

Support

Partnership and Participation For a Sustainable Tomorrow

Collaboration and Education For Sustainable Development

Katalin Czippan, Attila Varga and Faye Benedict



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Preface

Our common vision is to create a sustainable future, in which all people have adequate food, clean water, fresh air and shelter, as well as social conditions allowing them to live what we consider to be a good life. The earth's ecological support systems are able to satisfy these basic needs for all people if we have the will to use resources wisely and to share and distribute them in solidarity.

We have knowledge about these earth systems and how they can be used sustainably; the challenge is to use that knowledge. Morals and belief systems will ultimately determine whether equitable political and economic systems can be developed.

The school system is a key arena involving many people. Developing high quality education for sustainable development (ESD) in schools can contribute to the ultimate aim of global sustainable development.

This book is one product of the EU Comenius network project "SUPPORT: Partnership and Participation for a Sustainable Tomorrow." We have called the program "Partnership and Participation for a Sustainable Tomorrow" because partnership and participation are key elements to be used by schools in educating future citizens for sustainability. The SUPPORT network involves 31 professional partners from 14 countries who have worked together on Education for Sustainable Development (ESD) from 2007-2010. SUPPORT aims to improve our understanding of how to strengthen the capacity of schools to develop the knowledge, skills and attitudes their pupils will need as active and responsible citizens, to create a sustainable future.

The SUPPORT project focuses on the idea of *partnership* at international, national, community and school levels. Partnership requires cooperation skills. Collaboration in ESD has proven to be challenging for schools, both in terms of the school's internal dynamics and in terms of the school's ability to cooperate with external partners. It is also a challenge for various sectors in society, both locally and nationally. Cooperation is essential for sustainable development, so learning to cooperate should be a core part of education for a sustainable future.

A second great challenge in ESD is to inspire and motivate people to *participate* in society and to recognize changes that may be necessary. The teaching of schools subjects becomes more concrete and relevant when teachers and the students participate in society and interact with businesses, industry working life, the arts, cultural life and others in the local community. We have seen that this approach can increase the pupils' ability and desire to engage themselves and to learn.

The learning process is slow. Grasping the many dimensions and interconnections in nature and between nature, society, and economics is demanding. Awareness of and knowledge about these interconnections underlies pupils' ability to understand and take a stand on sustainability issues, and to evolve their own personal values and norms. Learning all these things is not easy. It takes years of hard work, experience and reflection to perceive and understand ecological, social and economic systems, their components, dynamics and interactions.

The bottom line is that we need to change traditions in school education. If schools begin to work more with actors outside of the school they will learn that this approach can

greatly benefit both schools and the external partners. Collaboration will stimulate school development. Evaluations have shown that school development requires continuous support, motivation, attentiveness and encouragement. Schools and teachers need to feel ownership and create education locally. Projects should start small and simple, to avoid teacher's enthusiasm from "burning out." It is also important that development projects are "mainstreamed" as part of the mission of the school, its curriculum, and everyday school life and culture.

Three of the SUPPORT network partners, Katalin Czippan, Attila Varga and Faye Benedict, were given the task of drafting and editing this book based on a set of case studies of school-community collaboration in ESD collected by the entire SUPPORT consortium. The SUPPORT partners were also involved in reflection and discussion and gave many forms of input to the book.

A lead author was designated for each chapter. Attila Varga sets the stage for ESD collaboration in Chapter 1. Katalin Czippan compiled and edited the cases of school practice in the accompanying CD-rom and analyses the findings in Chapter 3. Faye Benedict outlines key concepts of collaboration in Chapter 2, the final section of Chapter 3, and Appendices 3 and 4. All 3 editors and the members of the SUPPORT consortium contributed to the final chapter summarizing lessons learned and ideas for implementation of ESD collaboration.

We hope that the SUPPORT project and this book, although only one small contribution, can be useful and inspirational to school partners, school authorities, principals, teachers, and not least pupils - in their search for new ways to promote a more sustainable tomorrow through education.

December 15, 2010

Astrid Sandås
SUPPORT Coordinator
Norwegian Directorate of Education and Training

Introduction

This book is about education for sustainable development (widely known as ESD) focussing on one particular aspect which we call ESD collaboration.

We propose the following working definition of ESD collaboration:

ESD-collaboration is a shared effort by schools and one or more partners in society to achieve the educational goals of ESD, promote school development and contribute to sustainable development.

In other words, collaborative ESD merges the three perspectives of society, pupil and school: sustainable development in society, pedagogical development for improved learning by pupils, and organisational development for better schools (see Figure I).

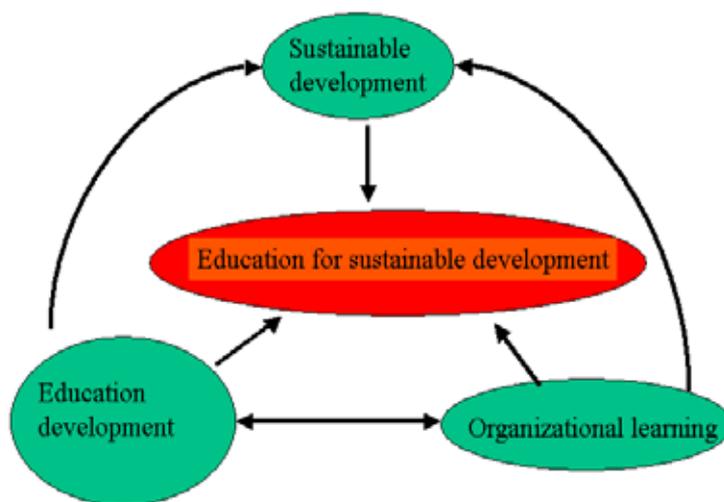


Figure I. Collaborative ESD merges the perspectives of sustainable development, pedagogical development and school development.

Thus we see that ESD collaboration can promote development on three fronts: achieving the complex learning goals of the school curriculum, strengthening the role and position of schools in society, and improving the capacity of society as a whole for sustainable development.

ESD collaboration brings the school and its pupils out into society and brings society into the school. We believe this is one of the most direct routes to achieving the educational goals of ESD: preparing young people for their role as citizens concerned with sustainable development in their families, communities and workplaces. Through collaboration, we expect that young people will develop the kinds of understanding, skills and attitudes which will enable them to participate actively and constructively in change processes in society.

Rather than teaching about sustainability issues in an abstract way in the classroom, ESD collaboration creates a framework for schools and pupils to do concrete work for sustainable development in a real life context. *Schools and pupils become a resource for the community and the community becomes a resource for the school.*

Pupils and schools work on topics of concern in the local community. Pupils develop an understanding of the complexity of sustainability issues, including economic, ecological and societal dimensions. They learn to carry on a constructive dialogue with people having different viewpoints, thus sharpening their communication and cooperation skills. Not least, they become aware that they have a voice in democracy and can make a positive contribution toward creating a better future.

The publication “Quality criteria for ESD schools”¹ from 2005 proposes a set of quality criteria to guide the development of high quality ESD in schools. The first two criteria are quality of teaching and learning processes and integration into school policy and organisation. The third set of criteria relate to the school’s external relations.

The authors describe the school’s ESD external relations in two broad categories: “community cooperation” and “networking and partnerships.” The first refers to learning situated in the local community in contact with local actors, in which the school might ultimately become a local centre for sustainable development. The second is dynamic networking and partnership relationships in which mutual learning occurs. Examples of networking and partnership include cooperation among schools to exchange experience, between schools and NGOs or GOs, between schools and various bodies working for education for sustainable development, and finally between schools and international partners.

In the middle of the UN Decade on ESD, although much has been accomplished it is evident that ESD has clearly not yet reached its full potential². At this junction, collaborative approaches are being embraced and recommended as a key methodology in ESD because they *create societal arenas in which effective learning processes for ESD can be designed*. The following are some examples of recently heightened awareness of the importance of collaboration and active participation in ESD.

The Gothenberg Recommendations on ESD of 2008³ state:

“Participation and involvement are necessary components of ESD, with an emphasis on empowerment and agency for active citizenship, human rights and societal change. Reorientation is necessary at all levels and in all phases of education, and encompasses community learning, thus making ESD a wider process challenging the form and purpose of education itself.”

The midterm review of the United Nations Decade for ESD⁴ points to the effectiveness of ESD collaboration to expand the range, quality and effectiveness of ESD. The review says:

“Capacity-building in multi-stakeholder social learning and the facilitating and strengthening of networking between schools, educational institutions/organizations

1 Breiting, S. Mayer, M. and Mogensen, F. 2005. Quality Criteria for ESD schools: guidelines to enhance the quality of Education for Sustainable Development”. Published by the Austrian Federal Ministry of Education and Culture.

2 Wals, Arjen. 2009. A mid-DESD review: key findings and ways forward. Journal of Education for Sustainable Development. 2009(3): 195-204.

3 Ottosson, Pernille and Bo Samuelsson. 2008. Gothenburg Recommendations on ESD. Centre for Environment and Sustainability, Chalmers University of Technology.

4 Wals, A., op.cit.

and other potential partners in ESD at a local, national and international level, appears crucial”.

The Bonn declaration⁵ (2009) includes the following main policy recommendation to achieve the goals of the United Nations Decade for ESD:

“Re-orient education and training systems to address sustainability concerns through coherent policies at national and local levels. Develop and implement ESD policies through co-ordinated inter-sectoral/inter-ministerial approaches that also involve business and the corporate sector, civil society, local communities and the scientific community.”

The OECD project “Innovative Learning Environments” revolves around the idea of creating innovative arenas for learning through collaboration. The project is founded on a review of pedagogical research on experiential learning approaches, learning processes and outcomes. “Situated learning” and “service learning” refers to learning in collaboration with actors in the community.

Billing and Furco⁶ defines service learning, which is enjoying rapidly increasing popularity, as “an experiential learning pedagogy in which education is delivered by engaging students in community service that is integrated with an organized school curriculum. Service-learning is premised on providing students with contextualized learning experiences that are based on authentic, real-time situations in their communities.” Service-learning, even though it lacks the sustainability dimension, is pedagogically speaking a very close relative of ESD collaboration.

The objective of this book was to collect and analyze case studies of current practice of collaboration between school and society in ESD, and then using these cases reflect on and make recommendations about how the best ways to construct and manage these kinds of school external relations in ESD. We focus on committed and sustained kinds of collaboration rather than simpler one-way flows or sharing of information of resources and information, even though there seem to be many more examples of the latter in schools today.

Collaborative methods and sharing of responsibility are quite challenging for schools and their collaborators. A first and essential step is therefore to develop a clear idea of the reasons and justification for adopting these methods. Ultimately, it is the results of the collaboration that matter most: the learning processes and the benefits accruing to the various actors involved in the cooperation.

This book is written for anyone interested in entering into a partnership or collaboration for dynamic and effective ESD. The editors hope it can be a first step toward a better understanding of what collaboration in ESD is all about, and to finding your own answers to questions such as:

Why should we collaborate in ESD?

What are we aiming to achieve, seen from the point of view of schools, pupils and their collaborating partners?

How does a collaborative way of working in ESD complement school development work

5 World Conference on ESD. 2009. Bonn Declaration. German Commission for UNESCO.

6 Billing, S.H. and A. Furco (eds.). 2001. Service-learning: the essence of pedagogy. Greenwich, CT. Information Age Publishing.

and contribute to the school becoming a dynamic learning organisation?
What should we watch out for, what are the pitfalls?
How can we ensure that our collaboration is sustainable?

This booklet is just a starting point. As the editors and the SUPPORT network examined and worked with the material, we realized the pivotal importance and great potential of ESD collaboration between schools and society. Many aspects of ESD collaboration deserve much more work and elucidation, but were beyond the scope and time frame of this introductory booklet. For example:

- cultural factors impacting collaboration as a methodology
- educational policy and intersectoral cooperation to promote ESD collaboration
- specific pupil competencies developed by pupils through collaboration, and how they can be evaluated
- teacher competencies needed for collaboration, and how to ensure them in pre-service and in-service training
- school engagement in society as an integrated part of school development
- the need for additional practical tools or handbooks for schools, teachers and partners in ESD collaboration
- organisation of collaboration networks on a larger scale, for example using ICT and social media.

The SUPPORT network therefore sends the relay pin on to all ESD practitioners and researchers! We ask you to engage openly with the idea of school collaboration with society, and to take your reflections one step further on any part that catches your particular interest, as you gain experience with this fascinating educational approach of the future.



Chapter 1. Optimistic, constructive ESD

This chapter presents the context and rationale for schools to collaborate with communities and research institutions as a core method in Education for Sustainable Development (ESD).

When schools operate as independent and isolated institutions, they propagate the very same fragmentation of sectors which characterizes unsustainable development in society as a whole. When, on the other hand, schools engage and collaborate with various actors in the environment of which they are a part, the work of schools gains new meaning and status.

Collaboration in ESD means that schools and pupils engage with real life issues and become participants in change processes in several arenas. The schools change their own mission and working methods. The pupils' education and outcomes are changed. Finally, the collaboration may catalyse change in society as a whole. In other words, there are three essential arguments for collaboration in ESD: it contributes to school development; pupil learning and sustainable development in society (see Figure 1).

We hardly need to review the ways in which the world society today is unsustainable. We are the first generation to realise that humankind itself may be the main threat for future life on earth. The earth's resources are finite; human society cannot continue to grow and expropriate resources at the current rate. Loss of soil, pollution, loss of biodiversity, changes in climate and other kinds of ecological degradation can reduce the potential for human life on earth permanently. Social and economic sustainability issues are equally disturbing and threatening. Poverty, hunger, disease, injustice and conflict persist, despite generations of effort to resolve these problems. Education systems and schools are legitimate institutions reaching all future citizens in virtually all societies. Schools therefore have the potential to play a crucial role in the transformation of society in the direction of sustainability.

Optimistic ESD

The key question is: What should the children learn to be equipped to deal with an uncertain future? The main messages of ESD could easily become depressive, focussing on problems rather than on hope and solutions for a good life and better future on earth. ESD is difficult to grasp. Our children need to learn that the way we live is dangerous to life itself. We do not have clear answers about how to face and deal with these threats constructively. Many issues and problems may be quite clear, but the solutions and routes to sustainability are not.

The children need to learn that even though the answers may not be obvious, solutions can be found by working and learning together constructively and optimistically. The work of ESD is then transformed from a depressing message of gloom to an inspiring opportunity for hope. The pupils learn that they – indeed, every person – can make an important contribution to a better future for all!

Schools, then, need to re-examine the objectives of the education they offer in light of sustainability. New kinds of learning arenas and –methods can be designed to better achieve the desired learning outcomes. UNESCO defines the learning aims and main characteristics of ESD as follows in the Framework for the United Nations Decade for ESD⁷:

7 UNESCO. 2009. Framework for the UN DESD International Implementation Scheme. UNESCO, Paris.

“Education for sustainable development will aim to demonstrate the following features

- Interdisciplinary and holistic: learning for sustainable development embedded in the whole curriculum, not as a separate subject*
- Values-driven: it is critical that the assumed norms – the shared values and principles underpinning sustainable development – are made explicit so that that can be examined, debated, tested and applied;*
- Critical thinking and problem solving: leading to confidence in addressing the dilemmas and challenges of sustainable development;*
- Multi-method: word, art, drama, debate, experience... different pedagogies which model the processes. Teaching that is geared simply to passing on knowledge should be recast into an approach in which teachers and learners work together to acquire knowledge and play a role in shaping the environment of their educational institutions;*
- Participatory decision-making: learners participate in decisions on how they are to learn;*
- Applicability: the learning experiences offered are integrated in day to day personal and professional life.*
- Locally relevant: addressing local as well as global issues, and using the language(s) which learners most commonly use. Concepts of sustainable development must be carefully expressed in other languages – languages and cultures say things differently, and each language has creative ways of expressing new concepts.”*
- On one level, education for sustainable development aims to help pupils understand the systems of nature, economics and society in which they live and the complex interactions among these systems. But ESD goes further and develops the pupils’ understanding of change at many levels: personal, community and society as a whole. Finally, the pupils develop a sense of self; their value and role as a responsible and active citizen. Collaboration with society is an appropriate method to develop all of these competencies.*

ESD-related activities should preferably be initiated by pupils, and they should also be encouraged to help plan and steer the activities. The activities are then more likely to be meaningful and motivating. Pupils are normally open and ready to learn if they are convinced that what they are doing serves their own interest and the needs of the world. They will focus on learning for the joy of understanding and contributing to society. Further motivation and excitement can be created by recognizing and honouring positive contributions by presenting the work of the pupils, schools and collaborators in the media and locally.

Starting from a moralistic standpoint (the teacher stating what people need to do, rules for environmentally friendly behaviour, etc.) is less apt to be successful in engaging the pupils. It may not even necessary to introduce the activity as environmental or sustainability-related; this will emerge as the work proceeds.

Teachers, then, need to create learning environments in which the talents and potentials of pupils unfold, and they are welcomed as members and “co-creators” in their society. Pupils should be given the space and opportunity to express their own needs and interests in the context of such interactive learning arenas.

Education for sustainability should be positive education. Rather than overemphasize problems, educators need to facilitate learning about sustainable solutions and speak the language of opportunities and potentials. ESD does not ask teenagers to save the earth. It invites them to participate in a captivating and rewarding learning process in which the

activities contribute to their personality development and are also beneficial for earth and humankind.

A recent body of research in the field of human happiness reinforces this way of thinking about ESD. A “flow in happiness” comes from contributing to the welfare of the planet and humankind and sustainability through one’s work and activities. One becomes less concerned with oneself, and steps into a larger field of concern and awareness. Conversely, there is some evidence that materialistic people are less happy and healthy than those with a purpose in life related to sustaining life (Kasser⁸).

The phenomenon of flow as described Mihály Csikszentmihályi⁹ has also been reported by schools and pupils engaged in collaborative ESD. For example, in the Austrian case reported here the teacher wrote: “For the teacher the criteria for the success were the engagement of the students, their commitment to work on the project also during their free time, that they could not stop working in the evening, and that an amazing team spirit arose.” In its most successful form, collaborative ESD could help pupils in their search for a happy and rewarding life.

Schools that are open to society

There are other reasons as well for schools to seek out new and more active roles in society. Media, internet and private tutoring are taking over the monopoly on knowledge transmission once enjoyed by the school system¹⁰. The mission of schools today needs to expand and go beyond child day care, literacy training, and reproduction of skills required by industrialized society.

A need for an ecological- or sustainability literacy is emerging; why not make our schools the flagships of this new literacy? This new mission is quite different from the original literacy and knowledge reproduction mission of schools. Literacy for sustainable development is not simply transmitted knowledge extracted from the experiences of older generations. Rather, it is a continuous process of developing new knowledge and understanding through active participation by stakeholders.

Taking on this new mission requires schools to become open institutions in continuous development and interaction with their social environment rather than isolated enclaves. An open and collaborating school has many implications for teacher education, school management, examinations, evaluation and funding systems. Structures and processes for support and evaluation need to be adjusted or evolve to be coherent with the new mission.

Many people might think that societal change should begin with changing schools so that future generation will be equipped to run a sustainable society better than the past generations. However, the education system alone cannot (and it is not reasonable to expect it to) bear the responsibility for society’s transitional to sustainability alone. Educators cannot change the rules of economics; politicians have to do that. Educators cannot find more efficient renewable energy sources; scientists have to do that. Educators cannot run environmentally and socially responsible businesses; business people have to do that. Change is needed in all sectors of society (economy, politics, community life and so on).

8 Kasser, T. 2002. The high price of materialism. MIT Press, Cambridge, MA.

9 Csikszentmihályi, Mihály. 1993. The evolving self: a psychology for the third millennium. New York, Harper Perennial.

10 OECD. Schooling for Tomorrow programme.

Pupils will be stepping out into this world. They will need experience and competence based on reality, not theory, utopias or “sand castles” that might never survive in the real world.

Science education

“...from Gödel's incompleteness theorem to Kuhn's model of paradigms: however full and detailed our seeing or describing the world may be, it is never complete, never exhaustive, and above all, never entirely predictable. There will always be something to be added, more to be said, a different way of interpreting it by those who come after.”

Expectations towards science are much higher than what science can fulfil. Science will never explain everything, cure all disease, or solve all problems of humankind. A disappointed public might turn away from science, attracted by belief sets that promise to explain the world completely and without doubt.

For some reason, much science education today is often based on transmission of knowledge, when it could take advantage of the excitement of the inquiry process and an open-ended quest for understanding using scientific methods and logical analysis. Science textbooks rarely challenge “prevailing truths” or present alternative explanations. Textbooks and teachers rarely explain to pupils that most science is based a models of reality and does represent an irrefutable truth. Science education rarely focuses on current unsolved scientific problems and challenges. Because education so often fails to convey the real nature of science, pupils often experience science education as boring or unchallenging.

In addition, scientists and scientific institutions may often be distant and uninvolved in local issues and the needs and concerns of communities. Even though science lies behind the fulfilment of many basic needs such as shelter, food and medical care, science remains a closed profession and a tool for economic growth to many people. Culturally conditioned attitudes have been shown to strongly influence pupils' attitudes toward science and science education. For example, the ROSE project² demonstrated that pupils in less developed countries are interested in science because they feel that technology can contribute to solving their problems by immunizing children against disease, putting up a solar panel or supplying water by new methods.

Obviously there are acute local problems everywhere which science could help solve. In the Austrian example in this book, a nearby research institution cooperated with schools to map the local spreading of ticks and tick borne disease. The pupils gained a much stronger appreciation of how science can contribute and be useful. At the same time, they were intellectually challenged to do research and be creative, and they also became more aware of their own community and its various actors.

11 Prickett, Stephen. 2002. Narrative, religion and science: Fundamentalism versus irony, 1700-1999. Port Chester, NY, USA: Cambridge University Press.

12 Sjøberg, Svein and Camilla Schreiner. 2006. How do learners in different cultures relate to science and technology? Results and perspectives from the project ROSE (Relevance of Science Education). APFSLT: Asia-Pacific Forum on Science Learning and Teaching.

Communities and sustainability

In our globalized world, it may not seem necessary for people to be part of a local community, even though historically the community has had an ancient role in survival. Individuals have stronger ties to the global society, and may survive well without belonging to any smaller communities. This modern trend from communities to individuals has several effects on people's thinking about sustainability. First, people's time perspective is shortened. The connection between generations (past, present and future) is weakened and individuals are concerned mostly about their own life span and their children's. Second, people are isolated in space and it becomes easier to tolerate other people's suffering. They are psychologically far away; they are not present in our own immediate community any more.

Even local communities seem to be less coherent today than they were a few decades ago, community is more important than ever in terms of developing a sustainable society. Communities could be considered the basic units of sustainability. Each community has its own visible profile of resources, population, economy, and social structures¹³. Each community decides its own pattern of resource exploitation and -management, its own culture and norms, and regulatory mechanisms for exercising control. Communities are also linked together with each other and to the greater society.

As an educational arena for ESD collaboration, the local community is ideal. On the one hand it is a microcosm that realistically reflects the complexity of sustainability issues in society as a whole. On the other hand, it is small enough that pupils have access to it and can easily cooperate and interact with important actors. Pupils can investigate, analyze, question, evaluate alternative solutions and influence the community where they live. This is one place in the world where they have the full right to participate as citizens. They have a voice.

School-community-research cooperation

Involving pupils in real science projects focusing on the local environment in their local communities is an excellent way for pupils to learn how science and research actually work. This can help close the gap that too often exists between schools and their communities, and between schools and research institutions.

Local management agencies and research institutions are constrained by resources and it is beyond their capacity to monitor developments in every local community continuously or answer any scientific questions that arise. Collaboration with schools can multiply the capacity of research institutes. Schools can make valuable scientific observations as part of their regular educational work. Research institutes can contribute by providing scientific methods simple enough for schools to use, but at the same time reliable enough to be useful for scientists and managers in their work. Teachers and/or pupils also need training to use these methods. The collaborating institutions can also contribute up to day and in-depth knowledge of the issues at hand, given their extensive local experience and/or research activities.

In this ideal school-community-research collaboration, schools gain a practical purpose for their science education, while local communities gain access to scientific capacity to be applied to local issues and in the longer term, an engaged citizenry. Research institutes get a wider public presence and the valuable data generated by schools. Each stakeholder

¹³ Schumacher, E.F. 1973. Peace and permanence. In: *Small is Beautiful*. Harper and Row, New York.

has their role and benefits, and they each contribute in a particular way to sustainable development. But they do it *together* with their fellow collaborators.

The whole school approach

To be sustainable as an educational development, ESD has to be legitimate and embedded in the educational system. This has several implications that the schools and teachers involved should reflect on and plan. One needs to think about the time frame, the school's mission statement and how the ESD work will support the curriculum. Cooperation across subjects may be challenging for teachers, a new way of working requiring competence-building. Teachers will also need certain competencies in terms of knowing how to collaborate well with actors outside the school. How is ESD integrated in the way the school assesses learning outcomes and evaluation of the school itself? Resources may be needed to allow pupils to come out into the community and do research. Incentives for teachers may be necessary and reasonable, to motivate them to apply themselves, build competence and get involve in challenging issues in the life of the local community. Teachers have several critical roles, both as the bridge between schools and communities, the counsellor for pupils' project work, and role models of active and responsible citizenship.

Over time, school-research-community collaboration can be expected to increase the status and trust of the school among the residents in the community. They will see that the school can play a central role in the life of community, not just as storehouse of static knowledge to be transmitted, but as a kind of competence centre, which can be a resource for the community. The schools can help develop and realize a vision for the future of the community.

To be strong and sustainable over time, a school's ESD efforts should be reflected in the very culture and mission of the school. The "hidden curriculum" of the school (the behaviour of the teachers and staff, school management and operations, etc.) should embrace the search for sustainability. Developing consensus about the idea of sustainability could be part of the school's development agenda or discussions of school identity. In a "whole school approach" to ESD, the idea of striving for sustainability would consistently permeate the culture and mission of the school.¹⁴

Does this mean that if the school can't be run in sustainable way, it should not teach about ESD at all? No. There will always be shortfalls and challenges. What is important is the decision to strive for sustainability both in the school's operations and in teaching, and the capacity for reflection and improvement. Schools could think of ESD as a development process over time. In this approach, evaluation of the development process can provide a benchmark. For example, quality criteria¹⁵ could be used to assess progress according to the school's own quality goals rather than expectations from outside or standardized test scores.

14 For more about the whole-school approach see Hargreaves, L.G. 2008. The whole-school approach to education for sustainable development: From pilot projects to systemic change. In: Policy and practice: A Development Education Review issue 6, spring 2008.

15 Breiting, S., M. Mayer and F. Mogensen. 2005. Quality criteria for ESD schools: School development through environmental education (SEED). ENSI, Vienna.

Schools as learning organisations for ESD

Given that there is no one recipe to realize sustainable development and given the rate of change in the world today, it would be futile to try to develop a school model which would serve all schools in the foreseeable future. Schools have a double challenge. First, they need to encourage, facilitate the development of their pupils' knowledge, skills and competencies so that they can participate actively in sustainable development in their communities. Second, they need to develop their own capacity to transform their educational practices continuously. In other words, schools themselves, not just their pupils, have to be able to learn.

Learning inevitably includes interaction with the environment. Thus, the learning done by a social organization like a school is dependent on how it interacts and collaborates with its environment. We could view school-community-research collaboration as a tool for schools to develop as learning organizations. Conversely, a learning organization approach can serve the collaboration between schools, communities and research.

The theory of learning schools is well described, for example in Peter Senge's book "Schools that Learn."¹⁶ Here Senge applies a learning organisation approach¹⁷ to schools. Below we review the five disciplines for learning organizations which can be applied also for learning schools, quoting first Senge's definition of each disciplines (Schools that Learn p.7) and then adding some comments of our own about how the discipline relates to ESD learning and school development for ESD.

1. Personal Mastery

"Personal mastery is the practice of articulating a coherent image of your personal vision – the results you most want to create in your life – alongside a realistic assessment of the current reality of your life today. This produces a kind of innate tension that, when cultivated, can expand your capacity to make better choices and to achieve more of the results that you have chosen."

Comment: Personal mastery skills are often mentioned in case studies of ESD collected here. This kind of skill applies at several levels: not only to the personal mastery and self-management skills of the pupils, but also of the teachers, the school as an organisation in growth, and the collaborators.

2. Shared Vision

"This collective discipline establishes a focus on mutual purpose. People with a common purpose (e.g., the teachers, administrators, and staff in a school) can learn to nourish a sense of commitment in a group or organization by developing shared images of the future they seek to create and the principles and guiding practices by which they hope to get there. A school or community that hopes to live by learning needs a common shared vision process."

Comment:

The cases discussed later in this book provide several good examples of how schools collaborating with others in ESD can develop a shared vision together with their collaborators, but also internally in the school itself. This is a complex issue as the stakeholders will as

¹⁶ Senge, Peter. 2000. Schools that Learn. A Fifth Discipline fieldbook for educators, parents and everyone who cares about education. N. Brealy, London.

¹⁷ Senge, Peter. 1993. The Fifth Discipline: Art and practice of the learning organisation. Random House Business Books, London.

a rule have their own visions about schools, pupils, and their own role. In one case study from Germany the reporter states: "In the past there was no connection between the school and the local community because the local community has no responsibility for school, the school is a regional school with responsibility by the regional Government. The local Major even doesn't know where the school was situated in his city. The local authorities are now open for cooperation with schools. This is the outcome of a long-term work of the school, which offers their possibility to make students based research with and for the community, such like research about local rivers and small lakes, studies on public traffic and invited the local authorities to come to the school for presentation of the results of student's research."

3. Mental Models

"This discipline of reflection and inquiry skills is focused around developing awareness off attitude and perceptions – your own and those of others around you. Working with mental models can also help you more clearly and honestly define current reality. Since most mental models in education are often "undiscussable" and hidden from view, one of the critical acts for a learning school is to develop the capability to talk safely and productively about dangerous discomfiting subjects."

Comment: Perhaps the greatest challenge of ESD is to change the mental models which have led to unsustainable development, and evolve new models that are more suitable. In particular, we need to change our mental models about the interconnectedness of ecology-economy-society, and rethink the role of humankind in nature.

4. Team learning

"This is a discipline of group interaction. Through such techniques as dialogue and skilful discussion, small groups of people transforms their collective thinking, learning to mobilize their energies an actions to achieve common goals and drawing forth an intelligence and ability greater than sum of individual members' talents. Team learning can be fostered inside classroom, between parents and teacher, among members of the community, and in the "pilot groups" that pursue successful school change."

Comment: In many of the school cases collected in this booklet, team learning is clearly taking place and the co-operators are open to learning from each other in an ESD collaboration. In some cases, however, the strength of the team learning may be questioned. One of the partners might appear to be most interested in realizing their own agenda. In most countries, teachers have tended to work alone with little real cooperation with their colleagues, feedback and discussion. It should not be surprising that many collaboration projects also follow this tradition of individual and independent work. Team learning is a skill that needs to be practiced and learned, both within each school and between the school and its partners in society.

5. System Thinking

"In this discipline, people learn to better understand interdependency and change and shape the consequences of their actions. System thinking is based on a growing body of theory about the behaviour of feedback and complexity – the innate tendencies of a system that lead to growth diagrams, system archetypes and various types if learning labs and simulations help students gain a broader and deeper understanding of the subject of study. System thinking is a powerful practice for finding the leverage needed to get the most constructive change."

Comment:

Systems thinking is the “mother” of the notion of sustainability and therefore also ESD. System thinking elements are clearly present in virtually all school cases of ESD in terms of the complex sustainability topics being studied. There is a tendency, however, to focus on one kind of system (social, economic or ecological) rather than all three together. In some few cases, a system thinking approach was also applied to school development work. The systems thinking discipline could potentially be applied on the policy level to transform the education system as a whole, including policy formation, into a learning community working for continuous change and improvement in education¹⁸.

Mutual advantages of school collaboration in ESD

Successful ESD should be positioned in the intersection of sustainable development, organizational learning in schools and pedagogical development (see Figure 1). The result is improved learning by pupils, school development and societal progress toward sustainable development. This constellation of goals which reinforce each other can best be achieved by bringing the school and its pupils out of the school to collaborate seriously with their community and with research institutions on sustainability issues.

We suggest the following advantages of a collaborative approach from the point of view of didactics and pedagogy. Collaboration can:

- ensure that one is covering the economy-ecology and society sides of a complex issue by getting diverse input to the learning and investigation process
- ensure that diverse views and value standpoints are taken into consideration regarding complex sustainability issues
- provide a “sparring partner” for learning-rich discussion and debate
- ensure reality based investigation rather than models
- ensure high level of serious interest and engagement by pupils
- ensure high quality of information and methods
- provide a channel for the results of pupils’ work to be communicated and used by society
- provide a partner to recognize, value and use the work of the pupils toward sustainability actions
- Give an arena in which pupils and schools are taken seriously and given recognition for contributing to solving real world issues.

18 Fullan, M. 2004. Leadership and sustainability: Systems thinkers in action. Corwin Press.

Chapter 2. Concepts of collaboration in ESD

Collaboration of schools with local community and research in the pursuit of high quality ESD stimulates learning on all sides of the collaboration. In this chapter we will first take a closer look at various results that can be expected from the collaborative approach - for pupils, schools and society. We then clarify basic concepts about the structure and functioning of collaboration for ESD between the school and various actors in society.

Expected outcomes of ESD collaboration

New kinds of learning outcomes

Better educational outcomes for pupils are the most fundamental reason and motivation for schools to frame ESD projects in collaboration. Thus, the main focus of an ESD collaboration from the school's point of view will always be the learning outcomes for the pupils. There are several grounds for believing that the learning outcomes of a collaborative approach would be different than ordinary classroom teaching, although little pedagogical research has been done on this question.

In an ESD collaboration, pupils are active and take to at least some degree of responsibility and control of the learning process. This develops independence and initiative. Working with complex issues and diverse viewpoints together with others develops critical thinking, understanding of systems, and communication skills. Pupils develop the ability to understand and weigh alternative "mental models" and views on issues. When pupils participate in debate and research about real sustainability issues, and receive feedback about their work, they become more confident and willing to take an active citizen role in society. A wide range of learning outcomes is promoted by a collaborative approach.

Inclusion and social cohesion

Sustainability issues in the local community affect the quality of life of everyone living there. For this reason, ESD collaboration can engage all pupils in a school and all citizens in a community regardless of social status, belief, ethnic background, etc. It is ironic that environmental education has sometimes been described as a "middle class phenomenon," most well-developed in "elite schools" with abundant resources and high teacher competence.

Our school cases show that collaboration as a method in ESD is not elitist, but rather the opposite. Collaboration appears to be particularly well-suited to engaging a wide diversity of pupils and actors. It promotes social cohesion and a shared identity among the pupils and staff of the school and in the local community. In several of the cases, disadvantaged pupils are said to be particularly receptive to the collaboration approach and working in the community. It is almost as though the collaboration creates a different constellation of actors and activities than existing, negative patterns of social interaction. New patterns of positive interaction and dialogue can defuse social discord and unite diverse actors in shared goals and constructive activities.

Understanding the complexity of sustainability

Environmental education and natural science education have traditionally focused on the natural world. Sustainability education focuses on the interaction of the natural world with the human world of society and economics. Sustainability studies can start with a focus on either the ecological dimension (natural science), peoples' culture and quality of

life (society) or development (economy). Regardless of what the starting point is, a local sustainability issue will almost always naturally evolve into a wider interdisciplinary issue as the studies proceed.

Collaboration and concrete work in the local community strongly promote learning about the complexity of sustainability issues, because in the real world the stakeholders and the issue itself *are* complex. Collaboration puts pupils into direct contact with the depth and ramifications of the issue, and with the diverse viewpoints of stakeholders.

A stimulus to school development

Collaboration challenges schools to work in new ways and thus challenges teachers and school leaders to review, reflect on, revise and improve their current teaching practices. The challenge also applies to revision of critical framework factors such as the school's educational mission, organisation, relationship to the local community, resource allocation, curriculum and evaluation. Thus, ESD collaborations can be instrumental to school development processes lasting several years. Several of the case studies illustrate this relationship between school development processes and ESD collaboration.

Schools become a resource for society

As mentioned in Chapter I, one main reason to collaborate is that it brings schools into society as a resource for sustainable development work. Clearly, schools are motivated by the educational outcomes of this method. It might be surprising to realize that the collaborators may also be strongly motivated by the educational results. Collaboration for ESD “produces” enlightened, engaged and competent citizens. Yet another benefit is the concrete sustainability results achieved.

Can pupils and schools do work that is of high enough quality to actually be useful to society? Of course they can! The quality of the pupils' work and its usefulness will be greater if the work is framed in a collaboration with the institutions that will receive and use the results. For example, pupils collecting scientific data on pollutants, species, energy use or other topics, can use methods developed or approved by scientists who can then vouch for the validity and representativity of the data. Quality assurance and opportunities for pupils to generate data that can be directly used by society are strong arguments for ESD collaboration. Research organisations and society at large stand to benefit from the large amounts of up-to-date and relevant information that can be produced through collaboration with schools.

Other kinds of results and products can also be very useful and contribute to sustainable development. For example, local communities will benefit from activities such as preservation of cultural heritage, actions to improve quality of life or informational activities.

Pupils' ideas and opinions about local issues also have high innate value to the local community. When pupils formulate and communicate their ideas and opinions about sustainability issues, they are giving citizen input from the growing youth segment of the population to government, organisations, parents or others. Youths' opinions have an impact on the mind-frame and priorities of decision-makers. Thus, the school takes on a new role in addition to its educational mission. The school contributes directly in and to society, and becomes a resource for sustainable development. At the same time, the status of the school increases.

More on pupil learning outcomes

We have stated that a key reason for collaborating is that it can catalyze new kinds of learning taking place on several levels: pupil, school, collaborator, society. The outcomes include sustainable development results for the collaborator and society, wide learning outcomes for pupils, and school development. The OECD project “Innovative Learning Environments” (ILE)¹⁹ has examined the pedagogical impact of such learning environments and reviews research supporting the thesis that innovative learning arenas in society lead to diverse and strengthened learning outcomes for the participants.

Collaboration ensures immersion in the complexity of an issue at hand, a relevant issue in one’s own community. Pupils are learning directly from the realities of the issue, rather than a simplified or theoretical textbook version. The economic, societal and ecological dimensions and their interactions are evident and included, as well as the diverse perspectives various people may have on the issue and the uncertainty of its solution.

The very complexity of sustainability issues is a strong reason for pupils to learn about them in reality-based learning environments. Giorgio Bertini says: „Global climate change can serve as a prototype of a sustainability problem, one which is characterized by a high degree of complexity, expressed by a strong interrelationship between ecological, social and economic dimensions, which have important consequences for future generations; furthermore there is the uncertainty about the routes that should be followed to find a solution”²⁰.

Martin Sharman²¹ uses the term “wicked problem” to describe biodiversity issues. By this he means that the issue is poorly understood and resists clear definition. Wicked issues, he says, cannot be understood solved by a traditional analytical approach or by setting simplified goals. Such problems have no solutions short of developing what Sharman calls “a better understanding of how to establish and sustain a balanced relationship between humans and the rest of the world.” Sharman argues that the essence of sustainable development is understanding of (and our *capacity* to understand) the complexity of sustainability issues and alternative solutions.

Thus, sustainability issues require more than disciplinary mastery and a transmissive approach to education. We talk about construction of knowledge. This kind of approach stands in contrast to a linear, reductionist approach, which seems inadequate in the face of complex “wicked” issues. Collaboration challenges teachers, schools, pupils and their collaborators to adopt a view of knowledge and learning which is inquisitive, investigative, open, self-steered and self-motivated.

The competencies being promoted in ESD are thus wider than traditional disciplinary competencies. We talk about cognitive competencies (knowledge and understanding), skills and abilities, and also values and attitudes.

The *CO₂nnect* school campaign, organised by the SUPPORT consortium in 2009, exemplifies how wide ESD competencies can be developed through collaboration. 400 schools, 30.000

19 OECD. 2008. Innovating to learn, learning to innovate. OECD Centre for Educational Research and Innovation. Paris.

20 Giorgio Bertini, Sustainable Development and Education for Sustainable Development; SCRIBD, 27.II.09, p.2

21 Sharman, Martin. 2009. The wicked problem of biodiversity. Targets or sustainability – that is the question.

pupils and 1100 staff from 30 countries participated and reported on their school learning activities using the internet. Guidelines and help sheets on the website encouraged teachers and pupils to collaborate in their local community on climate- and transport issues.

Following the long tradition of United Nations work on environment education starting in the 1970's, learning outcomes in ESD are often categorized as knowledge and understanding, skills, awareness and attitudes. These concepts work well in a school context and can be easily linked to learning goals in the formal curriculum.

The SUPPORT partners who created CO₂nnect formulated the following “intended learning outcomes” for pupils participating in CO₂nnect:

Understanding of the interconnected mobility- and climate change issue

- Climate change, its causes and consequences
- greenhouse-gas emissions from transport and mobility
- the interlinking of social, environmental, cultural and economic aspects of the local transport system
- how individual choices and participation can contribute to creating a more sustainable development

Skills and abilities

- actively participate in local democratic processes
- interact with local decision-makers
- collaborate with researchers and generate reliable information
- create innovative proposals and suggest alternatives for a more sustainable society
- use ICT and the internet interactively for partnership and data analysis
- act and think autonomously

Awareness

- sensitivity to and awareness of the effect of transport on climate change and the sustainability issues raised by climate change
- awareness that each person has a role in climate change, including CO₂ emissions from transport

Attitudes and values

- develop concern about the climate change issue, its causes and impacts
- develop motivation to participate in decision-making for a more sustainable society
- realize that they have opportunities to help create a more sustainable society, both as individuals and through common actions

After completing the local ESD projects and activities using the CO₂nnect website and database, 207 teachers then completed an online evaluation. The evaluation included both a description of the collaboration with local community, and the teacher's assessment of the degree to which each of the learning goals stated above was achieved through their project work. CO₂nnect provides a fascinating and unique body of data about the learning outcomes associated with a collaborative approach.

The results of the teachers' online evaluation of CO₂nnect are presented in detail in a report to the EU about CO₂nnect²². Teachers reported that opportunities to collaborate

22 Benedict, F. 2010. Innovation and instruments for education for sustainable development: Evaluation of

(both using the internet and in the local community) were highly motivating for pupils. They registered a high level of attainment of the “intended learning outcomes” for the pupils and a surprisingly high level of concrete sustainability impacts in the local community. Schools and teachers also became more interested in pedagogical innovation after the experience.

Most interestingly of all, the learning outcomes for pupils and schools, as reported by the teachers, *was consistently correlated with the intensity of collaboration* between the school and actors outside the school. Outcomes in some areas related to skills, abilities, personal attitudes and values were particularly responsive to collaboration.

Patterns of ESD collaboration

In the introduction to this booklet we proposed the following general definition of ESD-collaboration:

“A shared effort by schools and one or more partners in society to achieve the educational goals of ESD, promote school development and contribute to sustainable development”.

Here we will look more closely at the nature of the interactions and the shared effort between the school and society. We present some concepts and terms that are commonly used when talking about collaborative relationships, and also discuss common obstacles to collaboration.

Terms and concepts

“Interaction” and “relationship” are neutral terms used to describe all kinds of contact between actors in which there is an impact on one or both of the actors. Many more specific terms and concepts exist to describe in more detail these interactions and relationships, which have been so important for humans throughout history. In everyday usage, many of these terms imprecise.

In Appendix 3 we suggest how some of these terms about relationships between two actors can be interpreted in the context of ESD.

- At the highest level of collaboration we can talk about true partnership, collaboration and cooperation. The partners actually share goals and responsibilities.
- At the second level of intensity the collaboration is less committal, but the partners nevertheless shared commitment to the work and they receive benefits.
- The third level of collaboration is not really collaboration in an ideal sense, but rather a one-way communication or utilization of another actor for one’s own purposes.

The degree of *shared commitment, motivation and responsibility* by each party may vary greatly from case to case. The degree of *reciprocity and mutual benefit* may also vary. Some interactions are more or less one-way, benefitting one of the partners much more than the other. Other collaborations enjoy a greater spirit of commitment, shared mission and mutual benefit.

The *initiator* of some projects was the school as a whole or a single teacher; others were initiated by somebody outside the school, such as school authorities, an NGO, or a research institution.

the international school campaign CO₂nnect. Norwegian Directorate of Education, Oslo.

Structures for organising, steering and evaluating the collaborative effort could be arranged in many different ways as well.

The *role of coordinator* may be critical for success. This person is responsible for ensuring smooth implementation and should understand the perspectives of all collaborators. The coordinator may be a member of the school, the collaborating organisation, or both. If the coordinator is outside the school, the school should delegate a counterpart who works closely with the coordinator.

The *planning phase* appeared to be of pivotal importance to the implementation and sustainability of the collaboration. See Chapter 3 for a discussion of the importance of the planning phase and Appendix 4 for an overview of issues to be clarified when planning a school-society collaboration.

Obstacles and constraints

Studies of school collaborations with research institutions (so-called “REC”s - Research Education Cooperation) have shown that such cooperation can improve science education and promote the learning outcomes of ESD. A review of 190 cases of school-research cooperation in the FORM-IT project²³ on research-education cooperation provided abundant evidence of positive learning experiences. Interestingly, many obstacles were also identified: lack of resources (time, money), lack of long term financial support, necessity of devoting one’s free time to the effort, lack of support for promotion and public relations, and lack of appreciation.

A workshop on school-research collaboration in the field of biodiversity was organised by the SUPPORT network in Germany in 2009²⁴. The participants, teachers and researchers reviewed their experiences with such cooperation in biodiversity education as part of ESD. Their comments agreed well with the barriers identified by the FORM-IT network.

The biodiversity workshop identified many obstacles to school-research collaboration: structure of schools and curricula with little space for biodiversity education and ESD, pressure on teachers’ time and energy, scientists’ lack of pedagogical training, low level of support by policy, teachers’ lack of confidence, scientists’ requirement of formal recognition, lack of resources (money/materials/time), low competence in use of ICT, teachers’ hesitancy to go into nature, English language barriers for teachers, the challenge of understanding complex interactions, the challenge of handling differing value systems (for example about what to protect), poor collaboration with families and bureaucracy.

While it is important to recognize that there are many obstacles along the way, the participants at the biodiversity workshop also proposed some innovative ways to overcome these barriers. For example, one could create a system for teachers to find experts, change the reward system for experts, request time and resources for support, improve project management and -coordination, identify key people responsible for the collaboration, and offer training in English language and ICT.

23 Kyburz-Graber, Regula. 2009. Images of research and education cooperation in Europe. Article in Conference Proceedings, Bridging the Gap between Research and Science Education. ...

24 Ulbricht, K., J. Settele and F. Benedict (eds.). 2010. Biodiversity Education for Sustainable Development – Reflection on School-Research Cooperation. Pensoft Publishers, Sofia-Moscow.

Project planning and sustainable collaboration

How could teachers, schools and their collaborators avoid the many pitfalls in the landscape of collaboration and create successful and lasting partnerships within existing constraints of the school and education system more generally?

The importance of the planning phase can hardly be overemphasized. Many misunderstandings can be prevented if the collaborators-to-be sit down together at the very start of the collaboration and openly discuss the nature of their interaction, their motives for working together, and the outcomes they hope and expect to achieve. Pupils should be involved as main actors representing the school during the planning process.

During the dialogue that preceded the actual project work, the collaborators get to know each other. The roles and activities of each partner are clarified. The collaborative project becomes embedded in the everyday work and goals of the partners, ensuring “legitimacy” and a clear mandate for the work. Rather than being an add-on activity driven by a few enthusiasts, the collaboration becomes an essential part of the core activities of the partners. This means integration in school curriculum in the case of the school, and integration in organisational mission and strategy, in the case of partners outside the school. “Mainstreaming” of the collaboration can help ensure adequate allocation of resources, a long term perspective, and strong ownership and participation.

The future collaborators must above all agree on a common mission and a set of shared goals and activities for which they are willing to share responsibility. Thorough discussion when planning the collaboration helps ensure that the parties truly understand each other, know what is expected of them and have realistic expectations for the results. All of these factors increase the likelihood that the cooperation will be robust and sustainable.

Olsen (1996) recommends what he calls “the long and the short route,” in which preparation for a school development activity is given considerably more time and effort than its implementation. A relatively long planning period gives time and opportunities to involve all of the participants, clarify the goals and purpose of the development project, define roles and responsibilities, specify a framework of time and resources, and set up norms or structures for communication and decision-making.

In “the short and the long route” on the other hand, little time is spent planning and one quickly progresses to a longer action phase. The “short-long” approach is not recommended for cooperative projects. The actors are less apt to be fully motivated and will also be less prepared for new kinds of expectations and the roles they will play in the collaboration. Appendix 4 suggests some central questions and issues that should be addressed and clarified when planning a collaboration.

Chapter 3. School practice of collaboration in ESD

In this chapter we analyse and reflect on the 17 selected case studies of ESD school-society collaboration collected by the SUPPORT partners. For more detailed a description of each case, please see the appended CD-rom. The cases are from schools in Hungary, Germany, Romania, UK (England and Wales), The Netherlands, Belgium, Denmark, Austria, Finland, Switzerland, Norway, the United States and Malaysia.

The template used to collect the case studies is shown in Appendix I. Case authors were asked to describe the primary actors of the collaboration (the school, the community, the research organisation), the main aspects of the collaboration, success factors, key learning points and added value to education that could be attributed to the collaboration.

Profile of schools and pupils

A common notion exists that only so-called “elite” schools involve themselves in ESD. Our survey shows a very different picture. Contrary to the prevailing dogma, our review shows that ESD collaboration is suitable for all kinds of pupils, ages and school types and communities. It may even be *particularly* suitable for disadvantaged schools or communities as it promotes inclusion and common identity, and may diffuse social discord by uniting people and organisations in an effort for the common good. Collaboration clearly “works” in diverse educational settings and can be used in a wide range of academic subjects.

The 17 cases include examples from all age groups: 9 primary school, 5 secondary schools, 1 combined primary and secondary school, 1 upper secondary and 1 special needs school. Two projects involved collaboration between two or more schools.

Most of the schools were located in middle-class neighbourhoods, but there were exceptions. Pupils in one case (USA) lived in poverty and depended on the school for nutrition and safety. In another case (Switzerland) the social environment was polarized:

“The main group of pupils are children of immigrants, who live in an area with older flats, cut off by the highway and socially not well integrated with the residents from the other side of the quarter. The second group lives on a hill on the other side of the traffic line and generally has a much better social status and background.”

Many of the schools were representative of public schooling and were not specialized. We also see examples from well-developed ESD demonstration schools and eco-schools, and one well-equipped boarding school specialising in agriculture, biology and genetic engineering. Some schools were specialized in the natural sciences and history, while others focused on humanities, the arts, or other fields.

Three schools (Hungary-1, Hungary-2, Belgium) were situated in rural areas; the rest were in urban locations. Small and large cities were almost equally represented. The urban schools may dominate because their work was more “visible” and accessible to the SUPPORT partners, or possibly because collaboration itself is easier in an urban setting.

Profile of sustainability issues

While sustainability issues by their very nature must weave together ecological, economic and social dimensions of a topic, our cases show that the topics chosen by schools often focus on one of these dimensions. As the work proceeds, it almost inevitably widens and encompasses the other dimensions as well. Understanding the reasons for environmental problems and finding solutions requires an understanding of society as well as a range of communication and participation skills.

Almost half of the cases focused on environmental issues, for example:

- Planning and transforming the school buildings to low-energy buildings (UK-England)
- Planning and implementing actions to reduce CO₂ emission by recycling paper, reducing car-traffic in school transport and planting trees (Malaysia)
- Valuing ecosystem services and natural capital and using it for the benefit of the local community (Hungary-2).
- Water quality and history of a river, creation and implementation of a revitalisation plan (Germany-1).
- Nitrate-pollution in drinking-water well's and on the education of the public to prevent it (Romania-2).
- A computer simulation about conserving an ecosystem (Germany-2).
- practical tools and knowledge on climate change and sustainability (Denmark)-

Three cases focused on the social situation of the schools' surrounding community:

- Developing social skills and understanding the role of different age groups in the society by producing a play together with a home for seniors (Switzerland).
- Developing safe and environmentally friendly transport of children to school. in cooperation with parents and the community (Belgium).
- The position of woman in science (Romania-1).

While none of the projects focused primarily on economic issues, economical aspects were incorporated when economic aspects of community problems. In some cases learning arenas were developed in cooperation with companies; in others, pupils developed small enterprises.

Examples of partner organisations

A very spectrum of collaborating organisations were involved in the case studies (see table). The most common kind of collaborator was local community organisations.

Type of collaborator	Comments and examples
Local community organisation	These could include other educational institutions, civic forums, official/governing bodies, parents of pupils, the media, non-government organisations and many other kinds of actors. Specific examples from the cases included kindergartens, lower grade schools, local media, the municipality, the local council, the local police, fire brigades, non-profit organisations, clubs, a home for the elderly, environmental organizations, a fishing club, a women's association.
Local business (or local branch of national or international business),	Examples from the cases included waste collection and management companies (Norway), local hotels and local bakery (UK-Wales), construction companies (UK-England) and a local subsidiary of a multinational department store (Norway).
Governmental/ national organisation or agency	In addition to, or instead of local partners we also find regional and national governmental organisations and agencies, funding organisations and programmes. One example from the cases is environmental education funding organisations (Germany and the UK cases).
International organisation or -network	Schools may join international networks of schools or organisations working with environment or sustainability education. Examples of such networks are the CO ₂ nnect and SUPPORT network.
Research organisation	Universities are foremost among research institutes in school-research collaborations. Education, environment and natural science departments often collaborate with schools, and we have examples of other kinds of research organisations as well. Examples from the cases: universities (Austria, Denmark, Finland, Germany-I, Hungary-I, etc.), science groups (UK-Wales), conservation-education centres (USA).

Shared vision and goals

Some of the school-community collaborations in the cases were centred around the establishment of the collaboration; in others the collaboration was viewed as a means or tool to reach the goals of the school's education programmes. Both approaches can lead to effective collaboration. However, one should take care to remember that establishing a collaborative arrangement, by itself, can never be an educational goal. It is the learning arenas, activities and dialogue created by the collaboration and the reflections to the experiences which produce educational results. Thus, a collaboration will always be a tool for learning and a subordinate goal, rather than overall objective of a school or project.

The crucial importance of developing a shared vision and a shared set of educational

objectives among the partners in an ESD collaboration was discussed in Chapter 1. The following are some examples of stated pedagogical goals and learning outcomes, taken from the cases:

- increasing the level of understanding about ecosystem services and climate change
- pupil participation in research
- developing active citizenship
- developing critical thinking and the ability to work in teams
- improving presentation skills
- taking ownership of and responsibility for the project and its products.

Our case study methodology asked in general terms about the dialogue between the partners, the objectives of the partnership and the participation of pupils. With few exceptions, the partners had discussed and agreed the goals they wanted to achieve for pupils and for the participating institutions. However, little detail was provided by the authors about the time line and nature of the dialogue with their partners. The issue of how to create a set of shared objectives and activities needs to be explored in more detail in future studies, as the “meeting of minds” during project preparation does indeed appear to be pivotal for the dynamics and results of the collaboration.

The process of setting goals is sometimes dominated by the institution initiating the collaboration. Schools may be invited by institutions to collaborate on implementation of existing projects, in which the goals have already been set. Conversely, schools often set their own education targets in line with the curriculum, and then looked for collaboration partners who could help them realize them. Neither of these courses is particularly favourable for creating a balanced collaboration in which all of the partners, including pupils, have a hand in creating the project, its goals and activities.

A well functioning collaboration based on mutual understanding and shared objectives seems more likely when the project develops from a whole-school development perspective, as in the following examples:

- a goal was to involve all members of the school community (pupils, teaching staff, assistants, administration, cleaning personnel and parents) (Norway)
- a goal was to involve of the outside stakeholders beside the citizens of the school (Hungary-1)
- the City School Board aimed to improve the status of a “poor district” school by developing teacher and pupil competencies, developing collaboration and making school operations more sustainable (USA).

Who were the initiators and Facilitators?

The initiative to start a collaboration can be taken by a school, by the community, by a research organisation, or any combination of these.

About half of our cases were initiated by schools. The person or group of people representing the school can be virtually anyone: headmasters, teachers, teams of teachers, staff members, school volunteers or parents. The idea of the collaboration may also originate from the pupils themselves. Here are some examples:

- At a school in Wals. a moth project was initiated by the headmaster, a school garden by the dinner supervisor, and a chicken farm by from pupils.
- Schools also initiated collaborations in Austria, Finland, Germany-1, Hungary-1, Norway, Romania-1 and Romania-2.

Projects may also be initiated by communities or their institutions. Such collaborations often benefit from a high level of legitimacy and support from the school owner. Interim organisations such as educational NGOs or a research facility may be engaged on behalf of the municipality, as in the cases from Switzerland, The Netherlands and the USA. In Switzerland a theatre consultant was engaged, and in The Netherlands an USA NGO-s was involved

Almost third of the case studies were initiated by a research organisation, typically a university (Denmark, Malaysia and UK-England) or research organisation (Germany-2 and Hungary-2). The partner often provides essential scientific or other competence needed to fulfil the educational goals of the project, while at the same time fulfilling their own outreach mission.

When the school and community have traditionally worked together, new collaborations often arise spontaneously and jointly. This situation may become more common in the future as more schools and communities gain experience.

- In Belgium a school and the parents' organisation jointly initiated the project.

More complex (often unique) situations arise when people "wear two hats" and are therefore especially well placed to start a joint initiative or see how the missions of two organisations can serve one another. In one example, a school teacher doing their PhD study and a university researcher had worked together in an NGO and started a collaboration project in that context.

Ideally, the school's partners recognize that working with the community can help them achieve their own goals

- Aa municipality called in collaborators to help them improve educational quality and increase appreciation of their schools (USA).

Personal motivation, or a combination of personal and institutional motivation, may play a strong role throughout the project, for example:

- A headmaster took a training course at a Nature Conservation Centre, became interested in conservation and initiated a school project (UK-Wales)
- Teachers' PhD studies were fuelled by their participation in an international network working with ESD centred school development (Finland)

The role of facilitator or coordinator in the later stages of project implementation may remain with the initiator or shift to one of the other partners. In many cases the project developed step by step, involving all partners and with shared responsibility for implementation. It is nevertheless important to clarify who is responsible for coordinating the collaboration, facilitating the work through effective communication, and calling attention to any corrective actions that might be needed.

From simplicity to complexity, and vice versa

The case studies demonstrate how the innate complexity of sustainable development and ESD can be handled. Interestingly, it seems to work to begin with a complex overview and proceed to simpler elements of the issue, or to begin with one aspect and let the issue evolve into its full complexity.

The following schools started with a complex issue and then broke it down into smaller, simpler project:

- An ESD centred school development was based on comprehensive “Four C model”: Curriculum, Connections, Campus Ecology, and Collaboration. Smaller projects were then spun off to support these themes (USA).
- Related to the comprehensive issue of reducing CO₂ in the atmosphere to mitigate climate change, the school constructed four simpler projects: recycling paper, planting trees, reducing use of cars to school, and raising community awareness (Malaysia).

In other cases the schools begins with a simple project and this eventually leads to a more complex ESD program.

- At one school several teachers began working with research organisations but within their individual subjects and without cooperating with each other. Later, they related all of these various efforts to a common topic, holistic management of rivers in the region. (Germany-1).
- Pupils began by collecting water samples to monitor water quality. The project grew organically. Later they interviewed residents and presented their findings publicly to raise local awareness of the issue (Romania-2).

Examples of pupil activities

As we can see from the following examples of pupil activities taken from the case studies, there are almost unlimited possibilities for pupils to carry out activities together with collaborators outside the school:

- developing a play together with elderly people
- interviewing people, parents about traffic and gender issues
- developing and distributing maps, brochures and bookmarks
- informing the public about infected ticks or on nitrate pollution in drinking water and its link to the human behaviour
- taking part in project evaluation and feedback
- writing letters or making inquiries to mayors and other municipality authorities and leaders

Several case study authors remarked that pupils were most engaged and appreciative of the learning activities when they had been actively involved in planning and developing them. We can also see from many of the cases that pupils are indeed able to generate topics for research, direct their own work on concrete activities and take on the role of problem solver. It is important that the pupils feel that they own the process. To enable these new kinds of pupil responsibility, teachers must be flexible, empathic and patient. Teacher then becomes more of a coach or helper than a source of knowledge to be transmitted.

Many examples can be found in which pupils develop collaboration and communication skills leading to concrete contributions to sustainable development:

- After some preparations by researchers, pupils made proposals for design elements and practices to be used in renovation of their school to achieve a low-carbon emission profile (UK-England).
- After consulting with experts, pupils organized and supervised an environmentally friendly waste management system in their school (Norway).
- Pupils gave feedback about the environmental curriculum to teachers in training who had taught them (Hungary-1).
- Pupils contributed to local food self-sufficiency by raising vegetables and chickens (UK-Wales).
- Pupils influenced the local municipality to install speed limit signs around the

- school (USA).
- Pupils presented community development proposals to the municipal council. Their proposals for renovation of the main square were accepted.
- Pupils succeeded in raising local awareness of drinking water quality and its relationship to their own activities (Romania-2).
- Pupils researched a river and proposed a river development concept to the local and regional government (Germany-1).

The contribution of collaborating partners could be fundamental to the sustainable development work of pupils:

- the collaborators brought advanced knowledge to the schools to inform activities such as design of low-energy schools (UK-England) and monitoring of tick infection (Austria)
- The collaborators introduced new learning practises such as scientific research (many cases), digital models of ecosystems (Germany-2), theatre (Switzerland), art (Denmark), narrative storytelling (Finland).

Examples of benefits to pupils

Is it possible to identify from the cases specific pupil competencies that can be attributed to working in collaboration? Case study authors pointed out that collaboration stimulates the ability to listen, understand, reflect, share, exchange and evaluate. Pupils become more active, conscious and prepared members of the school and the local community. Skills in using computers, communication, presentation and modelling are also indirectly promoted by collaboration. Several authors mentioned that pupils learned how to carry out a project.

Pupils became motivated if they felt that the results of their work was useful and contributed to improving the life of their school or community:

- exciting work with a theatre project motivated pupils for school work in general, and they were more successful in their examinations (Switzerland)
- children came home and brought up the topics of energy use and waste, changing family practices (Norway)
- after interviewing researchers, pupils became motivated to study harder (Romania-2).

Pupils respond very positively when they realize that they can put their knowledge into practice for the benefit of the people and the environment. It is also significant to pupils that both the teachers, officials and members of the local community take their opinions seriously.

In several cases the author remarked that the project brought about changes in the class and individual pupils. They underwent a personal development and increased their feeling of worth. This was especially true for disadvantaged pupils and schools. In a collaboration, pupils learn to behave well and in return, that they can expect to be treated like responsible citizens with full rights to participate.

Collaboration activities often “bring the children out of their shells,” raises their self-esteem and can change their personal habits.

- In the Switzerland case, one pupil suffered from selective autism, but began to communicate more widely after the theatre project.
- A second pupil in the Switzerland case, a 10 year old immigrant from Sri Lanka,

began to learn German language seriously and developed higher self-esteem.

- A third pupil in the Switzerland case was socially excluded in his class, but after taking a strong role in the theatre project the mobbing stopped and he was accepted.

Examples of benefits to schools and teachers

In some cases the whole class's behaviour was reported to have changed and became less problematic. The teachers' work became easier and teachers became motivated and received positive feedback. Teachers became proud of their work – some for the first time. The teachers' status increased among colleagues and outside the school.

- One teacher felt strongly empowered and motivated, stating "It is a kind of burn-out prevention" (Switzerland).
- Another teacher said, "I've never worked so hard before in my life, but it has been so worth it" (USA).

When coupled to whole-school development and action research, ESD collaborations were reported to lead to improved teaching, school operations, organisation and administration structures. Changes were made in rules for teachers, communication processes and decision-making. New relationships were established both between the school and community, and inside the school.

Four cases illustrate how schools can begin to reorient their whole educational practice and operations to become ESD schools:

- One school transformed to become an ESD demonstration school for education of a new generation of sustainable thinkers (Norway).
- A school did action research with the goal of developing eco-schools and improving teacher training for environmental educators (Hungary-I).
- Whole-school development of ESD was achieved using an action research approach (Finland).
- A school was transformed into a "Sustainability Academy" (USA).

Reflection and evaluation are especially important in the whole-school approach. In most of the case studies presented here, the educational aims, project goals and collaboration processes were evaluated by the participants.

In many of the case studies successful collaborations were said to greatly improve the school's reputation and status in the local community:

- A mayor did not even know where the school was located in his city, but after the ESD project the local authorities were open to stronger cooperation with schools (Germany-I).
- City council members got involved and they now facilitate new partners and sponsors for schools. The community takes pride in and is more involved in school life. School attendance has improved (Hungary-I)
- The educational inspectorate has decided to support the future environmental education activities (Romania)
- Funding and other opportunities possibilities have improved, including renovation of the school traffic environment, to be funded by the Flemish Government (Belgium) The profile of school support staff has improved due to their involvement with a food production project (UK-Wales).

Examples of benefits to partners and society

Collaborations bring valuable benefits not only to pupils and schools, but also to the partners and society at large. It contributes by creating sustainable solutions, promoting active participation and -citizenship. We offer the following examples from the case studies of this kind of outcome:

- Citizens understood better the connection between agricultural practices and groundwater pollution (Romania-2).
- Architects and builders got information about the special needs of education environments and pupils (UK-England).
- A research institute learned about how to work with schools in the future (Hungary-2).

“Mainstreaming” For a sustainable collaboration

We may ask critically whether the collaborations in our case studies were sustainable and mainstreamed into the regular work of the school. How many pupils from the schools participated in the case studies, and how were the programmes and projects built into the educational practices of the school?

The number of pupils participating ranged from just a few pupils to teams involving all pupils in a class, a grade, several classes or the whole school. The activities could be a purely school activity, and extracurricular activity, or a combination. Projects could be clearly integrated and linked to the school’s teaching programmes, or developed as an “extra” school project.

Generally speaking, stronger results seem to be achieved when the collaboration and the ESD work are incorporated from the very start into school programmes, with the intention of supporting existing institutional school goals. We found cases in which the collaboration and ESD projects were integrated into everyday school work and the curriculum from the start, and other projects that started in isolation but became increasingly integrated and mainstreamed into the normal work of the school.

- The ESD project and collaboration with a research institution were founded on a point in the curriculum requiring pupils to take part in research projects, as well as the expectation that pupils dedicate some free time to extracurricular work (Austria)
- The school board decided that the “Rich practical tasks” program could support the school curriculum. Traditional project work was reoriented towards working on real tasks for the society. The school eventually decided to extend this method for all pupils at the school (The Netherlands)
- The experience of developing texts and playing theatre was so positive that it was adopted as a general method for teaching language (Switzerland)
- Many teachers became interested in environmental issues and all classes participated in the CO₂nnect project (Romania)
- Activities preparing the pupils for safe bicycle traffic were built into the curriculum of all classes according to age level (Belgium).

Supportive conditions For ESD collaboration

While many excellent examples of ESD collaboration can be found, as illustrated by the case studies here, much of this is done by inspired individuals, groups of individuals and organisations - rather than as a systematic part of official school development programmes. Introduction of this approach in many or all schools would require a supportive national educational policy and funding framework. Some cases, however, are clearly located in the mainstream of policy and support systems, for example:

- An entire programme of collaboration between a university and schools was approved and supported by both the Ministry of Education as well as more local educational authorities (Malaysia).
- A state's educational supervisors acknowledged that a programme was appreciated, and they later gave permission for and aided similar activities (Romania-2)
- The municipal school board contracted an NGO to guide the transformation of a school from poverty-school to magnet school. The local council had worked with the NGO previously and this relationship of trust may have been critical for the funding decision (USA) Urban studies and community projects are part of the national curriculum. Funding was therefore made available to an NGO to work with schools using an ESD approach (The Netherlands).
- The community contracted the school to do research and they were genuinely interested in the results (Germany-1).

Some of the case studies show that even when the project is organised without a strong framework of supportive policy, it is possible to use the school's normal budget, renovation funds, and the like, toward collaboration for ESD and achieve tangible results.

Institutions and organisations outside the school system may also be able to provide support and funding to educational institutions to engage in ESD collaborations. In our cases, such support takes many forms: teacher training, teacher support, international contacts, scientific expertise, networks, coaching. Some examples of international cooperation for support are:

- The SUPPORT project with its consortium of 31 partners (Hungary-2 and Malaysia)
- The Environment and School Initiatives network (ENSI) (Finland and Hungary-1)
- COMENIUS school network projects (Romania-1).

Collaboration in ESD, as an innovation to create new learning arenas and learning processes, could be easily integrated into existing programmes of school development and competence-building. When coupled to reflection and self-evaluation activities, ESD collaboration methodology could then support such school development programmes. This would be a "win-win" situation, improving both the collaboration activity and the programme of school development and competence building.



Chapter 4. Key messages and practical steps for ESD collaboration

A set of “key messages and actions” for sustainable collaboration in ESD was compiled to sum up the main points of discussion and analysis in the first three chapters of this book. For practical reasons we abbreviate “ESD collaboration” as *ESD-C* here. The SUPPORT consortium reviewed the material and contributed suggestions and feedback. We hope that these key messages about collaboration and suggestions for activities can be of practical use for anyone who is either already collaborate or is thinking of starting up a collaborative ESD process.

The three table charts at the end of this chapter present the key messages and actions for successful collaboration, grouped into three main issues:

1. Why is ESD-C necessary for education for the future?
2. What are the characteristics of a good ESD-C between schools and a community?
3. What are the required framework conditions for sustainable collaboration?

A set of *statements or principles* is made down the left hand side of each table. In the columns to the right, some *ideas for followup* are suggested about what each actor in an ESD collaboration could do regarding this point. The actors we consider in the tables are students, teachers, school leaders, educational policy makers and last but not least, the partners outside the school who chose to enter into a cooperative or collaborative activity together with schools.

The ideas may be practical, concrete actions, or sometimes it has to do with adopting a certain approach, frame of mind or attitude. The suggestions are not meant to be exhaustive or a “cookbook.” The intention is to explain and stimulate reflection and discussion about the implication of that particular principle on each actor’s role and activity in the collaboration.

One could certainly ask, in many of our case studies, whether the collaboration is truly sustainable and gives benefits to all of the partners. There is often room for critical evaluation and improvement. Is the collaboration anchored in clear enough shared goals and a sense of shared purpose? The activities and their outcomes may be influenced by the locus of control in the collaboration (who is really in charge?), the motivations of the collaborators and a “hidden hand” of other players such as the educational authorities or municipality. Favorable framework policy conditions and access to resources are factors which may be difficult to do anything about, but which may prove to be critical for sustainable collaboration. Even though the collaboration may not be ideal or fully sustainable, it can still be a useful step in a development process, and favourable for pupils’ learning.

Our findings and conclusions as presented in the tables below agree well with the conclusions of Austrian education researchers who analyzed collaborative ESD in 19 school-community collaborations in Austrian schools. An expert workshop called “Successful School-Community-Co-operation” was organised by the Austrian Federal Ministry for Education, Arts and Culture in Salzburg in October 2008 to further explore the idea of school-community collaboration for ESD.

The Salzburg workshop resulted in a description of four “basic criteria for sustainable school-community-partnership.” The authors also note that these criteria could be used when evaluating school-community collaboration. For details about the analysis and Austrian school cases, see the article²⁵ included in the case study descriptions appended to this booklet.

The Austrian group defined four criteria for sustainable collaboration:

“1. Sustainability

The co-operation is designed to be long-term or even permanent. That means, the partnership goes beyond a single and temporary project and lasts longer than one school year, the partnership provides an organisational frame which can be used for several projects, and the partnership yields a lasting benefit for all involved groups.

2. Participation of pupils and students

The partnership is characterised by voluntary contribution and active participation in decision-making of pupils and students. That means, pupils and students are actively involved in initiating, implementing and evaluating collaborative projects, and pupils and students are actively involved in the support structures established for the school-community-partnership.

3. School development

The partnership with the community is part of the school development. That means, the contribution of the partnership to school development is embodied in school documents, e.g. in the school’s mission statement, the partnership fosters the quality of life and the quality of teaching and learning in school, the school administration establishes structures within the school to support the partnership, and the school-community-partnership is taking advantage of the specific strengths of the school location and of the partners involved.

4. Community development

The partnership contributes to the involvement of the school in community development. This means, the partnership with the school is embodied e.g. in municipal council resolutions or in the community mission statement, the partnership contributes to the increase of quality of life in the community and fosters identification with the community, adequate steering structures are established in the community in order to consolidate the school-community-partnership, and the school-community-partnership takes advantage of the special strengths of the community and of the partners involved.”

In the next sections we offer some additional comments to supplement and highlight the most important messages and actions from the SUPPORT analysis presented in each of the tables.

25 Robert Lukesch, Harald Payer, Günther Pfaffenwimmer and Peter Posch. 2009. How partnership between school and community may enhance education for sustainable development – Results from a pilot study in Austria. The full text of the article is provided in the case study appendix of this booklet.

Why is ESD collaboration needed?

Table I. Why is esd collaboration needed?					
Steps for →	Students	Teachers	School leaders	Educational authorities	School Partners
ESD-C is a basic element to achieve the learning outcomes of ESD	Be aware that school provides just a part of your learning. You could learn much outside the school too.	Be open to collaborating in your teaching and learning; Take small steps	Be open to innovative pedagogy and encourage collaboration. Value those who try it.	Be open to and encourage collaboration. Consider how you can create intersectoral opportunities for school collaboration. Value schools who try it.	Be aware that your collaboration is really essential to educate future citizens through ESD.
ESD-C is learning centred	Be aware that the main aim of school is help you to reach your own goals	Focus on learning outcomes and make links to the curriculum	Recognize the potential of collaboration to improve pupils' learning	Recognize the potential of collaboration to improve education	Recognize the importance of the pupils' learning as well as the learning benefits to your organisation
ESD-C creates processes for understanding and working with uncertainty and complexity in sustainability issues	Be prepared for complex situations. Life outside the school is complex. You could contribute to sustainable development if you accept the ideas of complexity and uncertainty.	Deconstruct complexity through concrete examples. Start with one aspect and let complexity develop from there. It may also be possible to start with an overview or several activities at once.	Encourage and create frames for interdisciplinary cooperation. Look for synergies between subjects. Coordinate projects at the school.	Create frames for collaboration on complex issues involving diverse sectors and actors. Encourage actors with diverse views to participate.	Contribute your competence and viewpoints to the collaboration. This will improve everyone's understanding of complex issues.
ESD-C creates a stronger, engaged role for schools in communities and increases the status of schools in society	You can be proud of your school as an actor in the local community	Be aware that your teacher role will include being in close contact with the local community.	Your leadership role will expand to include being a spokesperson in your community. for education, balanced debate of issues and pupils' input as citizens.	Encourage schools to be proud of their engagement and role in society; ensure that the work of schools is visible.	Acknowledge the importance of the education system in educating citizens and engage with the schools and pupils as equal, respected partners.

Comment:

Educators involved in ESD-C should recognize that ESD-C is a fundamental element of ESD. Cooperation develops pupils' competencies and also increases the competence and status of teachers and schools.

The collaborators should all also understand that ESD-C is, at the core, about learning processes and the education of active, responsible citizens. Environmental and social

outcomes are also expected and will be valued, but the essence of the collaboration is achievement of the educational objectives. It is important that pupils are given room to take initiative and steer processes. However, the pupils' job is to learn - not to solve the environmental or social problems of the community. Responsibility for solving the sustainability issues lies with the entire community and its government.

Many or most sustainability issues involve conflicts of interest or lack of resources to take needed actions. Rather than pursuing an "ostrich policy" and avoiding such difficult issues, it is even more important for schools to initiate collaboration to explore why the problem has arisen, what kinds of solutions are possible, what the obstacles are, and how the school could contribute to change.

The best learning processes in terms of the complex competencies which ESD aims to achieve, can be achieved in a complex and open learning environment. Pupils need to learn to deal with complex and uncertain situations.

What are the characteristics of a good ESD collaboration?

Table 2. Characteristics of sustainable collaboration					
Steps for →	Students	Teachers	School Partners	Educational authorities	School Partners
The partners have a shared vision and common objectives	Communicate openly about your wishes and aims to everyone participating in the ESD-C	Share your vision with students and your partners. Learn about their perspectives and develop a set of common goals and success criteria in dialogue with them	Encourage and facilitate the common planning and reflective evaluation of the ESD-C	Ensure flexible frameworks to create room for ESD-C with partners outside of school as a part of education. Identify relevant local issues appropriate for ESD-C and encourage collaboration about these.	Enter into an open dialogue on equal footing with the school. Share your vision and expectation with schools and be open to learn about theirs. Find shared goals and activities for the ESD-C.
Collaboration is a process and it needs time to develop		Start simple, let ESD-C evolve as a long term development process. Build on small successes.	Be interested in the project. Start simple, let ESD-C evolve as a long term development process. Build on small successes.	Start simple but aim for long term collaboration. View this as a learning process about how schools and ESD-C work.	Start simple but aim for long term collaboration. View this as a learning process about how schools and ESD-C work.
	Relate new situations to things you have learned before. Be prepared for new experiences and open for change.	Be prepared for new roles and experiences; expect change.	Embed ESD-C into the vision of the school and school development. Reward innovation and progress.	Embed ESD-C in school development policy and support systems. Use available or new instruments toward the mission (school evaluation, teacher training (TT), support systems, development programmes, etc.).	Embed ESD-C with schools into your organisation's long term planning, strategy and mission. Let your engagement with schools evolve and develop.
	Reflect on your own learning process regularly.	Reflect and re-plan the process regularly.	Reflect and re-plan the process regularly.	Reflect and re-plan the process regularly.	Reflect and re-plan the process regularly.
The collaboration process is participatory, with pupils and teachers having a key role	Be active in determining your own education. Take initiative when possible to follow your interests and achieve your goals	Engage pupils in all steps and build on their inputs and interests.	Create a school ethos and methods for greater pupil participation, including evaluation.	Create frameworks and support systems for student participation.	Let pupils and schools have a strong hand in shaping the process.

Steps for →	Students	Teachers	School Partners	Educational authorities	School Partners
Roles and responsibilities are clearly defined	Ask for clarity about your role, rights and responsibilities in the educational process.	Spend time preparing the project together with the partners to really mutually understand what schools and the partners are about, to learn about each other's objectives and ways of working.	Use your position and management skills to support clear definition of goals and roles and responsibilities of the partners. Give clear mandate to your colleagues when appropriate. Support the interests of your students and staff.	Give clear mandates for schools in ESD-C and project work.	Clarify your expectations and what you can offer. Participate in the planning work with the school to clarify roles and responsibilities.
Each collaboration is unique and should develop and have a life of its own	Try to contribute to creating a special identity for your school. Be open to the idea of an evolving topic and -project	Let the collaborative relationships evolve organically.	Encourage diversity and flexibility.	Be aware of examples of diversity of good practice. Encourage creativity and emphasize that there are many possibilities that can be followed.	Be flexible and creative.
The shared collaborative work is more in focus than the partners per se	Be open for new kinds of educators in your education, also people outside the school.	Be open for change of partners to ensure matching goals for the ESD-C.	Be open for change of partners if the aim of schools do not match any more with a partner's aims.	Encourage content based collaborations rather than promoting particular partners for schools	Be open to work with new schools if your aims is do not match any more with a partner school's aims.
The collaboration and its results should be visible, communicated and promoted	Participate in communicating the results of your schools to the wider community.	Communicate the results to schools, media and the community.	Communicate the results to schools, media and the community.	Raise awareness of the ESD-C results and benefits in the whole society.	Raise awareness of the ESD-C results and benefits in the whole society.

Each successful ESD-C is unique and develops a “life” of its own as it progresses. An open course of development might seem to imply that it would be hard to plan ESD-C or ensure the exact kind and quality of the results. Openness also implies a possibility of failure. These factors should not be taken as an excuse for not planning the process well. On the contrary, they are a strong argument for special effort to ensure good communication and clarity at all stages. A strong planning process and appropriate structures for communication in the collaboration will help ensure that expectations of the collaborators will be met. Transparency and clear communication are especially important when decisions about being made contents, activities and methods.

How can a school create such a complex open and unique cooperation for ESD? A truly shared vision and common objectives among the partners is one of the most essential and difficult requirements for sustainable collaboration. Pupils, teacher and partners from outside should all have opportunities to exchange ideas openly, discuss their motivation for

participating, take part in decision-making and influence the collaboration. Clear definition of goals, roles and responsibilities is a common feature of successful ESD-Cs.

If the goals of the partners cannot be reconciled and made to align well with the pedagogical goals of the school, a change of partners could be considered. The purpose of schools is not to help scientific institutes in data collection, to achieve better sorting of waste in the community, or to clean up nature areas. The purpose of schools is for children to learn.

At the school level, a good process of collaboration with actors outside the school over time requires the commitment and support of school management, as well as a school ethos which motivates and values innovation and development work. This might even involve professional and financial recognition of teachers involved in ESD-C.

Pupil participation in decision-making and steering should be routine methodology, even in the planning stage of the collaboration.

ESD projects and –collaborations need to be manageable at the school level. One idea is to start small, with a defined topic and group of subjects and teachers involved. The project content and activities can evolve gradually, or multiple projects can be established, even over a period of years.

Sustainability issues are by nature interdisciplinary and complex, with intertwined ecological, economic and social dimensions. While the starting point of a project may focus primarily on one of these dimensions (for example, an environmental or social problem in the community), pupils should be encouraged to explore the causes and impacts of the issue, so that the project evolves and develops in scope to touch on all three dimensions.

Evaluation and sharing of results among the collaborators could potentially be a strong tool to promote more robust and sustainable collaborative arrangements. Evaluation culture needs to be strengthened; quality criteria for collaboration and new methods are needed to aid and encourage reflection and self-evaluation by collaboration practitioners. Evaluation of collaboration methods and activities should be integrated into the school's mainstream evaluation and quality assurance activities, as well as the partners' evaluation frameworks.

In a sustainable collaboration, the partners are less important than the collaboration goals and activities themselves. If one partner feels that its own objectives are no longer fulfilled by the ongoing co-operation, the partnership can be changed. New partners can be brought in, or a collaborator may choose to terminate a collaboration with one partner and start a new partnership with someone else. For example, a school might start a research project by collaborating with a scientific institute to gain expertise in collecting data about the environment, but would later decide to work to communicate the results to the community, and would need a different partner or set of partners.

Innovative ESD collaborations should be publicized using media and the networks of the collaborative partners. One reason is to increase the visibility of the good work the school and its partners are doing, to improve status and prestige. The community will realize that the school's work is valuable to them.

Publicizing the work to reach other schools and education decision-makers can also multiply the impact of the school's work by inspiring others and building competence, and by stimulating policy-makers to create a favourable policy environment for ESD collaboration,

What Framework conditions are necessary For a sustainable collaboration?

Table 3. Framework conditions for sustainable collaboration

Steps for →	Students	Teachers	School Partners	Educational authorities	School Partners
The collaboration should be anchored in a policy framework	Be aware of your rights concerning education.	Integrate ESD-C into school personnel plans (rather than free time), and into the school/local curriculum.	Integrate ESD-C into the mission and local curriculum of the school.	Integrate ESD-C into national, regional and local curricula, evaluation, development work, training and support systems.	Develop institutional policies, missions encouraging ESD-C
Schools should feel strong "ownership" of the work	Realize that your initiatives could make a difference, and that you can influence your own education to the better.	Take a leading role in innovative ESD-C. Relate the ESD- You're your responsibility for learning and the curriculum.	Designate a coordinator from the school for the ESD-C. If the coordinator is external, ensure that there is a responsible counterpart from the school.	Ensure that the school and teachers have a leading role in any ESD-C facilitated by the authorities. Enable schools to create their own ESD-C	Be aware that your work is to help the work of education and that the school and teachers have lead responsibility for pupils' learning.
Collaboration should ideally involve the whole school	Try to understand the connections between your school subjects.	Engage your colleagues. Develop common ESD-C activities.	Integrate ESD-C into the school development process and teacher training. Ensure involvement of all pupils in ESD-C	Integrate ESD-C into the school development programmes and teacher training. Ensure involvement of all pupils in ESD-C	Maximize your interaction with teachers and staff of collaborating schools.
Necessary resources should be secured	Participate in finding and mobilizing resources in your community	Integrate ESD-C into ordinary workload and time resources.	Allocate time and resources. Prioritize use of existing resources and incentives in the education system to promote ESD-C.	Allocate time and resources for developing the process. Prioritize use of existing resources and incentives in the education system to promote ESD-C.	Be aware that your contribution is an important resource for ESD-C and to reach the shared goals of the collaboration.
New kinds of teacher competencies may be needed	Understand that teachers don't know everything and that teachers can help you seek knowledge on your own.	Prepare for and educate yourself, about ESD-C	Ensure that the school's teaching staff have competencies needed for ESD-C.	Integrate ESD-C into pre-service and in-service teacher education.	Support schools and teachers by offering to share or give training in various kinds of competencies that your organisation possesses.
Support systems should be mobilized as needed (teacher guidance, materials, ICT, funding opportunities, etc.)		Use the existing educational support systems for developing innovative ESD-C.	Make teachers aware of support systems available and encourage them to use them.	Establish a coherent professional support system for mainstreaming ESD-C	Contribute to and liaise with educational support systems.

The critical importance of a supportive policy environment for ESD-C can hardly be overstated. However, there is often not much that teachers and pupils can do about this except communicating their work, the results and their needs.

The goal is that ESD-C should become a mainstream way of learning for all schools and pupils. This means integration in curriculum as well as systems for time allocation, financial support, professional support and recognition, evaluation and development work. Resources, competent teachers and technical and professional support systems are needed if ESD-C is to evolve from being a “lighthouse” innovation by a few schools and teachers, to becoming a routine way of working in all schools.

There is another side to the coin. A supportive external environment is not enough to run a successful ESD-C. The school itself also possesses many keys to success. First, the school must feel strong “ownership” of the co-operation. In successful ESD-Cs, the original idea comes from the school system, school owner, school or pupils rather than, for example, a company, research organisation, NGO or other organisation with its own strong interest or goals to be achieved using children.

As discussed in Table 2, whole-school engagement and the support of the school’s leadership and development processes is also required. This has many aspects and constitutes one of the most important parts of the policy framework needed to support sustainable ESD collaborations.

Appendix 1: Methodology For collecting case studies through the SUPPORT network

All SUPPORT partners were asked by to seek out schools in their country that could provide a written description of an ESD collaboration. The partners then identified and contacted schools from their own range of contacts and organisational networks. Some partners interviewed teachers and/or pupils and the schools or collected written descriptions according to the following case study guideline. 17 case studies were selected for inclusion. The case study guideline asked for a description of the following aspects of the collaboration:

Actors

- general description of the school
- general description of the community
- general description of the research organisation (if appropriate).

School-research collaboration and the research methods (when applicable)

- Topic, aims/objectives, method, results
- Initiation (How was the project started? Who was the initiator? How and why was it chosen, and by whom? Was it developed together? Did the school apply or adapt an existing method? How were the participants selected? Were existing frameworks used (e.g. laboratory) or new frames developed?)
- Participation (What was the pupils' involvement in the development and the research? Did the researchers communicate scientific methods or results to the students? Did students and researchers cooperate in a common project with new results? Did students collect data for researchers? Have students' data been used by researchers? What was the benefit to the research organisation or researchers from the collaboration with schools?)
- Processes (What kind of personal contacts took place (e.g. teacher-researcher or students-researcher)? Did the goals or methods change in the course of the project? Who did mainly steer the process?)

School-community collaboration (when applicable)

- Topic, aims/objectives, method, results
- Initiation (How was the project started? Who was the initiator? How and why was it chosen, and by whom? Was it developed together? Did the school join an existing project/program/network? How were the participants selected?)
- Participation (What was the pupils' involvement in the development of the school-community co-operation? What was the benefit to the community from the collaboration with schools?)
- Processes: What kind of personal contacts took place? Did the goals or methods change in the course of the project? Who mainly steered the process?)

Success factors

- Who determined the success factors/ indicators? What were the success criteria, indicators agreed on in advance and during the evaluation? How were they monitored, evaluated?
- What kind of evaluation process took place, and how? Was there an evaluation done by students? If yes, share results, comments, quotes from it. Was there any evaluation done by the cooperating partners in the local community or research

- organisation? You may also share evaluation results from the cooperating partners.
- What was the benefit to the community from the project/process, was it a success in their view?
 - What was the benefit to the researchers from the project/process, was it a success in their view?
 - What was the benefit to the school as an organisation, from the project/process, was it a success in their view?
 - How have the project results been presented inside and outside the school?

Key learning points

- How did the school serve the community needs with its work?
- What and how did/do the students benefit from the school-community cooperation and/or school-research collaboration and using research methods?
- How did/does the school use the school-community collaboration and/or school-research collaboration and research methods for its own institutional development?
- For example: action research element, local curricula development, institutional changes generated by the project
- How and to what extent does the school integrate the science methods and/or school-community collaboration into its own practice?
- How have the experiences changed teaching methods (give some examples)?
- Did/do the roles of the teachers change because of the project?
- Lessons and suggestions to other schools – what to do, what not to do, and why.

The added value of the cooperation

- Was there something what would never have happened without the , school-community or school-research? In the school, in the local community and in the research team as well.
- What kinds of competencies of the pupils were developed by the project? Were these competencies somehow different than what the pupils usually learn?
- Has the role or image of the school in the community changed in any way? If yes, how?
- Has the community's way of working with schools changed in any way? If yes, how?
- Has the research institute's way of developing and disseminating their knowledge or methods changed in any way? If yes, how?
- Do the results have a direct relation to the everyday life of the partners in the cooperation?

After a first reading of the cases, more detailed questions were posed to many of the authors to get an even better understanding of the collaboration dynamics:

- What was the key driving force in the initiation of the program? What kind of burning social, environmental, developmental issues, situation and problems were there to solve, or was there a personal or organisational goal, mission to fulfil?
- What is ESD in those cases? How do the schools approach ESD – Do they focus on the didactics, the way of thinking about the issues raised, the way of generating the knowledge or dealing with the complexity or the change?
- The characteristic of the collaboration: Who are the partners and how did they cooperate? Who initiated and coordinated the project?
- How the program/project was integrated/embedded/incorporated to the daily life of the school?
- What is the level of student engagement in the project? Did they do real

research or took part in a community project? Did they contribute to sustainable development and were they aware of it? Do they take part in the planning or in the evaluation of the project?

- What level was the project started and ended at? Did it start with a simple issue and then opened to systemic approach or started with complex view and implemented through simple actions, steps?
- What have the students, the teachers, the staff, the school as a whole and the involved partners learned during and after the program?

Appendix 2: Overview of the SUPPORT case studies

Country	Project	Community size Village pop. =2000-5000 Small city pop. =20,000-60,000 Large city pop. =90,000-300,000	Focus	Approach
Austria	Tick patrol: measure the infection of ticks in the neighbourhood and disseminate the information	Village		
	Environment	Project		
Belgium	Developing system of safe transport of pupils to school	Village	Society	Project
Denmark	Understand sustainability and climate change and interpret it via artistic work	Large city	Environment	Project
Finland	Sustainable School Development	Small city	Environment	Whole school
Germany-1	Systemic Study of a Small River as Part of the Regional Planning	Small city	Environment	Project
Germany-2	From the computer to nature - simulate and preserve biodiversity	Large city	Environment	Project
Hungary-1	Action research of an eco-school's development	Village	Environment	Whole school
Hungary-2	Measure the natural values of the local neighbourhood and learn how to make it use of it	Village	Environment	Project
Malaysia	CO2nnect campaign - reduce carbon emission within the school and its extended community	Large city	Environment	Project
Norway	Systemic Transformation to become an ESD Demonstration School	Large city	Environment	Whole school
Romania-1	"Encouragement for Changes" - Gender and Health Related Projects	Large city	Environment	Project
Romania-2	Research and Awareness Raising for Preserving Drinking Water Resource at the Mureş Watershed	Large city	Environment	Project
Switzerland	„Old meets young - young meets old" - via theatre play in the elders' home	Large city	Society	Project
The Netherlands	"People Planet Profit" - Creating Opportunities for Everyone to Learn and Work for the Sustainability	Small city	Society	Whole school
UK	Engaging pupils in the design of a low-energy school	Large city	Environment	Project
UK-Wales	Moth identification and data collection + Developing a school vegetable garden and chicken farm	Small city	Environment	Project
USA	Transforming a School into a Sustainability Academy	Small city	Society	Whole school

Appendix 3. Glossary of ESD collaboration terms

The following interpretations are suggested, for terms often used to describe different degrees and kinds of relationships between collaborators.

Level 1: Strong sharing of goals and responsibility

Partnership: A relationship in which responsibility for core activities is fully shared (as in marriage or a business partnership). This kind of total commitment is quite rare in the context of ESD. However, partnership can also refer to shared responsibility in a more limited sphere of activity or interest, and in this sense it can be applied to substantial ESD collaborations which are strongly embedded in the missions of the partner institutions.

Collaboration: An interaction in which the parties share responsibility for a common activity. As our examples later in this chapter illustrate, there are many alternative ways to arrange collaboration, given the basal requirement of shared responsibility for an activity. Collaboration is a reasonable criterion for a strong and productive relationship in our context of ESD, and is therefore the term we use most often.

Cooperation: This term derives both from ecology and social sciences and implies an active and mutually beneficial interaction. However, the degree of shared responsibility and shared activities can vary. A cooperative relationship can be quite passive (such as taking the others' interests into consideration or not obstructing the other) or more active (such as shared interests and activities).

Level 2: Moderate sharing of goals and responsibility

Contribution of resources: a one-way relationship in which one actor provides supportive information, services or other activa useful to the other

Participation: one joins and contributes to an existing activity, with varying degree of influence on its initiation, planning and implementation

Mutual benefit: when there is a clear benefit of an activity to both or all actors involved and this is a motivation for the relationship. Shared responsibility for activities is not implied, as mutual benefits can occur as the result of an activity without it actually being a shared activity.

Reciprocity: when care is taken to ensure that actions are taken favoring each of the actors to ensure a balance of benefit to the actors involved. The actors appreciate the need to return benefits to their partners. Sometimes reciprocation happens sequentially in time, sometimes simultaneously.

Network: A communicative arrangement between various actors which may involve any amount for shared commitment and activity. It may be simply a channel for sharing information or it can be a full collaboration with shared mission and activities.

Exchange: two-way flow of information or resources. Exchange of information is relatively noncommittal and does not necessarily involving shared responsibility or shared activities in addition to the exchange. It may be the first step in a close cooperation.

Sharing: one- or two-way agreement to provide access to information or resources. Examples would be information shared in a databank or reports, and shared equipment.

Level 3: Weak collaboration with little sharing of goals and responsibility

Information channel: one of the actors uses the other as a medium for communicating their message or results. This kind of relationship can potentially be exploitative, if the motivation is solely to promote the goals of one's own organisation rather than sharing in a common goal and activity.

Acknowledgment: when one actor recognizes the receipt and usefulness of information sent or resources granted by the other actor. Acknowledgment signals respect for the other actor and some degree of shared goals, but the level of commitment and contribution to shared activities may be low.

Appendix 4. Checklist of issues to be clarified when planning the collaboration

Identity of the collaborators

There are many kinds of potential collaborators: parents, local community, businesses, non-government organisations, sector authorities, managers, educational institutions, research institutions. Schools should consider carefully who would be an appropriate partner.

Schools can also collaborate with other schools and pupils locally, regionally or internationally. Contact should be made and the collaborating schools should participate in planning.

The project plan should clearly specify the responsible partners in the collaborative relationship. It could be an organisation, one or more individual people within an organisation, or one or more individuals with no institutional affiliation. If an individual is acting on behalf of an organisation, it is important to clarify what authority they possess to make decisions on behalf of their organisation, or whether they are acting as individuals.

Agreements and planning documents should be drawn up describing the collaboration, the person or people responsible for commitments made and clearly describing the roles and expected activities of the various people involved and their organisations.

Motivation and common mission

What is the essence of our shared goal and interest???

What is our motivation to collaborate?

What results do we expect to see from the activities that will benefit everyone?

How is the collaboration integrated into each partner organisation's mission statement, development plans and goals?

What does each organisation expect to benefit for themselves, that may not be relevant to the others? "What's in it for me?"

Clarification of the topic and shared activities

The topic of collaboration could vary from narrowed topics within one or more disciplines (for example science) to more complex interdisciplinary issues

A range of situations, issues, or questions to be explored/resolved

What activities are going to be carried out? Is there a milestone plan specifying activities, the participants and the time frame?

What exchange of resources and information will take place? These should be specified.

Clarification of roles and expectations

A collaboration project can be initiated by the school, by a key person or by a body outside the school.

Who will coordinate the project or activity? The school should preferably take the coordinator role, or if the coordinator is external, the school should at least have a "counterpart" coordinator.

Where is the locus of control? Who is providing the main energy and impetus which keeps the collaboration going?

What mechanisms will be put into place to steer and make decisions in the collaboration? How can one ensure that the views of all collaborators are taken into account?

Who is providing what resources and information; what kinds of support and facilitation are being provided?

Who “owns” and is committed to ensuring the success of the collaboration?

How will the outcomes be evaluated?

Pupil involvement

How, specifically, will pupils be involved in each stage of the collaboration, starting with the planning stage and also including evaluation?

How will pupils be activated and given responsibility for the progression of the work?

How much influence will pupils have in decision-making?

What outcomes are expected?

What concrete outcomes is the project or activity expected to produce?

Which of these are shared outcomes; which will benefit primarily one of the collaborators?

Are all of the collaborators satisfied with the potential benefits to themselves?

What learning outcomes are expected for the pupils and how does this relate to the curriculum?

How will the results and the collaboration process be evaluated?

Is the collaboration expected to continue into the future, and if so, how?

Support

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