti-programs such as e.g. PBS taking up time and e.g. SD losing focus because of macro-actor 6 – see further in next paragraph!

Which are in this context and in this respect some major organizational factors contributing – or not - to the successful integration and continuous implementation of activities related to sustainable development?
It is clear from the analysis of this case-study that without access to as well obligatory passage points, context and border negotiators it was difficult to implement policy. During phase 1, ESA was forcefully and generally implemented but only constituted the ecological part of SD. Once the environmental audit was made there was no “next step” to take. MG led by the enthusiasm first of teachers A and B and then by Adm A, managed many inscriptions but lacked OPP:s as well as context outside of the realm of democracy. MG was not a line-function and had no natural outlet for implementation: There were therefore no OPP:s, little context and above all no particular foundation in the local community groups – with no specific meaning linked to SD.

With two important organizational changes – the establishment of PDG as a line-function and AP as responsible for SD, there were new opportunities: In section 6 the possibilities of integrating the efforts of PBS and SD were discussed, now that they had PDG as arena in common. Both macro-actors, SD and PBS, however, were found weakened (end of section 4). The rejuvenation of SD via definitions provided by SL (sustainable leadership) to AP and the pursuit of SD work within the PBS learning groups (despite the ended support from the township) were discussed as possible ways of finally being able to link SD with finality to strong OPP:s, several routes to context and specific meaning developed in the learning groups for their members to bring “home” to their respective working teams and students.

6.2 Questions related to ambition 2: demonstrate an investigative tool which uncovers factors of importance leading to the local implementation and continuous pursuit of global SD-related programs and policies

*How – using what method - can we observe and analyze the local interpretation and implementation of sustainable development policies according to this study?*

It should be clear from the results presented in section 4 and the discussions made in section 5 that the combination of ANT, SNIT and Co-oP can be used to observe local implementations of global SD-related programs

*What are some general implications of these results regarding the usefulness of this method to study the local implementation of sustainable development policies in a school?*

The method used in this study apparently provides:
- a terminology very much attuned to the organizational realities in a school. The best proof could be that it is was found to be easily understood and adopted by people working in the school-environment
- the method seems to point in an uncanny way at the actual practical problems residing in a school when introducing new concepts and trying to make them “stick” – it’s all about following actors, making them powerful, giving them context and finding local interpreters.

- *Finally, what are some general implications of these results regarding the usefulness of this method to study the local implementation of other global, strategic goals in schools as well as in other institutional organizations?*

Problems encountered do not seem to be specific for SD or for schools for that matter. Any global policy to be locally implemented in a public institution which is compatible with the translations criteria brought up in section 2.2.4 should be applicable to the method used in this study. If, on the other hand the global policy is so clearly formulated as to be directly applicable locally, the diffusion model would apply and the method illustrated in this thesis would be superfluous. In other words, global policy, requiring “local translations” to be implemented should in most cases, irrespective of who is the intended “implementer”, be successfully analyzed with the proposed combination of theoretical tools!

### 6.3 Pointing forward

Obviously, a large amount of research could be applied to a similar more detailed study of the other schools already surveyed by the author of this thesis or in a broader sense by applying a similar model to a larger amount of schools or other institutional organizations. The subject of these studies could be sustainable development or maybe other issues with a global scope requiring local adaptation and implementation. The researchers would then be provided with a forceful tool-box not only to observe and analyze all factors involved – human as well as less human – but also with a common ground in the locally very applicable terminology to express findings.

Hopefully further research, as well as in a more limited sense the present study, will allow us to take a few more steps towards a more resilient and forgiving future, where society, technology and nature is one – Bruno Latour would like that.
7. Main references.

[The author of this study is solely responsible for all translations made in the text; All papers listed below marked with * are available in Swedish in Latour (1998)]


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http://www.regeringen.se/content/1/c6/06/62/80/bf5c673c.pdf (2006-11-20)
http://www.stockholmresilience.org

all the web-site pages of the schools investigated & their community web-sites
Appendix 1: Environmental School Award (ESA) - criteria & instructions

(Version in Swedish – version in English attached to physical version of thesis).


3 § För att erhålla utmärkelsen Miljöskola krävs följande.

1. …. grundskola,….. gymnasieskola, … skall arbeta med samtliga kriterier inom områdena A och B, med tillämpliga delar av område C beroende på verksamhetsform och samt med 15 kriterier efter eget val bland de nio delområdena inom område D.


7 § För att få behålla utmärkelsen måste skolan före 3-årsperiodens utgång till Skolverket lämna dokumentation av uppnådda resultat enligt Handlingsprogram 2 samt ytterligare ett handlingsprogram (Handlingsprogram 3) med förslag till hur miljöarbetet kan förbättras inom områdena B och C, de tidigare valda kriterierna inom D samt hur skolan planerar att arbeta med ytterligare …..tio kriterier inom område D.

Bilaga : Kriterier för utmärkelsen Miljöskola

Utgångspunkten för verksamheten i Miljöskolan är skrivningarna i läroplan för förskolan (Lpfö 98), läroplan för det obligationiska skolväsendet, förskoleklassen och fritidshemmet (Lpo 94) och läroplan för de frivilliga skolformerna (Lpf 94) om värdegrunder, där det bl. a. betonas vikten av att "[…] främja akning för varje människas egenvärde och respekt för vår gemensamma miljö." I läroplanerna anges även att miljö skall vara ett av de övergripande perspektiven i undervisningen.

Kriterier har utformats inom följande områden:

A. Övergripande
B. Verksamhet
C. Arbetsmiljö och hälsoarbete
D. Fysisk miljö

A. Övergripande

Utmärkande för Miljöskolan är att barn, elever och personal är engagerade och aktiva deltagare i utvecklingen mot ett hållbart samhälle. Verksamheten i Miljöskolan karaktäriseras av delaktighet samt medvetenhet och kunskap om relationen människa - natur ur miljömässigt, socialt, etiskt, estetiskt och kulturellt perspektiv. Arbetet för Miljöskola är en i skolan ständigt pågående process.

Kriterier:

- Stöd erhålls från huvudmannen för skolan och skolans ledning.
- En kartläggning av verksamheten och dess miljöpåverkan görs.
- Ett handlingsprogram för att främja hållbar utveckling upprättas gemensamt av ledning, lärare, övrig personal och barn/elever.
- Skolan framför en viljeyttring att arbeta för att erhålla utmärkelsen Miljöskola.
- En utvädering och uppföljning av miljöarbetet görs varje år.
Appendix 1(continued)

B. Verksamhet

Med utgångspunkt i problemområden och med närmiljön som arbetsfält medverkar alla till kreativa lösningar som bidrar till utveckling av **handlingsberedskap för ekologisk hållbarhet**. Arbetet bedrivs främst i den reguljära verksamheten men andra arenor som miljöting, miljögrupp, Agenda 21-grupp och miljöråd spelar också en viktig roll.

**B1. Undervisning**
**Kriterier:**
- En plan för pedagogisk verksamhet om ekologiskt hållbar utveckling i ett lokalt och globalt perspektiv finns, tillämpas, utvärderas och revideras.
- I arbetet för hållbar utveckling integreras teori med praktisk, handlingsinriktad verksamhet både vad avser den egna skolmiljön och närsamhället.
- Barnen/eleverna har en aktiv, stark och tydlig roll i arbetet/undervisningen. De är delaktiga i planering av verksamheten och har reellt inflytande över sitt lärande.
- Miljöfrågorna integreras i teman och projektarbeten där flera ämnen/verksamheter samverkar.
- Naturstudier och andra utomhusaktiviteter ingår i verksamheten där så är möjligt.

**B2. Personalens kompetens och kompetensutveckling**

**B3. Samarbete och integration mellan verksamheter**
**Kriterier:**
- Samarbete kring miljöfrågor omfattar alla skolans personalgrupper och föräldrar där så är lämpligt.
- Miljöfrågor är integrerade i alla ämnen/verksamheter.

B4. Samverkan med det omgivande samhället

C. Arbetsmiljö och hälsoarbete
Skolan verkar för att barn/elever och personal har bra arbetsmiljö - både fysisk och psykisk - som främjar säkerhet och hälsa på såväl kort som lång sikt. Det sker inom ramen för arbetsgivarens skyldighet att arbeta med den egna arbetsmiljön integrerat i övrig verksamhet. I skolan omfattas följande grupper av arbetsmiljölägsgiftningen: elever i utbildning, lärare och övrig personal. **I arbetsmiljöarbetet skapas förutsättningar för samverkan och demokratiska arbetsformer.**
Appendix 1 (continued)

C1. Arbetsmiljö

C2. Hälso- och friskvård

D. Fysisk miljö
Skolan arbetar för en ekologiskt uthållig samhällsutveckling dvs. minskad belastning på miljön och effektiv användning av jordens resurser.
D1. Material och varor: Resursanvändningen är låg.
D2. Mat, livsmedel och kök: Maten är av god kvalitet och framställd av livsmedel som tagits fram med minsta möjliga miljöpåverkan.
D6. Luft och luftflöden
Utsläpp av ämnen i luften sker i en sådan omfattning att människans hälsa inte skadas eller naturens förmåga att ta emot och bryta ner dessa ämnen inte överskrids.
D7. Närmiljö
D8. Transporter
Transporter utförs med det transportslag som förbrukar minst energi. Fordon drivs med miljövänliga och förnybara bränslen.
D9. Byggnader
Resursförbrukningen är låg. Användning och förekomst av skadliga ämnen för miljön avvecklas och dessa ersätts med mindre skadliga ämnen.
Appendix 2: Sustainable Development Award (SDA) – criteria & instructions

The Sustainable School Award

The Sustainable School Award, as decided by the Swedish Government, is in line with the holistic approach to sustainable development, and Education for Sustainable Development (ESD). A sustainable school integrates economical and social, as well as ecological, issues in an overall perspective. The purpose of this award is also to make it possible for every pre-school, school and adult education body to become a sustainable school. The Sustainable School Award, administered by the Swedish National Agency for School Improvement, aims to support and inspire pre-schools, schools and adult education bodies in ESD.

The teaching methods in a sustainable school are characterised by

- An interdisciplinary and holistic approach
- Problem solving and critical thinking, promoting action competence
- Diverse teaching methods
- Contents stretching from past to present, and from local to global perspectives
- Participatory decision-making
- Reality based learning

The educational contents could be issues such as

- Human rights
- Gender equality
- Health
- Governance
- Climate change
- Sustainable urbanisation
- Poverty reduction
- Cultural diversity and intercultural understanding
- Natural resources
- HIV/AIDS
- Peace and human security
- Rural development
- Disaster prevention and mitigation
- Corporate responsibility and accountability

Why?

Pre-schools, schools and adult education bodies working for the Sustainable School Award will benefit from:

- An interdisciplinary and holistic perspective
- Support for systematic work with the national curriculum
- Effective co-ordination in quality development work
- Expert advice, ICT support and reference materials

The Criteria

To achieve the award, a pre-school, school or adult education body has to meet the prerequisites set by the Swedish National Agency for School Improvement. They are specified as follows:
Appendix 3: The “shopping-list”:

100 most frequent actants identified in the pre-study.

• SD – definitions
• Linguistic actants
• Components of EE and ESD in curriculum
• Meeting-groups and meetings as actants
• Working/meeting environment actants
• Major Personnel or Internal Projects/Planning groups
• Administrative/Organizational actants
• Implementation Actants
• Local context actants
• Stake-holder actants / External communications
Appendix 3: The “shopping-list” (continued)

- **Sustainable Development – Definition actants**
  - Global / International / National
  - Dept of Education / National Agency for Education
  - Official reports on schools and education related to SD
  - Local community
  - School management
  - School policy documents/working plan documents
  - Individual teacher definitions
  - Resonance group definitions
  - Integration project definitions
  - SD definitions in educational material
  - SD definition of SD-related awards
  - SD definition in competence enhancement seminars

- **Linguistic actants in the Brundtland-commission-report-definition of SD**
  - distribution of resources between the richer countries and the poor
  - the basic needs of all should be met, now and in the future
  - large reliance on economic growth to solve all problems
  - greater democracy to set limits on environmental resources used

- **Components of ESD in curriculum as actants (comparison with ESD-award)**
  - Subject integration projects
  - Teacher role (coach?)
  - Curriculum-based working method: - Pluralistic; normative ; fact-based
  - Pedagogic instruments
  - Student-power
  - Working environment
  - Democracy as a subject
  - Democracy as a working method component
  - Ethics
  - Acting competence
Appendix 3: The “shopping-list” (continued)

- **Linguistic actants in:**
  - Case-story; success-story; marketing mtrl (published on web, distributed documents etc.
  - Educational material
  - Internal Reports
  - Mandatory Reports to authorities
  - Publicly available reports
  - Successful marketing actants
  - Policy document - Linguistic actant-linkages = a numerical actant – counting amount of links of different linguistic actants

**Example: Pedagogic plan May 2004 at Senior compared to same, revised plan, dec 8 2006:**

<table>
<thead>
<tr>
<th>Term</th>
<th>2004:</th>
<th>2008:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Democracy</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Critic/critical/critically</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Influence (as in student-power)</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Sustainability (no definition)</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>(related to resource mgmt and 15 related to ecological or environment issues)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecologic/ecological</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Working environment</td>
<td>21</td>
<td>30</td>
</tr>
<tr>
<td>Environment/environmental</td>
<td>141</td>
<td>153</td>
</tr>
<tr>
<td>(excluding working environment)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3: The “shopping-list” (continued)

- **Meeting-groups and meetings as macro-actants**
  - Formal working groups (meetings):
    - APT (working-place-meeting), Samverkansgrupp (Cooperation-grp); PUG (pedagogic development group); ledningsgrupp (executive-group); programråd (program-council); lärgrupp (learning-grp);
  - school executive planning group (UBG: executive grp);
  - working-team-groups: (UBG: entire program, specific orientation)
  - curricula based groups (ämneskonferenser)
  - student body conference (elevkonferens)
  - student food-council (matråd)
  - class-council (klassråd)
  - leisure-time planning group
  - culture group
  - safety group (skyddsombud)
  - student support group
  - mentor-groups
  - special new project implementation groups (see separate heading)
  - individual employee-employer meeting

- **Working/meeting-environment actants**
  - Library
  - Personnel meeting room /coffee-room
  - Teacher working team office
  - Computer-room
  - School social meeting mixed arenas: entrance, school-yard, theatre
  - Class-room
Appendix 3: The “shopping-list” (continued)

- **Actants: Major Personnel or Internal Projects/Planning groups**
  - IT-related projects
  - Curriculum Competence enhancement courses/seminars
  - Pedagogic courses/seminars - PBS
  - ESD related courses/seminars
  - Administration/Organization related projects

- **Administrative/Organizational actants**
  - School policy documents
  - Organization chart
  - Personnel – functional and individual responsibility and work-descriptions-salary-criteria
  - Working-team responsibility and work-description
  - Hear-say policy
  - Informal cooperation groups
  - Meeting-notes
  - School Yearly Activity Plan
  - Calendar of events
  - Teacher schedule
  - Student Curriculum Schedules
  - Teacher working group base: specific subject; student class; subject-orientation/program
  - Computer Network/Software/Access Privileges
  - Curriculum or project Evaluations by colleagues, by students
Appendix 3: The “shopping-list” (continued)

- **Implementation Actants**
  - Encouragement (management, peer-group, working team, community group, students)
  - Stated formal support (management, working team, resonance group)
  - Financial support
  - Support in national and local curriculum policy documents
  - Integration in curricula
  - Integration in time-schedule
  - Appreciation of work
  - Staff or executive functional group
  - Availability of time
  - Personal condition of individual (health, family etc)

- **Macro-actor- Local context actants**

  **Local context variables:**
  - School structures for collaboration (scheduling time, personnel, funds)
  - Support for effective professional development
  - Performance standards and expectations
  - Culture of classrooms
  - Culture of schools
  - Availability and access to outside networks, resources and community services
  - Trusting and supportive climate in school
  - Ethic of caring for all members of the community
  - Relationship of policy environment to the learning community
  - The role of the local community: control or commitment strategy; efficiency or effectiveness; regulatory versus capacity-building initiatives?
  - The role of the state
  - The role of stakeholders:
    - Parents – to establish the students’ cultural and linguistic heritage
Appendix 3: The “shopping-list” (continued)

- Macro-actor- Local context actants (continued)
  - Parent participation in curriculum
  - The school as “family” for a student
  - Unions
  - Youth organizations
  - Library
  - The role of professional associations and credential institutions
  - The role of education reform network
  - Reconceptualizing & redesign efforts of leadership at all levels inside and outside school

- Stake-holder actants / External communications
  - Marketing – school
  - Marketing – community
  - Marketing – private stake-holders
  - Network and activities with: other schools, NGO’s ; community sponsored activities ; private companies
  - Financial authority - community
  - School curricula-material producers
  - ESD consultants
  - National Agency for Education (NAE): SD-award authority ; formulation and enforcement of curricula content ; school-inspection
  - Parents: daily contacts, individual meetings , weekly news, parent get-together ; parent group-meetings
  - School annual report
  - School-website / presentation of school in community web-site
  - School year-book
  - Yearly Quality report
  - School-inspection report
  - Travels , visits to/from other places with: personnel; working team , students with teachers
Appendix 4: Main SD actor-networks @ Senior- actors listed by macro-actor network

Macro-Actor 1: Environmental Education (EE)

School policy and action plan: School has a strong environmental profile with strong support in many departments.
Teacher duo, A & B: Initial and continuous efforts by two Science teachers “burning” for the environmental issue to move EE and ESA forward.
Environmental School Award (ESA)
Teacher C: A social studies teacher with strong opinions on SD.
Adm A: Administrator taking over the responsibility for implementing ESA after duo A&B.
Environment and environmental politics are today optional subjects in one of three branches of science program and mandatory in another, the latter branch called “environmental science”.
Contacts with township: Experience of environmental management systems.
Environmental monitoring (EM)
Environmental University Course (12 teachers from Senior participated).
SNAE-program: Swedish National Agency for Education funds teacher competence enhancements.
ISO 14001: the environmental auditing standard, is a model for one of the science teachers.
Environmental survey as a concept appealing to many teachers.
Environmental meeting group (MG) – staff function with no line-responsibility, produces minutes.
ES-Senior: “Environmental school” is the official name of the environmental group.
All teachers and students participating in practical portion (section D) of ESA study.
University course, survey and report of survey performed on paid, scheduled time.
Lpf94 – the national school curriculum and national curriculum goals include “environment”.
Ecologically sustainable development as concept (Eco-SD)
Library environmental shelf
ESD pedagogic plan (document)
Working environment (WE)

Macro-actor 2: Democracy in the shape of student power

Stakeholders: Very strong incentives from stakeholders (national legislation, local government, union, parents).
Active Student Involvement in Program Councils in every program dept.
Macro-actor 7, PBS - see fig 4-7, is a strong enforcer of macro-actor 2 by providing context.
Examination influence: Many teachers allowing students to influence choice of information material for a specific part of curriculum and mainly presentation formats for individual student reports/exams in that subject.
SNAE Inspection: National Inspection report made by the Swedish National Agency for Education requiring school to increase student involvement in curriculum decision-making processes.
Student council and conference.
Library directed orientations as introductions to new projects.
TL: Working team leaders for each program.
Appendix 4: Main SD actor-networks @ Senior-actors listed by macro-actor network
(continued)

Macro-actor 3: Education for Sustainable Development (ESD) in the costume of democracy

Macro-actor 2, democracy, is OPP for ESD
Social studies’ teachers teaching and making projects on the subject of democracy
Social science program – SPSK - social science branch planning ESD-project for 09/10 season
TE ESD-project
NV Ecological SD project
Concretizing ESD: Role-playing (Parliament, UN) providing action competence in democratic performance

Macro-actor 4: Subject Integration

Macro-actor 7, potential border negotiator
SPSK: Social science program – social science branch planning ESD-project for 09/10 season
TE ESD-project
NV Ecological SD project
MP-projects
Media tools (MP-department)
ESD pedagogic plan (document)
TL: Program working team leaders (with some exceptions)
AP, assistant principal, has line responsibility for the NV, MP and TE programs
Teacher C is a fervent supporter of SD, but not necessarily of macro-actor 4

Macro-actor 5: Sustainable Development as a concept (SD)

Annual Report including Quality-reporting from school to local government to SNAE
Macro-actors 1-3
Pedagogic Development Group (PDG) – line function and its minutes
Revised, not yet approved School policy 3 and action plan 3 document (main formal planning instrument)
AP: Specified line-responsibility for implementing SD = assistant principal in charge of TE, MP, NV
Teacher D, a working-team leader and teacher
Teacher E, a social studies teacher
Teacher C
Globalization seminar (Teacher C participating and reporting on SD related themes)
SDA: Sustainable development award
SL: sustainable leadership
Appendix 4: Main SD actor-networks @ Senior- actors listed by macro-actor network
(continued)

Macro-actor 6 : Definitions of Sustainable Development

**EE-Eco**: Environmental Education as education IN Ecological Sustainable Development
**ESD-1**: Education FOR Sustainable Development
**ESD-2**: Education IN Sustainable Development
**OSD**: Other definitions of Sustainable Development at Senior
**Democracy**: for Sustainable Development
**AC**: Action Competence to enable Sustainable Development
**Brundtland**: Commission definition of Sustainable Development
**Resource**: allocation as Economic "leg" of Sustainable Development
**WE**: working environment as criteria in ESA
**Fire**: protection and safety activities to improve WE
**SO**: Sustainable organization to endure a rapidly changing society
**SL**: Sustainable leadership to enable a more Sustainable Development

Macro-actor 7 : PBS – Problem-Based School development

**Stakeholder**: (township initiative involving all schools)
**Teachers**: in particular social studies and media-teachers.
**PBS-competence**: enhancement, a community initiative
**PBS learning group**: for student participation
**PBS minutes**: of several learning groups
**Annual Report**: including Quality-reported by Senior via township to SNAE
**SNAE**: Swedish National Agency for Education
**TL**: The teacher working group leaders incl. AP, all members of PDG and have final say on PBS issues
**Teacher working teams (WT)**: independently determine issues to work with in PBS learning groups
**PDG**: Pedagogic Development Group – line function led by AP
**PDG minutes**: Pedagogic Development Group minutes - inscriptions influenced by PBS, AP
**Action plan document**: inscription of formal planning instruments
**Action plan**: Main stated issues (not only document)
**AP**: assistant principal and TL for TE,MP,NV; AP has line-responsibility for implementing SD today
Appendix 5: Main SD actor-networks @ Senior- alphabetical listing of all actors.doc

AC: Action Competence to enable Sustainable Development
Action plan 3 document (main formal planning instrument) & revised, not yet approved School policy
Action plan document : inscription of formal planning instruments
Action plan Main stated issues ( not only document)
Action plan1 and School policy: School has a strong environmental profile
Adm A : Administrator taking over the responsibility for implementing ESA after duo A&B
Annual Report including Quality-reported by Senior via township to SNAE
AP : assistant principal and TL for TE,MP,NV; AP has line-responsibility for implementing SD today
AP, assistant principal, has line responsibility for the NV, MP and TE programs
AP: Specified line-responsibility for implementing SD = assistant principal in charge of TE,MP,NV
Brundtland Commission definition of Sustainable Development
Democracy for Sustainable Development
Eco-SD : Ecologically sustainable development as concept
EE-Eco: Environmental Education as education IN Ecological Sustainable Development
EM : Environmental monitoring
Environment and environmental politics mandatory in “environmental science” branch
ESA: Environmental School Award
ESD-I: Education FOR Sustainable Development
ESD-2:- Education IN Sustainable Development
ES-Senior: “Environmental school” is the official name of the environmental group
Examination influence: Teachers allowing students to influence curriculum and examination format
Fire protection and safety activities to improve WE
Globalization seminar (Teacher C participating and reporting on SD related themes)
ISO 14001, the environmental auditing standard, model for one of the science teachers
Library : has specific environmental shelf, but no specific “SD” - shelf
Library directed orientations as introductions to new projects
Lpf94 – the national school curriculum and national curriculum goals include “environment”
Macro-actor 1 – EE - environmental Education
Macro-actor 2 – Democracy
Macro-actor 3 – ESD - Education for SD
Macro-actor 4 - Subject Integration
Macro-actor 5 – SD - Sustainable Development
Macro-actor 6 - Definitions of SD
Macro-actor 7 - PBS – Problem-Based School development
Media tools (Media Program-department)
MG : Environmental meeting group– staff function with no line-responsibility, produces minutes
MP-projects - projects of media-program
NV- project – projects of science program
NV Ecological SD project
OSD : Other definitions of Sustainable Development at Senior
PBS learning group for student participation with teachers
PBS minutes of several learning groups
PBS-competence enhancement, a community initiative
PDG : Pedagogic Development Group– line function led by AP
PDG minutes : Pedagogic Development Group minutes - inscriptions influenced by PBS, TL and AP
Pedagogic plan - ESD (document)
Program Councils : Active Student Involvement in in every program dept.
Quality-reporting in Annual Report from school to local government to SNAE
Appendix 5 (continued):

Resource allocation as Economic "leg" of Sustainable Development
Role-playing (Parliament, UN) providing action competence in democratic performance
SDA : Sustainable development award
Section D : practical portion of ESA; All teachers, students participating in implementing that section of EAS
SL : Sustainable leadership actor with program to enable a more Sustainable Development
SNAE : Swedish National Agency for Education as authority
SNAE Inspection: National Inspection report made by the Swedish National Agency for Education
SNAE-program: Swedish National Agency for Education funds teacher competence enhancements
SO: Sustainable organization to endure a rapidly changing society
Social studies’ teachers teaching and making projects on the subject of democracy
SPSK: social science branch in Social science program
Stakeholder - in singular only referring to township initiative involving all schools in in the township
Stakeholders: National legislation, township, union, parents)
Student council and conference
Survey, environmental, as a concept appealing to many teachers
TE ESD-project
Teacher C : A social studies teacher with strong opinions on SD
Teacher D , a working-team leader and teacher
Teacher duo, A & B: “burning” for the environmental issue
Teacher E , a social studies teacher
Teachers, in particular social studies and media-teachers.
Time: University course, survey and report of survey performed on paid, scheduled time
TL: Working team leaders for each program
Township: Contacts with Experience of environmental management systems
University Environmental Course (12 teachers from Senior participated)
WE: working environment as criteria in ESA
WT: Teacher working teams independently determine issues to work with in PBS learning groups