ENVIRONMENT AND SCHOOL INITIATIVES

Lessons from the ENSI Network – Past, Present and Future

Christine Affolter, Attila Varga (Eds.)

environment and school initiatives

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PREFACE:
ENSI – 30 Years of Engagement for Education and School Development
Christine Affolter 7

ENSI – main features 9

1. A common platform for research, development and support of EE and ESD
Peter Posch 11

2. 30 Years of ENSI in six phases
Günther Pfaffenwimmer and Peter Posch 20

3. ENSI and the Centre of Educational Research and Innovation: Policy Development
Kathleen Kelley-Lainé 26

4. Innovation for Environmental Education: An account of ENSI's formative years from 1986–1994
John Elliott 30

5. Dimensions of effective Education for Sustainability: ENSI's contribution to the effective delivery of complex programmes
Michael S. Duggan 38

6. ENSI pillars – Action Research and Dynamic Qualities
Franz Rauch and Günther Pfaffenwimmer 40

7. The Whole School Approach: ESD as core element of school development – a modern adaptation of ENSI's basic concept of Dynamic Qualities
Reiner Mathar 46

8. The challenge of complexity: From system thinking to wicked problems – The ENSI contribution
Michela Mayer 54

ENSI in national contexts 69

9. ESD in Europe, a quick overview
Michel Ricard 71

10. ESD international Policies in the Cyprus context: Reflections and Insights
Aravella Zachariou 79

11. The story of ENSI in Norway and its impact in Norwegian strategy for ESD
Astrid Sandås 88

12. A history of ENSI/Finland – From integrating EE to ESD: Theories, tools and implementation
Mauri K. Åhlberg 98

13. The Encounters Project in Espoo/Finland
Anna Maaria Nuutinen 108

14. Implementation of Education for Sustainable Development in Switzerland and co-operation with ENSI
Christine Affolter, Regula Kyburz-Graber, Klara Sokol 115

15. Environment and School Initiatives (ENSI) – Its impact in Austria
Günther Pfaffenwimmer 123

16. ENSI's Quality Criteria and Education for Sustainable Development in Greece
Evgenia Flogaitis, Georgia Liarakou, Costas Gavrilakis 130

17. ENSI and its impact on the Hungarian Educational System
Attila Varga and Péter Havas 142

ENSI initiated projects 149

18. The use of criteria when planning, evaluating or completing a project: The case of ENSI Quality Criteria and the Curriculum Key in Iceland
Allyson Macdonald, Auður Pálsdóttir, Ingólfur Ásgeir Jóhannesson, Kristín Norðdahl and Stefán Bergmann 151

19. Moving on from CoDeS – The keystones for a whole systems approach to low carbon schools
Margaret Fleming and Mark Lemon 159

20. Practicing social goals of sustainability: Involve the local community in its own future
Ton Remmers 168

21. ESD in work rooted on ENSI-based project SUPPORT in Malaysia
Norizan Esa 174

22. Evaluative Discourse and Networking on ESD in ENSI: Experiences from the SUPPORT and CoDeS networks
Esther Sabio Collado 184

23. A European project on sustainability competences in teacher training curricula – the joys and sorrows of co-operation
Regina Steiner 191

24. Experiences, challenges and success of the ENSI-supported CASALEN-project in Romania
Mária Tóth 202

ENSI – Future leading reflections 209

25. Beyond sustainability: Intergenerational change and regenerative development
Patrick Dillon 211

26. Reclaim the streets!
Natalia Eernstman 224

27. When the demanding initiatives lost their controversial forces and the notion environment became an empty signifier – on the political of ENSI
Johannes Tschapka 233

28. The pendulum swings – but is it moving? Spiralling towards sustainability the ENSI-way
Arjen E. J. Wals 242

29. What Networks do we want for Environmental Education and Education for Sustainable Development? Implications from ENSI and TEEN
Sun-Kyung Lee 249

30. School development and engagement – is mental ownership the holy grail of Education for Sustainable Development?
Søren Breiting 258

31. Learning 'for' the future and 'in' the future
Wim Lambrechts 272

32. Life after ENSI: New directions, Different Models and More Flexible Support Structures
Syd Smith 279

List of abbreviations 289

Preface:

ENSI – 30 Years of Engagement for Education and School Development

by Christine Affolter

ENSI has been an independent, self-managed network of experts drawn from the fields of Environmental Education (EE) and Education for Sustainable Development (ESD) and financed by member countries and individual members. During the life time of the organisation ENSI often anticipated upcoming themes and new demands and through analyses, reflection, and participative debates drew up an annual working programme to meet these needs.

Often ENSI was the forerunner of themes and developments and as a result its work had a significant impact on schools in Europe, Asia and Australia through curriculum development, teacher education, and quality indicators. But having the favourable status of a self-managed network also involved a permanent challenge to find appropriate financing and over three decades ENSI had to find a balance between the professional quality of its work and the available funding resources.

Thanks to the commitment of the ENSI experts the network gained a high international reputation. Initially ENSI was founded by OECD/CERI in 1986 and aimed to respond to two related triggers (Elliott, 2018):

- The increasing pressure from 'grassroot-groups' concerned about the impact of economically driven developments on the environment that were asking for school programmes to support students and teachers in the development of new competences such as critical thinking, dealing with complexity, and reflectivity.

- Governments and schools that had to deal with the educational implications of the increasing social complexity resulting from rapid economic and social change. Schools needed to find answers in their local environment realising that centralized curricula couldn't completely fulfil the needs of the local communities.

Environmental Education (EE) aimed to provide answers to these issues, but at the same time it was generating new challenges as the interdisciplinary teaching and learning required by EE meant that appropriate learning methods and monitoring structures were needed. ENSI explored already existing concepts, developed new ones and involved teachers and researchers' in Action Research in order to gain evidence-based data to support these changes.

Again ENSI was a forerunner when the important new topic of "Education for Sustainable Development" was raised at the Earth Summit of Rio in 1992. ENSI was involved in the development of new concepts on school development, curriculum building, teacher education and collaboration between schools and communities over the following decades. "ENSI organizes and affects the exchange of expertise in the field of research education on sustainable development also by offering a platform for senior experts, as well as for young, innovative researchers" (Quotation from UNESCO Review of Contexts and structures for Education for Sustainable Development 2009, Arjen Wals).

When looking back on ENSI's work and development a range of qualities are obvious:

The ***commitment of ENSI's partners to research and development*** was always at the heart of the network. ENSI offered a ***platform for debate and collaboration between experts from various backgrounds*** – it was a unique meeting place for all fields of education. Experts from ministries, universities, teacher education, schools and communities co-operated in the realisation of Education for Sustainable Development. Fruitful interactions were made possible by ***ENSI's attitude of welcoming new partners***!

This publication offers insights into ENSI's past, current developments and also draws visions for the future. ENSI's commitment to creating pedagogical principles for ESD is mirrored in its work involving cross border thinking, a variety of perspectives, the acknowledgement of complexity, and an orientation towards the future, as well as participation and reflectivity.

This volume is published on the occasion of the closure of ENSI's permanent secretariat. The participation of ENSI experts in the publication shows the loyalty and the ongoing commitment for this outstanding organisation. Special thanks go to Attila Varga, Peter Posch, Günther Pfaffenwimmer, James Hindson, Wim Lambrechts and Nicola Bedlington for their high engagement for this publication.

ENSI – MAIN FEATURES

A common platform for research, development and support of EE and ESD

by Peter Posch, Alpen-Adria-Universität Klagenfurt. Austria

THE BEGINNING

The process of globalization proceeded rapidly in the last third of the 20th century and has led to an enormous economic and political interdependence. It has produced prosperity in most industrialized countries but a high price was paid – at the time hardly noticed by those responsible in administration and politics: Worldwide and within the European Union the quality of the environment has dramatically deteriorated and although there were some warning voices that resulted in concrete environmental standards and norms being established there was often no strong commitment to their enforcement. An effective environmental policy would need not only changes in the economic system but also a change of attitudes in the population. Apart from some citizens' initiatives there were hardly any indications that such a change would occur.

In view of this situation, the Austrian Minister of Education, Dr. Moritz, in his speech at a Conference of Ministers of Education of the OECD member states in Paris in 1984, underlined that the organization within its educational program should pay special attention to Environmental Education and take the initiative in this area (Genehmigungsakt GZ 37.888/60-110/85). The minister did not get much reaction from his colleagues because at the time the environment was not considered an important issue by most countries and even less so by OECD.

In 1984 I was the Austrian representative on the Governing Board of the Center for Educational Research and Development (CERI) of the OECD. Not long after the speech of the minister I had the opportunity to participate in a forward planning exercise for CERI for the next five years and I used this chance to propose an international project. In order to get the attention of at least some delegates I pointed to an educational aim that had high status in the OECD: the promotion of "Dynamic Qualities" such as initiative, independence and individual responsibility, entrepreneurship, and linked these to the promotion of "environmental awareness". I argued that these two aims were not necessarily in conflict with each other but could be regarded as interdependent: Dynamic Qualities could best be developed

if pupils are enabled to take constructive initiatives in their proximate environment[1]. I argued that the environment would offer on the one hand a unique context for the development of Dynamic Qualities whilst on the other hand, I suggested that the broad distribution of these skills in the population is an indispensable prerequisite for economic and technological development. A joint promotion of environmental awareness and Dynamic Qualities would contribute to an extended understanding and improvement of teaching and learning. I proposed that the project should focus on existing initiatives of teachers and pupils, and should study, publicize and support them (Posch 1990).

At a break between sessions about ten delegates got together and showed interest in joining such an initiative. This was the starting point for the international project "Environment and School Initiatives".

After this meeting a formal proposal was prepared (CERI 1986) and negotiations started between the Austrian Ministry and the Education Committee of OECD. Finally, OECD agreed to support such a project within the program "Innovation Exchange Seminars", in which OECD would provide a secretariat and finance international meetings. Eleven countries decided to participate: Austria, Belgium, Denmark, Germany, Finland, Italy, Netherlands, Norway, Portugal, Sweden and Switzerland. France and Canada assumed an observer status. Each of the participating countries nominated a coordinator and during their discussions, a first design materialized: to find schools and teachers, who were ready to document their work and present it at an international conference. Their experiences should be discussed, comparative analyses of their pioneer work made, and strategies developed in order to benefit the further development of Environmental Education. It was agreed that the project should conclude at an international conference in 1988.

THE DIMENSIONS OF ENVIRONMENTAL SCHOOL INITIATIVES

The tension between environmental awareness and Dynamic Qualities provided the background for the definition of the following dimensions of Environmental education initiatives: Students should be involved with environmental issues on three levels

- the level of personal experience and emotional commitment ("to experience the environment");

1 See also the Final Report of the Intergovernmental Conference on Environmental Education in Tbilisi 1977 (UNESCO 1978) in which similar arguments were used.

- the level of interdisciplinary learning and research ("to study the environment");
- the level of socially important action ("to shape the environment").

This involvement should qualify by two criteria:

- Students should be involved in decision-making on problem finding, on procedures and on monitoring their work;
- Students and teachers should systematically reflect on their activities.

These three dimensions and two criteria were influential in broadening the then current approach to Environmental Education.

The *first dimension* (personal experience and emotional commitment) was to convey the message that environmental awareness presupposes a minimum degree of personal involvement and emotional commitment. The environment should gain "significance value" and not only "utility value" (Tenbruck, 1975). Many projects stressed this dimension and it was found that children can exert considerable influence.

An example of this kind of project was the action taken by pupils from the Primary School in Serre, a small town south of Salerno, Italy (Cicatelli and Schirru, 1989). In the vicinity of Serre there is an area called the Oasis of Serre, a wetland area formed 50 years ago when the river Sele was dammed. The wetland is a conservation area managed by WWF. After the last earthquake in 1980 the dire economic situation of the region led to a proposal to locate a number of industries near the wetland, and the oasis was threatened by the waste that was expected from the factories. The primary school of Serre, two teachers and 40 pupils made it their task to preserve the conservation area. They conducted an opinion poll to find out the attitude of local people toward the protection of the oasis. They also conducted interviews with workers involved in building the dam and studied the history of the dam and its effects on agriculture. In excursions and discussions with experts, they studied the river itself, its sources, the characteristics of the water, the degree of industrialization, and the potential impact of any pollution on the natural equilibrium of the wetland and on agriculture.

They compiled their experiences into a small information brochure for the public written by the pupils and edited by the teachers. They wrote and staged a play, presented their activities in an exhibition and invited experts to make their contributions. Finally, in an open letter to the authorities, the children pointed

out the importance of the oasis and asked that the plans for industrialization be withdrawn in exchange for stronger support of agriculture and tourism. The letter was a combination of a sober description of the facts and an expression of the children's emotional involvement.

What was the outcome of it all? It seems that the school's activities contributed – not to the plans for industrialization being abandoned – but to the construction of a channel in order to direct any waste water around the oasis. This example shows that children are able to create awareness even in an initially skeptical and resigned population, and that strong emotions supported by solid facts can play an important part in that process.

The second dimension (interdisciplinary learning and research) focused on the fact that the environment offers an ideal opportunity to study realistic situations, acquire knowledge about complex issues and interconnect various disciplines. This is difficult to achieve in systematic instruction, because textbook knowledge predominantly concerns problems that have already been solved. In many projects environmental initiatives also facilitated interdisciplinary learning and research.

An example of this second dimension being put into practice comes from two comprehensive schools and five teachers from Middle-Norway who participated in a project "Archaeology at School". The incentive for the schools to join the project came from new archaeological discoveries in the community area and a subsequent revival of an interest in the past. In co-operation with archaeologists of the University of Trondheim and the local museum the teachers developed an approach in order to allow their 15-year-old pupils direct access to early history. A plurality of activities took place: the pupils participated in the excavations, documented discoveries, mapped the changes in the landscape since the Iron Age, reconstructed Stone Age methods, wrote small brochures on early local history and wrote a play based on a scientific paper about living conditions during the Iron Age. They also staged the play and held early-history classes for younger pupils. The pupils' work made a significant contribution towards creating a greater historical awareness in the community (Fjortoft, 1988).

The example shows the interdisciplinary potential of environmental activities in schools and the close connection between learning and research when pupils concern themselves with complex and realistic tasks. It also illustrates that environmental school initiatives can be a service appreciated by the community.

The third dimension (socially important action) was the most difficult one to put into action. School learning is about pupils acquiring a body of knowledge and skills trusting that this knowledge and skills will be useful in later life and will be able to support society's desire to perpetuate social and cultural assets. It is therefore difficult to provide students with an immediate experience of the meaning of learning. Exceptions to this situation are opportunities where pupils can make use of their knowledge in order to help modify social processes.

This is what happened during learning at an Austrian Vocational secondary School. A geography teacher together with his students, mapped and made photographs of illegal waste dumps in the surrounding communities, listed them and put the results at the disposal of the communities concerned. This led to a number of conflicts because the communities had tolerated the waste dumps up to that date and reacted negatively to what they perceived as the pupils' interference. After talks with local politicians the pupils increased their activities through organizing letter campaigns and finding support in the press. On their own initiative, 15 students took part in a training seminar to learn how to present their findings in public. They gave numerous lectures on waste problems in general and on their findings in particular, in schools and institutions of adult education. Finally the Waste Association joined their ranks and with the approval of the communities started to clear the illegal waste dumps. (Schweitzer, 1990 and personal communication).

During projects of this kind pupils experience

- that they are capable of achievements that are appreciated by society,
- that information and a readiness to stand up for one's interests can lead to changes and
- that skills of presenting an argument, knowledge and courage are prerequisites of human progress in a democracy.

PROBLEMS AND EMERGING CHANGES IN THE CONCEPT OF LEARNING

During these early environmental initiatives a number of problems and questions stimulating research and development were identified. Some of them later resulted in curricular changes, new regulations such as integrating project work in school curricula.

- Many project teachers reported little understanding of their activities on the part of their colleagues. Their initiatives were perceived as interfering in what was regarded "normal instruction".
- There was a tendency to push environmental initiatives towards the margin of school activities and into the leisure time of pupils and teachers. In most cases it was an extra-curricular activity, resting on the shoulders of especially committed teachers.
- In the course of initiatives pupils and teachers were sometimes involved in public controversies and conflicts. On the one hand they were an indication of the weak position of schools as social institutions in society whilst on the other, school leaders, teachers and students had to learn how to cope constructively with conflict.

One salient reason for many difficulties was the dominating "transmission view" of teaching focusing on presentation of knowledge. The classical paradigm of learning implied the separation of learning and action. Experiences with environmental school initiatives showed the limited character of this view of learning and suggested an extended concept of learning: learning not only from the instruction by those who know to those who don't know, but learning also as a process of joint seeking, joint experimenting and a joint formation of awareness of possible futures (Fischer, 1987). This concept of learning had a number of consequences that were new at that time. For example, teachers needed to communicate with each other and to co-operate. If they go beyond imparting systematic knowledge and cope with ill-structured situations, they increasingly need to be aware of what they do; they need a kind of systematic reflection of their own actions, both, to keep a check on the risks connected with such initiatives, and to facilitate communication and further development. It soon became clear that Action Research should play an important role in this project (Elliott, 1985).

THE LINZ CONFERENCE AND ENSI'S EXTENSION OF FOCUS

The *first phase of ENSI* concluded with an international conference in Linz (Austria) in September 1988 (Kelley & Posch, 1991; Elliott, 1991). At this initial event eleven countries were represented by their coordinators. Forty schools also took part and approximately 250 persons participated including around 150 pupils. One of the highlights of the conference was an international interactive project exhibition.

In his invited lecture, John Elliott called the conference a "unique event in the history of international projects concerning curriculum change". This may be a friendly

exaggeration but it had a background. The reports from teachers and students on their work and the projects that were presented at the exhibition provided an enormous wealth of experiences with school initiatives at the conference. They ranged from an environmental pillory set up in front of an elementary school (Thomasroith, Austria) on which pupils put everything they found on the road thus showing adults the effects of their thoughtlessness (they found less and less thrown away things on the road) to the reorientation of a whole school (Öckerö, Sweden). This involved giving part of the weekly instructional time to projects (such as glasshouse culture, fish breeding, and weekly radio programmes by students) through which students acquired competences they could immediately use to enter and in some cases even create jobs on the island.

As a result of this conference ENSI was established as full OECD project. In *phase 2 (1989–1994)* new countries joined the original eleven: Australia, France, Hungary, Ireland, Japan, Northern Ireland, Scotland, Slovenia, Spain and the United States. Although many countries extended the number of environmentally active schools, ENSI developed a wider perspective leading to new initiatives: OECD initiated In-Depth Studies of Environmental Education Policy in selected countries and quality criteria for Education for Sustainable Development (ESD) were developed and internationally publicized (Breiting, Mayer & Mogensen, 2005). Many countries started case studies and developed their own agenda within the framework of ENSI.

In 1995 ENSI started in its *third phase (1995–2004)* as a decentralized network within OECD with a focus on school development initiatives. These included a project "School Development through Environmental Education" (SEED 2002–2005) and the Project "Learnscapes" (1998–2005). A small group of countries (Austria, Belgium, Denmark, Hungary, Switzerland) focused on the project "Environmental Education in Teacher Education" (ENITE 1997–2000), a first attempt to integrate Environmental Education in teacher education curricula. In several countries such as Austria, Hungary and Italy national networks of schools with environmental focus were established (ECO-Schools).

In *phase 4 (2005–2008)* ENSI became an "Independent network" in co-operation with UNESCO within the UN Decade "Education for Sustainable Development". Two major projects characterized this phase: "Curriculum, Sustainable development, Competences, Teacher training (CSCT 2004–2007) and "Partnership and Participation for a Sustainable Tomorrow" (SUPPORT 2007–2010).

In ENSIs *5th phase (2009–2015)* the last ENSI project with 17 participating countries was carried out: "School and Community Collaboration for Sustainable Development" (CoDeS 2011–2014).

During the thirty years of its existence, the Environment and School Initiatives Project has extended its operational basis from classroom projects to an increasingly wider field of action: school development (e.g. SEED), school grounds (Learnscapes), teacher education (ENITE and CSCT), school networks (ECO-Schools), linking schools with research institutes (SUPPORT) and finally linking schools to their communities (CoDeS).

In many countries ENSI has stimulated continuing national developments and many suggestions and proposals emerging from ENSI still wait to be publicly discussed and implemented. Climate change and reduced biodiversity have increased dramatically the need to work on the attitudes of citizens. Education remains an important road to achieve solutions and to gain public acceptance of the need for legal regulations regarding a range of environmental issues such as energy consumption, the use of resources, traffic, agricultural production and other areas effecting the human ecological footprint.

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30 Years of ENSI in six phases

by Peter Posch, Alpen-Adria-Universität Klagenfurt, Austria and
Günther Pfaffenwimmer, Austrian Federal Ministry for Education, Science and Research

PHASE 1 (1985–1988)
INNOVATION EXCHANGE PROGRAMME WITHIN OECD

In 1986 ENSI started as a two-year project as part of the OECD/CERI Innovation Exchange Programme with 11 participating countries: Austria, Belgium, Canada, Denmark, Finland, Germany, Italy, Norway, Portugal, Sweden, Switzerland. OECD/CERI provided a full time secretariat (Mrs. Kathleen Kelley-Lainé) and the scientific advisors were by Peter Posch (Austria) who had drawn up the ENSI project proposal on behalf of the Austrian Ministry of Education and John Elliott (UK). The member countries were represented by country coordinators, delegated from their Ministries of Education and coming from different backgrounds including administrators, school inspectors and researchers. The country coordinators made up the steering body of ENSI and met once a year bringing their experience and ideas as well as the perspective of their respective countries. Together with the secretariat and the scientific advisers they discussed and decided on the development of the ENSI project. The focus of the first phase was the selection of schools already prominent in environmental initiatives and supporting them in documenting, analysing and reporting their work. From the very beginning therefore, ENSI had a research and a development agenda.

This first phase of ENSI concluded with an international conference in Linz (Austria) in September 1988 (Kelley & Posch, 1991; Elliott, 1991). Approximately 250 people took part in the conference including country coordinators and teachers and around 150 students from 40 schools. As a result of the impact of this conference the CERI governing board decided in 1989 to continue with ENSI as a full scale OECD/CERI project from 1990 to 2004.

PHASE 2 (1989–1994)
FULL-SCALE OECD-PROJECT

Between 1989 and 1994 ENSI was a full-scale project of OECD/CERI with 22 countries participating. In addition to the 11 countries named above, Australia, France, Hungary, Japan, Northern Ireland, Republic of Ireland, Scotland, Slovenia, Spain and the United States joined the project. At the international level an in-depth analyses of Environmental Education policy was carried out by OECD in selected countries

(Australia, Austria, Finland, Germany, Hungary, Norway) involving groups of experts visiting these countries, collecting data on the basis of documents and interviews with key individuals and presenting their findings at a public hearing. Most participating countries extended the number of schools taking part and decided to develop quality criteria to evaluate environmental school initiatives. Twice a year a newsletter was published.

A number of international seminars were organised in this phase.

- "Environment, Schools and Citizens of the Future – Teaching for a Sustainable Development", (Veldhoven, NL, April 1990),
- "Images of Society, Nature and Science through Environmental Education – Dealing with Complexity in Environmental Education" (Perugia, IT, May, 1992),
- "Economy and Ecology" (Sunder, DE, September 1992),
- "The Role of Values in Environmental Education" (Stirling/Scotland, May, 1993);
- "Action Research" (Frascati, IT, June 1990) and
- "Evaluating Environment and School Initiatives", University of East Anglia/ Norwich, UK, June 1991).

During the meeting of country coordinators in Paris in November 1993, OECD proposed a third phase of ENSI and invited countries to forward proposals for discussion at the final conference in Braunschweig, Germany in March 1994. However, at the opening of the conference Tom Alexander, the Director of CERI, thanked the ENSI members for their successful work and stated that ENSI would come to an end after the event. This was somewhat of a surprise and in the end a compromise was offered whereby ENSI could be continued as decentralised network under the umbrella of OECD and that this transition phase would be supported by OECD.

PHASE 3 (1995–2004)

INDEPENDENT NETWORK UNDER THE UMBRELLA OF OECD

During this phase ENSI changed its status from being a "project" organised by the OECD-secretariat to an independent network which had to organise itself, build up the necessary structures, devise new methods of internal communication and independent funding arrangements.

OECD/CERI provided the assistance of Ms. Motoyo Kamiya, who had a business development background and she pushed forward the structural development of ENSI to international standards and a draft constitution, financial plan, and work plan were discussed and adopted and a website created.

Scotland hosted the secretariat from 1995–1997 supported by Colin McAndrew from the Scottish Consultative Council on the Curriculum (SCCC). In these three years several decisions were taken:

- The focus should be on four fields of activities:
  - Development and research on teacher education initiatives in EE in light of the ENSI experience (Teacher education)
  - Development and research on networking through new information technologies (Networking through ICT)
  - Evaluation of the quality of EE in schools (Quality criteria)
  - Research on schools transforming themselves into environmentally sound institutions (Eco-schools).
- "ENSI aims and principles" were developed and determined.
- A budget was drawn up and membership fees were introduced.
- Co-operation with the OECD-Programme on Educational Buildings and with the OECD Environmental Directorate were commenced.

In January 1998 to 2002 Austria (Johannes Tschapka) took over the secretariat and focus was laid on the internal development of the network organisation:

- A constitution and decision making process were developed
  - Annual General Meeting (AGM): this was the highest decision-making body and made up of the coordinators appointed by the member countries. Their task was to draw up and review the ENSI programme of work, the budget plan and to elect the members of the Executive Committee.
  - The Executive Committee (composed of President, Vice-president, and Treasurer of AGM) as to manage ENSI business in collaboration with the secretariat. The Vice-President should be the coordinator of the country hosting the secretariat.
  - The International Decentralised Secretariat of ENSI (seated in one of the ENSI member countries for minimum period of two years) was to execute the decisions of the AGM and of the Executive Committee.
- An ENSI web site was constructed.

From 2002 to 2004 Germany (Wolf von Mutius) took over the secretariat and the coordination of activities. In 2003 Syd Smith/AU prepared a comprehensive formative evaluation "Reviewing ENSI".

A number of research and development projects were initiated during this phase:

- A small group of countries (AT, BE, DK, HU, CH) focused on a project "Environmental Education in Teacher Education" (ENITE 1997–2000). This was a first attempt to integrate Environmental Education into teacher education curricula.
- A number of countries participated in the Learnscapes project (1998–2005). This aimed to enable students, teachers and the communities to develop learning spaces in or near the school's grounds. (AT, NO, FI, DE).
- In several countries including Austria, Hungary and Italy national eco-school networks of schools with environmental focus were established (ECO-Schools).
- In 2001 it was decided to apply for an EU-project: "School Development through Environmental Education" (SEED, 2002–2005). The aim of this project was to promote Environmental Education as a driving force for school development and to initiate a dialogue among policy makers and practitioners in the various education systems to foster innovative teaching practices and modern teaching and learning pedagogies. ENSI particpants were AT, BE, FI, DE, DK, GR, HU, IT, ES, LU and AUS.
- ENSI contributed substantially to the national German project "Bildung für Nachhaltige Entwicklung" of the Bund-Länder-Kommission (BLK21), supporting the participating schools from Hessia developing sustainable school programs.

ENSI members in this phase were Australia, Austria, Denmark, Finland, Germany, Hungary, Italy, Luxembourg, Netherlands, Norway, Sweden, Switzerland and the United Kingdom including Scotland.

By October 2003 ENSI received an official letter signed by Dr. Barry McGaw, OECD/CERI Director of Education stating that CERI would end its umbrella function by the end of 2004. As there was no possibility of ENSI finding a new "umbrella" the organisation changed its policy and became an "independent network".

PHASE 4 (2005–2008)

INDEPENDENT NETWORK.

Switzerland (Nicola Bedlington) took over the Secretariat from 2004 to 2006 and the coordinators succeeded in developing an international partnership with UNESCO within the UN Decade "Education for Sustainable Development". A strategic plan for 2006–2010 was developed committing ENSI to Action Research projects that help to:

- Clarify concepts underpinning EE and ESD
- Mainstream EE and ESD into educational curricula
- Support teacher education to integrate ESD

- Stimulate and foster ESD through research and evaluation on the use of Information and Communication Technology (ICT)

The Netherlands then took over the Secretariat (Adry Nienhaus van Lint) from 2007 to 2008 and supported the start of the second EU project, SUPPORT, and the transition of ENSI in becoming an international legal body (NPO) focused on innovation and research in Environmental Education and Education for Sustainable Development.

Two major projects were delivered during this phase:

- "Curriculum, Sustainable development, Competences, Teacher training (CSCT 2004–2007). This project was developed as a response to the call of the UNECE Ministers of the Environment in 2003 for including ESD in curricula from pre-school to higher and adult education. (AT, BE, DE, HU, IT, NO, ES, UK, CH).
- "Partnership and Participation for a Sustainable Tomorrow" (SUPPORT 2007–2011). The goal of this project was to promote and enhance the quality of ESD by linking schools, research institutions and communities in a web-based network (AT, BE, CY, FI, DE, GR, HU, IT, NL, NO, SI, ES, UK, EE, RO, Rep. of Korea, Malaysia).

At the AGM in 2006, a discussion took place regarding the fact that ENSI was a network without any formal legal status. It was understood that it would be very difficult to raise funds and accept finance without becoming some form of legal entity. It was agreed that a working group on this issue should develop and submit a proposal to the Executive Committee in October 2006, with a view to adoption at the AGM in 2007. The result was that, ENSI became an international non-profit organisation, recognised under Belgian Law. The statutes of ENSI were revised to accommodate to the Belgian legal requirements and the new regulations came into effect in spring 2008.

PHASE 5 (2009–2015)

INTERNATIONAL NON-PROFIT-ORGANISATION (NPO)

Switzerland (Christine Affolter) had already taken over the Secretariat in 2008 and was presented with a wide list of tasks:

- relaunching the website,
- building up the newsletter and annual report,
- developing the application for the EU project CODES and then coordinating the project.
- after 2014: making other project applications. These were not accepted.

In 2008 the ENSI Junior Researchers Group was established to disseminate ENSI research methodology and achievements and to share expertise in the field of 'Research in ESD'. The group also aimed to attracted new members. The junior researchers gathered for the first time in 2008 at a seminar in 2008 in Switzerland. Twenty Masters and PhD researchers met and under the guidance of ENSI experts (Michela Mayer, Johannes Tschapka and Christine Affolter) exchanged their professional knowledge and explored cultural differences. Over the following six years until 2014 around 30 Junior Researchers were involved.

In this phase two ENSI projects were carried out:

- "School and Community Collaboration for Sustainable Development" (CoDeS 2011–2014). the aim of this project was to support collaborations between schools and their surrounding communities with a focus on sustainability, thereby to improving students' motivation, deepening their knowledge in science and developing civic competencies. (AT, BE, CH, CY, FI, DE, GR, HU, IT, NL, NO, RO, SI, ES, UK, Rep. of Korea).
- The CArpathian SustAinable LEarning Network (CASALEN) (2008–2011). This network established a support system in order to encourage school based co-operations in the Carpathian region within the existing financial frameworks. (AT, CZ, HU, PL, RO, RS, ME, SK and UA).

PHASE 6 (2016–2018)

PREPARATION OF THE FORMAL END OF THE ENVIRONMENT AND SCHOOL INITIATIVES PROJECT

Due to the decreasing number of full members (countries) over the last decade and as a consequence a lack of resources, it became impractical to run the network with a secretariat. At the AGM 2017 in Vienna it was therefore decided to close down the ENSI secretariat by June 30th, 2018. All formal memberships of ENSI would also end by this date but ENSI's homepage and the access to all documents would still be possible.

ENSI and the Centre for Educational Research and Innovation: Policy Development

by Kathleen Kelley-Lainé, former OECD/CERI Secretariat of the ENSI, Paris

The OECD Centre for Educational Research and Innovation (CERI) agreed to include an activity on Environmental Education in 1985 as proposed by the Austrian Minister of Education, Dr. Moritz, following the 1984 Conference of Ministers of Education of Member Countries in Paris. Peter Posch, at that time the Austrian representative to the CERI Governing Board, was able to convince the members of the Governing Board and a reluctant secretariat to include an international project on Environmental Education in its programme of work for the next five years. When George Papadopoulos, Deputy Director for Education, proposed that I take on the Secretariat's responsibility for Environmental Education in CERI and work closely with the Austrian representative, I was both puzzled and attracted at the prospect.

As environmental awareness necessarily requires active learning, developing Dynamic Qualities of both students and teachers, it was decided to launch ENSI as a grass-roots country-based project from the outset. At the same time the project needed a "policy" thrust to interest and inform Ministries of Education in Member Countries concerning Environmental Education. Our initial team consisted of Peter Posch, John Elliott and myself with the participation of eleven countries. I will try to outline some of the strategies deployed from the initial stages of the project that enabled ENSI's impact on government policies.

The main policy issue then and now is of course how to educate young people for Sustainable Development and our concern from the beginning was to link the environmental school initiatives proposed by participating countries with an educational paradigm that could be used by policy makers to raise the awareness of OECD member governments. The following points were addressed to Governing Board Members, giving a list of the main challenges for policy makers:[1]

1. The necessity for "sustainable development" was one of the main challenges for policy makers. Education is potentially one of the most powerful policy instruments for bringing about new ways of thinking, global as opposed to

1 Kathleen Kelley-Lainé, *Environmental Education and Sustainable Development: Trends in Member Countries in* SUSTAINABLE DEVELOPMENT OECD Policy Approaches for the 21st Century OECD, 1997 (Report of the OECD Task Force on Sustainable Development coordinated by Marilyn Yakowitz)

compartmentalised awareness as well as developing the necessary skills, attitudes, behaviour, values and ethics necessary for stewarding a sustainable world.

2. The outcomes of the OECD/CERI reviews of Environmental Education policies in six member countries (Australia, Austria, Finland, Germany, Hungary and Norway) highlighted many aspects of international developments. Experts identified advanced innovative practice in schools; the effective use of networking as a tool in education and teacher training; the use of Action Research as a method of formative, on-going evaluation for teachers carrying out community-based school initiatives; teachers, students and schools tackling controversial issues within their local environment. Unfortunately policy measures were not in place to offer sufficient political legitimacy to back up a "new Environmental Education paradigm" with a solid epistemological status and the funding to back up research and teacher training.

3. The development of Environmental Education policy in participating member countries was set within particular social and cultural contexts. Governments are moved by grass-roots initiatives that are often conditioned by environmental accidents, threats or the fragility of the land. Environmental issues are high on the agenda if there is sufficient grass-roots pressure. Institutions, Universities and policy makers did not seem to be initiating environmental policies or activities but were rather responding to the initiatives taken by schools, students, parents and other grass-roots organisations.

4. Environmental education policies tended to be voluntary and permissive rather than mandatory. Although Environmental Education appeared in curriculum guidelines, it was often considered with other "soft" issues such as gender studies, native populations or man and society. In some systems, Environmental Education is still in its traditional place of "nature conservation."

5. For a new "Environmental Education paradigm" to develop there was the need for a fresh knowledge base that can master the complexity of the inter-disciplinary nature of environmental issues. There was a need for University investment in research and the professional development of teachers. Governments need to invest funds to stimulate these activities, both at higher education levels as well as in other institutions.

6. The "legitimacy" issue is related to the fact that Environmental Education was seen as competing with economic development. In fact economics is a very important part of Environmental Education, as are issues concerning values and investment of human resources. Some industries were in fact realising the importance of creating partnerships with schools in this area, since they are conscious of the need for the training of future workers and managers in environmental issues.

7. Future education policy directions point towards the "Four E's": environment, economics, employment and education and foresee the powerful development of a new "education market" for the public/private sector partnerships investment in the area of sustainable development.[2]

CONCLUDING REMARKS:

Looking back on the ten years of my role as OECD/CERI secretariat of the ENSI project, from its beginning in 1985 until the moment that ENSI was removed from CERI's program of work in 1995, I can truly say that it was an exceptional project, unlike any other. The first phase of ENSI was rich with country meetings, expert discussions, Action Research and the creation of a solid network of schools and country representatives engaged in the construction of dynamic learning and environmental awareness in education. Environmental Education policy reviews in six member countries enhanced the knowledge base through expert visits, country reports with a bird's eye view of historical, cultural and social factors that influence environmental education policies. Because ENSI was set up along paradigms of "qualitative research" with an emphasis on "Action Research" and not statistical reviews, it was not possible to draw up representative policy statements. Each of the six member countries reviewed felt that environmental Education policies were not sufficient to enhance EE countrywide. On the other hand, however all noted increasing interest and participation of schools in ENSI projects and grass-roots innovations.

The early 1990's saw the beginning of economic restrictions in OECD member countries, including pressure on the OECD to downsize staff and encourage early retirement. Within CERI the ENSI project was the first to be taken off the programme of work. When the Governing Board meeting was held to discuss next year's programme, Country Representatives involved in the ENSI project all

2 Kathleen Kelley-Lainé, *Education for Sustainability* in Sustainable Development, The OECD Observer-Special Edition on Sustainable Development, June 1997

agreed to maintain the work within CERI. Despite the majority vote, it was decided to "decentralise" the project, with the vocal support of non-participating country representatives. Although I was very upset at this unexpected turn of events, I said to my colleague Jarl Bengsston that we would now witness the veritable investment of ENSI member countries. Would member countries finance the project from local resources? He thought I was joking. The present publication documents the continuation of the ENSI Network for a further 23 years as an independent project. This book bears witness to the exceptional accomplishments that schools, teachers and researchers can achieve working together in dynamic networks within and across countries and cultures creating environmental awareness through active learning. ENSI's outcomes from theory to practice, the experience of 30 years of networking, and facilitating education for sustainability has produced a rich knowledge base to fertilise the ground for policy making. I am honoured to have been able to contribute to the first ten years of ENSI's evolution.

Innovation for Environmental Education: An account of ENSI's formative years from 1986–1994

by John Elliott, University of East Anglia, United Kingdom

INTRODUCTION

This article is based on a report I was commissioned to write following ENSI's 1998 second international conference in Linz. Since the network's inception in 1986 as a part of the OECD's Innovation Exchange programme I had served ENSI for 12 years in the role of pedagogical consultant. Shortly after Linz when the network became fully self-supporting and disconnected from the OECD I ceased my involvement. This account is cast as case story about the development of ENSI's aims and pedagogical principles as an innovation and the issues it addressed during its formative years.

CONTEXTUAL FACTORS WHICH GAVE BIRTH TO ENSI'S PEDAGOGICAL PRINCIPLES

ENSI was initiated in 1986 by OECD/CERI in response to a proposal submitted by the Austrian Ministry for Education. It coincided with two related factors. Firstly, the rise in many OECD countries of 'grassroots' pressure groups expressing concern about the environmental impact of economically-driven technological development. Secondly, governments in these same countries having to face the educational implications of the increasing social complexity resulting from rapid economic and social change, and in response beginning to re-think their highly centralized and bureaucratized national curriculum policies in order to devolve more responsibility for curriculum initiatives to schools and local communities.

The Austrian proposal reflected the two factors cited above. Schools would be made responsible for curriculum initiatives within the field of EE but such initiatives would be guided by a general framework of pedagogical principles. The focus would be on 'local environmental issues' which impinged on students' lives, and the pedagogy would aim to promote *environmental awareness* through an active learning process characterized by 'interdisciplinary inquiry' and the development of 'dynamic' as opposed to 'passive' qualities in learners.

The two factors cited above carried sufficient 'force' in 1986 for the CERI Governing Board to decide to include the proposed project in its Innovation Exchange Programme for a two-year period culminating in a first international conference in Linz during 1988. Interestingly, neither the USA nor the UK chose to participate at

this stage. The eleven participating countries were confined to continental Western Europe where environmental issues appeared to have higher priority on the political agenda at the time. Also from the UK perspective ENSI appeared to mismatch government-initiated curriculum reforms, which contrary to trends in continental Europe gave schools and local communities less discretion over curriculum decision-making and reinforced a curriculum organized around discrete subjects.

THE BRUNDTLAND COMMISSION AND THE UPGRADING OF ENSI

Following the 1988 Linz conference, the CERI Governing Board decided that ENSI had been so successful as an innovative curriculum experiment that its demonstrable potential should be further developed and its status upgraded to a major OECD programme. ENSI 2 was launched with enhanced support within participating countries and from the OECD/CERI secretariat. More countries became actively involved, including the USA, the UK (Scotland and Northern Ireland but not England and Wales), the Republic of Ireland and Australia.

This upgrading and extension of the number of participating countries coincided with the publication in 1988 of *Our Common Future,* the report of the Brundtland Commission, whose members included the OECD's environmental authority Jim MacNeill. It was the Commission which introduced the concept of *Sustainable Development* as a means of reconciling economic and technological development with respect for the natural environment. During phase 2 of ENSI the OECD secretariat encouraged the project to adopt the concept as an expression of the central purpose of its approach to Environmental Education, interpreted as the promotion of 'environmentally sustainable behaviour' in students and the local community. Certainly, the concept became increasingly used to legitimise the project in schools to policy-makers. The extent to which it was instrumental as a guide to curriculum planning and development in schools is more doubtful. In other words at phase 2 the concept appears to have served a largely symbolic rather than an *instrumental* function. However, in the Netherlands a conference on *sustainable development*, involving some participants from the ENSI project, was convened by Maarten Pieters of the Institute for Curriculum Development (SLO) to explore the meaning of the concept and its significance for EE policy and practice (SLO, 1998). During the course of the conference ambiguous and often contestable meanings were exposed, rendering the use of the idea as a standard for measuring the outcomes of EE somewhat problematic.

TEACHERS' CASE STUDIES OF THEIR ACTION RESEARCH

Phase 1 had demonstrated the value of teachers researching their attempts to innovate in terms of the insights they generated about the problems of effecting worthwhile change. Schools were asked to produce case studies of their initiatives and these provided the knowledge-base for phase 2. This approach to knowledge-generation was a novel one for OECD/CERI projects, which had largely employed university-based 'experts' to generate their knowledge-base.

From the teachers' case studies it was possible to distil an agenda of issues relating to the mainstreaming of ENSI's principles and values as a focus for research and development in phase 2 (see Elliott, 1991). These included

- *How are the complex relationships between human beings and their environment best represented and explored through the curriculum?*
- *How to effect changes in the organization of schooling which will enable an environmental education informed by ENSI's values and principles to become part of mainstream curriculum provision, and which is accessible to all students?*
- *How to describe and assess the Dynamic Qualities the project aims to foster in students through an active engagement in improving the environmental conditions which govern their lives?*
- *How to develop pedagogical strategies for handling in an educationally defensible manner, the value issues raised by attempts to involve students in action to improve the environment?*
- *How to develop a pedagogical process which links locally defined environmental concerns with global issues?*
- *How to use evidence generated by the environmental sciences to inform student inquiry into local problems?*
- *How to involve teachers in finding answers to the above through a process of collaborative action research within their schools?*

With respect to teachers' accounts of such issues it was noted that the quality of the case studies varied as a source of insight and understanding, according to the level of support teachers had received for engaging in an Action Research process. For phase 2, it was decided to strengthen the support given to helping teachers systematically reflect on the problems of curriculum and pedagogical change in schools. The design of phase 2 recommended the provision of pedagogical support in each country to facilitate teachers' Action Research in addition to the national coordinators, who largely held administrative and liaison responsibilities.

THE POLICY CONTEXT

In phase 2, greater stress was placed on understanding the policy-context of ENSI as an innovation in certain self-selected countries.

This development was prompted by an issue raised by many of the case studies many of which suggested that in the absence of wider systemic change, the project at best operated at the margins of the system, becoming confined to voluntary groups of enthusiastic teachers and students frequently operating in extra-curricular time. At worst it became assimilated into the 'normal' structures of schooling, which largely shaped the curriculum experiences of students and the pedagogical practices of teachers. Although the project at stage 1 more than demonstrated its potential there was little evidence of *innovation transfer within* schools or more widely from the initial cluster of participating schools.

The aim of the policy studies was to examine the extent to which national environmental and educational policies were consistent with each other and supporting or constraining school initiatives framed by ENSI's core values and principles. Hence, phase 2 involved a dual strategy of, at the school level supporting the further development of an EE pedagogy through Action Research focusing on the issues that emerged from phase 1, and at the policy-level of getting educational policy-makers to examine the implications of ENSI's principles for the development of supporting structures at the level of the system as a whole.

TOPIC-FOCUSED CONFERENCES AND THE IMPACT OF NETWORKING ACROSS BOUNDARIES

By the end of phase 2 a series of international conferences, hosted by different countries, had brought participating schools, support persons, and country coordinators together across national boundaries to focus on specific topics. These included:

- *'The Complexity of human transactions with the environment: its curricula and pedagogical implications';*
- *'Supporting the development of environmental initiatives in schools through teachers' Action Research';*
- *'Evaluating the quality of School Initiatives';*
- *'Networking in Environmental Education: theory and practice'.*

The outcomes of these conferences were highly significant. Participants became aware of the significance of 'networking' across established boundaries for empowering teachers and schools to effect change. The conferences themselves constituted significant nodes in the ENSI network. The networking activity, which flowed into and out of these conferences, opened up communication between administrators, inspectors, academics, and teachers within and across national boundaries in a form that was normally free from constraints of position and role. The conferences were critical in creating the conditions which enabled participants to sufficiently distance themselves from their roles and relationships inside the system(s) to share experience and construct knowledge together across 'the boundaries'. They enhanced the intellectual and social capital (such as trust and mutual respect) which participants could draw on as resources for educational development within their own countries. Ideas constructed in one national context were borrowed and used in others.

The idea of Action Research as an approach for empowering teachers as active agents of educational change rapidly spread and took effect in many participating countries during phase 2. 'The politics of borrowing' was not difficult to discern in this case. The idea offered a resolution to the problem of 'trust' that giving schools and teachers more curriculum autonomy posed. How could they be trusted to use that autonomy to affect educationally worthwhile curriculum initiatives? Engaging teachers in the process of Action Research involves inducting them into a methodology for achieving sufficient 'critical distance' from their practice to identify which aspects are problematic and need to be changed, and then to evaluate the actions they take to effect change.

THE CONSTRUCTION OF NATIONAL EVALUATION REPORTS

The spread of teachers' engagement in Action Research during phase 2 impacted upon the process of constructing the end of phase national evaluation reports. In some countries the evaluation of ENSI initiatives evolved as a collaborative process. The data teachers gathered, through Action Research directed at enhancing the quality of their school initiatives informed the evaluation, and that gathered by the evaluator(s) informed the Action Research. Such a process reconciled evaluation goals that are often perceived to conflict; namely, the use of evaluation as an instrument of *accountability/quality assurance* and its use as an instrument for *quality development/enhancement*. The latter often takes the form of *self-evaluation,* and the former *outsider-evaluation*.

There is a tendency to regard self-evaluation as inappropriate for accountability purposes. It is argued that in this context teachers cannot be trusted to evaluate the quality of their own initiatives in an unbiased manner. To be credible in an accountability/quality assurance context evaluations should not place too much reliance on teachers' self-reporting. In other words it is assumed that accountability/quality assurance systems are *low trust systems*, and that, as a central component in them, evaluations will share this characteristic. However, the spread of Action Research in ENSI schools as a systematic form of practice-based inquiry, and the sensitive way in which some external evaluators negotiated access to the data and its subsequent use in their reports, suggest that self-evaluations can be relatively *high trust* and serve accountability/quality assurance purposes.

The evaluation requirement at phase 2 coincided with a general search in educational systems for indicators, against which to measure and compare the quality of educational programmes across increasingly deregulated school systems. It appeared that the price of giving schools a measure of curriculum autonomy was the requirement that they allow the quality of their programmes to be measured and compared against a fixed set of indicators.

Following the *complexity* conference in Italy, a group of Italian teachers undertook work to describe the qualitative dimensions of environmental learning. This stemmed from a concern about the pedagogical implications of current developments in the field of educational assessment i.e. the attempt to define the quality of learning in terms of a few measurable indicators. Their search to identify these qualitative dimensions as opposed to quantitative indicators rested on a holistic conception of the development of *environmental awareness* which acknowledged the complexity of human transactions with the environment. Subsequently this work attracted attention in other countries amongst those concerned to establish ENSI's aims and principles within the mainstream curriculum.

What can be said is that ENSI began to develop a form of evaluation which is open and sensitive to a range of evaluative perspectives that can vary from one local context to another. Such evaluations did not so much pass judgement on particular initiatives as process the judgements of others and locate them within the contexts that shaped their development. However, some raised critical issues about the extent to which initiatives and the values/purposes they served in particular contexts were consistent with the broad aims and principles of the ENSI project. The

overall intention of this form of evaluation is to promote informed reflection and discussion about the quality of environmental initiatives in schools.

ENSI'S EMERGING SCHOOL DEVELOPMENT AGENDA

In the course of phase 2 the agenda of issues/themes which emerged from the phase 1 case studies was further refined and developed as participants compared evidence and experience across national and local contexts. By the end of phase 2 the *school development agenda* for the ENSI Network had shaped up as follows:

- *Changing the mainstream curriculum to foster inter-disciplinary inquiry into environmental situations that concern local communities, in a form which enables students to become aware of the complex interactions between the global and local factors operating on them.*
- *Developing the school curriculum in ways which a) do not simply assimilate Environmental Education to the traditional subject-based organization of the curriculum and the mode of passive learning and corresponding form of assessment this so often entails, and/or b) do not push ENSI aims and principles to the margins of the curriculum.*
- *Changing the culture of teaching and learning in schools in ways which develop those dynamic qualities of citizenship that enable students to accept responsibility for the environment and to collaborate with others on initiatives to improve the quality of their transactions with it.*
- *Fostering school-community collaboration on environmental initiatives by constructing interpersonal and inter-agency networks which cross the traditional socio-organizational boundaries between community services, interest groups, and centres of specialist knowledge/expertise.*
- *Further developing inter-school knowledge networks which enable students, teachers and their partners to share their work across national and local contexts and to learn from each other's experiences and insights.*
- *Developing structures within the educational system for supporting teachers-based Action Research as an approach to school-based curriculum and pedagogical development.*
- *Developing ways of evaluating the quality of Environmental Education, which is consistent with ENSI's premises, aims and values, and which serve the joint purposes of quality development and quality assurance.*

This development agenda transgressed many traditional boundaries enshrined in educational systems: between the school and the University as the traditional

site of knowledge-production; between subject-specialisms; between childhood dependency and adult responsibility; between formal learning inside schools conceived as warehouses and informal learning in real-life social and community contexts; between insiders and outsiders; between institutions/organizations; between knowledge-producers and knowledge users; between teaching and educational research; between teaching and learning; between knowing and acting; between 'global' and 'local' knowledge; and between facts and values.

It was in fact an agenda for systemic reform, because it entailed change in the broader structures and functions of schooling which maintain and reinforce these boundaries. It was not part of a *school improvement* agenda aimed at making schools as organizations more effective and efficient in performing their traditional functions. It was not about 'raising educational standards' as these are conventionally understood. School development in the context of the ENSI project had become understood as a process of more fundamental systemic reform, prompted by the need for schools in advanced industrial democracies to make an effective, rather than merely symbolic response to the emergence of environmental concerns at the top of the social and political agenda globally.

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Dimensions of effective Education for Sustainability: ENSI's contribution to the effective delivery of complex programmes

by Michael S. Duggan, University of the Sunshine Coast, Australia

ENSI facilitated Education for Sustainability (EfS) programmes with the distinct purpose of addressing the expanding role of education in embedding sustainability in our society, a role the organisation committed to in response to the increased recognition provided to them throughout the years of the United Nations Decade of Education for Sustainability (UN-DESD). In this chapter the author provides a very brief illustration of key characteristics and dimensions of ENSI's programmes which contributed to effective facilitation of EfS , including linking research priorities to teaching and learning practices, and enhancing multi-stakeholder networks at varying geographic and organizational scales.

The facilitation of EfS programmes are complex as a result of the multiple and diverse approaches employed by the organizations that deliver them and the inherent challenges and opportunities confronting programme delivery more generally. ENSI employed a scalable approach to EfS programme facilitation, delivering programmes that were contextual, relevant to participants, and confronted the gap between the paradigms of research, policy and practice. As a global network, ENSI was well placed to deliver EfS at scale due to their focus upon organizational and programme development, scaling up (i.e. organizationally), out (i.e. geographically) and in (i.e. values-based) from local to international projects. A comparative analysis of four ENSI programmes (Duggan, 2015) revealed five common characteristics for the effective facilitation of EfS. These include:

1) applying the Action Research approach to bridge the gap between research and practice;
2) facilitating EfS programmes through learning networks;
3) a decentralized approach to programme delivery;
4) mainstreaming EfS programmes; and,
5) formative and summative monitoring and evaluation of programmes.

Each of the five characteristics purposefully contribute to the facilitation of EfS, regardless of varied audiences and the diversity in the contexts or needs of the participants, that allows for a more general understanding of sustainability. For

example, ENSI identified the empowerment of schools through teacher education and learning networks as a key pillar of their approach to the delivery of EfS. Teacher education has been the outcome of the formal delivery of an Action Research approach and the link between methodology (i.e. Action Research) and outcome (i.e. teacher education) encapsulates the thematic connection between research and practice, the platform upon which ENSI established their programmes.

ENSI's approaches to delivering programmes demonstrates the considerable influence an organization can bring to bear when encouraging participants and governments to engage with EfS programmes through networks and action-oriented learning and research. Specifically, ENSI's applications of an Action Research approach to address the gap between research, policy, and school practice provided the opportunity for programmes to contribute to the effective facilitation of EfS more broadly. This approach was considered of significant importance to the facilitation of EfS at the programme level, enabling ENSI's organizational and programme level objectives to be realized concurrently and through scaled program delivery.

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ENSI Pillars – Action Research and Dynamic Qualities

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In this chapter we first describe the concepts and development of Action Research (AR) and Dynamic Qualities as ENSI's key pillars. Second, we reflect in brief on developments and the ENSI legacy in selected countries.

ACTION RESEARCH AND ENSI

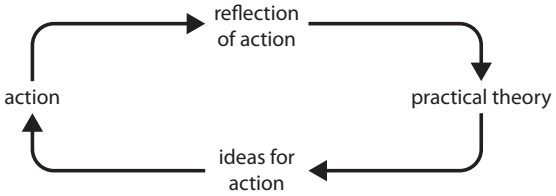
The tradition of AR in the ENSI Project goes back to Lawrence Stenhouse and John Elliott (Elliott, 2018). Peter Posch connected their work on AR with ENSI. John Elliott 's role of "General rapporteur" for the ENSI conferences in Linz 1988 and 1998 and his seminar on AR, together with Peter Posch in Frascati (Italy) in 1990, were both highly influential steps.

The trainees were ENSI country coordinators and the pedagogical support people, who as national teams had the mission to establish and strengthen AR in ENSI member countries in order to support case study development in the ENSI phase 2 (1989–1994).

Action Researchers in and around the ENSI Network have published widely on features of AR, methods, quality criteria and so on (i.e. Altrichter, Posch, Somekh & Feldmann, 2007). To define AR we cite here some quality features published in the ENSI Series by Herbert Altrichter (1990):

- *Action Research is a mode of reflective professional action*
- *Professional practice is "research in the practice context and it resembles a "reflective conversation" with the situation*
- *Action Research is characterised by confronting data from different perspectives*
- *Action Research is characterised by closely and iteratively linking reflection and action.*

This basic feature of Action Research is best described by a graphical presentation:



- *Action Research incorporates reflection and development of educational values*
- *Action Research is characterised by holistic inclusive reflection*
- *Action Research implies research and development of teacher´s self-concept and competencies*
- *Action Research is characterised by inserting findings into a critical professional community*

In the ENSI phases one (1985–1988) and two (1989–1994) teachers in all member countries wrote case studies about their environment-oriented project teaching. Some of the case studies were also published in the Cambridge Journal of Education (Schindler, 1993; Breidler, 1999; Eder, 1999).

The next generation of AR conducted by Austria ENSI teachers focused on experiences of counselling schools in the pilot phase of the new ECO-school network (ECOLOG network, www.oekolog.at). In mid-2000 the Austrian ENSI teacher team developed case studies on students' participation in schools which resulted in the book "9 times pupils participation. Examples from school practice" (Posch and the Austrian ENSI Team, 2006). At the same time the research project ENITE (Environmental Education in Teacher Education) was launched, funded by the Austrian Science Fund (FWF), Austria's most competitive funding organisation for basic research. AR based case studies on innovation in teacher education in the context of Environmental Education (EE)/ESD involving teacher educators, teachers and students were published (Rauch & Kreis, 2003). Building on the project a network emerged leading to the University course BINE (Education for Sustainable Development in Teacher Education and Schools) which currently runs successfully for the fourth time (Rauch & Steiner, 2015). Internationally, the AR component of ENSI was crucial in the EU-Project CODES in which case studies about school and community collaboration built the basis for the analytic study "Key stones on school community collaboration for sustainable development" (Espinet, Zachariou, 2014).

DYNAMIC QUALITIES AS CENTRAL PILLAR OF ENSI

In his basic concept for ENSI Peter Posch linked the highly esteemed demand of OECD for "Dynamic Qualities" to the promotion of "environmental awareness", and stated, that Dynamic Qualities could best be developed if pupils are enabled to take constructive initiatives in their proximate environment (Posch, 1990).

Dynamic Qualities as applied in ENSI can be described as follows: Students take and reflect on initiatives in co-operation with others in the environment in which they live. By doing so, they develop self-confidence, creativity, willingness to become active and accept responsibility. These Dynamic Qualities are also related to key qualifications which are required in professional development, such as the ability to learn on a life-long basis, to communicate, to co-operate and to plan, to be creative and have the capacity for conflict resolution and to act responsibly (OECD/CERI/CD (85) 10, par. 211; quoted in Posch, 1990). Thonhauser (1993), adds awareness and advancement of one's abilities and skills by the learner him/her-self and an open awareness of complex problems as well.

Additionally, the OECD project "Definition and Selection of Competencies (DeSeCo)" (1997–2003) should be highlighted, as it embraced the concept of Dynamic Qualities and nurtured the discussion and implementation widely (OECD, 2002; Rychen, Salganik, 2003). A parallel development could be identified in the context of the United Nations. Beginning with and based on the Declaration of the first World Environmental Education conference in Tblisi 1977, a series of conferences and documents articulated the need for the development of "Dynamic Qualities" (the UN world conferences in Moscow 1987, Tessaloniki 1997 and Ahmedabad 2007; the Agenda 21, chapter 36, as a result of the United Nations Conference on Environment and Development in Rio 1992 and core documents of the Decade of Education for Sustainable Development DESD). Dynamic Qualities are also discussed in relation to economic development. The term "entrepreneurship education" refers extensively to it (Bacigalupo, M., Kampylis, P., Punie, Y., Van den Brande, G., 2016). Furthermore, the current UN Agenda 2030 and the Sustainable Development Goals and the "Global Action Programme" can be regarded as a continuation and dissemination of the concepts discussed here.

But it was ENSI which was the first project focussing on Dynamic Qualities and linking it to environmental awareness and Environmental Education. It can be stated, that ENSI's concept and programme of work developing relevant Dynamic Qualities and

competences through practical engagement and reflection (AR) are an ongoing task in different member states.

Action Research was chosen and proved to be the method to make Dynamic Qualities observable, to facilitate reflection and trace their enhancement through e.g. environmental-oriented project teaching.

SOME TRACES OF ACTION RESEARCH AND DYNAMIC QUALITIES

In *Austria* the work of ENSI has left several living traces. The eco-school network is evolving on an ongoing basis including an intensification of accompanying research (Rauch, 2016; Rauch, Zehetmeier & Erlacher, 2014). The University course BINE is still running and a master-course in Austria and Europe wide is under discussion. ENSI documents and ideas are embedded in pre-service Teacher Education programmes in some Austrian Universities (i.e. Klagenfurt, Innsbruck) supported by new curriculae which offer space for ESD and Action Research.

In her contribution about the development of ENSI in *Norway*, Astrid Sandås clearly demonstrates that the idea of Dynamic Qualities has been underpinned many projects and programmes in her country (Sandås, 2018, p.1) "pupils exhibited a high degree of Dynamic Qualities; in particular, they were good at collecting information, drawing conclusions and communicating their findings to local decision-makers and the press" (Sandås, 2018, p.4)

According to Attila Varga and Peter Havas ENSI contributed significantly to the transformation of the Hungarian education system on three different levels, among them 'Ensuring Environmental Education and later ESD as a cross-curricular issue in the National Core Curriculum. The main elements of this avant-garde position of Environmental Educational developments initiated by ENSI were the active involvement of pupils and the Action Research (Varga, Havas, 2018)

Maarten Pieters (2018) gives examples how far Action Research and the concept of Dynamic Qualities are reflected in curriculae and teacher training in the Netherlands: All secondary school students work on a final assignment in their final year, which transcends various subjects. These assignments offer good opportunities for AR or the development of Dynamic Qualities, but do not require it per se. Continued professional development is increasingly combined with development and/or research tasks, in a way that meets the definition of Action Research (producing

both academic knowledge and results for «next week's» or «next year's» teaching practice).

These examples shed light on ENSI's legacy in three participating countries. Although these are only snapshots it shows the potential ENSI has to continue to influence long lasting developments in education policies and education systems to shape an enabling educational environment and to foster a more sustainable future.

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The Whole School Approach: ESD as core element of school development – a modern adaptation of ENSI´s basic concept of dynamic qualities

by Reiner Mathar, ESD-Expertnet, Germany

Sustainable Development, the key outcome of the Earth Summit in Rio 1992, can only be achieved if all people of all ages participate and accept new and different ways to become a sustainable society. If education is understood not merely as instruction, but rather as a process of involvement in the process of future orientation, planning and creation of a sustainable future, the education should clearly be one of the main strands in the field of Sustainable Development. The world summit in Johannesburg held in 2002, focused mainly on this issue and led to the UN-Decade on Education for Sustainable Development (2005–2014). One of the outcomes of the Decade was that Education for Sustainable Development should be firmly established within all sectors of formal and non-formal education, and for all ages of students from kindergarten up to tertiary levels. However, to implement this, it is important that Sustainable Development should not be seen as a closed concept with given solutions but must be considered as an ongoing process, finding new and the best solutions. While children are at school they need the possibility of developing and realizing their own approach to life-long learning and against this background, it is obvious that there is a need for change within the whole education sector. Not only teaching, learning and student participation needs to change, but so does a schools' co-operation with the local community and other partners in the society. Instruction and learning must be transformed to involve more co-construction between students, teachers, parents, partners, and experts from outside schools. Different areas of cross-curricular education such as environment education (EE), health education, civics / education for democracy and so on can be doorways to ESD.

This general move of education towards Education for Sustainable Development means that school must become a role model for Sustainable Development. Pupils and students spend an increasing proportion of their live in education and thus it is more and more important that real life experiences are offered and realized at school. This includes food and consumer-education, social learning, learning about energy use and personal resource management. An understanding that sustainability is a guiding principle will help schools to develop. Not only that but

students will be able to develop their participation within the local community and after reflection deepen it further.

The "s3 concept"[1] of the British school inspection offers an interesting school-evaluation instrument. It links different aspects of Sustainable Development and Education for Sustainable Development, by identifying different doorways to ESD practice at school. These doorways are:

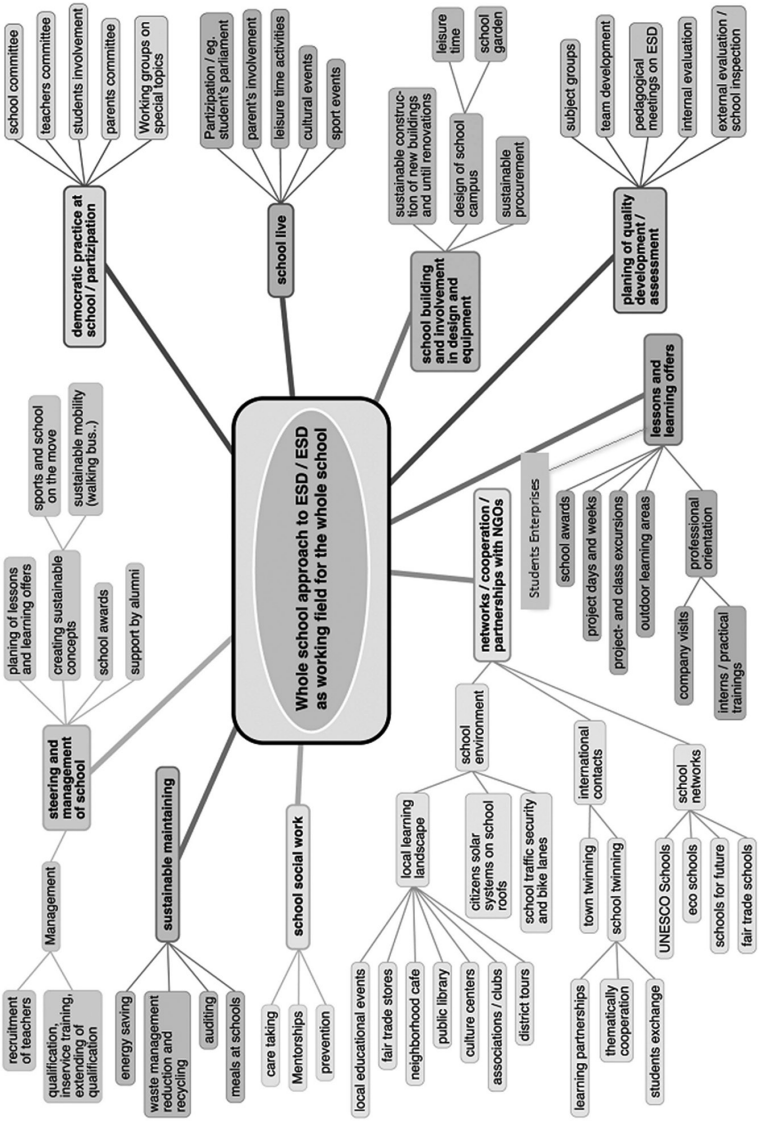
- food and drink
- energy
- water
- travel and traffic
- purchasing and waste
- school buildings
- school grounds
- inclusion and participation
- local well-being
- the global dimension. (The transition from different areas of ESD to a whole school concept means that different "cultures" of cross-curricular education need to be considered.)

ESD relates to many other cross-curricular areas of education that touch upon SD or SD components. A figure in the UNESCO Report on ESD from 2012[2], gives a clear picture of this relationship and names some of these areas: environmental education, human rights education, climate change education, disaster risk reduction (DRR) education, consumer education and development education. All of them can be linked to ESD. All of these areas can be linked to ESD in different ways depending on whether a narrow or broader interpretation is taken of both ESD and the other cross curricular theme and whether ESD is placed at the centre of thinking or on the periphery. So the figure positions the narrow interpretation of these different educations on the outside periphery. The broader interpretation, however, is positioned towards the centre. Concentrating on these educations more broadly, they revolve around similar issues and overlap at the core, where Education for Sustainable Development is located. But, ESD can only build the centre, when it

1 s3: sustainable school self-evaluation for primary, middle and secondary schools, DfES, 2006; available from www.teachernet.gov.uk/sustainableschools/tools.

2 Shaping the Education of Tomorrow, UNESCO 2012, http://unesdoc.unesco.org/images/0021/002164/216472E.pdf p.71

Mindmap of the Whole School Approach



The the mind is based on the mind map published in: Mathar, R. (2016): Der Lernbereich Globale Entwicklung als Aufgabe der ganzen Schulen in: Schreiber, J-R and Siege, H (eds.): Orientierungsrahmen für den Lernbereich Globale Entwicklung, ENGAGEMENT GLOBAL, Bonn https://www.kmk.org/fileadmin/veroeffentlichungen_beschluesse/2015/2015_06_00-Orientierungsrahmen-Globale-Entwicklung.pdf p. 414.

is interpreted broadly enough to include all listed themes and perspectives. When ESD is interpreted narrowly, it moves back to the figures' periphery, means that it will move from ESD to the specific education issue.

THE WHOLE SCHOOL APPROACH FOR SUSTAINABLE DEVELOPMENT – A CONCEPT OF EDUCATION FOR TOMORROW

ENSI understands the concept of the Whole School Approach (WSA) not merely as a set structure to be followed as a concept for a sustainable school, but rather as a platform to evaluate a schools progress and as basis to formulate challenges and possible co-operations, to combine different fields of activities and to develop new fields of activities towards a more sustainable school. The concept of WSA followed the experience of the network ENSI that defined ESD as a mainly open concept based on Dynamic Qualities and competencies: "A school engaged in ESD is engaged in learning for the future, by inviting students and teachers to enter a culture of complexity, by using critical thinking to explore and challenge, in clarifying values, reflecting on the learning value of taking action and of participation, revising all subjects and the pedagogy in the light of ESD"[3]

Following the idea that ESD is more based on competencies in the sense of the personal quality development of the learners, than in selecting the topics and content of sustainable development, the Whole School Approach will put the development of the student's personality at the centre. From the beginning this was a central focus of ENSI and it links the topic of environment and later the broader concept of Sustainable Development with social, economic and cultural elements as well as to the overall area of political development even beyond the educational sector.

The following mind map (see page 52) describes the WSA model and aims to raise and lead discussions at school level about their current activities in the field of ESD and well as raising new ideas and concepts to improve ESD capacities and work on the way to a more sustainable school.

Schools are always determined by external factors (terms and conditions) and internal factors (processes and features) that have an impact on school life and that need to be considered when educating young people. Other factors such as

3 Breiting, Mayer, Mogensen: Quality criteria for ESD schools, Guidelines to enhance quality of education for sustainable development. Vienna, 2005. https://www.ensi.org/global/downloads/Publications/208/QC-GB.pdf

external co-operation, international partnerships, sponsoring, support systems and school inspections also play a vital role. Looking at future school development and especially when it is linked to "Agenda 2030" and the "Sustainable Development Goals (SDG's)", co-operation and working within the local community becomes more and more important. Some countries are already taking steps to support the development of such co-operation in the future. Mongolia for example has decided to orient the school system towards the SDG's and supports schools to develop concepts, and future leading ideas for local development.

The successful sustainable school is one that builds effective teaching and learning and in terms of processes and features; leadership and management are critical for the success of the school in these areas. Closely connected is the professional staff development. Having an inclusive culture at a school also plays an important role. One precondition for becoming a sustainable school is fulfilled if all process and features aspects are considered and then well organised.

Terms and conditions factors are difficult for a school to influence but a school can react accordingly. The legal and political framework is predefined usually by a national constitution, national curriculum, and school laws. The quality of teaching and learning depends not merely on the condition of the classrooms but more important the number and qualifications of the teaching staff. Are there enough teachers? Are they qualified? Are they familiar with the concept of Dynamic Qualities and the overall concept of competence orientation towards modern education? Do they have enough useful teaching and learning materials?

IN THE GLOBAL ACTION PLAN (GAP) FOR EDUCATION FOR SUSTAINABLE DEVELOPMENT THE WHOLE INSTITUTION APPROACH BECOMES PRIORITY ACTION AREA

"ESD is about much more than preaching and teaching on Sustainable Development. It is also about practicing Sustainable Development. Sustainable learning environments, such as eco-schools or green campuses, allow educators and learners alike to integrate sustainability principles into their daily practice. Transforming learning and training environments concerns not only managing physical facilities more sustainably, but also changing the ethos and governance structure of the whole institution. The second Priority Action Area calls for promoting whole-institution approaches to ESD in schools and all other learning and training

settings".[4] Following the evaluation of the UN-Decade on ESD up to 2014, UNESCO changed the main focus of ESD from project to structure, moving from project development to implementation and embedding of ESD into the school system and its structures. Therefore the GAP focuses on priority action areas to enable this to happen and the concept of WSA is one of those, and one that links to other areas as well such as teacher training, youth and community development.

SDG 4.7 AND THE CONCEPT OF WHOLE SCHOOL APPROACH

Through linking different target areas the UN developed and then adopted the overall concept of Agenda 2030 and the SDGs. For the first time, a set of goals for all regions and countries of the world have been developed and concrete and specific sub-goals will guide further development. These will be evaluated using an ongoing process of indicator development and reporting system. Right from the start education was seen as a core element to reaching the SDGs and just two months after the formal decision by the General Assembly and linked to the Paris Agreement on climate change, UNESCO and other international bodies organized first world conference on "Education as a driver for Sustainable Development Goals", the outcome is described in the "Ahmadabad plan of action"[5] The development and the adoption of Agenda 2030 and especially the Sustainable Development Goals define new challenges for school education and education in general. SDG4.7. for the first time defines Education for Sustainable Development as an overall educational goal.

> "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development."

By combining Education for Sustainable Development with other elements of education and especially with inclusive learning, this SDG is very much linked to the concept of Whole School Approach. Following the Ahmadabad declaration, it is obvious that the SDG's can only be achieved if schools and other educational

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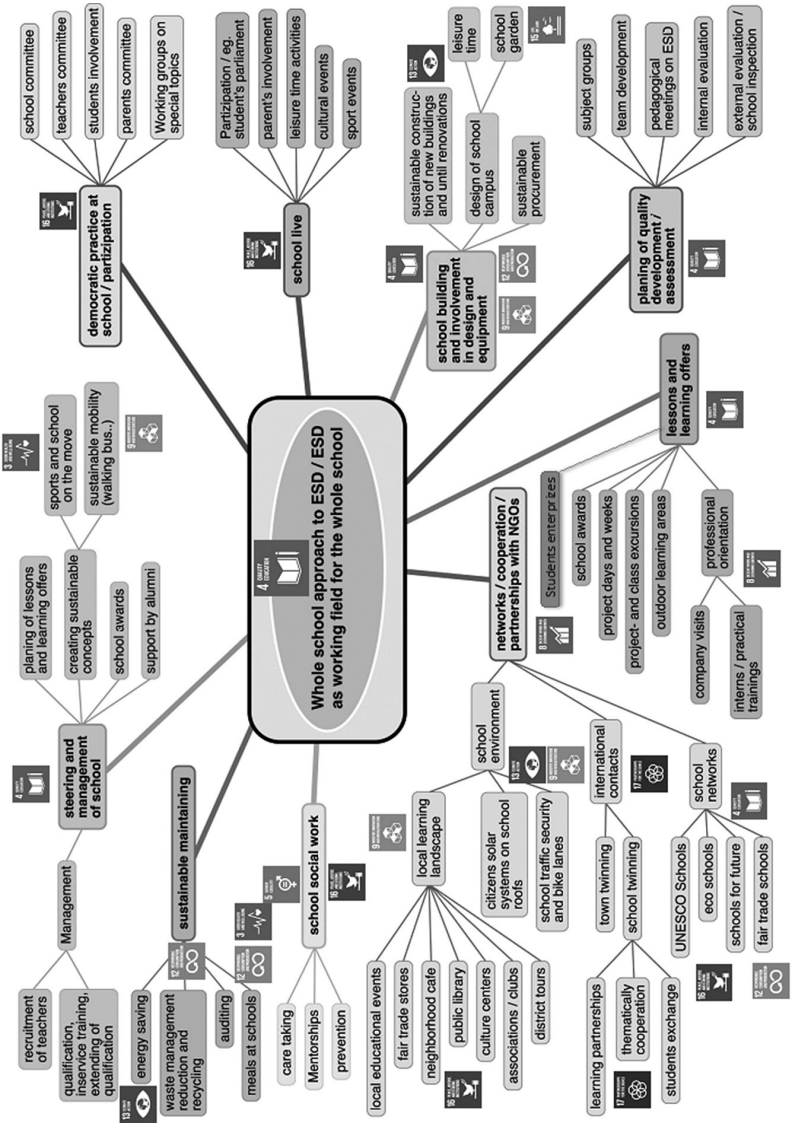
4 Roadmap for implementing education for sustainable development UNESCO, Paris 2014, http://unesdoc.unesco.org/images/0023/002305/230514e.pdf

5 Ahmadabad plan of action, CEE India, January 2016, http://ceeindia.org/esdg/PDF/Conference%20Final%20Action%20January%2013,%202016.pdf

Mind map of Whole School Approach linked to SDG's



The the mind is based on the mind map published in: Mathar, R. (2016): Der Lernbereich Globale Entwicklung als Aufgabe der ganzen Schulen in: Schreiber, J-R and Siege, H (eds.): Orientierungsrahmen für den Lernbereich Globale Entwicklung, ENGAGEMENT GLOBAL, Bonn 2016 https://www.kmk.org/fileadmin/veroeffentlichungen_beschluesse/2015/2015_06_00-Orientierungsrahmen-Globale-Entwicklung.pdf p. 414.

organizations work with as many different elements of all SDG's as possible, with the main goal being to offer all students insights and possibilities to work and live with the SDG's.

The basic mind map demonstrates the relationship between the elements of a Whole School Approach to the SDG's and shows a strong link to nearly all SDG's.

The concept of Whole School Approach as described above has been adopted as a planning and school development tool in several countries including India, Germany, Mexico, South-Africa and Mongolia – with Mongolia being on the way to introduce it to all schools in 2018.

There, by order of the Ministry of Education Mongolia has decided, that all schools must work on ESD, based on the Whole School Approach and work together with local communities to reach to SDG's at a local and regional level. To support the process, the National Institute for Teacher Professional Development has already started to train multipliers and run school based processes in three regional areas of the country.

In Germany, the new national framework of ESD adopted by all Ministries of Education is already based on the SDG's and has a special chapter on ESD as a task for the whole school.[8]

Looking finally on the ongoing and future development of Education for Sustainable Development, the concept of Whole School Approach has already become a structure building function. The concept links the realization of SDG 4.7 with the overall goal of school development. WSA is following the successful story of Environmental Education in the 80th and 90th. During this period Environmental Education helped schools to reflect on their own development by assessing energy-consumption, waste-management and other aspects and then to link these reflections on own projects and management structures to further school improvement.

The challenge of complexity: from systems thinking to wicked problems – the ENSI contribution.

by Michela Mayer, ENSI and IASS, Italian Association for Sustainability Science

At the very first ENSI Conference in Linz (1988), the Italian scientist Laura Conti raised the issue of complexity, in life and in education, suggesting the need for a reflection on the limits of our knowledge and on the unpredictability of living complex systems. This was accepted by the ENSI community and became one of the main areas of reflection in subsequent years. The ENSI vision – Dynamic Qualities combined with complex systemic thinking and with the Action Research approach to teaching and to teacher training – represented an important step toward 'sustainable education', and a contribution to ESD as an evolving concept. Today, further stimulating thinking coming from 'sustainability science' and from 'post-normal science' (PNS) enriches the debate on complexity and on related educational challenges.

A FIRST TALK ABOUT COMPLEXITY

It's spring 1988 and the schools selected for the ENSI national report on Environmental Education in Italy find themselves together, for the first time, at the CEDE – European Centre for Education – Headquarters in Villa Falconieri, a villa that dates back to the 7th Century, surrounded by a park which is hundreds of years old. The representatives of the two Ministries involved spoke, as did Peter Posch, the project's international adviser, and now it's Laura Conti's turn: the Italian doctor and ecologist who was instrumental in achieving one of the first European laws against Environmental Pollution, the "Seveso Directive" (82/501/EEC).

Laura doesn't only speak, Laura recounts stories. Amidst silence, with the birds of the park as her only companion, she tells us true tales, thoughts that keep us enthralled in a path that has its own logic, but that, like in fairytales, winds its way with unpredictable turns. And these are Laura's themes: the unpredictability and complexity of connections in an ecosystem, the uniqueness of living beings and their variability.

The starting point is ecology, but this is interwoven with the challenge of teaching this complexity, being able to convey it within the school system and in Environmental Education.

> "*You have the task of enabling pupils to get used to predicting the behaviour of living things: but since each living thing is unique, its behaviour is never predictable with certainty. Predicting the unpredictable is a little difficult, but doing it habitually is even more so, and I don't know how you can manage it. Yet people need to learn what complexity is, that is a function of diversity that in its extreme case is the uniqueness of each subject.*" (Conti, 1989)

Laura Conti was invited to convey the voice of ecology to Linz, at the first international meeting organized by the ENSI project in that same year and this is how she concludes her speech:

> *"Can schools teach children to be aware of the future?… Today, Europeans … are free in a way they have never been before. Yet they have lost their future and are destroying their past."* (Conti, 1991)

This lack of "future" was, for Laura, one of the most serious consequences of a society and of a school that concentrates on the past and on a more immediate future – that of an electoral mandate – and is forgetting about the complexity of connections. It does not reflect the impact of decisions, in the long term and at a global and local level. Complexity, in fact, does not only concern environment, nature, society but it concerns, in first instance, the processes of knowledge, the way in which we perceive and represent the world. A 'mechanistic' culture, of the required predictability of the results of a scientific or political action still permeates the school system, as well as university and wider society. In the years following the Linz Conference, ENSI in Italy focused its research on "the culture of complexity" together with the development of "Dynamic Qualities" and of "Action Research", in order to reflect, together with teachers, on how only a complex vision of the world can change curricula and teaching methodology.

In Environmental Education, turning to a culture of complexity at that time, meant addressing undue generalisations and simplifications, and highlighting the '*patterns that connect*' (Bateson, 1979), addressing relations and processes and not just the final outcomes. Complexity to ask oneself about the '*relevance*' of questions rather than about the correctness of results, and to highlight *limits* and *problems* rather than purely proposing solutions. Thus, the complexity not so much, or not only, of an external reality that we cannot manage to simplify, but of the elements of knowledge with which we build our representation of the world.

With this theme in mind, Italy and its team of teachers, took the lead in organising an International conference for the countries and the schools that are collaborating with ENSI research: *Images of nature, man and science in Environmental Education (1992).*

The conference, hosted by the Province of Perugia with the support of the Italian Ministries of Education and Environment, invited international experts – Isabelle Stengers, Marcello Cini, Mauro Ceruti, follower of Edgar Morin, … – for a dialogue with the teachers: which images can better help us build, together with our students, the idea of a complex, interconnected, unpredictable world? And how can we build a kind of knowledge that is sensitive to this?

KNOWLEDGE AND COMPLEXITY

Complexity, according to Marcello Cini (1994) and Isabelle Stengers (1987), cannot be considered as a new "scientific" vision which counters the mechanistic one. Rather, it presents itself as an "emerging" concept, that allows us to look at very different phenomena – such as the environment, society and education – recognizing the similarities, accepting the importance of not "reducing" them to something else. Complexity requires an approach of openness and connectivity.

The concept of complexity does not, in fact, exist independently of those who use it: the complex thought is not at odds with the simple and analytical thought, indeed it underpins it whenever possible but it emphasizes the problems created by arbitrary generalization and invites us to be aware and responsible for the "mis en scène" of the problem definition process.

Within these forms of knowledge, attention is placed on undue simplification and on the legitimacy of generalisation. According to Strengers (1987), reductionism is not in the simplicity of models but in extending these models beyond their 'raison d'être', on the "pertinence" of the questions more than on the accuracy of the results, on the contexts in which the problems are being recognized, more than on their solution. Asserting the complexity of reality does not imply a renouncement of knowledge but responsibility to connect, into a sole narrative, information and values, sensations and interpretation. Knowledge which is not static and impartial but sensitive to the fact that

> "*We can never identify how things are, especially in matters of people and their environment, without already interpreting what we find, implicitly preparing for decisions or making value judgement...*" (Stengers, 1992)

School and University often confuse knowledge with its representation and are still based on an idea of knowledge as "mapping the world" (Novo, 2002) without stopping to reflect on the cartographer, on his perceptions, his questions, his instruments and their role in defining the map. A general and complex vision of knowledge is not in contrast with disciplinary cognizance, it indeed directs them towards

> "*the construction of a lucid relationship with knowledge, which requires methods to evaluate the pertinence of what we know, the choices with which we can evolve, the controversies which reveal the risky character of these choices*". (Stengers , 1992)

THE RESULTS OF THE ENSI RESEARCH ON 'TEACHING COMPLEXITY'

The Perugia Conference was a success – many countries participated and the use of Action Research to explore a complex approach to Environmental Education spread to other countries, in particular France, Spain and Sweden, as seen in the final publication edited by OECD (1995).

The environment is no longer conceived as a repertoire of elements allowing teachers to give meaning and enrich their disciplines, but it becomes a common field of action, a test for evaluating the school's complex approach to reality.

> *Students realize that a world in which each problem has only one possible categorical answer doesn't exist and that every action puts into play a series of relations with control and self-regulation mechanisms* (Axelsson, 1993).

Knowledge built at school is not important because it is part of the syllabus or because it is objective and divorced from reality; on the contrary it is important because it includes value judgements, expectations and experience that is meaningful.

> *"Although very often implicit inside schools, values come into the open in environmental education, be they the teacher's values, those of the social or family environment, or those that influence the solution of the problem which must be dealt with. In a culture of complexity values are an integral part of the problem." (Losito e Mayer, 1993)*

> "*Our goal is to develop with our students a conscious holistic view of the complexity of the society; the students are to be given the chance to see the opportunity for*

individual and groups to influence the society …. We want to teach from our students' point of view about the world, and not from a simplified 'teacher's' view" (Axelsson, 1993)

The teachers' role must change: they are no more the transmitters of pre-defined knowledge, instead they need to learn to build meaningful contexts and to pose '*legitimate questions'* – questions which do not have readily made answers (von Foerster, 1971) – within which students can "*actively create their meanings*" (Elliott, 1991). Schools in the ENSI-project cannot work in isolation but must co-operate and change their role from libraries in which to file past experiences to *'active centres where a community gathers to debate and deal with their problems'* (Mayer, 1995).

Accepting uncertainty and risk become part of teachers' new professionalism, their confidence in "contents" shifts to confidence into "processes" that enables a safe harbour for error and conflict. Following the Laura Conti alert "*…although if we can widen the scope of our forecasting, some areas will remain unpredictable…. remembering this means having the foresight to remain constantly on our guard so that we can recognise the unpredictable as soon as it appears*" (Conti, 1991), teachers start to appreciate the challenge:

"*Freedom is uncertainty. I did not know where this was going to lead us…Little by little the process got momentum, pupils had so much energy and numerous ideas. My task was different from before but I started to enjoy it.*" (Teacher from Slovenia Primary School, reported by Pozarnic, 1993)

"*The teacher is not a book that preserves unchanging knowledge; rather s/he is a sailor who adapts to the changing conditions of the sea"* (Teachers of Moena Secondary schools, reported by Losito and Mayer, 1993)

EDUCATION FOR SUSTAINABLE DEVELOPMENT AND COMPLEXITY

In 1992, during the International Summit of Rio, Education for Sustainable Development was proposed as an alternative to Environmental Education. The transition from one expression to the other did not happen without critique, especially with regard to the word 'development' and its risk of forcing education towards the necessities of an economic 'growth' (Jickling, 1992).

The network of nations and schools that have participated in the ENSI experience lived this transition without drama: in the ENSI-project, Environmental Education

was never limited to a nature-like education and the complex thought we were exploring forced us to see the connections and interdependences which are inevitably parts of the economy as well as of the eco-logy. As proposed in 2004, by the New Zealand Parliamentary Commission, even for ENSI "*sustainability can be thought of as both a destination (something worth aiming for) and a journey (that has no predetermined route)*", a concept which, as a consequence, can be continuously explored and re-debated.

The new orientation towards Education for Sustainability promoted interest and reflection on systemic and complex thought, at national and international level:

- Within the UNESCO project – Educating for a Sustainable Future – Edgar Morin was called upon to write a paper on complex thinking: Seven complex lessons in education for the future (1999). Many ideas we had explored within the ENSI were prominent:
  - the importance of knowledge that is not only interdisciplinary but also 'trans-disciplinary': "*Fragmentation and compartmentalization of knowledge keeps us from grasping 'that which is woven together*" (p. 19)
  - the need of 'belonging': "*all truly human development means joint development of individual autonomies, community participations, and a sense of belonging to the human species*" (p. 25)
  - the necessity of sharing values so that we can all live together on this planet: "*the education of the future should teach an ethics of planetary understanding*" (p. 39)
  - the impossibility of eliminating risks and uncertainties and the awareness of sailing "*on a sea of uncertainties dotted with islets of certainties*" (p. 48).

- In 2001 Stephen Sterling uses the systemic and complex thinking to analyze 'traditional' education and proposes, following Bateson's thought (1972), to work hard for a 'second order change' and to invert the terms: no longer educating for sustainability but making education itself sustainable. Sustainable Education does not refer only to Education for Sustainable Development but is a challenge to education as a whole: the term 'sustainable education' implies a paradigm shift, one that asserts both humanistic and ecological values (Sterling, 2001). Education, in Sterling's vision, should be at the same time critical and transformative, consciously value-laden and action based, local and global, participative while developing independence, reflective and critical.

- In 2002, in Johannesburg, the IUCN, as a result of its two days' workshop on Education, identified 'systemic thought' as one of the five core components of Education for Sustainability. Four other components – 'Imagining a better future', 'Critical thinking and reflection', 'Participation in decision making', and 'Partnership' (Tilbury and Wortman, 2004) – have been considered essential for an educational approach which takes complexity into account.
- The UNESCO Decade for ESD, started in 2005, summons global attention to Education. In Europe, the UNECE strategy affirms that: "*The development of a sustainable society should be seen as a continuous learning process, exploring issues and dilemmas, where appropriate answers and solutions may change as our experience increases*". In order to obtain these results: "*Learners at all levels should be encouraged to use systemic, critical and creative thinking and reflection in both local and global contexts*".

"As experienced by the ENSI network, working on knowledge processes and not only on environmental emergencies, profoundly changes not only the contents but also the contexts and methods of education. During the UNESCO Decade, the ENSI SEED project (School Development through Environmental Education) analysed the Eco-schools development process in 13 countries (Mogensen and Mayer, 2005). As a result of this research a booklet was produced – *Quality Criteria for ESD schools* (Breiting, Mayer & Mogensen, 2005) – currently translated into 18 languages and to which various articles in this publication refer.

In the booklet's introduction we can read:

> *"A school engaged in ESD is engaged in learning for the future, by inviting students and teachers to enter a 'culture of complexity', by using critical thinking to explore and challenge, in clarifying values, reflecting on the learning value of taking action and of participation, revising all subjects and the pedagogy in the light of ESD." (Breiting et al., 2005 p. 10)*

The 'culture of complexity' is one of the 15 'areas' in which schools are invited to develop these qualities.

> *"The emerging idea is that not only we have a complex world and that environmental situations are complex to manage but that we need 'complex thinking' that counteracts the reductionism of many 'narrow technical rationalities'"* (p. 21).

In the vision proposed by the booklet, the ESD schools interested in a culture of complexity, should explore three main areas: a) attention to the *'patterns that connect '* all living beings to each other and to the planet; b) an evolutionary view of natural and social processes, and thus an understanding of how our opportunities for the future are shaped by the interactions between constraint and diversity; c) the awareness of limits, together with the awareness of the unpredictability of complex systems and of the risks associated with our every action or inaction (Mayer, 2000).

NEW CHALLENGES FOR EDUCATION:
FROM SUSTAINABILITY SCIENCE TO AGENDA 2030

In the Third Millennium, sustainability science emerges as a new, evolving, academic discipline that can point the way to a sustainable global society by facing challenges that existing disciplines have not addressed. This includes endeavours to simultaneously understand phenomena and solve problems, uncertainty and application of the precautionary principle, the co-evolution of knowledge and recognition of problems, and trade-offs between global and local problem solving.

As a solution-oriented, transformative endeavour, 'sustainability science' promises to provide an answer to these needs, bringing together research and practice, global and local perspectives, disciplines across the natural, technological and social sciences. Sustainability science could be conceived as "*a field defined by the problems it addresses rather than by the disciplines it employs; it serves the need for advancing both knowledge and action by creating a dynamic bridge between the two.*" (Clark, 2007)

The goal of sustainable science is not that of ascertaining a 'truth', by its own nature uncertain, but that of collecting the most information possible to arrive at wise decisions which take into account the different points of view and interests, which produce consensus and are inspired by the principle of precaution: if making decisions is urgent and if uncertainty is not eradicable, there is a need to work hard towards 'reversible' decisions and the monitoring of the effects of our actions.

To reach these goals, the fact that science is interdisciplinary is not enough – it also has to become 'trans-disciplinary', i.e. open to the contribution of all those who know the problem they are facing because they are experiencing it personally. As sustainability science claims: the traditional vision of science that is characterized by separated and isolated disciplines, a search for objectivity, consistency within disciplinary borders and detachment from common thought, should be replaced

by a new vision generating a new type of science that is characterised by the continuous involvement of non-academic actors in the knowledge production process, and by the adoption of a wider vector of research practices, such as trans-disciplinary, community-based, interactive or participatory approaches (Wiek et al., 2012).

An important reference to sustainability science is 'post-normal science' (PNS) as defined by Funtowicz and Ravetz (1993). A 'post-normal science' tries to extend the limited circle of the scientific community (which, in the Kuhn vision, guarantees the quality of the procedure in 'normal science periods') to the entire society and represents the only possible approach for the use of science on issues where "*facts [are] uncertain, values in dispute, stakes high and decisions urgent*" (Ravetz and Funtovicz, 1993). Within post-normal science, citizens' practices and opinions, stakeholders' feelings and hopes, schools' reflections and actions, should become an integral part of the process of the creation of knowledge. A process that requires everyone's, and not only scientists', sense of responsibility, critical reflection, and democratic exchange of view. The notion of uncertainty, indeed, should always be accompanied by that of democracy, and by that of a democratic society where '*no problem is solved in advance'* and '*uncertainty does not cease once a solution is adopted*' (Bauman, 2000).

In this approach, errors, or ignorance, should no longer be seen as a problem to be avoided but, instead, as facts on which to, even partially, base our decisions: *"The philosophical perspective … is one of the complementarity of 'knowing-that' and 'knowing-how', where uncertainty and quality are essential attributes of knowledge … where there is a dialectic interaction of knowledge and ignorance. In this way ignorance is usable, indeed useful and essential, for our understanding of ourselves and our relations with our environment. Awareness of ignorance can be the beginning of wisdom about our place in the contemporary world …"* (Ravetz, 1992).

The awareness of one's own ignorance and of one's own limits has been emphasised more than once as an important 'quality' for all those who try to 'innovate' and in particular for the teachers: "*as innovators teachers are asked to take on, initially at least, the burdens of incompetence*" (Stenhouse, 1975).

The lack of awareness is instead at the basis of those that have been recently defined as 'wicked problems'*:*

> *"The term 'wicked' in this context is used, not in the sense of evil, but rather as an issue highly resistant to resolution. Successfully solving or at least managing these wicked policy problems requires a reassessment of some of the traditional ways of working and solving problems … " (Australian Public Service Commission, 2007)*

All problems are 'human constructions': an environmental issue, a social transformation, an economic emergency, is perceived as a problem only with regard to a set of values or to shared goals. Unfortunately, the time we spend in the "construction of the problem", and in the analysis of what we know and of what we do not know or of what we have never done before, is always too little compared to the time spent in finding its solution. Looking at the examples of wicked problems in literature we can clearly see that we are dealing with complex problems where the main difficulties are the differences of the values at stake, the need for simple solutions and of immediate political feedback, the lack of necessary time to really understand the situation and prepare oneself to confront it through trial and error.

> *"Successfully tackling wicked problems requires a broad recognition and understanding, including from governments and ministers, that there are no quick fixes and simple solutions". (Ibid.)*

The crisis science is facing in dealing with 'wicked complex problems', is not only methodological and organisational in nature, but also ethical and metaphysical. In order to deal with this crisis it is necessary to clarify first, as proposed by Benessia et al. (2016), what we need to 'unlearn': starting off from a vision of science as an impartial experience, so as to dispel the myth that any problem of natural or social origin can eventually be solved through the accumulation of hard facts.

If what we need to tackle wicked problems is a collective participation in the construction of a complexity based knowledge, the educators, the teachers, must take responsibility of educating citizens to participate in social choices, for environmental or non-environmental issues.

The Sustainable Development Goals of the UN Agenda 2030, adopted in 2015, is an example of complex and ambitious attempt to "*take the bold and transformative steps which are urgently needed to shift the world on to a sustainable and resilient path*" (p.1). However, the interdependence between the goals, claimed in the first part of the document, is left to the efforts of single countries, in which the chosen

indicators for monitoring do not take sufficiently into account the correlations, the 'quality', the complexity of transformations to which the SDGs aspire.

Education plays a major role in transformative learning: as a specific Goal of the Agenda – Goal 4 – to ensure *'quality' education for all'* and as a main tool to reach the whole set of proposed goals. But, what does 'quality' mean in a changing society towards a sustainable world and what competencies should a qualified teacher have? The UNESCO publication – *Education for Sustainable Development Goals* (2017) – even following the 17 SDGs and keeping separate the related 'learning objectives', collects in the introductive and conclusive chapters the experience and thoughts of the UNESCO Decade:

> *"What ESD requires is a shift from teaching to learning. It asks for an action-oriented, transformative pedagogy, which supports self-directed learning, participation and collaboration, problem-orientation, inter- and trans-disciplinarity and the linking of formal and informal learning." (UNESCO 2017, p. 7)*

Introducing the key competencies, the document affirms the necessity of a complex vision:

> *"The sustainability key competencies represent what sustainability citizens particularly need to deal with today's complex challenges. They are relevant to all SDGs and also enable individuals to relate the different SDGs to each other – to see "the big picture" of the 2030 Agenda for Sustainable Development"(p.11)*

Among the key competencies, the document indicates "systems thinking" as the first competence, defined as "*the abilities to recognize and understand relationships; to analyse complex systems; to think of how systems are embedded within different domains and different scales; and to deal with uncertainty" (p. 10).*

The world of Education for Sustainable Development – and the ENSI project has paved this very road – seems to have learned, from reflections on complexity and critique on techno-sciences, more than what many of the very same scientists who deal with environment and transformation for a sustainable development, have in fact understood. It is important that this critical awareness of the limits and potential of scientific thought and of technological innovation, and of the futility in simplifying the world's complexity, is present in all future reflections on ESD.

As proposed by Lotz-Sisitka, Wals, and al. (2015), educators need to reflect on the 'resilience' not only of eco-systems but also of social, 'un-healthy systems', that can potentially end up promoting "*scientific imperialism when applied uncritically to the social*". These transcend disciplinary boundaries and role divisions, and require a form of learning, and teaching, not only transformative but 'transgressive' of norms and ways of thinking that we have often taken for granted.

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ENSI IN NATIONAL CONTEXTS

ESD in Europe, a quick overview

by Michel Ricard, Université de Bordeaux, France

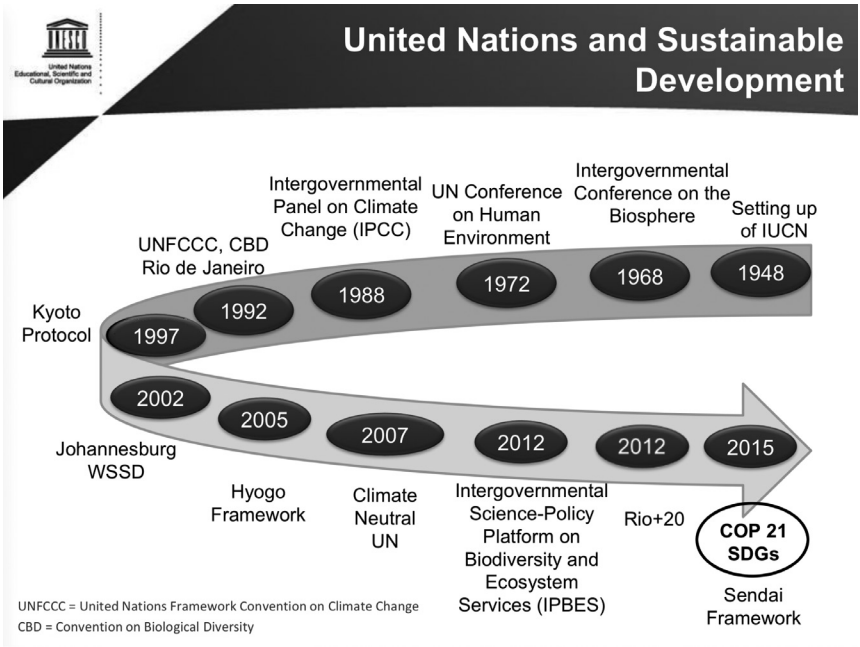
The following few pages are intended to review the events that have taken place over the last 50 years and to show how, through initiatives that may have seemed disconnected from each other at the time, a journey has resulted in a broad awareness of the situation of our planet. The remedy for this situation is a drastic change in behaviour in order to create a more sustainable society, particularly through education. At this moment in time it seems interesting to review these various stages and the results that been achieved.

Throughout the last 30 years a well-known and recognized actor, ENSI, has worked to contribute to these various events, and its initiatives, activities and innovations have made a significant contribution in giving space to the environment and sustainable development in not only school education, but as part of an education for all and throughout life. Thanks to the dynamism of its leaders and the fruitful partnerships between the researchers and educators that resulted, ENSI's actions have accompanied the major European and global programs in EE and ESD, and the resulting publications should be compulsory references for all teachers and learners.

This statement by Kofi Annan in 2001, "*Our biggest challenge in this new century is to take an idea that sounds abstract, sustainable development, and turn it into reality for all the world's people*" (Fien, Maclean and Park 2009) is probably the best introduction we can cite to remind us that the implementation of sustainable development represents a major challenge for the survival of future generations, a challenge that can only be met by a radical change in our behaviour.

Education is undoubtedly the most appropriate approach to improve this behaviour and more specifically, an Education for Sustainable Development (ESD) that would continue throughout life in order to give to everyone, regardless of age and status, means and motivations to engage actively in various processes that aim to use the resources of the planet in a reasoned manner, protect our environment and improve social relations in a process of equity, sharing and peace. Education for Sustainable Development is an emerging but dynamic concept that encompasses a new vision of education that seeks to empower people of all ages to assume responsibility for creating a sustainable future (UNESCO 2002).

Over the last three decades, several successive stages (see figure) have brought us from simple observation of the disturbances of our environment to an awareness of global problems whose resolution requires the adoption of a global approach called sustainable development:



- The 1972 Stockholm Conference introduced the notion of eco-development in its final declaration, which was undoubtedly the first step in this realization[1];

- In 1977 the world's first intergovernmental conference on Environmental Education was organized by UNESCO in co-operation with UNEP and was held in Tbilisi (USSR). The Tblisi declaration noted the unanimous accord in the important role of environmental education in the preservation and improvement of the world's environment, as well as in the sound and balanced development of the world's communities[2].

1 https://sustainabledevelopment.un.org/milestones/humanenvironment

2 http://unesdoc.unesco.org/images/0003/000327/032763eo.pdf

- The Brundtland report of 1987 introduced the concept of sustainable development by "formalizing" the fact that the interactions between socio-economic activities and the environment must be considered together if one wishes to avoid irreversibly mortgaging the future of the planet.[3]

- The 1992 Rio Conference adopted the Plan of Action, known as Agenda 21, chapter 36 of which states that education in all its forms is of fundamental importance for the achievement of sustainable development. Rio was followed by the creation in 1993 of the Commission for Sustainable Development to monitor and promote the implementation of Agenda 21;[4]

- In 1997, the Thessaloniki Conference "Environment and Society: Education and Public Awareness for Sustainability" recalls the fundamental role of education in achieving a goal of viability and sustainability for our planet.[5]

- In 2000, the Millennium Summit was held in New York which resulted in the UN Millennium Development Goals (MDGs);[6]

- In 2002, the World Summit on SD in Johannesburg recalled the interdependence between economic development, social development and environmental protection and the need for local, regional and global approaches. Following this conference, the United Nations entrusted UNESCO to promote the 2005–2014 Decade for ESD and to develop a national and international implementation program to promote and improve the integration of ESD.[7]

- In 2012, Rio + 20, resulted in an outcome document, "The Future We Want", in which states reaffirmed their commitments to all previous SD targets and committed to developing Sustainable Development Goals (SDGs).[8]

- In September 2015, the Sustainable Development Goals (SDGs) of the UN 2030 Agenda for Sustainable Development officially reaffirmed the importance of

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3 http://www.un-documents.net/our-common-future.pdf

4 https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=23&menu=35

5 https://www.iau-hesd.net/sites/default/files/documents/thessaloniki.pdf

6 http://www.un.org/en/events/pastevents/millennium_summit.shtml

7 https://sustainabledevelopment.un.org/milesstones/wssd

8 https://sustainabledevelopment.un.org/rio20

quality education for all and throughout life. Over the next fifteen years, with these new universal goals built on the Millennium Development Goals (MDGs), countries should mobilize efforts to end all forms of poverty, fight inequalities and tackle climate change.[9]

ESD AND THE UNECE STRATEGY

Among all the initiatives developed globally, regionally and locally with reference to the various programs of the United Nations and related to ESD, it is important to consider the ESD actions that have taken place during the last 13 years within the framework of UNECE and which concerned the 56 country members and a large number of experts, associations and NGOs.

WHAT IS THE ORIGIN OF THE UNECE STRATEGY?

The UNECE strategy for ESD resulted from a long and complex process and originates more specifically from several international and regional processes that started several years ago.

In 2003, in connection with the plan of implementation for sustainable development agreed in Johannesburg during the 2002 World Summit, the UN Commission for Sustainable Development (UNCSD) invited the Regional Commissions to consider organizing regional implementation meetings in collaboration with other regional and sub regional organizations. As a direct consequence of this invitation, during the Fifth Ministerial "Environment for Europe" Conference, which took place in Kiev in 2003, there emerged a UNECE initiative on ESD when ministers gave the green light to draw up a regional Strategy on ESD[10].

It was a challenging exercise for everybody as both education and sustainable development are complex issues relating to all major concerns of our societies. The Strategy was developed through a participatory process involving governments, UNESCO, NGOs and other stakeholders. Environment and education ministries co-operated closely in the drafting process leading up to the ESD strategy.

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9 http://www.undp.org/content/undp/en/home/sustainable-development-goals.html

10 See: https://www.unece.org/fr/environmental-policy/environment-for-europe/envefemeetings/environment-for-europe/ministerial-conference/2003/fifth-ministerial-conference-environment-for-europe/fifth-ministerial-conference-environment-for-europe.html

In Vilnius, in March 2005, two years after the Kiev Conference, ministers and other officials from education and environment ministries from across the UNECE region adopted the Strategy at their joint high level meeting and defined the modalities for implementing the Strategy and reviewing its progress with the help of a steering committee. The members of this Steering Committee were designated by UNECE member states and included representatives of various sectors of environment and education; in addition, representatives of international organizations and NGOs were invited as observers including UNESCO and ENSI as permanent observers. Moreover the UNECE Secretariat was mandated to provide support to the Steering Committee.

The Vilnius meeting also launched the 2005–2014 United Nations Decade of Education for Sustainable Development in the region. implemented by UNESCO.

THE UNECE STRATEGY: A POLICY INSTRUMENT

The UNECE ESD Strategy is a policy instrument to promote and support the implementation of the UN Decade in the UNECE region, and more specifically to encourage members to develop and incorporate key themes of SD into both their formal education systems through relevant subjects, and also in non-formal and informal education. Another goal was to adapt the Strategy to national contexts each time it needed and to address a wide range of issues linked to SD.

The UNECE Strategy for ESD was coordinated by an intergovernmental steering committee which met for the first time in February 2006 in Geneva to define its main objectives which were to:

- ensure that policy, regulatory and operational frameworks support ESD;
- promote Sustainable Development through formal, non-formal and informal learning;
- equip educators with the competences to include SD in their teaching;
- ensure that adequate tools and materials for ESD are accessible;
- promote research on the development of ESD;
- enhance co-operation on ESD at all levels within the UNECE region.

The implementation of this Strategy referred to a road map which involved three successive phases:

- **Phase I** (2005–2007) was particularly devoted to taking stock of existing activities, implementing initial measures, and defining priorities for further activities;

- **Phase II** (until 2010) focussed on starting to integrate SD into learning programmes, curricula, and review progress made in the implementation of the different national strategies and revise these strategies if necessary;

- **Phase III** (until 2015) was intended to making considerable progress in implementing ESD.

To assess the progress in the implementation of the Strategy, a reporting mechanism was developed by the UNECE expert group on indicators. The indicators and the reporting mechanism are meant not to compare but rather to enable countries of the region to learn from each other and advance in the area of ESD.

The Steering Committee constituted the principal decision-making body for the activities on the ESD Strategy in the UNECE region and was responsible for giving guidance and strategic directions to the implementation of the Strategy. It also reviews the progress of its implementation. In particular, in:

- Sharing of experiences on regional level whether through the annual Steering Committee meeting or the engagement in good practice collection;
- In jointly addressing bottlenecks in implementation, e.g. through the work of UNECE Expert Group on Educator Competences and of the Expert Group on Indicators;
- In building capacity through sub-regional and national workshops;
- In monitoring the implementation of the ESD Strategy (2007/2010/2015).

UNECE'S PUBLICATIONS ON ESD:

Among the important tasks of the Steering Committee is the publication of documents aimed at collecting and disseminating significant elements related with ESD, not only for UNECE members but also for those involved in ESD all over the world.

Since the launching of the ESD strategy, the UNECE Steering Committee has published several relevant documents related to Education for Sustainable Development:

– 2007 "GOOD ESD PRACTICES IN THE UNECE REGION" IN 2007:
This publication is a collection of good practices and shared experiences on ESD in the UNECE region, provided by a range of different stakeholders in formal non formal and informal learning situations.[11]

– 2009 "LEARNING FROM EACH OTHER":
This publication brings together the relevant policy documents and a number of practical tools to guide governments and other stakeholders through the process of assessing the success of ESD in a given national context. While developed in the context of the UNECE Strategy, the assessment tools also aim at reinforcing synergies with other relevant processes, in particular those under the United Nations Decade on ESD.[12]

– 2012 "COMPETENCES FOR ESD":
This provides a framework to integrate ESD in the curriculum of teacher training institutes. This handbook on CSCT (Curriculum, Sustainable development, Competences, Teacher training) was developed as a response to the call of the UNECE Ministers of the Environment in 2003 for including ESD in curricula from pre-school to higher and adult education. It was realized as an ENSI – EU (Comenius 2) project; the handbook became the base for the UNECE-publication on teachers competences.[13]

– 2013 "EMPOWERING EDUCATORS FOR A SUSTAINABLE FUTURE"
This is a tool for policy and practice workshops on competences on ESD. This publication is built on the November 2011 report entitled "Learning for the Future: competences in ESD" drafted by the UNECE Expert group on competences which gives advice on (a) what competences educators need in relation to sustainable

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11 https://www.unece.org/environmental-policy/education-for-sustainable-development/education-for-sustainable-development-esdpublicationshtml/education-for-sustainable-development/2007/good-practices-in-the-unece-region-education-for-sustainable-development-in-action/docs.html

12 https://sustainabledevelopment.un.org/content/documents/798ece5.pdf

13 https://www.unece.org/fileadmin/DAM/env/esd/ESD_Publications/Competences_Publication.pdf

development; and (b) what policy approaches and strategies are needed to help educators develop those competences.[14]

THE FUTURE OF THE UNECE STRATEGY FOR ESD

Almost 13 years after the launch of the UNECE Strategy for ESD in Vilnius and in reference with the Global Action Plan and the 17 SDGs, the UNECE Strategy on ESD was as a major contribution to empower sustainable development solutions at local, national and regional levels.

As early as 2013, the UNECE Steering Committee for ESD voiced its strong commitment to continue to implement the Strategy for ESD on the regional level beyond implementation of the DESD. To assess the progress made and to continue the Strategy's implementation, the high-level session of education and environment ministries at the "Environment for Europe" (EfE) Ministerial conference[15] in 2016 at Batumi (Georgia) adopted a new implementation framework beyond 2015 through the Global Action Programme 2015–2019 for ESD and agreed the proposal to continue to coordinate the implementation of the Strategy on the regional level and to work closely with all European and Mediterranean actors.

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UNESCO 2002: Education for Sustainability – From Rio to Johannesburg: lessons learnt from a decade of commitment, UNESCO 2002, 46 pp. http://unesdoc.unesco.org/images/0012/001271/127100e.pdf

14 https://www.unece.org/fileadmin/DAM/env/esd/ESD_Publications/Empowering_Educators_for_a_Sustainable_Future_ENG.pdf

15 https://www.unece.org/environmental-policy/environment-for-europe/efe-conferences/batumi-conference/welcome.html

ESD International Policies in the Cyprus Context: Reflections and Insights

by Aravella Zachariou, Cyprus Pedagogical Institute Cyprus

INTRODUCTION

The design, adoption and implementation of ESD policies by countries at a national level is influenced and largely determined by prevailing educational trends. This is especially true in the field of policies related to the environment and sustainable development. ESD is a dynamic area of education, and has gone through many transformations based on the prevailing epistemological perceptions regarding the environment, society and economy, and on the role that education has to play in this direction.

The way in which Education for Sustainable Development is interpreted and defined at the level of national policies is characterized by diversity and is, on the one hand a result of the aims pursued by policy makers at different levels and on the other, a result of the implementation of international and regional policies in the national context of countries. This diversity related to the implementation of ESD policies is reflected in the final report of the Decade for Education for Sustainable Development (DESD) indicating that: (a) specific polices, strategies, frameworks and plans vary considerably within and across regions, (b) countries have established national or interdepartmental bodies to coordinate and implement ESD policies based on their particularities, and (c) there is a diversity in tools and curriculum frameworks that include ESD at the national and at regional levels (UNESCO 2014a, p. 48). Despite the variety and progress achieved, we should not overlook the fact that there is still a lack of concrete action following the measures at the political level (UNECE, 2011). The adoption of the ESD policies/strategies/regulatory frameworks does not imply that they achieved their aims or that sustainability is understood and addressed in education. We have to acknowledge many other factors underlie the impact the success of an ESD related policy, and that these factors include government policies in other areas (Temenos & McCann 2013). For example, in Cyprus, elements of Global Education, Peace Education, Equity Education and others are integrated in the education system under the framework of the SDGs but despite their similarities with ESD, they often operate differently (GENE, 2017), and sometimes in a competitive way. Taking into account all the above and given the fact that in recent years there has been a discussion on the role of international policies on Education for Sustainable Development and their impact on the level of

national policies (Lotz-Sisitka, 2009), this paper examines how international policies and networks, such as ENSI, have influenced the formation of ESD policies in Cyprus ESD and discusses how ESD policies must be confronted at the national level in order to be effective.

INTERNATIONAL ESD POLICIES IN THE CYPRUS EDUCATIONAL CONTEXT

When putting the ESD policies into any national context, Cyprus included, it is very important to take into account the situated realities of policy-making frameworks, including for example the way laws are made and institutional environments, as well as the longer historical perspectives such as the impact on a country of an empire and the colonization of land and people (Tuck & McKenzie, 2015, p. 324). It could be argued that the first few years of planning the adoption of ESD at the national policy level in Cyprus, the process was driven mainly by the need to be seen to be a participant in the changes, rather than being driven by a conscious action on the basis of knowledge and the importance of integrating ESD policies at the national level. It was more related to the need for policy makers, politicians and officials to borrow and be associated with the political symbolism of the terms than actual to implementation (Whitty & Edwards, 1992, p. 324). That is why at the beginning of the Decade of Education for Sustainable Development (DESD 2005–2014) initiatives were hindered by the epistemological traditions and ideological-political orientations that dominated the Cypriot educational system at the time.

These traditions and orientations were related to various factors including the historical and socio-political circumstances that created the current political situation in Cyprus – British rule, Independence, the Turkish Invasion and occupation of part of the island. Also important was the role of education in the development of a national identity and the raising students' national awareness. Other factors included the importance of a Christian epistemology connected to the Greek Orthodox ideals; and finally the focus of education on encyclopedic cognition, uniformity, theoretical and abstract knowledge, specialization and rationalism (Zachariou 2005).

Taking these issues into consideration, the development of ESD in Cyprus within a coherent, integrated and clear educational policy framework coincided with general developments in the international field aimed at making ESD the focus of educational policies. These developments culminated in the UNESCO DESD, as well as the adoption of the Strategy for ESD (UNECE 2005a). Within this dynamically-evolving setting for ESD in the international arena, Cyprus adopted the United

Nations Economic Commission for Europe (UNECE) Strategy for ESD (2005b), and this formed the basis for the preparation of a "National Strategic Plan for Environmental Education Focusing on Sustainable Development" (CPI, 2007). This is the most important national policy document on ESD and it was horizontally diffused in all the relevant national policies linked with ESD, including the revised strategy for sustainable development, and strategies for climate change, for the sea, and for biodiversity (MoEC, 2017). The aim was to promote an effective implementation of ESD at all educational levels whilst at the same time promoting links between formal, non-formal and informal education through integrated planning and actions.

IMPLICATIONS OF INTERNATIONAL ESD POLICIES IN CYPRUS EDUCATION

An important element in the contribution of international policies for ESD in shaping educational policies in Cyprus was the fact that these were not adopted without thought, but were adapted and developed based on the special educational framework in Cyprus as well as on the environmental, social, political and cultural circumstances of the island. International ESD policies were therefore a tool for the transformation and development of ESD on the island, ensuring their sustainability and foundation at the national level. ESD policies in Cyprus were integrated as a whole and not fragmentally. The national ESD policies adopted the main philosophy of the UNECE ESD Strategy and the DESD Decade, acknowledging ESD as an integral element of quality education and a key enabler for sustainable development. Also, the main priorities of recent international policies in ESD, GAP and UNECE (advancing policies, empowering and mobilizing trainers, accelerating sustainable solutions at the local level, UNESCO 2014b; UNECE 2017) and the Sustainable Development Goals (SDG's, UN 2015) were set in the core of educational policies in a unified way.

The evolution of these policies, as well as the active participation of Cyprus in international networks such as Environment and School Initiatives (ENSI) led to the development of the following: the ESD Curriculum, the establishment of a Sustainable Environmental Education Policy, and the implementation of holistic school approaches. They also influenced the establishment in 2015 of a permanent ESD development, implementation, control and updating unit working not only for the educational process but also horizontally inter-ministerial and inter-sectoral and for the strengthening of the policy for the professional education of teachers.

It is noted that the ENSI network contributed not just internationally but also regionally and nationally to the evolution of the ESD, not only through the educational material and tools it developed, but also through the process of

"osmosis" and the development of ideas between the educational and university communities, policy makers and decision makers, contributing to the establishment of policies and their implementation at national level.

The participation of Cyprus in the ENSI network has strengthened ESD in the national context through the flow of ideas between experts. For example, the results of the School and Community Collaboration for Sustainable Development Project (CoDeS) led to the organization of a National Conference for Sustainable Schools in Cyprus, named "Schools and Community Collaboration" (CPI 2015). The discussion and the exchange of ideas among experts about CoDeS with national policy makers and teachers contributed to the establishment of the Schools' Sustainable Environmental Educational Policy (SSEEP; Zachariou & Kadji 2015). In addition, all the educational materials for ESD School and Community Collaboration (ENSI 2014) have been used as tools for supporting the educational community to set sustainability at the core of the school. ENSI materials have also been used as means for enhancing teachers' professional development in ESD. For example, the "Keystones for School and Community Collaboration for Sustainable Development" document (Espinet and Zachariou 2014) has been used as the basic tool for teacher education and training for designing and planning their SSEEP (CPI 2015).

The policies described above were not developed independently from each other but in close interconnection and they were designed to be complementary to one another in a coherent and systematic way. Creating the National Action Plan for Education for Sustainable Development (NAPEESD) as a "whole", in which ESD is the focal objective, was an important challenge and radical change for the Cypriot educational system and one involved "more than a line of unconnected activities" (Scott 2005, p. 4). This contributed to the transition from a marginalized and occasional study of Sustainable Development issues in schools to a holistic approach to these issues as a fundamental part of the educational vision and policy of each school in the country. Each school in Cyprus is flexible and free to develop its own policy to integrate the local environmental and SD issues in their curriculum, being sensitive to its own needs and objectives (MoEC 2009, p. 5–6). In line with this, special emphasis is given in the Cypriot ESD Policy to non-formal education as a tool for complementing and supporting the work conducted by schools in the study of Environmental and SD issues and beyond the school boundaries within various settings (Zachariou and Kadji 2015, p. 325).

Similarly, international recommendations on teacher training have impacted the policies of ESD professional development and have resulted in the formation of the national strategy for teachers' professional learning. This strategy holistically "captures" teachers' ESD professional learning as part of a system in which school improvement is a prerequisite and which is to be achieved through Action Research approaches. The strategy also aims to enhance teachers' knowledge, skills and attitudes of pedagogical and educational practices that can contribute to the upgrading of the schools and the educational system (MoEC 2015).

REFLECTIONS AND INSIGHTS REGARDING ESD POLICIES

Bearing in mind that Cyprus did not have the ESD tradition of other countries its evolution has been rapid, making it an example of good international practice (UNESCO, 2014a; UNECE, 2016) at the levels of both formal and non-formal education. To this, international policies, texts, leading organizations and networks have contributed, which despite the criticism they have received in relation to their weakness to take into account the particular contexts that they have, their own characteristics and challenges regarding the educational process (Gonzalez-Gaudiano, 2016, p. 119), in Cyprus they have positively influenced and contributed to their enactment and implementation in the national context.

However, it is important to understand that international policies should be seen as generally supporting the effective implementing of ESD at the national level, rather than being adopted as a form of "recipe". The value of international ESD policies is essentially based on their integration at the local level, and in providing a "common language of communication" and consensus of all stakeholders in ESD policies at international and national levels. In addition international policies help in the exploration of the policy/practice interface by examining the negotiations, constructions and recontextualizations through which policy informs educational practices (Feinstein, Laessoe, Blum & Chambers, 2013).

It is important that international ESD policies are viewed critically, and analyzed and applied according to what is needed and actually going on in practice in different contexts and at different levels in a country, including the national level (Laessoe, Feinstein & Blum, 2013). Without claiming that there are no weaknesses or gaps in the implementation of international ESD policies in the Cypriot national context, the case of Cyprus, as well as those of other countries, could be used as examples for enhancing the dialogue regarding the role of international policies on ESD at the local and national levels.

Expanding this view, we consider that international ESD policies can have a role in ESD implementation at the national level. However, it is important to consider the process of their design and their overall goals. International policies and networks should not be imposed by specific groups to achieve specific goals set by specific centers of authority. Rather, they should be the guiding axes and supportive instruments to help countries improve their societies on the basis of sustainable development. What is needed is a transition from a multidisciplinary policy and research discussion to a transdisciplinary discussion on issues such as how ESD policy is actually implemented in practice. The implication of this is, that there is a need for coexistence between different sciences and researchers in the field of ESD and not just the labeling of their interconnections and associations. Some of the questions considered as critical for in-depth discussion related to the future of the ESD Policies are: (a) Do ESD policies operate as an "alibi" to cover-up what should be done and perhaps has not been done? (b) How can policy texts and the reorientation of education policies towards ESD be understood by all participants in education, not as theoretical texts of abstraction and bureaucracy that enhance the instrumental nature of education, but as dynamic sources of educational policy, which if used properly could transform education towards ESD? (c) Can local and national policies impact the formation or reconsideration of international ESD policies? (d) In what ways can international networks impact the integration of ESD policies nationally and internationally and how can they move forward in order to be effective?

From this point of view, the ENSI network is an example how to continue ESD. ENSI is not ending its "life cycle", is at a stage of transformation, where it is "self-determined" regarding its role and aims in relation to the new challenges of ESD. Taking in consideration that ENSI is a network that follows a bottom-up approach, it has not imposed, but rather it has contributed to the formation of ESD policies, emphasizing the involvement of all the interested educational parties in their integration. Through its operation and its action, it has enabled various "voices" to be heard in the field of policy in ESD. It has helped to reconcile the various policies and facilitated their adaptation and their implementation in a variety of educational contexts, creating the conditions for learning from each other.

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The story of ENSI in Norway and its impact on the Norwegian strategy for ESD

by Astrid Sandås, Norwegian Directorate for Education and Training

Norway participated in the "Environment and School Initiatives" (ENSI) since it's initiation in 1986. In Norway the opportunity of action learning through the different distinct phases of ENSI was taken. Each phase had its own specific goals and the lessons learnt through participation are described in this paper.

ENSI PHASES 1 AND 2

Norway was active right from the start of ENSI and in the first phase from 1986 to 1988 the focus was on whether, and to what extent Environmental Education could be an appropriate tool for bringing about school development. We had in mind that school development included development at pupil, teacher and school levels. At the pupil level the concern was about developing the ability of students to take the initiative, through formulating issues, collecting information, assimilating knowledge and drawing conclusions. At the teacher level the focus was on the teachers' ability to create a good environment for learning, to lead the educational process in practice and to co-operate across disciplines and with actors outside the school system. Several schools at different levels and different parts of Norway took part in the project and participating teachers as well as school leaders used an action learning strategy during the project. The conclusions from Phase 1 in Norway can be summarized as follows:

- *co-operation between the school and actors outside the school inspired pupils and appeared to stimulate learning,*
- *a network between schools and actors outside the school inspired teachers who participated in the network,*
- *co-operation between schools and research institutions appeared to benefit both groups,*
- *pupils demonstrated a number of Dynamic Qualities; in particular they were good at collecting information, drawing conclusions and communicating their findings to local decision-makers and the press,*
- *teachers experienced interdisciplinary work that was both demanding and fruitful.*

The second phase of ENSI lasting from 1989 to 1994, focused in Norway on the development of local curricula. Twelve schools participated and were supervised by

a project manager from a teaching institution, Per Bjørn Foros. The Project Report highlights the demanding nature of curriculum development, especially in ESD and notes that this need for locally focused curricula might be the greatest challenge facing the development of continuous and lasting ESD.

During the second phase of ENSI, a "Policy review" of Environmental Education was also conducted in six OECD countries, including Norway. To prepare for this a background report was compiled, "Environment and School Development." (Benedict & Sandås, 1993) and the formal report on Norway by the OECD experts showed that although much good work had been done, documentation and evaluation of trends in development and trends at school level was inadequate (Norris, Posch & Kelley-Lainé, 1993).

A revised version on the strategy for Environment and Development in the educational sector was published in 1994 (Ministry of Education). An evaluation of this strategy was conducted by a Norwegian research institution, Rogalandsforskning (1999) and this observed that Norway had progressed form the stage where individual schools undertook environmentally related projects to a systemic approach to Environmental Education. Several important framework factors for Environmental Education were improved, for example:

- *the topic environment and development was included in curriculum plans for primary, lower secondary and upper secondary schools and further education,*
- *the responsibility of school management for in-service training is explicitly stated,*
- *formal, inter-sectional co-operation has been established at several levels of the administrative system, and*
- *teaching materials were developed to support Education for Sustainable Development.*

An important conclusion from Norway's participation in Phases 1 and 2 of ENSI was that schools needed further guidance after completing the initial two or three year project period.

In 1999 a strategy workshop took place in Hadeland, Norway, where one concluded that Education for Sustainable Development (ESD) was well-established in many schools through a wide range of excellent pilot projects. However, it was also recognized that the challenge now was how education, schools and policymakers could go beyond successful pilot projects and create the necessary culture of

legitimacy, the organizational framework, the competences and the financial mechanisms to ensure that pupils experienced effective ESD. The workshop report written by Faye Benedict (Benedict, 1999) reflected the inspiration of the event and encouraged Norway's' participation in Phase 3 of ENSI.

ENSI PHASE 3

In 1997 it was decided that the Norway should participate in Phase 3 of ENSI with the following goals:

- *Finding ways to integrate the Norwegian strategy for environment and development in the educational sector,*
- *comparing Norwegian ESD practice with that of other countries, both to learn from and to have an impact on, development in this area,*
- *revealing barriers at all levels in the Norwegian school system to achieving ESD that fulfilled the United Nations goals,*
- *developing models for competence-building in ESD.*

We had learned from previous experience that, when a project has been completed, participating schools often reverted to their previous practice once project support is no longer there. To tackle this and establish continual support structures and to give schools access to scientific competence and support, we started to develop national programs on different ESD themes. The programs consisted of a set of quality assured activities and background materials developed by research institutions, while the development of individual school projects was the responsibility of each school with support from the material developed by researchers.

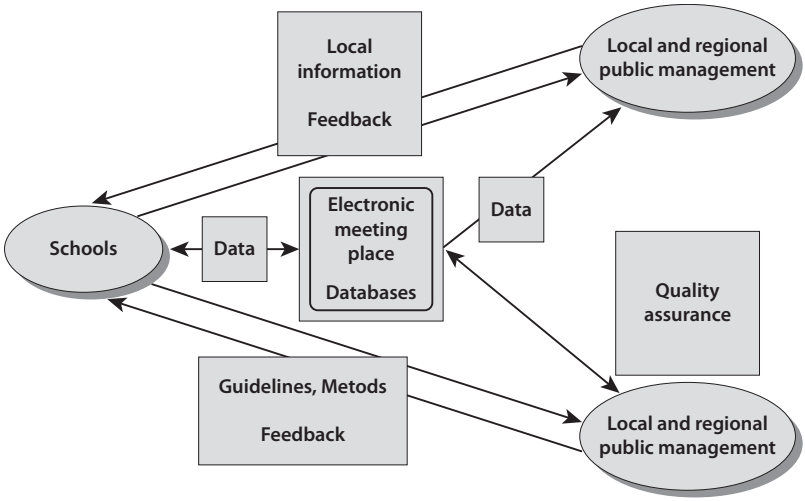
During the four years of the project large number of schools took part in different investigations each year including projects on lakes (100 schools) (Vanda) (Knutsen and Van Marion, 1997), streams investigations (80 schools a year) (Bekkis), coasts (almost 400 schools), and energy (150 schools). An evaluation of these programs concluded that:

- *the material developed by research institutions and the opportunity to have contact with these institutions both gave the schools support,*
- *using this material and the dialogue with researchers led to interdisciplinary and active learning processes taking place in the schools,*
- *the pupils considered the tasks to be meaningful and were proud to be part of a larger movement,*

- *schools were shown be credible partners in contributing to progress towards sustainable development, mainly through collecting data and reporting to a national system.*

The separate programs were later combined to create a simpler and more internally consistent system and the result is the current internet-based program www.miljolare.no, an ICT platform that provides a meeting place and support for schools, research institutions and public organizations. A conceptual model is shown in the figure below.

Conceptual model of miljolare.no system



ENSI PHASE 4

Norway's participation in Phase 4 of ENSI was connected to the "School Development through Environmental Education" (SEED) project which offered the possibility to exchange ideas on innovative teaching practices and teaching and learning pedagogies. It gave the Norwegian partners the possibility to learn from the experience of others and stimulated the development of strategies for education for Sustainable Development (ESD). In addition it inspired the project "Measuring Rainfall" and the creation of the "Rain Check" activity through co-operation between the Directorate for Primary and Lower Secondary Education, the Norwegian Institute for Air Research (NILU) and the "Research Days" secretariat in the Norwegian Research Council. The web site miljolare.no was pivotal in the

campaign, serving as a place to find information and enter results. The Norwegian national broadcasting company (NRK) was also a partner, and advertised the campaign in advance and ran a series of TV and radio programmes and webcasts on the topic of how weather and climate effect peoples' everyday lives. We were surprised about the attitude of engagement and seriousness the pupils exhibited. Around 900 schools participated in the project.

The activity itself, measuring rainfall, was simple to carry out and proved to be the catalyst for the pupils' interest and engagement. Getting to take a rain gauge home, having responsibility for setting it up in the garden and accurately reading it every day at 8 AM and then bringing the data to school to enter it into the database on the national web site, "did" something for the pupils. They were part of real research – part of a larger, shared task where their contribution made a difference. During the whole campaign the pupils felt that they mastered their task and that meant a lot!

Activity combined with theory, talking, discussion and reflection often proves to result in an effective learning process and a project activity, "Extreme Weather Week", had room for all of these elements. By letting discussion touch on topics the pupils were involved and interested and had their critical thinking capacity awakened. By looking at interconnections between human activity and climate, the young adults taking part in the project started to have their own thoughts. The simple task of rainfall measurement proved a surprising catalyst for strong pupil engagement.

Interest and engagement is of great value in itself and it was rewarding to see that the pupils' positive engagement was directed toward the topic at hand. The pupils participated in discussions, asked questions, and talked about climate at home bringing back information to school information about topics such as traditional weather signs and other local knowledge about weather and climate. In this way other members of the family also got involved. The key lesson learnt was that it is possible to develop a simple project at a national level that gives schools room for their own activities that leads to significant and meaningful discussion and learning in the classrooms. It supported schools with background information they could adapt to their own needs. There seemed to be no contradiction between taking part in a national, centralised activity and local freedom. On the contrary, students were inspired by the interest shown by researchers and the national broadcasting company and the experience of the project was one of the cornerstones in the Co2nnect activity as part of the Support project (see below).

ENSI PHASE 5 AND 6

The SUPPORT project

Inspired by previous projects an application for a Comenius EU-project was developed in 2007 in co-operation with several ENSI-partners. The aim of the project was to promote and enhance the quality of ESD in line with the challenges of Sustainable Development (SD).

The project was named "Partnership and Participation for a Sustainable Tomorrow" (SUPPORT) and the overall objective was to promote Education for Sustainable Development (ESD) in European schools through bringing concepts and issues of SD into the education system. Inspired by the Norwegian experience with miljolare.no and by the "Globe"-program, one aim was to link schools, research institutions and communities in a web-based network, to provide learning opportunities that stimulated and empowered individuals to acquire relevant experience, knowledge, skills and values and understanding and to reflect critically on their role in creating a sustainable tomorrow. The project brought together a large number of partner networks from National Educational Authorities, Teacher Education Institutions, Educational Research Institutions, Scientific Research Institutions and NGOs. The SUPPORT project provided a platform for collaboration and participation between different institutions and organizations and the network was engaged in promoting, through pupil and teacher actions for sustainable and responsible citizenship, a number of the objectives and aims outlined in the Lifelong Learning Program and in the Lisbon Education and Training Progress Indicators. An external evaluation of SUPPORT was conducted by Michela Mayer (Mayer, 2010).

One goal in SUPPORT was to engage schools in a ESD project of high quality. We knew from earlier experience and studies that schools need support, motivation, some "pressure" and constant attention and encouragement if they are to carry through what is regarded as new way of teaching. We also knew that the goal of ESD is difficult to translate to a form that is manageable and concrete at the school level. The SUPPORT consortium regarded this as a great challenge, and decided to create a tool that could motivate teachers and students around the world.

Based on these experiences, a school campaign on the topic of climate and sustainable transport was developed – "*CO2nnect: CO2 on the way to school*" The pupils *participated* through investigating their own CO2 emissions through travelling to school, entering the data into an international database, analyzing and

comparing results and doing local project work. This activity engaged over 33,000 students from 671 schools in about 30 countries. The schools were motivated by the international perspective of the task and the possibility of acting at a local level to contribute to solving an important SD question.

The Co2nnect activity was important for the success of the SUPPORT project as a whole. It was a robust instrument that gave clear support and direction but also one that allowed schools and students to create their own learning situation having enough space for local freedom and creativity. The schools were encouraged to collaborate and create *partnerships* through the web-based network with other schools, researchers, or organizations in their community. It created opportunities for empowerment and action in an important field of ESD. An indication of the innovative nature of Co2nnect is that the tool is still in use seven years after the completion of the SUPPORT project. Schools from Italy and Russia as well as Norway have used the tool and reported on www.co2nnect.org in 2017. A thorough evaluation report of Co2nnect was written by Faye Benedict, (Benedict, 2010)

The reach and impact of project activities was supported by project outputs, some available in 17 languages, and demonstrated by the high levels of participation and collaboration by schools and other key stakeholders. The participation data from the Co2nnect is impressive not only in terms of the number of schools taking part. For example, 266 climate ideas were uploaded and the teachers help sheet was downloaded 2278 times. The relevance of the activities and outcomes was continuously evaluated during the project both internally and externally and shows that the project acted as catalyst for collaboration among schools, research institutions and communities, within and beyond EU, learning to learn and act together as responsible citizens for a sustainable development. All project documents are found at www.ensi.org/Projects/Our_Projects/SUPPORT

A follow-up to the SUPPORT project was "The Extreme Weather project". This was developed in 2011 as a one year project, but the web tool is still available at www.miljolare.no/aktiviteter/klima/ekstremver and is being used by schools. This project is another example of how ICT-tools can be used to support collaboration and learning for SD. The evaluation by teachers showed that they considered the ICT-tool a valuable starting point for learning, reflection, and cross-curricular teaching and learning.

SCHOOL AND COMMUNITY COLLABORATION FOR SUSTAINABLE DEVELOPMENT (CODES)

Norway also participated in the CoDeS project from 2011 to 2014, a network initiated by ENSI. It was a Comenius multilateral network funded by the Lifelong Learning Program from EU that focused on school community collaboration addressing sustainability. One of the Norwegian contributions was an interactive website for schools and communities – the "Digital handbook for local authorities", which can be found on www.miljolare.no/en/codes/. This handbook is a selection of four learning activities (including the Extreme Weather Project) for schools that can be used as a starting point for school-community collaboration.

The Biodiversity Education and Awareness to Grow a Living Environment (BEAGLE) was another project that grew out of ENSI's work. This was an online biodiversity project open to all schools in Europe funded by EU-Comenius and started in 2010 that encouraged schools to use their own grounds or the local environment to monitor biodiversity. BEAGLE provided the resources, support, guidance and training for teachers and students to enable stimulating out of classroom experiences (www.beagleproject.org), BEAGLE is also one of the activities in "Digital handbook for local authorities".

INSPIRATION FROM ENSI ON THE NORWEGIAN STRATEGY FOR ESD

In Norway Education for Sustainable Development has always focused on environment and development, not only on the environment despite that the term Environmental Education is used occasionally. Norwegian strategies for ESD have been developed in parallel to participation in ENSI and have been strongly inspired and influenced by the ENSI network. A great number of students, teachers as well as school leaders, teacher trainers and researchers have also participated in the different projects during the different phases of ENSI. In Norway it was considered important to have as participants from all levels of the school system and with different backgrounds both in order to discuss ideas, test ideas and to have feedback. As a result ENSI-principles have been widely disseminated throughout different regions of Norway and at many levels in the Norwegian school system. In addition, a Norwegian project coordinator was employed at the Ministry of Educational who, as well as supporting schools taking part in the project, had the opportunity to install ENSI ideas into different education policy papers developed by the Ministry. ENSI principles therefore had an influence in many different ways.

School development has been a priority area in Norway in recent years and as we believe that school development is a prerequisite for ESD, we argued that ESD was an appropriate tool to support such development. To promote this idea a booklet and a pamphlet on ESD and school development were published by the National Directorate for Education and Training and shared with all those schools taking part in a large scale school development project.

The collective objectives and principles for teaching in primary and secondary schools are laid down in the national curriculum and a new a curriculum reform is in progress. In the background papers for this new curriculum the idea of "depth learning" is emphasized. The aim of depth learning is to develop student's ability to be responsible citizens in a democracy; to develop their ability to take initiative, to co-operate, to think critically, collect information, assimilate knowledge and draw conclusions. Depth learning argues for a more interdisciplinary approach to teaching and learning through project work. The education must be experience-based, action-oriented, provide academic depth and give pupils real opportunities for participation and influence. Through the idea of depth learning we can see traces of ENSI's ideas in the new curriculum.

Some interdisciplinary issues are mandatory in the new curriculum and sustainable development is one such theme. Teachers therefore must have competence to conduct interdisciplinary Education for Sustainable Development in which social-, natural resource-related- and economic aspects are integrated. The development of teachers' competence is part of the school development and developments at the school level mean among other things the ability to co-operate both within the school and with external stakeholders.

Our participation in the ENSI-network can be therefore described as an interesting and inspiring action learning experience. It has been important for us in Norway to be part of an international group where ideas can be exchanged with interesting and knowledgeable colleagues. It has given us the opportunity to develop and improve the quality of our Education for Sustainable Development in the country. We are thankful to ENSI and all those involved in this action learning journey.

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A history of ENSI/Finland – From integrating EE to ESD: theories, tools and implementation

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BACKGROUND

The work of ENSI in Finland started in 1986. During Phase 2 of ENSI.[1] The Finnish National Board of Education and University of Lapland collaborated with number of schools however up to 1994 hardly any longlasting results were achieved. The meagre results of the this phase of ENSI in Finland are reported by Kurtakko & Izadi (1991) and mentioned in Åhlberg & Heinonen (2003). Partow Izadi based his doctoral dissertation partly on this ENSI period (Izadi, 2003).

Finland co-operated more actively with ENSI from beginning of Phase 3 in 1995. ENSI was at this time an independent network under the umbrella of OECD. A signficant international Environmental Education conference, Northern Call for the Environment, took place in 1996 at Savonlinna, a campus of the University of Joensuu. (Some of the main papers presented, were published by Leal Filho & Åhlberg (eds.) 1998). Peter Posch (University Klagenfurt, AT) and Mauri Åhlberg from Savonlinna Department of Teacher Education, University of Joensuu (1989–2004) and later on at University of Helsinki (2004–2013) were able get funding from the Finnish Ministry of Education in order to start OECD/ENSI collaboration. In the National Board of Education Councellor Reijo Laukkanen was a key administrator in the third phase of the ENSI programme as he was during the earlier phases of ENSI program in Finland. A second conference took place in 1997 in Finland – an "International workshop ENSI". This was an important meeting in that it took place at Rantasalmi where earlier an Institute for Environmental Education has been established, led by an innovative classroom teacher Pekka Hynninen. He had been collaborating with Mauri Åhlberg who had started his work on Environmental Education in the 1960s and since that time has developed both theories and methods for teachers and their pupils to promote quality learning in all subjects, including Environmental Education and Education for Sustainable Development (Åhlberg, 1988–2014).

1 see: Peter Posch: „The phases of ENSI" in this volume

The third phase was a very productive period for the Finnish ENSI related Environmental Education programme. Many teachers and doctoral students were involved and theories and tools developed and tested in schools and classrooms.

Prior to the fourth phase of OECD/ENSI program, in 1999, a working seminar was arranged in Norway: ”OECD/ENSI strategy workshop FROM THE PILOT TO THE MAINSTREAM: generalization of good practice in international Environmental Education. December 9–12, 1999, Hadeland, Norway”. There Åhlberg and Ahoranta (1999b) warned about ”the proposal to mainstream ENSI” as suggested by the seminar programme. Mauri Åhlberg and Mr Ahoranta argued that ”mainstreaming” is the task of National Boards of Education and not of an experimental OECD/ENSI program. The core of the ENSI program was to create innovative and experimenting schools, not mainstreaming. The final result of this ”mainstreaming” approach was a decrease in the number of full member-countries of ENSI and as a result of the lack of resources , the decision to close ENSI.

During the third phase of OECD/ENSI project a productive collaboration was started with Senior Councellor Lea Houtsonen, the central administrator in the Finnish ENSI program. Many ENSI meetings were held at the National Board of Education and Houtsonen took an active role in research and also edited and wrote a textbook during this period. After 2003 there were several ENSI projects in which the Finland participated, the final one being CoDeS (2011–2014). Finland also took an active part in the UN Decade of Sustainable Development (2005–2014). In 2010 Mauri Åhlberg and Peter Posch were nominated for Senior Advisers of ENSI.

WHAT WAS SPECIAL IN THE FINNISH PART OF THE ENSI PROGRAM?

Special features that characterise the Finnish ENSI project were highlighting the importance of teachers as researchers: Reflexive practice, experimenting, integrating Action Research, integrating case studies, continual quality improvement, integrating theories and methods, such as high quality learning and continual quality improvement (Åhlberg, 1997), collaborative knowledge building (Knowledge Forum®), concept mapping (CmapTools™), improved Vee heuristic, diagrams, (Vee heuristics are best described in Åhlberg 1993, Åhlberg & Ahoranta 2002, Ahoranta 2004), local species identification for biodiversity and sustainability education (NatureGate®), (Kaasinen, 2009, Åhlberg & Kaasinen, 2001, Åhlberg, Lehmuskallio & Kaasinen, 2008).

These tools have been presented at international ENSI seminars and workshops. As an example, one tool, Knowledge Forum® was used for more than ten years until 2013 to promote collaborative knowledge building. Knowledge Forum was developed in University of Toronto, from where it was bought to promote the Finnish ENSI collaboration (Åhlberg & Houtsonen, 2000). Mervi Aineslahti (2009) used notes from our Knowledge Forum® in her doctoral dissertation taking a narrative approach through a case study of her own school. In another example, Annukka Alppi from the Mahnala Environmental school has been very active in experimenting with different approaches, such as NatureGate (Alppi, Kaivola & Åhlberg, 2009.) Initially a teacher, she is now principal of the famous Mahnala Environmental school, which due to an increase in student numbers is expanding and through a new building programme will have better facilties in the near future.

One of the very active ENSI participants has been teacher Anna Maaria Nuutinen who was successful in obtaining funding to establish the UNU IAS RCE[2] Espoo. The Espoo center is therefore part of the network created by the United Nations University (UNU) and in particularly its Institute of Advanced Studies (IAS) as one of the global Regional Centres of Expertise (RCE). These RCEs were founded to promote Sustainability and Education for Sustainable Development during the UN Decade of Education for Sustainable Development (DESD), 2005–2014. Together the RCEs create a global learning space for Sustainable Development. The research and development group for UNU IAS RCE Espoo has long roots. In 2006 Mauri Åhlberg had been involved in efforts to create a RCE in the Helsinki Region and in Finland with success coming when two members of Research and Development Group of Education for Sustainable Development, Paivi Immonen and Mari Nuutinen were able to get the whole Espoo municipality involved. Many organizations were taking part in UNU IAS RCE Espoo, including two other R&D groups from the University of Helsinki: NatureGate and the main Research and Development Group of Education for Sustainable Development.

All the time there was active ENSI related research and development work going on in Finland as demonstrated through the doctoral dissertations, research articles, books and book chapters, presentations in international conferences, seminars and workshops. Some are listed in references.

2 see: https://tuhat.helsinki.fi/portal/en/projects/rd-program-for-unu-(7f4d86c4-c4a4-45c7-8e82-c1d0f0225fa9).html

After 2014, a general overview what had taken place in Finland to promote EE and ESD was presented in an article by Åhlberg, M. et al. ”Education for Sustainable Development in Finland” in Jucker, R. & Mathar, R. (eds.) (2015), Schooling for Sustainable Development in Europe. Obviously, ENSI has had a great impact on the promotion of ESD in Finland

IMPACT OF ENSI FOR THE FINNISH SOCIETY

It is very difficult to evaluate the impact of any single program on the Finnish school system or society as a whole. ENSI’s core values and ”Dynamic Qualities” are the same as those listed in the curriculum of Finnish comprehensive schools since 1970 and Finnish teacher education has been promoting case studies and Action Research since the 1980s. The following table provides hints of what may be the significance and impact of ENSI for Finland.

Number of classroom teacher education students, who were taught about basic elements of the Finnish ENSI program during 1990 – Spring 2004 in Savonlinna Department of Teacher Education, University of Joensuu.	80 students per year over 15 years, totalling 1200 students becoming classroom teachers. They have had a huge impact to their pupils and the Finnish society.
All Finnish teachers undertake a Master’s Thesis.	Five students per year used the Finnish ENSI framework. Over 15 years around 65 Master’s theses were created using the basic elements of the Finnish ENSI program between 1990–2004 in the Savonlinna Department of Teacher Education, University of Joensuu.
Number of classroom teacher education students, who were taught about basic elements of the Finnish ENSI program during between 2003 and 2014 at the University of Helsinki.	120 students per year over ten years, totalling 1200 students becoming classroom teachers. They have had a huge impact to their pupils and the Finnish society.
ENSI impacted fourteen doctoral theses in Finland between 1995–2017. The authors of these theses also promote quality education in their own organisations, schools, municipalities both in Finland and in through their international interactions. E.g. Arto O. Salonen’s doctoral dissertation (2010) had a signficiant impact on the new Finnish curriculum for comprehensive schools with the concept ”ecosocial general education” (ekososiaalinen yleissivistys) being one of its cornerstones. In detail, the impacts of doctoral theses are difficult to show. In Arto O. Salonen’s case it is clear.	1) Vienola, V. (1995) 2) Kankkunen, M. (1999) 3) Pitkänen, R. (2001) 4) Wilska-Pekonen (2001) 5) Uosukainen, L. (2002) 6) Äänismaa, P. (2002) 7) Izardi, P. (2003) 8) Ahoranta, V. (2004) 9) Aineslahti, M. (2009) 10) Kaasinen, A. (2009) 11) Salonen, A. (2010) 12) Siirilä, J. (2016) 13) Lampi, H. (2017) 14) Saloranta, S. (2017)

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The Encounters Project in Espoo/Finland

by Anna Maaria Nuutinen, RCE Espoo Finland

A description of a project funded by Finnish National Board of Education (2007–2011) supported by ENSI.

"For men and women are not only themselves;
they are also the region in which they are born,
the city apartment or farm in which they learnt to walk,
the games they played as children,
the old wives tales they overheard,
the food they ate, the schools they attended,
the sports they followed,
the poets they read,
and the God they believed in.
It is all these things that have made them what they are,
and these are the things that you can't come to know by hearsay..."

– W. Somerset Maugham, The Razor's Edge

"The values, diversity, knowledge, languages and worldviews associated with culture strongly influence the way issues of education for sustainable development are dealt with in specific national contexts. In this sense, culture is just not a collection of particular manifestations, but a way of being, relating, behaving, believing and acting through which people live out their lives and that is in a constant process of change" (UNESCO, 2006)

"It is the role of education and training to ensure that citizens of all ages have the knowledge, skills, readiness and vision that will enable them to build a sustainable and equitable future and commit to a sustainable way of life." (Finnish National Commission on Sustainable Development, Sub-committee for Education, 2006)

The aim of the Encounters Project was to find ways in which sustainable lifestyles could be rooted in a school culture. This was achieved through networking with stakeholders such as local authorities, and academic researchers and by choosing pedagogical methods that support social interaction, partnership and participation thus enriching the working methods within a school learning environment. More

than 40 organisations worked together on the Encounters project at the Keinumäki School in Espoo, Finland, including an ENSI-network partner from Valkeakoski, Sorrila School. These two ENSI schools implementated the Encounters project in their own unique ways.

The local community can offer a rich variety of multi-professional co-operations if the school is ready to accept it. Local, national and international networking also bring learning opportunities. The objectives of our project were wide and flexible, allowing multiple implementation pathways . Commitment and participation were the base of our co-operation.

KEINUMÄKI SCHOOL: COMMITMENT, PARTNERSHIP AND PARTICIPATION

Keinumäki is a small special school with 72 primary and secondary school students. In Finland the principal is the key person in the development of the school culture. Our principal, Ms. Riitta Paasivirta, included sustainable development as one of the guiding principles of the school philosophy. She also was experienced in project implementation and made sure that the project had a clear action plan with achievable goals and a practical strategy. She also ensured that the project covered the whole school and was based on the curriculum.

We had meetings where we discussed the ENSI-based project SUPPPORT and in a next phase the staff decided concordantly to join SUPPORT, an ENSI related project on partnership and participation. We felt that this project gave us the unique opportunity for mutual learning, including students, parents, community and ourselves. The next step after this was the creation of a steering group, a project group and a working group in order to manage the project implementation.

A number of ENSI experts were invited to join the steering group, including Lea Houtsonen from the Finnish National Board of Education, Mauri Åhlberg from the University of Helsinki and Vice Superintendent of Education, Ms. Elina Rönkkö from the Education Unit of Espoo. The main task of this group was to monitor the progress of the project towards its goals and results.

We prepared well for the implementation of the SUPPORT project in our school. For example, we were trained in a number of different areas, including how to use the idea of "Improved Concept Mapping" as a part of collaborative knowledge building, the use of an online tool (Nature Gate for natural species identification), and also in the use of enquiry-based learning methods. In addition we took part in training

days on ESD and how to promote well-being and the joy of learning and living of our students. Finally, we organised specific training sessions for our secondary school students on different topics such as how to saving energy and resources.

All sorts of experts and organisations helped with these trainings and our partners shared with us their expertise on the economic, ecological and social dimensions of sustainable development. We met key partners face to face before, during and after the learning process .

ENCOUNTERS – FOR SUSTAINABLE LIFESTYLE – PROJECT PURPOSE, GOAL AND ACHIEVEMENTS

The purpose of the Encounters Project was to find ways in which sustainable lifestyles can be rooted in school culture and the goal of the project was to ensure that ESD is implemented in the daily life of the school.

To achieve the project goal we planned and carried out five learning units each of which took into account all the dimensions of sustainable development:

- Ancient Espoo (2007)

The Ancient-Espoo-Unit combined Art, Music and History (mythical stories) into a fascinating entity. It allowed students to become familiar with their own roots and cultural history. The unit covered the cultural sustainability of the region and was consisted of six workshops. The package was carried out in collaboration with the Espoo City Museum, Espoo Library and Art Center Pikku Aurora.

- Medieval Espoo (2008)

The lessons in this unit familiarized the students with ordinary life and special occasions of medieval times when Medieval people were strongly linked to the surrounding environment. In a number of different workshops students learned about medieval occupations. Students learned to understand how human lifestyles have changed over time and how people managed these changes. The history of the region helped them to understand how Espoo came to be what it is today.

These units were carried out in collaboration with Espoo City Museum, the Glims Museum, the Finnish House of Nobility, the Finnish Theater Museum, Espoo's Cultural Department, the Weavers Guild, the Fransila Herb Garden, WSOY Publishers,

Espoo Parish. Espoo's 550th anniversary in the spring of 2008 was part of the learning environment.

- Nuuksio National Park (2008–2009)

This learning unit included a comprehensive experience of Nuuksio's nature through the different seasons. The aim was to explore students' relationship to nature through their own experiences and help them to understand how much people are dependent on nature: land, air, water and energy.

The package included instructions on how to learn about Nuuksio through stories, art and history. For example, Nuuksio's nature provided an ideal setting for nature photography during different seasons.

The package also gave instructions on how to observe, explore and devise a tour through nature. The package was implemented in co-operation with Metsähallitus (Natural Heritage Services) of Southern Finland and the Arthouse "Little Aurora".

- Mapping one's Environment (2009)

This learning package gave instructions to both teachers and students to support a process of experimental and experiential learning.

The package included instructions on how students could explore air, soil, and water as well as ways of discovering characteristics of living organisms. The package also included basic information on the functioning of ecosystems and interactional relations.

The aim for pupils was to obtain information through their own investigations in the local environment and then to learn and to question how wildlife, together with water, air and soil quality, has been affected by human impact. These questions helped students develop their critical thinking skills, especially in relation to the contribution that people have made by shaping and changing their own environment.

This learning package was implemented in co-operation with the Villa Elfvik Nature Center, the Technical and Environment Department of the city of Espoo, WWF,

and the UPM Forest Company. We also used an online tool *Nature Gate* for the identification of diffent species of plants an animals.

- Keinumäki School as a learning environment (2009–2010)

This final learning package aimed to support students' participation, influence and activities in the own school, at home and in society as a whole. The main goal of this learning package was to promote sustainable development in all dimensions of life in order to encourage the adoption of sustainable lifestyles. Other goals included the promotion of social sustainability through the creation of safe, equitable and friendly learning environments, and encouraging a joy in discovery and learning. The activities in the learning package also encouraged for economic and ecological sustainability in everyday life, including energy and water reduction, sorting and recycling waste, reducing consumption, as well as biodiversity protection in our natural environment. We were also concerned with cultural sustainability, including an understanding of human cultural history, traditions, multiculturalism and issues of fairness and tolerance.

This package was implemented in co-operation with the students' families, HSY (Helsinki Region Environmental Services Authority), Kuluttajavirasto (the Finnish consumer Agency), Kierrätyskeskus (Helsinki Metropolitan Area Reuse centre Ltd), Motiva Ltd. (Energy company), Jorvi Hospital, Zest and the Finnish Children's and Youth Foundation.

EVENTS

After the work with the various learning packages a number of events, such as art exhibitions, were organised. Particular learning packages offered occasions for specific actions. For example during the "Medieval Espoo"-unit, a Medieval event with workshops was organised and led by the students and during the "Nuuksio National Park"-unit we visited the park several times. We also organized our annual Spring Party 2009 in the park and the parents participated, sitting around an open fire with the whole school. Finally we presented our Nuuksio exhibition both in the library and cultural centre of the city of Espoo.

THE EVALUATION PROCESS

Before and after experiencing each of the learning packages the students were asked what they already knew about the topics – what was their prior knowledge and understanding? This information was then used during the units to ensure

more effective learning. Students participated in this process in different ways. For example, in the ”Medieval learning package” the data were collected by using the Collective–Knowledge-Building method and during the ”Keinumäki School learning environment”-unit, the students had very active role evaluating the eco-friendliness of the school, using green school criteria. Students also began to monitor energy consumption, organized sorting – and recycling – events and competitions. They also established an ”eco-team” which shared important information about global issues such as climate change. This team aimed to encourage students and staff to behave in an eco-friendly way. The eco-team activities were part of their studies.

Information was also gathered from staff-members. Several interviews took part during the project work, focusing on knowledge about SD, ESD and sustainable lifestyles, together with the kinds of everyday environmental activities done.

ACHIEVEMENTS AND AND THE IMPACT OF CONCRETE ACTIONS FOR OUR SCHOOL

We felt that participation in the ”Encounters”-project brought significant benefits!

1. Networking. The collaboration with established local, national and international networks empowered and inspired the whole school. We had access to new ideas for implementing ESD in our schools. It was a precious co-operation with actors from other schools and expert organisations, dealing with the same questions.

2. Participatory approaches. We explored real participation and the impact of this in our school on an everyday basis.

3. Systems thinking. We developed a holistic access to our local environment and learned how to realize Education for Sustainable Development in our school.

4. Learning environments. Teachers and students enjoyed versatile learning environments and developed advanced learning methods.

5. Sustainable lifestyles. We measured sustainable consumption and explored tangible elements of sustainability in everyday life. Partners collaborating in the initiatives were encouraged to foster sustainable lifestyles in their own environment (school, home, organisation, network, etc.).

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Implementation of Education for Sustainable Development in Switzerland and co-operation with ENSI

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The Swiss education system at both the mandatory and the upper secondary level is strongly determined by the federalist structure of the Swiss confederation. The political entities responsible for education are the cantons (federal states) together with some lower level authorities. Actual ownership of the schools lies at the community level. The system is even more complicated by the fact that in Switzerland four languages are spoken in different geographic regions and the borders of these linguistic areas are not the same as those of the political entities. The only part of education managed by federal law is vocational education, which in Switzerland often is implemented along a dual track of school-based and enterprise-based education.

Even though the cantons are in charge of developing the curricula for the mandatory school and general education in high school, inter-cantonal co-operation, mainly within the linguistic groups, has been strengthened. As a result the curriculum for the mandatory level has been harmonized in the French speaking part of the country (Plan d'études romand – PER) and in a similar way in the German speaking part (Lehrplan21). The Italian speaking part has a unique curriculum (Piano di studio). The implementation of the harmonized curricula is taking place at different speeds in the different cantons. For the general education at the upper secondary level, the point of reference is the national Framework curriculum 1994, but the cantonal curricula and the framework curriculum strongly diverge from each other. The harmonization in this field is intended but is progressing slowly.

ESD IN THE DIFFERENT CURRICULA

How the is transversal pedagogical concept of ESD carried out in this multiple, regionally diverse educational situation? To answer the question we will first briefly analyze the respective curricula.

For the mandatory schools in the French speaking cantons, the PER has integrated ESD into the general education curriculum and, depending on the topics, into the relevant subject disciplines. The topics are well coordinated, foster an

interdisciplinary approach and lead to the fulfillment of pupils' learning objectives. The ESD concept represented in the PER is broad and covers ecological, social and economic aspects of ESD as well the ethical, technological and societal dimensions. The PER has been already implemented in the whole area of its spatial validity.

In the Piano di studio (Curriculum for the Italian speaking community), ESD is currently implemented along different approaches such as within other media, health, political and economic education – all a part of general education. The aim is creating specific ESD competencies in line with transversal competencies such as self-management and critical thinking. Depending on the particular topic, ESD is found in different disciplines and the teachers are encouraged to develop an interdisciplinary approach.

In the German speaking part the strongly harmonized Lehrplan 21 is in the process of implementation in the respective cantons since 2015. ESD is a leading curriculum concept and is implemented alongside the following seven topics: politics and democracy, ecology and natural resources, gender, health, global development and peace, cultural identities and intercultural communication, economy and consumption. The teachers treat the ESD topics based on three main didactic principles of participation, networked thinking and orientation towards the future.

ENSI left traces in the 'Lehrplan21'. The former General Secretary of ENSI (1998–2002) Johannes Tschapka, served as head of an ESD curriculum development project from 2008 to 2011. The pooled expertise of ENSI had two inputs into this project: Firstly, members of ENSI supported the first phase of the curriculum development by sharing how ESD was integrated in their national curricula and then sent short feed-backs on the first draft to the ESD project team. Secondly, based on the strong collaboration with Australian, Canadian and Finnish ENSI-members, concepts of the competence-based curricula of the respective partners influenced certain aspects of the Lehrplan21, and in particular the idea of a three dimensional competence curriculum (facts, skills, concepts).

For the upper secondary level, the only canton that has explicitly introduced ESD into the curriculum of the Gymnasium is the canton of Berne. In other cantons and other schools at this level, ESD has not yet become a systemic part of the curricula and remains the subject of individual teacher's motivation or the requirements of the specific subject discipline. The core curriculum for upper secondary

schools however does include goals close to ESD such as taking responsibility for environmental, social and political developments.

As for the vocational education, the Sustainable Development rather than ESD features prominently as a mainstream topic in the framework curricula for the vocational schools. On this foundation, every school develops its own curriculum and as a result, it is not possible to provide an overall evaluation of the place of ESD. The practical part of the vocational training is defined by the sector specific training curricula that are carried out in the enterprises and strictly reflects the required practical competencies of that business sector.

ÉDUCATION21 AS NATIONAL FACILITATOR FOR THE IMPLEMENTATION OF ESD

Éducation21, a national competence centre for ESD and a specialized agency of Swiss Conference of Cantonal Ministers of Education, was founded (2013) in the middle of the process of curricula harmonization. Two other already existing organizations for environmental and global education merged into the new body. The new structure has a mandate from seven federal offices as well as from the Swiss Conference of Cantonal Ministers of Education to incorporate and implement the ESD in the educational system. Some key non-governmental organizations participated in the definition of the mandate and committed themselves in a similar way to the governmental structures in order to provide funding support for the new organization.

According to the vision of the founding organizations, the goal of éducation21 was to act as a national player in a multi-lingual educational structure and provide a unified understanding of ESD in the different educational environments. This impact was to be achieved through focusing on the multiplying structures, such as the teacher training institutes, by developing instruments for teachers and school principals. Networking and communication was to play an important role in this approach as well as establishing basic ESD-principles and quality criteria. Having said these political bodies as well as all the implementing organizations were to remain autonomous and éducation21 could make only propositions or offer its support for their products.

In line with this vision, éducation21 elaborated a common definition of ESD soon after its establishment and based on this the foundation evaluates, creates and provides teaching material for primary and upper secondary level for the various linguistic groups. In close co-operation with the pedagogical Universities, éducation21 also

supports the process of integration of ESD into the curricula for future teachers and provides on-demand courses for students and experienced teachers. In a similar way, é21 develops instruments in order to support and motivate teachers to implement ESD as prescribed by their respective curricula.

ESD as pedagogical concept together with the ESD quality criteria is defined quite broadly in order to allow integration of subjects required by the funding institutions such as political education, health promotion, ecology, and global education.

However, ESD is not determined by a specific topic, but is more a principle to organize a school as a sustainable place to learn, teach and share – in a 'Whole School Approach' (WSA). A network called Schoolnet21 (Schulnetz21) has been created throughout whole Switzerland and is a community of sustainable and health promoting schools. Schoolnet21 is monitored, supported and further developed by éducation21 in co-operation with Radix, the Swiss foundation for health promotion.

EVALUATION OF ÉDUCATION21

An evaluation of éducation21 was conducted after four years and showed that the institution has achieved its goals, although the further development of the ESD-concept as well as the development of quality criteria should continue (Schweizerische Eidgenossenschaft, 2017). In the pedagogical Universities, responsible for the training of future primary school teachers, the most significant impact was found: here 80% of lecturers had been affected by the work of éducation21, with a frequent use of éducation21 products. The school principals follow this main target group and two thirds make use of é21 products. Around 40% of teachers, at the primary level, know about the main products of éducation21 but a smaller proportion uses them.

SUMMARY

It is at the school practitioner level in all linguistic regions where further work needs to be done. The products of éducation21 seem to meet the demand arising from the new school topics and pedagogical approaches but the challenge appears to disseminate materials and approaches from the teacher trainers to the grass-root classroom level and to fully penetrate the educational system. It is important "to make questions of sustainable development vibrant and exciting for pupils to ensure that a sustainable and peaceful future is possible" (Sustainable Development Goals, 2016).

Such an approach should be monitored by using carefully developed instruments to identify evidence on the direct and indirect impact and outcomes of ESD. It is planned that in 2018 the main monitoring document in Switzerland, the Swiss Education Report, will include a section on ESD. Monitoring instruments that take into account the heterogeneity of the Swiss educational system will be developed as soon as possible in order to measure the efficiency of the efforts and the impact of investments into ESD.

ENSI AND SWITZERLAND

Switzerland has been active in ENSI since 1986 and generously hosted the ENSI secretariat from 2004–2006 and from 2008–2018. The decision to host the Secretariat continuously after 2008 was taken because it became visible that the biennial change of secretariat was generating a loss of knowledge and experience. In the decade after 2003, ENSI was strongly involved in five major externally funded projects (SEED, CSCT, CASALEN, SUPPORT and CoDeS), all managed and hosted by national ENSI member organisations. The close co-operation between ENSI and the local project management opened opportunities for both partners with on the one hand, ENSI being significantly involved in agenda setting whilst on the other hand the local project management received strong support from ENSI's experts.

In 2011, ENSI proposed an ERASMUS+ project gathering 28 partners from 17 countries. Resulting of organisational problems, the nominated local project management withdrew during the application process and ENSI had to find a legal partner to sign the proposal. As ENSI's status at this time was not eligible for European funding, so éducation21 stepped up to mark and nominated ENSI as the project secretariat. Three years of intense work for the ENSI-secretariat in the role of project management followed and at the end of the project 'CoDeS' (Collaborations of schools and communities for Sustainable Development) was evaluated by the EU Education, Audiovisual, and Culture Executive Agency and achieved high scores for its quality. CoDeS was one of the few Swiss managed Life-Long-Learning-programmes over the period of the LLP-funding frame.

Expectations that there would be a transfer of knowledge between éducation21 and the project CoDeS were only partly fulfilled: This happened because successful co-operation between an international agency and national organisations depends largely on the *national* context. If the international agenda is not synchronized with the national one it is almost impossible to develop fruitful exchange and this was the case between CoDeS and the work of éducation21.

Only very few Swiss schools co-operate with other schools either nationally or on internationally and school labels as such did not exist in Switzerland until the network of 'Healthy schools' was developed with national funding and support in 1997. Despite the fact that Switzerland was one of ENSI's founders in 1986, the CoDeS network never really impacted on the daily life of Swiss schools. Because of the challenge of move into schools, ENSI in Switzerland choose another approach:

Many success stories about ENSI's influence on national level education systems were built on the pyramid of University and Teacher Training, national administration, and schools. For more than two decades, ENSI's entry to the Swiss education system was linked to the University of Zurich and its networks in educational science. Regula Kyburz Graber was one of the initial ENSI members and her national and international research and work on curriculum development in Environmental Education and Education for Sustainable Development is highly acknowledged. In the heart of this Swiss-ENSI connection were the conceptions of socio-ecological approaches to EE, curriculum development, teacher education, reflective teaching, and participatory research. Regula Kyburz-Graber initiated a number of research projects that were directly or indirectly related to ENSI principles and were funded largely by the Swiss National Science Foundation. The project most closely linked to ENSI was a co-operative project with partners and teachers from the German and French speaking part of Switzerland based on a previous study with schools on socio-ecological Environmental Education.

Follow-up research projects broadened the EE field into one focusing on socio-scientific and "nature of science" questions with topics such as 'Science in a social context', 'Challenges in teacher education', 'Reflective practice', 'Discussing nature of science in classroom', 'Renewed pedagogy for science education', and 'Co-operative curriculum development on ESD' with teacher educators, teachers and student teachers from the German, French and Italian parts of Switzerland. References for the publications from these projects are listed at the end of this article. ESD research was gradually complemented by methodological studies such as 'Quality criteria for case study research' and 'Qualitative approaches to educational research'. In the context of these studies, Regula Kyburz-Graber critically reflected on the individualistic behaviorist approaches to EE and on Action Research approaches that might be misused as a tool to uncritically follow instrumentalist views of learning and action as a highly predictable behaviour. Instead, learning approaches were developed that allowed teachers and students to critically reflect on the conditions and boundaries of environmental learning and ESD discourses. Regula Kyburz-Graber advocates

educational processes where students are empowered to build up their minds independently and so may become competent to act as responsible citizens.

In retrospect, it is obvious that Switzerland and ENSI have shared a long and fruitful co-operation despite the fact that the Swiss schools did not participate in ENSI's networks. Both partners benefitted from each other. It will be the future challenge of éducation21 to maintain access to international debates and developments and new ways should be installed for the upcoming needs for international co-operation related to agenda 2030 and for achieving the goals of the Swiss frame curriculum.

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Environment and School Initiatives (ENSI) – Its impact in Austria

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INTRODUCTION

The network ENSI developed over a period of more than thirty years. I write this article from my perspective as the Austrian country coordinator for the ENSI-project since spring 1986 and also from having taken on different roles in ENSI such being a member of the ENSI secretariat, working in close co-operation with the EU-SEED project coordination, being ENSI president from 2004–2008 and being part of the ENSI Executive Committee. Here are some notes on the structure of ENSI in Austria and on its main impacts.

ENSI´S STRUCTURE IN AUSTRIA

The story began when Dr. Herbert Moritz, the Austrian Minister of Education gave the impulse for the creation of ENSI. Before becoming a minister in September 1994 he was vice-governor of the province of Salzburg and, more importantly, the first president of the Austrian Society for Nature and Environmental Protection (1973–1984). With this background and motivation he proposed Environmental Education as a priority topic at the OECD Conference of Education Ministers in November 1984. This proposal was rejected at that time. Later he commissioned the development of a basic decree for Environmental Education in Austria (issued in February 1985) as well as the development of an international initiative for Environmental Education within OECD. On May 21st 1985 he approved the proposal for the ENSI project which had been developed by Peter Posch on behalf of, and in close dialogue with the Austrian Ministry of Education (Bundesministerium 1985). The project proposal was finally accepted by CERI Governing board in December 1985. (CERI is a research department of the OECD Directorate for Education and Skills – see: http://www.oecd.org/education/ceri/)

According to the project plan the Ministry´s Department for Environmental Education chose and invited nine teachers experienced in teaching using project methods to join in. They came from different kinds of schools and from different provinces of Austria and I was invited to join the Ministry as coordinator for this teacher team and as country coordinator for ENSI. Peter Posch was appointed as our scientific-pedagogical advisor and the start date for our team was May 28th, 1986.

Since that time there has been a close dialogue and collaboration between the ENSI teacher team and the Ministry. As coordinator I had my seat in the department for Environmental Education and the ENSI team was officially nominated as a working group of the Ministry. The head of the environmental department also became a member of the team and took part in nearly all the team meetings, allowing a dialogue between school practise, administration and research, mutual learning and understanding. The teachers involved received training in Action Research to be able to document and publish their innovative work in case studies. The guiding advice of Peter Posch also led to our better understanding of the school system and its development and thus to the continuous professional development of the team members.

ENSIS IMPACT IN AUSTRIA

ENSI influenced the development of Environmental Education in Austria on four levels; contributions to policy, the development of networks, participation in research and development projects, and publications.

CONTRIBUTIONS TO POLICY

In Austria the basic ministerial decree in support of Environmental Education (1985) was the first official ministerial document to suggest teaching through environmental projects in schools. For me as a teacher this was a sensation, however it took another seven years until project teaching was actually recommended in a ministerial decree in 1992. The experiences and documents of ENSI phase 1 (1986–1988), including the ENSI team case studies, contributed significantly to this development.

The success of the ENSI Conference in Linz, 1988 provided a strong atmosphere of support for Phase 2 of ENSI both internationally and in Austria. The main focus was on the extension of ENSI Schools and to support this focus, training seminars for teachers were developed and an "Environmental Education Fund" (today "Education Support Fund for Health Education and Education for Sustainable Development") established by the Ministry of Education designed to finance and promote project instruction in schools. There were even plans to establish an Environmental Education Academy in order to institutionalize training seminars and encourage the exchange of relevant experiences among teachers but this idea did not materialize. During this phase the first substantial evaluation of environmental initiatives in Austria was commissioned (Thonhauser et al., 1993, 1994) and this confirmed the innovative role of ENSI.

The ENSI-EU project "Curriculum, Sustainable Development, Competences, Teacher Training – CSCT" that focused on teacher competencies for ESD (Sleurs 2008) also had a significant impact in Austria. The Austrian research project "Competences for Education of Sustainable Development" (KOM-BiNE)" was both stimulated by the international CSCT endeavour (Rauch et al., 2008) as well as making an important contribution to the outcomes of CSCT. The combined international and Austrian results were integrated into the development process of the UNECE document "Learning for the future: Competences in Education for Sustainable Development" (Sleurs, 2011) and this document together with a position paper on this topic (Rauch & Steiner, 2013) were incorporated into the handbook for the development of new teacher training curricula (Braunsteiner et. al., 2014). As a result nearly all teacher training Universities and Universities in Austria have incorporated ESD into their teacher training curricula which were put into effect in two steps 2015 and 2016.

The ENSI teacher team, together with Peter Posch was invited by the Ministry of Education in 2013 to draw up a proposal for a new basic decree on Environmental Education for Sustainable Development and during a broad consultation process over hundred educational experts were invited to give their comments and feedback. The decree was signed by the Minister in August 2014 (Bundesministerium, 2014). Based on this new decree the next project was to develop an on-line self-assessment tool for ECO-schools. Called "Quality star", this comprises 100 questions bundled in the ten focus topics of the ECO-school programme. Again there was a consultation process involving the regional ECO-school coordinators as well as a selected group of ECO-schools before the "Quality star" was launched in 2016 (www.oekolog.at).

Since 2017 a working group commissioned by the Ministry of Education has been dealing with the further development of teacher competencies for Environmental Education for sustainable development. The aim is to give orientation for in-service training for teachers, as well as for teacher training institutions in order to support the dissemination and implementation of the decree into school practise.

DEVELOPMENT OF NETWORKS

The decision of ENSI at the beginning of Phase 3 in June 1995 to focus on four main topics (Teacher Education, Information Technology, Quality Criteria and ECO Schools) for its further work strongly influenced developments in Austria. This was the starting point for two major ENSI based network initiatives in the country which are still active and growing. In summer 1995 the Minister of Education commissioned the ENSI teacher team to design the ECO-school network, which after a two year

pilot phase developed into a wider school network. By 2018 there were more than 500 schools in the network. Its structure is similar to the ENSI network: A steering group, corresponding to the ENSI executive; a federal conference of regional representatives, corresponding to the ENSI country coordinators and there are the many ECO-schools in the regions, corresponding to ENSI´s outreach in the member countries. And not to forget, there is scientific advice and research in both networks.

The ECO-school network contributed to the development of pedagogical criteria for "The Austrian Eco-label for Schools and Teacher Training Colleges" (www.umweltzeichen.at) which has been awarded by the government since 2002.

1995 was also the starting point for the teacher training initiative "UMILE – Environmental Education in Teacher Education". This Action Research based project received three years of funding from the Austrian Science Fund (FWF), Austria's central funding organization for basic research. One lasting result of this project is the two-year university training course for teacher trainers, "Education for Sustainable Development – Innovation in Teacher Training", which has recently run for the fourth time (Rauch & Steiner, 2005). As one result committed teacher trainers helped to establish a contact group of Teacher Training Universities to link with the ECO-school network and currently 9 out of the 14 Teacher Training Universities have joined the ECO-school network.

PARTICIPATION IN RESEARCH AND DEVELOPMENT PROJECTS

When ENSI decided to organise its work through projects, Austria joined ENSI´s "Learnscape pilot project" (1999–2001) under Australian leadership. This involved eight ECO-schools and Austria organised the final international Learnscapes conference in autumn 2001. Learnscapes has become a focal topic for the ECO-school network and the project was also the starting point for the still on-going collaboration with the Austrian Institute for School and Sport Facilities (ÖISS) and its working group on school grounds. One important result of this collaboration are recommendations for the design of school grounds (Mellauner & Clees, 2005).

In 2002 Austria submitted the first proposal for an ENSI-EU-project "School Development through Environmental Education SEED" (2002–2005). The proposal was successful and Austria coordinated the SEED project from 2002 through to 2005. Subsequently Austria took part in further three ENSI-EU projects with a number of partners: EU Comenius 2-project "Curriculum, Sustainable Development, Competences, Teacher Training – CSCT" (2004–2007), an EU Comenius 3 network

project "Partnership and Participation for a Sustainable Tomorrow" – SUPPORT (2007–2010), and EU Comenius 3 network project "School and Community Collaboration for Sustainable Development – CoDeS" (2011–2014).

Austria supported these projects by organising conferences, contact seminars, study visits and international workshops as well as publishing the project´s publications. Five Austrian partners were involved in the CoDeS-Project and provided case studies and Austria also organised the first CoDeS-conference in Vienna, May 2012 and supported the project's publications.

There has been a fruitful interaction between ENSI´s EU-projects and ENSI work in Austria. We have made ample use of the "Quality Criteria for ESD-Schools", the most popular product of the first ENSI-EU-project SEED (Breiting, Mayer, Mogensen, 2005). The Ministry of Education provided all ECO-schools with this publication and the "Quality Criteria" were so well received that to our surprise the Department for Vocational Education of the Ministry asked for it to be distributed to all Vocational Schools.

In order to facilitate understanding and use of the Quality Criteria the ENSI teacher team, with Peter Posch designed and piloted an in-service seminar for heads and coordinators of ECO-schools during which participants visited ECO-schools and used selected criteria to observe the schools' initiatives in sustainability as well as providing feedback as critical friends (Lechner & Rauch, 2014).

PUBLICATIONS

ENSI Austria has produced a great variety of publications. These include a considerable number of case studies based on Action Research, several books (e.g. a Handbook for Ecological School Management), evaluation reports, research articles in international journals and books, and even a few doctoral theses, some by members of the ENSI teacher team. One specific example was published during the European Year of Citizenship through Education (2005). This ENSI team publication focused on pupils voice in schools; the Austrian ENSI teacher team developed case studies of student´s participation and produced a book "9 times pupils participation. Examples from school practice" (Posch and ENSI Team, 2006).

For more than 30 years the ENSI teacher team has provided important and innovative impulses to the development of Environmental Education in Austria. It has been a

unique group within all ENSI member countries, working in collaboration with the Ministry of Education until 2016 and is continuing on individual engagement.

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ENSI's Quality Criteria and Education for Sustainable Development in Greece

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THE CONTINUING DIALOGUE OF ENSI WITH EDUCATIONAL PRACTICE

Looking back over texts that outline ENSI's vision (e.g. Posch, 1985; Smith, 2004) as well as some of the most important publications of ENSI projects (e.g. Espinet, Mayer, Rauch & Tschapka, 2005; Espinet & Zachariou, 2014) one easily notes a continuous and vibrant dialogue concerned with educational practice and the systematic effort to support teachers and schools in implementing Education for Sustainable Development (ESD). ENSI has always attempted to encourage theory to be transformed into educational tools and for the evaluation of educational practice to fuel the further development of theory. It is not coincidental that from its initial steps, ENSI adopted a participatory approach involving schools, students, teachers, teacher trainers and administrators, and attached great importance to the promotion of qualitative and Action Research methods and self-reflected practice (Smith, 2004; ENSI, 2015).

The publication "Quality Criteria for ESD-Schools", an outcome of the ENSI's Comenius 3 program "School Development through Environmental Education" (SEED) is one of the hallmarks of these efforts (Breiting, Mayer & Mogensen, 2005). The SEED project took place at the start of the UN Decade of Education for Sustainable Development (DESD), when intense debates on an international level about both content of ESD and its relation to Environmental Education (EE) took place (e.g. Gonzalez-Gaudiano, 2005; Sauvé, Brunelle & Berryman, 2005). In this publication, quality criteria for ESD-Schools are organized in three groups which are further subdivided into fifteen areas (Table 1). One distinctive feature and an advantage of this publication is that it moved from the broad expressions of the DESD Implementation Scheme produced by UNESCO and provided more detail about the implementation of quality ESD (UNESCO, 2005). Thus it became a useful tool that gave new impetus to the advancement of sustainable schools (e.g. Macdonald, Pálsdóttir, Ásgeir, Norðdahl, Bergmann, 2018) and was positively reviewed by the international scientific community (e.g. Wooltorton, 2006).

Table 1. Quality criteria for ESD-Schools

Quality criteria regarding the quality of teaching and learning processes	*Quality criteria regarding school policy and organization*	*Quality criteria regarding the school's external relations*
1. Area of teaching-learning approach, *2. Area of visible outcomes a school and in local community* *3. Area of perspectives for the future* *4. Area of a 'Culture of complexity'* *5. Area of critical thinking and the language of possibility* *6. Area of value clarification and development* *7. Area of action-based perspective* *8. Area of participation* *9. Area of subject matter*	*10. Area of school policy and planning* *11. Area of school climate* *12. Area of school management* *13. Area of reflection and evaluation of ESD initiatives at school level*	*14. Area of community co-operation* *15. Area of networking and partnerships*

Source: Breiting, Mayer & Mogensen, 2005.

Quality Criteria for ESD-Schools was translated into 18 languages, including Greek (Flogaitis & Liarakou, 2009) and since then it has been taught to students of pedagogical departments and to teacher training seminars in the country. As a tribute to ENSI's important contribution, the purpose of this chapter is to evaluate the progress of ESD in Greece using the Quality Criteria for ESD-Schools as an interpretative framework and as a springboard for asking reflective questions (Breiting & Mayer, 2015). In particular, we will examine what changes have been made to the Greek education system since 2005, when the document was published, in fields related to the three groups of criteria mentioned above.

THE BACKGROUND… UNTIL 2005

Environmental education (EE) was institutionalized in Greek school system in 1990, and was quickly embraced by educators and it followed a dynamic course of development throughout the 1990's. In schools it was not taught as a separate subject, but was integrated in the form of optional extra-curricular projects, which were implemented voluntarily by teachers and students after school hours. These first steps were nurtured in two ways. The first was the appointment of Environmental Education Officers, experienced teachers in EE, who were placed in

the Greek Primary and Secondary Education Districts (116 in total). Each EE Officer coordinated, monitored and supported the teachers who implemented extra-curricular projects in the schools of her/his district. The second was the creation of 53 Environmental Education Centers (EECs) across Greece staffed by experienced EE teachers who delivered one to three-day EE projects for school students.

As a result of the UNESCO Thessaloniki Conference in 1997 a dialogue developed internationally about need for the concept of sustainability to permeate the curriculum and wider education however the majority of Greek teachers rejected the idea of widening the EE agenda and the renaming it as ESD. At an institutional level, the Greek Ministry of Education tried to implement international decisions and commitments on the integration of sustainability especially in EE but failed to formulate a coherent educational policy to enable this to happen (Liarakou, 2011). An important development was achieved in 2003 with the adoption of the Cross Thematic Curriculum Framework for compulsory education (DEPPS, 2003) which lists environment and sustainability among the eight principles of education in Greece. In addition, from 2002 to 2006, thanks to a European program, the field of environment and sustainability blossomed with more than 4,500 Environmental Education projects being funded in schools with approximately 160,000 pupils taking part (Sofoulis, Gavrilakis & Kapiotas, 2005).

Up until the time when DESD was launched and the 'Quality Criteria for ESD-Schools' was drafted, the prospects for EE in our country were encouraging. The rest of this chapter follows the Greek story of the continuity of EE and ESD's through ENSI's three groups of quality criteria.

I. TEACHING AND LEARNING PROCESSES

Since 2005 there have been remarkable developments in teaching and learning processes when 2006 new school textbooks started arriving in schools. The relevance of this for ESD was that these new books contained many references to environmental concepts and issues in all subjects including languages and mathematics and as a result a "greening" of the curriculum became apparent especially in primary schools. We can therefore say that Greece has made some progress on the criterion concerning integration of ESD into subject matter (area 9). Having said this, the references to environmental and sustainability issues are fragmented with no overall planning for all courses and classes and this has resulted in a lack of continuity and coherence. This fragmentary character does not help the cultivation of a culture of complexity (area 4) nor develop critical thinking and

the language of possibility (area 5). In many cases, for example in geography and sciences, ESD references are primarily aimed at acquiring knowledge whilst value clarification and development (area 6) are not promoted.

In Greece there is only one approved school textbook for each subject for each school year and these textbooks, which are issued by the Ministry of Education, are for compulsory use by schools. Such a national textbook system does not help students in making connections with local issues of the environment and sustainability and as a result, visible environmental and sustainability outcomes both in school and in the local community (area 2), the action-based perspective (area 7) and active participation (area 8) do not seem to be particularly cultivated, at least not through school textbooks.

These areas were best covered by the extra-curricular projects already in place and the creation of opportunities for the integration of these projects, namely the introduction of a 'flexible cross-thematic and creative activities zone' ('flexible zone') in all primary schools in 2005 was a step forward. This 'flexible zone' in the curriculum allocated space within the timetable to implement innovative projects that were interdisciplinary and related to "*pupils' interests and life situations*" (DEPPS, 2003, p. 619). The features of activities to take place within the flexible zone are consistent with many of the proposed criteria regarding the quality of teaching and learning processes.

In 2011 another attempt was made to introduce a new framework for Greek schools – the "New School" programme. This was similar to the 'flexible zone' approach and 'Environment and Education for Sustainable Development' was one of the proposed 13 teaching fields of the school and as a result a curriculum for ESD was developed the first time. However, as a result of governmental changes, the 'New School' programme was abandoned before it could be implemented.

Unfortunately we cannot provide any substantive evidence related to take up of ESD activities or the introduction of new teaching-learning approaches offered by the innovative 'flexible zone' (area 1), since the initiative was not formally evaluated. However, it is clear that the initiative did not receive support from many teachers especially those who had difficulty in moving away from 'front of class' teaching based on the one and only school textbook. In addition, in many instances the 'flexible zone' was used by teachers to supplement and enhance "core" courses (e.g. mathematics, language). However, even when the 'flexible zone' was used to

implement projects, there was no evaluation of their quality or fulfillment of the ESD objectives and in informal and small scale surveys carried out during courses at the University with our students, it seems that many of the projects were limited to relatively superficial approaches to environmental issues such as recycling or reforestation.

In recent years initiatives and opportunities that support innovative teaching and learning approaches appear to have receded. The time allocated to the 'flexible zone' is shrinking in the first four grades of primary school and has been abolished from K-11 and K-12 and we believe that this decision will stop the momentum that had been created for innovative learning and ESD activities. Opportunities in lower secondary schools similar to the 'flexible zone' have also been eliminated and the research activities that provide the opportunity for experiential, co-operative and exploratory learning have been retained only in the Lyceum (i.e. upper secondary school for students about 15–18 years old). In addition the role of EE Officer in each district has been abolished and replaced by a School Activities Officer who now has the responsibility of designing and coordinating not only EE but also Health Education, Cultural Affairs and other adjectival 'educations'. The future of even this teacher support is also uncertain. In addition the level of staffing at Environmental Education Centers is being reduced at the same as they are being rebranded as Sustainable Development Centers and their responsibilities broadened. Even the symbolic financial support of school projects has been abolished.

II. SCHOOL POLICY AND ORGANIZATION

In Greece, pupil participation in school administration is through school communities and student councils created in the 1970s with the ambitious goal of contributing to a more democratic school operation. However, even at the time, the work of the student councils was mainly limited to the organization of cultural, sporting and recreational activities and the role of the councils has not evolved or strengthened (according to the quality criteria 10 and 11), but has been devalued in the consciousness of students and teachers. According to a survey conducted by the Children's Ombudsman involving 37,488 school students (Ombudsman for Children, 2017), the vast majority of pupils seek more active participation and more effective decision-making processes regarding various aspects of schooling. In the survey students proposed several ways of improving participation including: empowering pupil teacher collaboration, respecting the views expressed by pupils as well as informing pupils about issues related to the school. This research has sparked debate on the role and feasibility of student councils that may eventually

lead to a substantial upgrading of their role and more generally, the creation of conditions for the development of more effective citizenship. Such ideas however, are in the future. Currently, various NGOs and foundations implement different programs related to cultivating volunteerism and citizenship such as the program "I Care and Act". However valuable these are, they are sporadic and isolated and have not been institutionalized within the education system.

More recently, the participation of teachers and parents in the drafting of the school's internal regulations has been discussed along with the possibility of empowering of the teaching staff to rebalance the school's hierarchical power structure. These discussions seek to create greater democracy and communication at school and are small but promising steps on the road to changing the culture and the climate of the school as advocated by the idea of a sustainable school.

III. THE SCHOOL'S EXTERNAL RELATIONS

In recent years the idea of an 'Open School' is increasingly being discussed in teacher and institutional settings. Whilst this is a positive step forward it is often the case that community school partnerships regress to their simplest forms such as inviting community specialists and / or sponsors to school, or using schools as venues for community events and activities (Liarakou, Gavrilakis & Flogaiti, 2014). The latter seems to be developing largely on the initiative of municipalities. For instance 25 schools participate in the "Open Schools" program of the City of Athens, involving school premises being provided as meeting places and centers of action for the local community to take part in recreational, cultural, educational and sports activities (City of Athens – Open Schools, 2018).

In a qualitative research project conducted with a small sample of teachers in Greece (Gkini, Gavrilakis & Flogaiti, 2016) and based on another important ENSI publication related to school-community collaboration (Espinet & Zachariou, 2014), teachers seem to understand the basic elements of a quality school-community partnership and are positive towards the development of such collaborations. However, most teachers have limited time as a result of a stifling curriculum. A lack of training in how to manage school community partnerships, as well as a dearth of experience and good examples are also key inhibitors in the development of such collaborations.

Discussions around the idea of an 'Open School' in a community is a step forward, but for the moment the radical and emancipative version of the sustainable school regarding the external relations of a school as described in the Quality Criteria

(area 14 – community co-operation and area 15 – networking and partnerships) appears to be a discussion which has not yet been opened.

DISCUSSION

Summing up our reflection on the progress of ESD in Greece using the 'Quality Criteria for ESD-Schools' (Breiting, Mayer & Mogensen, 2005), we have found that positive steps have been taken, mainly in the area of teaching and learning processes, whilst less progress has been made on school policy, school organization and external relations. However, it seems that these steps can largely be attributed to the developments and progress in EE before 2005 rather than initiatives that happened related to the DESD. Indeed, although several institutions and processes developed from the mid-1980s to the mid-2000s and strengthened the dynamics of ESD, the period following this revealed several weaknesses in terms of integrating ESD into the Greek education system. International initiatives such as the UN Decade for ESD (UNESCO, 2005) and UNECE Strategy for ESD (UNECE, 2005) promoted the transition from EE to ESD and facilitated ESD's consolidation within many national education systems (UNECE, 2016) however, in Greece, they did not trigger the development of appropriate national initiatives and policies to re-orientate education and schools towards sustainability. In fact the transformation of ESD declarations into educational policies and practice was, in our opinion, hampered by two broad groups of factors.

The first group consisted of factors external to ESD, one of which was the global economic and social crisis which particularly affected Greece (European Commission / EACEA / Eurydice, 2013). The decline of ESD structures and institutions such as abolishing the position of EE Officers, the reduction of the number of EEC staff and the disappearance of funding for school projects was the direct result of an enormous pressure for cuts to be made in education spending to make more efficient use of financial and human resources. In our opinion this was a policy that derived from the neoliberal approach adopted to address the Greek economic crisis.

Furthermore, in the context of neoliberal globalization, international organizations gave priority to the accountability of education systems and the globalization of educational standards (Hursh, Henderson & Greenwood, 2015) rather than progress in the quality of learning and ESD. Several national and international educational assessments, such as the OECD Program for International Student Assessment (PISA), have become "*a metapolicy, steering education systems in particular directions with significant effects in schools and on teacher practices, on curricula, as well as on*

student learning and experience of school" (Lingard, Martino & Goli Rezai-Rashti, 2013). This priority rationale is consistent with an educational system that adapts to the modern competitive model of education promoted by the UN although it is fully opposed to a critical approach to ESD (Sinnes & Eriksen, 2016).

In addition, even though international declarations and conventions promote ESD, the development of ICT and STEM Education (Science, Technology, Engineering and Mathematics) seem to be the real international educational priorities rather than ESD. The European University Association (EUA) response to the review of Key Competences for Lifelong Learning 2006 proposed by the European Commission (European Commission, 2018) highlights this imbalance. While the EUA recognizes that the 2018 proposal represents a major improvement from previous ones, it considers that it "*highlights STEM and basic competences in science and technology, but does not refer to social sciences and humanities*" (EUA, 2018). The challenge is that a knowledge-centered and technocratic perspective of learning such as that advocated by STEM, is insufficient to address sustainability issues and greater investment in social sciences is needed (Davis, 2012). However in recent years, and especially after the refugee crisis, Intercultural Education has also developed and become a priority in Greece's central education policy. Of course, no one can question the importance of ICT, STEM Education or Intercultural Education, however the problem is that instead of these educational fields acting in synergy with ESD (Burnett & McArdle, 2011; Hopkinson & James, 2010), they act competitively. These fields dominate both at the level of organizational structures and budget allocation at the expense of ESD, and since we live in times of economic distress, budget prioritization becomes a particularly important issue.

The second group of factors, which interact with the first, consist of conceptual and institutional issues (or "identity issues") of ESD. The fact that ESD seeks to act as an overarching paradigm that guides and transforms core disciplines, second-tier disciplines, and adjectival educations (such as Health Education, Cultural Education etc.) so that they can contribute all together to enable a more sustainable future (UNESCO, 2012) appears to be an issue that impedes its development. Abolishing borders and bridging these different educational fields is a particularly difficult task as it seems incompatible with the dominant structure and rationale of education systems.

Even the convergence of adjectival educations and their integration within ESD seems to face difficulties and a range of alternative proposals such as 'global education

for sustainability citizenship' (Huckle & Wals, 2015) and 'education for inclusive development' (Bonal & Fontdevila, 2017) have proliferated recently and challenge the central role of ESD. The dynamic development of adjectival educations up to 2000, with EE as a pioneer, has now receded and critically, whilst EE has indicated a willingness to "sacrifice" its name and identity in order to converge with the vision of sustainability under the broad title of ESD, other adjectival educations have not done the same. On the contrary, they seem to be haphazardly compiled into a single structure, that of ESD, without any meaningful discussion within the educational community that would contribute to the real integration of their fields. As a result, adjectival educations (excluding EE) continue to operate autonomously, usually under the auspices of International Organizations (for example, Health Education is supported by the WHO) and EE is disappearing slowly within the broad field of ESD as ESD itself staggers and declines.

The broad conceptual framework of ESD and the non-convergence of the adjectival educations have also had negative consequences on ESD structures and institutions. Instead of openness encouraging the growth and strengthening of institutions and structures in order to be able to support the idea of sustainable schools, it seems today to only facilitate their shrinking. This is mainly due to the fact that the rationale of an integrated approach and change of the educational system has not yet matured, neither has an understanding developed of the holistic nature of sustainability issues that integrate ecological, cultural, and health dimensions. This is apparent in the undermining of the flexible zone in primary schools. Paradoxically, the flexible zone has diminished due to hypothetical improvements, such as the integration of its features into the curriculum as a whole, without the necessary changes to motivate and support the sustainable school ever having been made in the curriculum.

In short, the changes that have been made in recent years in Greece in relation to ESD have only been first order changes. They have not been the second-order changes envisaged by Sterling (2001) that involve critically reflective learning, that examines basic values and takes place beyond accepted boundaries. However it is precisely these second-order changes that are required to promote the reality of sustainable schools. Moreover, the term 'sustainable school' is not even an objective in our country's education policies and is only supported by various NGOs.

The end of ENSI's work comes at a time when questions about the future of ESD have become more urgent. ENSI has been firmly committed to a critical ESD and

an education for emancipation and change in education and society towards sustainability. The crucial question that arises is whether the end of ENSI's work is simply the inevitable end of a life cycle of an organisation, or whether it marks the decline of the idea of ESD itself. Time will tell…

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ENSI and its impact on the Hungarian educational system

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Hungary joined ENSI as an observer in 1992, even before joining OECD, and became a full member of ENSI in 1996. These steps could be considered as a part of the long process in the transition of Hungary from a socialist state into a parliamentary democracy (Havas & Varga, 2006). This transition included a transformation of basic values and structures of society as whole and as part of this process the transformation of the education system. It is worth mentioning that environmental issues[1] had an important role in resistance against the Socialist system, as environmental concerns were tolerated by the ruling party. This served as a solid background for the development of Environmental Education at that time. After the collapse of the Socialist regime in the early 1990's, there was an enormous openness for co-operation with Western institutions. This unique combination of openness to Environmental Education and making links with Western institutions resulted in Hungary being the first country from the region to join ENSI.

ENSI made a significant contribution to the transformation of the Hungarian education system on three different levels through:

1. catalysing the development of Environmental Education
2. ensuring EE and later ESD became a cross-curricular issue in the National Core Curriculum
3. initiating and providing continuous professional support for the Hungarian Eco-school Network

CATALYSING THE DEVELOPMENT OF ENVIRONMENTAL EDUCATION

The main tool by which ENSI catalysed the development of Environmental Education was the ENSI report on the state of EE in Hungary in 1993 (Dőry, 1993). The preparation of the report brought together the most prominent environmental educators of the time, provided a very detailed diagnosis of Environmental Education in the country and drew up a plan of the steps necessary for the further development of EE. On the basis of this solid empirical background the Hungarian ENSI team played a crucial role in the late 1990's and early 2000's in introducing

1 Like protests against the Gabčíkovo–Nagymaros Waterworks, see at: http://enacademic.com/dic.nsf/enwiki/3331444

innovative EE approaches especially through locally based curricula. This was a radical and cathartic innovation after forty years of the repression of local voices in the world of a centralised curriculum, centralised textbooks and traditional way of teaching from the front. By supporting the development of local curricula, EE became a flagship for education innovation as a whole throughout these years. The main elements of this avant-garde position of Environmental Education initiated by ENSI were the active involvement of pupils and the Action Research approach to development. It has to be mentioned that ENSI was not the only international player supporting the development of EE in Hungary in the late 90's. There were also others, such as Science Across Europe, IUCN, and GLOBE, but ENSI played the central role through involving policy makers, researchers and practitioners in the process. At the same time ENSI published comprehensive books and articles that helped NGOs, teacher training institutions and schools willing to develop, primarily through a process of self-reflection on their own practice, and as a result to find better ways of working that matched their own circumstances.

Last but not least the professional communication channels established during the preparation of the ENSI report about Hungary were significant in channelling environmental educators' voices into the development of the first National Core Curriculum (NCC). These communication channels are still in operation and serve to support the continuous improvement of ESD in Hungary.

2. ENSURING EE AND LATER ESD BECAME A CROSS-CURRICULAR ISSUE IN THE NATIONAL CORE CURRICULUM

As a result of the processes described above involving the preparation of the National report for ENSI, the Hungarian ENSI team was actively involved in the formulation of environmental educational goals during the development of the first NCC issued in 1995.

From the point of view of Environmental Education the first NCC had two main characteristics. Firstly and most importantly it defined EE as a compulsory cross-curricular theme for all Hungarian schools, thus transforming EE from being just the hobby of some green biology teachers into an official duty of all educators nationwide. This step could be considered as the most significant development for Environmental Education in the 20th century in Hungary and its impact can clearly be seen today.

The second main characteristic of NCC was that it gave schools a broad freedom allowing them to develop their own curriculum after forty years of more or less total state control of school life. This freedom had advantages and disadvantages. On the one hand it helped encourage many excellent educational innovations, including environmental ones, to flourish. On the other hand however, the end of centralised school control also allowed less innovative schools to provide low quality education and in many occasions to even to neglect their environmental responsibilities. The new curriculum freedom was often misused or badly managed, and therefore the desire for state control reappeared from different political directions.

Over the last twenty years the need for freedom and state control at the same time has led to an almost continuous swing of the pendulum between centralization and decentralization of curriculum regulation. (Horváth, Kaposi, & Varga, 2013). Within this continuously changing and hectically developing Hungarian curriculum arena, the support of ENSI helped the position of Environmental Education to be maintained and even strengthened. These changes have even supported the shift from EE to Education for Sustainable Development with the latest, very detailed and centrally determined curriculum in Hungary, providing many opportunities for detailed instruction in environmental and sustainability related issues in each subject in the curriculum from primary to upper secondary schools.

3. INITIATING AND CONTINUOUS PROFESSIONAL SUPPORT OF HUNGARIAN ECO-SCHOOL NETWORK

The Hungarian Eco-school Network was launched by the Hungarian ENSI team as a realization of the ENSI Eco-school project. Initially the Network was established as an informal group of schools in 2000 and was open to every Hungarian institution of general education. The only precondition to joining was that the school principal had to provide a signed letter that included a description of the Environmental Education activities of the school and which expressed the school's intention to be part of the Network. Until the introduction of the official qualification system of Eco-schools, 40 schools had already joined the network (Széplaki & Varga, 2005).

The Hungarian ENSI team developed the Eco-schools qualification system based on the Swedish Green School Award – an excellent example of the international knowledge and know-how transfer that ENSI made possible. The introduction of the official qualification system lifted the network from the level of an informal school network to a formally and systematically recognized one by the ministries responsible for education and environmental protection. This made the network

much more attractive for schools and in the first year of the official network 144 school joined and the number of Eco-schools has almost continuously increased since then. Currently there are more than 900 member schools, meaning that about a quarter of the country's schools have voluntarily joined the network.

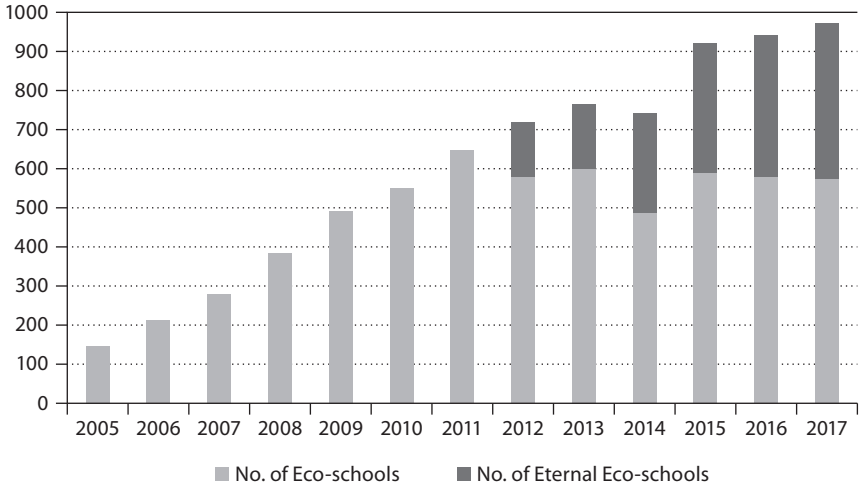
There are two points about the development of the Hungarian Eco-school system worth mentioning more detail. The first is the designation of some schools as "Eternal" Eco-schools. After the first three years of being an Eco-school, a school has to reapply to keep the title for a further three years. After six years of having the title a school can have the Eternal Eco-school title with no requirement to reapply but with the obligation to create an annual Eco-school development plan.

Secondly, as can be seen on graph 1 below, in one year there was a decrease in the number of Eco-schools. This decline was mainly due to the introduction of a heavily centralized school system, not only for the curriculum but also for the management of state run schools. This centralisation reduced the management of schools from the 3000 local authorities to just one governmental centre.

These curriculum and management changes resulted in the total reorganization of school life and meant that there was virtually no capacity in schools for the organisation of additional activities such as applying or reapplying for the Eco-schools title. The situation started to normalize because luckily, and thanks to the ENSI background of the Network, a significant project was started with support of Switzerland just when the decline started. This support made it possible to establish regional centres for Eco-school development and to launch a new series of in-service teacher training activities for Eco-school teachers. With this extra help it was possible to bring the network back to the growth track.

The continuous growth of the Hungarian Eco-school Network demonstrated that the ENSI based system created a solid professional background for all Hungarian schools willing to realize a Whole-School Approach to environmental educational practice.

1. graph: Number of Eco-schools in Hungary



FUTURE PERSPECTIVES

These three contributions of ENSI have shaped the Hungarian educational system and over the last decade, Eco-schools has become an attractive brand which has led to more and more schools being involved in Environmental Education and in a Whole-School Approach to ESD. One of the guiding principles of the Eco-school application system is that attaining the qualification must be feasible for any Hungarian school. However it appears from the data that the support system for Eco-schools cannot always keep pace with the growth of the network, and this brings into question the rationality of further network expansion. If professional support is reduced, then the network could easily be diluted and the achievements may be eroded.

In addition to the further expansion of the network, another possibility for further progress would be for the Eco-School qualification, or at least its main features, to be integrated into general school evaluation and so become a compulsory expectation for all Hungarian schools. If this were to happen then it would be necessary for all Hungarian schools to have access to the systems developed for the professional support of the Eco-school Network (training courses, education-training program, expert support, pedagogical aids and special forms of learning).

There is a possibility for the features of Eco-school accreditation to be included as part of the centralized control and support system for schools that has been established over the last eight years, and first steps have been taken into this direction. Experts of regional pedagogical support centres have been informed about the Eco-school Network and there is a growing number of teachers with a portfolio for their higher professional qualification containing evidence about her or his excellent work in order to realize the eco-school plan.

Apart from large scale systemic results the importance of the individual teachers also needs to be highlighted. One common and clear lesson of research into the effectiveness of education systems over the last ten years is that the quality of education is largely determined by the quality of the work of teachers (Barber & Mourshed, 2007 and OECD, 2005). Educational systems are successful if they attract the best young graduates to become teachers and then ensures their continuous professional development to keep them in the teaching profession throughout their career. During our regular Eco-school visits we noticed that the Eco-School title alone does not ensure the success of the scheme (Varga , Könczey, & Saly, 2017). If there is no educator in an Eco-school with an extraordinary engagement with the goals of ESD, stagnation, decline, and even ultimately loss of the title may happen. That's why the participatory approach of ENSI is crucial for any successful attempt to develop the ESD practice of schools. There is no successful Eco-school without teachers believing in its objectives and eager to work for them.

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ENSI INITIATED PROJECTS

The use of criteria when planning, evaluating or completing a project: the case of the ENSI Quality Criteria and the Curriculum Key in Iceland

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INTRODUCTION

This is the story about a research and development project in Iceland between 2007 and 2011 named "GETA". In Icelandic the name means "capability" and reflects the interest of the project in both Action Competence and Action Research. The underlying focus of the project was to understand what types of educational practice lead to Sustainable Development (Action ESD, 2007).

The project model involved school-university co-operation, a year of preparation for the researchers, a year-long in-service course for teachers, assessment of ESD policy and practice in Iceland, small group work and for some, voluntary work with schools as GETA advisors. Three years of low-level funding were provided by Reykjavik Energy and four preschools and four compulsory schools in different municipalities elected to join the GETA project. About 25 teachers and most principals took part in managing school projects of their own choice and around 12–14 researchers took part, several going on to study further. An active web-site was maintained on all project activities (http://skrif.hi.is/geta). The site was still accessible in March 2018.

In this paper we describe and comment on the origin and use of two rather different tools used to strengthen ESD activities in the GETA project. One of these tools was the set of guidelines developed and distributed by ENSI and SEED entitled 'Quality criteria for Education for Sustainable Development' (Breiting, Mayer, & Mogensen, 2005). The other was the Curriculum Key developed by a sub-group of GETA researchers in order to analyse the national curriculum in Iceland at that time (2008). This analysis turned out to be helpful for teachers in developing their own ESD curriculum within their schools.

THE DEVELOPMENT OF THE CURRICULUM KEY (CK)

In 2008 the GETA sub-group wanted to develop a way of investigating the opportunities for sustainability education within the three national curricula valid at the time. These were written for pre-schools, compulsory schools and secondary

schools, most parts of which had been approved in 1999 and some revisions in 2007. One of the researchers began by identifying four characteristics of sustainability education though conceded that the first three were closely linked to Environmental Education. These four were 1) developing values, attitudes and a feeling for nature and the environment, 2) acquiring knowledge which helps people to use nature in a sensible way, 3) undergoing and education that would foster democracy, participation in society and development of action competence, and 4) learning about equality and multiculturalism. After further review by GETA researchers two more characteristics were added to the Curriculum Key; one on welfare and public health and another on global awareness. Finally, a seventh characteristic about economic development and future prospects was added (Norðdahl, 2009).

The process of making the Curriculum Key showed the flux and extent of ideas and definitions of sustainability, sustainable development and sustainability education at the time (Table 1) and it was clear that opportunities for working with ESD become apparent when applying the Curriculum Key to a school curriculum (Jóhannesson et al., 2011, Norðdahl, 2009).

Table 1. Characteristics of sustainability education included in the final version of the Curriculum Key

Values, opinions and emotions about nature and environment
Knowledge contributing to a sensible use of nature
Welfare and public health
Democracy, participation, and action competence
Equality and multicultural issues
Global awareness
Economic development and future prospects.

The Curriculum Key group set itself the task of looking for signs in the Icelandic national curriculum that indicate the range of opportunities for working on areas of Education for Sustainable Development (ESD). The group found that several opportunities existed for teachers to practice education for sustainability (EfS) but that a clearer definition of sustainability education (SE) was needed.

The Curriculum Key was also used as a tool to analyse existing school activities thereby extending the understanding that teachers and advisors had of education for sustainability (Pálsdóttir, Pétursdóttir, Óskarsdóttir, Jóhannesson, & Norðdahl, 2009; Norðdahl, 2009; Jóhannesson, Norðdahl, Óskarsdóttir, Pálsdóttir, & Pétursdóttir, 2011).

USING THE *QUALITY CRITERIA FOR EDUCATION FOR SUSTAINABLE DEVELOPMENT*

Quality Criteria (QC) for ESD had been developed in Europe through a research and development project (Breiting, Mayer, & Mogensen, 2005). In 2005 one of the Danish specialists, S. Breiting introduced the QC to one of the GETA researchers (SB) who recognised their potential for school development in Iceland and set about translating the criteria from Danish into Icelandic. An English version of the guidelines in English was ready in 2005 (Breiting, Mayer, & Mogensen, 2005)/2008) and was used in early 2007 in creating the aims and objectives of the funding proposal for the GETA project (Action ESD, 2007).

The Quality Criteria were found to be helpful in the work of the project GETA and were used at several stages and in different ways. The guidelines are presented in a clear and logical way regarding both time and place with each criterion following the same format; first examples of relevant practice are given, then some background information and finally the guideline or criterion itself.

Using the Quality Criteria guidelines and related European materials, three principles for action were put forward in the GETA proposal (2008) each giving an indication of the kind of practice the project would pursue (Table 2).

Table 2. Principles for action in the GETA project based on the QC approach

	Quality Criteria (QC) for ESD	**Based on principles of action arising from the QC**	**Consequences of following the principles**
1	**Teaching and learning processes**	*Knowledge* *Developing knowledge for and about sustainable development*	*Actions for teaching and learning, in informal and formal settings that enable teachers and learners to build up their knowledge about natural resources and sustainable development*
2	**The school policy and organisation**	*Respect* *Encouraging respect for nature and society*	*Actions within a school that encourages respect for critical values, democratic procedures and social inclusion in developing sustainable practices in Iceland and elsewhere*
3	**The school's external relations (society, community)**	*Responsibility* *Nurturing a sense of shared responsibility for our common future*	*Actions at community level that encourage schools and other organisations to work together in sharing responsibility for a sustainable quality of life*

The Quality Criteria also provided the framework for the main evaluation of the project under the theme 'Look back, around and then forward' (Table 3). At the evaluation meeting teachers, advisors and researchers discussed the development, status and progress of the school projects. School groups varied in the way that they responded to the questions or reflections; some found it difficult giving just the names or content of previous and/or planned projects but others wrote extensive reports on each of the six sections (Table 3).

Mogensen and Mayer (2005) suggested in their review of Eco-schools in Europe that no one criterion should be used to evaluate ESD. It is the interaction of conditions that is just as important as the conditions themselves. This remark guided our approach in setting up the framework in Table 3. Each school was to answer each question in groups prior to and during an evaluation meeting.

The quality criteria were also helpful to advisers when providing feedback to teachers and when writing reports on each school´s activities (Bergmann et al., 2010).

Table 3. The framework for an internal evaluation meeting on the theme Look back, around and forward – reflecting on progress

Sites of action for ESD within QC In and interaction between QC		***Questions about ESD***		
Quality Criteria (See Table 2)		***What were we doing before we joined this project?***	***What did we do at our school this year?***	***What will we do next year?***
1	*Learning and teaching (classroom)*			
2	*School (as an organisation)*			
3	*Community/local society*			
1, 2	*Learning/teaching in interaction with the school organizations*			
2, 3	*The school interacting with local society*			
1, 3	*Learning and teaching linked to the community/ society*			
	Our future vision	**What was it?**	**What is it?**	**What could it be?**

It should be noted that the GETA participants also found the document which Huckle (2006) prepared on ESD for the Teacher Training Agency in the UK to be very useful.

REFLECTIONS

The suggestion by Mogensen and Mayer (2005) that developments must be considered in context proved to be crucial to understanding the achievements of the GETA project. For example, we realised the need to create time and space for the development of new and challenging ideas in order to understand the complexity of sustainability. Sometimes we were impatient with ourselves and others and then we needed to go back to the principles, aims and objectives and the guidelines and reassess.

The GETA Curriculum Key was intended as a tool for analysing the national curriculum but proved to be useful at school and classroom level as teachers engaged in planning and evaluating their work and passing findings on to others in need of information in order to understand EfSD. The Key became part of the document 'Welfare for the Future' (2010 version, 3rd edition) of the Icelandic governmental policy on sustainability (Ministry for the Environment, 2010).

The GETA Curriculum Key also facilitated the inclusion of education for sustainability as one of six fundamental pillars in the National Curriculum Guide in 2011. General text on sustainability education was included in all three general guides, for pre-school, basic schools and secondary schools. However, the seven characteristics of sustainability education in the Curriculum Key were not included directly as a single statement but were distributed across the three guides. Most importantly, the emphasis on Action Competence (Jensen and Schnack, 1997) became a part of the general text on sustainability and under the democracy and human rights pillar there is an emphasis on collective responsibility for creating a sustainable society. Some of the text in the National Curriculum (2013) and general guides (2011) was developed from the GETA Project and added credibility to the GETA Key.

We believe that the GETA work was used because it was available – it was in the right place at the right time. The GETA group took seriously UNESCO's call that all citizens – including researchers – had a responsibility to initiate and develop policy and practice for sustainability education. In addition the Curriculum Key had an impact on the work of the project schools as the GETA report on the experience of eight schools questions shows

> "[it was discussed] whether the topics and issues addressed by the schools as being on the road to ESD have a beginning or an end. The schools usually emphasised that their projects were extensions of their regular work or were continuations of projects which could strengthen ESD. They felt that their co-operation with GETA would give some of the projects new dimensions, e.g. environmental projects considered the social dimension" (Bergmann et al., 2010, p. 6).

Our conclusion is that the Quality Criteria and the Curriculum Key can be used in several ways: to support the planning of a new project or the evaluation of one underway or the outcomes when nearing completion. Both can be used to chart progress against a base line or the achievement of a goal; approaches that are in fact

complementary offering project participants a chance to look back and assess, look around and reflect or look forward and plan. Teachers and school leaders can select appropriate criteria from the Curriculum Key and the Quality Criteria to allow aspects of sustainability to be incorporated into the curriculum. The tools provide the means to support the implementation of an ESD curriculum and provide examples of sustainability and expose opportunities that lie in the nooks and crannies of the curriculum, the classroom, the school or the community.

These two tools form part of the same development kit and are linked by the principles outlined in Table 2 that offer ways to make new spaces in which 1) to learn about sustainability 2) to respect others and other disciplines and 3) to share responsibility for school and sustainable development. The principles are within each of us and each itself contains all three. Building up knowledge and respecting others and other forms of knowledge, and then taking responsibility are powerful tools for learning about SD and life itself.

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In the Icelandic way we did not observe formalities and did not inform the central ENSI office of our use of the guidelines nor its translation. We hereby offer our apologies.

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Moving on from CoDeS – The keystones for a whole systems approach to low carbon schools

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INTRODUCTION

Moves towards reducing the carbon footprint of new buildings requires a new way of thinking. Design research suggests that the development of more innovative and sustainable solutions increasingly highlight the benefits arising from the integration and participation of multiple actors with a wide range of technical and contextual knowledge and expertise. The need to address complex problems more systematically has escalated the importance of cross-disciplinary collaborations and partnerships between stakeholders (Coley and Lemon, 2009). It is also becoming more widely accepted that the inter-connected dynamics of a system's component parts is what determines its complexity suggesting that a holistic approach to problem solving cannot always rely on conventional methods. A mechanical problem is typically broken down into its parts before being able to systematically solve the problem piece by piece. Whilst this is powerful for some problems, and often requires extensive knowledge that aligns with the complex nature of the task, complex issues, invariably involving people and their relationship with other actors (not necessarily human), do not lend themselves to such a reductionist approach. The design and subsequent operation of a school is one such complex phenomenon that requires a holistic approach which acknowledges the process of continual change that emerges from these interrelationships and patterns (Anarow, Greener et.al., 2003); it also requires collaboration, partnership and trust.

This chapter will return to the "Keystones on School Community Collaboration" that emerged from the ENSI-CoDeS project (Collaboration of schools and communities for Sustainable Development, 2011–2014) and are summarised and reflected upon, with examples, in Espinet and Zachariou (2014). It will focus on the continuation of city based collaborations in the UK (Leicester) that were designed to ensure that the legacy of the Building Schools for the Future (BSF) Programme was one of enhanced sustainability facilitated through collaboration and partnership. The next section will summarise the BSF programme and will introduce the projects that will be considered alongside the CoDeS Keystones. The Keystones will then be introduced alongside examples derived from the projects and a final concluding section will explore what these projects and the Keystone concepts might tell us about the

generic capabilities that have been introduced above and might underpin such collaboration in very different contexts.

BUILDING SCHOOLS FOR THE FUTURE AND LEICESTER EFS PROJECTS

Building Schools for the Future (BSF), was a nationwide UK government programme initiated in 2006 with the aim to rebuild and or refurbish all secondary schools in England. At the heart of BSF was a requirement to engage with students in the development of a vision for their new or refurbished low carbon school. £2.2 billion was invested in the scheme in its first year generating confidence that positive changes would result in the way secondary education is delivered in the UK. Those changes aligned with a holistic approach to more sustainable education and the intention to integrate the BSF schools more closely with the communities they serve. This was consistent with the holistic National Framework for Sustainable Schools that was released by the Department for Children, Schools and Families in 2008 (DfCSF, 2008). In 2010 this alignment, and the associated integrated vision, was compromised when the BSF programme was terminated with the Education Secretary describing it as bureaucratic and wasteful (The Telegraph (05/0710). However, within the context of austerity, many of the construction projects that had started did continue and the activities considered below focused on the delivery of these within a sample of Leicester schools.

Table 1: Summary of Low Carbon School projects in Leicester

Project and partners	*Aim of project*
Knowledge Partnership – De Montfort University (DMU), Leicester City Council (LCC), 17 City Schools (range of stakeholders), Politicians, design and construction teams	*This project was intended to embed knowledge of low carbon building design into the design, construction, refurbishment and operation of schools administered under the City's Children's Capital Projects. The partnership was designed to locate Leicester as one of the first authorities to have a dedicated carbon reduction and sustainability contract for its schools' building programme and to empower those schools to manage their buildings more efficiently into the future. The project facilitated this process through the creation of tools, guidance manuals and support resources and the schools involved had a 30% reduction in energy consumption during their first full year of operation (Peterson, 2017).*

Project and partners	*Aim of project*
Horizon 2020 funded Energy Data Innovation Network (EDI-Net) – DMU, LCC, energy managers, building users, finance managers and decision-makers	*Through the monitoring and evaluation of school energy and water use the ongoing project aims to help public authorities make more effective use of the information gathered from smart meter data in campaigns and awareness raising. Leicester City Council has electricity, gas, heat and water collected on a half hourly basis and this information is presented on the EDI-Net dashboard for council buildings https://dashboard.edi-net.eu/p/o/leicester-city-council/tbl/51.* *An online discussion forum enables building users to share their knowledge and experience about the performance of administrative buildings and schools. The website contains advice and guidance on how to set up and run different campaigns to encourage people to use less energy. The system is used by the Leicester eco-schools to share information and best practice using real-time data from their buildings.*
BSF (EPSRC) Engaging Pupils, Teachers and Governors in 'Carbon Neutral' schools; School stakeholders, University researchers	*The Engaging Pupils project had three central aims: to raise awareness and understanding surrounding the design, construction and operation of low energy school buildings; to enable the school community to have informed discussions with their peers and the design team and to increase pupils' interest in science and engineering. Pupils and their teachers were introduced to issues surrounding climate change and five key principles of designing a new or refurbished school e.g. site orientation and natural day lighting. In common with OFSTED (2010) they were found to respond particularly well to ESD when given the opportunity to take part in practical activities, both within and outside the classroom, that enable them to research, plan and implement projects that make a clear difference to the school and the local community. Students presented their ideas for a low-energy school to their peers and teachers through assemblies, class presentations, securing an article on the school website or newsletter and / or having a dedicated slot on their school radio station.*

BUILDING ON THE KEY STONES: BSF POST CODES

The CoDeS Keystones (Espinet and Zachariou, 2014) were formulated to provide a solid conceptual framework upon which community – school collaborations could be built. As mentioned above, the BSF programme did originally align with a vision for such collaboration, and while this has been 'diluted' in the subsequent focus on the delivery of school buildings the projects summarised above have linked this delivery to more enhanced environmental (energy and water efficiency with

corresponding economic implications), social (community – school networks) and human (education and social learning) capital. The following analysis will draw upon examples from case study project reports and papers and participant reflections to highlight the utility of the Keystones and to identify some over-riding and generic insights that might enhance their future adoption. Prior to this we will consider some of the potential dilemmas identified in Espinet and Zachariou (2014) that may need to be taken into account in pursuit of the Keystones.

Dilemma 1 – Static versus dynamic participation: Successful participation in school community collaboration is a developmental process. Despite difficulties in times of austerity, the schools within the EPSRC[1] project that had established internal systems for collaboration were the most successful.

> …..*User collaboration within schools ensure needs are addressed, ownership is developed and solutions become self-sufficient with minimal external support* (Paterson, 2016 p61)

> *Reports have suggested that the schools that are most successful in developing a commitment to sustainability throughout the school are those that have an active school council or designated 'eco-group'….. Throughout the project it has been observed that existing groups of pupils, such as the school council or even a particular science class, have been more successful in disseminating information throughout their school.* (Charnley, Fleming et. al., 2010)

Dilemma 2 – Homogeneous versus heterogeneous participation: Diversity can make collaboration both more difficult and richer. The high degree of diversity of the stakeholders led to enhanced learning and experiences for all concerned and continues to be considered a strength of the projects requiring *a tailored approach for engaging with each of the four user groups is required* (EDI-Net 2017 report, p19)

Dilemma 3 – Implicit versus explicit stakeholders' roles: The roles that stakeholders have in school community collaboration may change over time and or take different forms at the same time; how does the teacher engage as community member, does the community member share experience in the schools?

1 EPSRC The UK Engineering and Physical Sciences Research Council

Usually, there is a massive disconnect between LA [local authority] staff and academics. Academics are driven by research outputs – which are often too academic for LA staff to understand or implement. The KP (knowledge partnership) has successfully bridged that divide (academic project lead, Paterson, 2016, p57).

*…An expert from IESD (DMU) visited a low-energy school and took photographs of examples of sustainable design options. These were then made into a photo story to which he added commentary (indicating a change in his role and relationship with the students). As the photo story focused specifically on sustainable development, it was very effective in encouraging pupils to think about the five key sustainability principles within the context of an existing schoo*l (Charnley, Fleming et al., 2010 p58)

Dilemma 4 – Hierarchical versus democratic participation: Participation is a structured process that is guided by values on how people can be involved in EfS; this may vary with cultural context but also with the stage of participation i.e. when formal tasks need to be allocated and performed. During the original EPSRC process it was possible to operate a more flattened democratic structure. University staff undertook training to enable them to better understand the processes involved in teaching and learning.

…Undoubtedly, more could have been achieved if the 'authorising environment' for the work of the KP had been stronger (Paterson, 2016 p5)

Often schemes for energy efficiency are top down….or bottom up…. Few schemes fully engage users from across the organisation (EDI-Net 2017 report p18)

As with any participative activity the BFS projects were more closely aligned with some of the CoDeS Keystones than others and this will be reflected in the following examples.

Participation is a social process by which all the stakeholders in school and community become agents of change in their local context. During the tenure of the KTP (Knowledge Transfer Project) this wasn't possible but by this point the level of trust had deepened and successful collaboration still happened.

Each of the phases involves a number of experts from IESD who have been trained as STEM (science, technology, engineering and mathematics) ambassadors to facilitate

these engagement activities with pupils and teachers (Charnley, Fleming et al., 2010 p75).

Communication is dynamic and based on dialogue among all school and community stakeholders. It underpins the pursuit of shared meaning – vision, but as will be discussed below not necessarily consensus.

> *One BSF Director recognised the dangers of working within council silos and encouraged cross-team collaboration and the alignment of the BSF vision, Sustainability ARs and design briefs. The KP Company Supervisor however saw a very clear divide between staff working on capital budgets and those working on revenue strands. Disputes over output and outcome issues were more complicated because these responsibilities lay in different divisions of the local authority. 'Tricky issues' (epitomised by the bio-diesel systems issue) were difficult to resolve without clear 'common purpose' and single lines of responsibility* (Paterson, 2016, p52).

School and community collaboration *is an emancipatory learning process* whereby participants gain insight into, and about, other members of the collaborating community. This was one of the most successful aspects across the projects. In the EPSRC project there were significant findings concerning successful student learning. The approach was based on an enquiry/problem based learning approach.

> *As it was a co-design process the learning was also multi-directional experiences opinions and desires were shared between collaborators. It was also cross-disciplinary i.e. relating the technical and social sciences, and transdisciplinary i.e. cross cutting pedagogic and building functions and drawing upon generic, and often new, skills in order to do so e.g. seeing the school as a whole system. …* (Paterson, 2016)

Action in school and community collaboration for SD is understood *as a collective process of bringing about change* in the school and the community with the purpose of developing participants' competence and awareness. The EPSRC project took place ahead of the building of the schools, action and the impact of the collaborations was very much judged on the impact of student learning.

> *All of the kids got a lot out of the activities and the people involved have provided a valuable basis for them to create informed decisions. (Teacher, English Martyrs School, Leicester)….* (Charnley, Fleming et al., 2010 p79)

School community collaboration for SD is always sustained *by visions of how the world should be*. This project grounded in a collective vision that was bought into, and subsequently interpreted, by the wide range of stakeholders involved. In the carbon neutral schools project architects found engagement with pupils useful, pupils gained confidence through working with professionals.

> *Additionally, providing pupils with the opportunity to engage directly with professionals who are responsible for delivering their new school is essential. Pupils have been observed to take ownership of their wish lists in the knowledge that their ideas would be heard and valued. A number of opportunities for pupils to have 'adult' discussions with designers, architects, local government officials, policy makers and decision makers have been organised* (Charnley, Fleming et al., 2010 p78).

Mandates are crucial instruments for the integration of school and community so that collaboration for SD is possible. This shared mandate about sustainable school design underpinned all of the projects, for example pupils were educated about design principles often only found in Higher Education and there was also a shared mandate for high quality teaching and learning across stakeholders. This started before the schools were built and continued after.

> *Resources were developed for the pilot project in partnership with the Centre for Alternative Technology to enable pupils to fully understand the complex science and engineering issues surrounding the design of sustainable schools. A package of engagement activities was developed for the project that uses these resources but which also incorporates recent publications and reports of best practice such as those produced by the Department for Environment* (Charnley, Fleming et al., 2010 p75)

School community collaboration for SD is a *social practice which pursues negotiated aims and goals* through the use of available resources, not only funding, but also other social, material and symbolic resources.

> *There is a need to create strong incentives for stakeholders to engage and use research findings to substantiate claims. … Engaging with politicians is made easier if an authority has made such a commitment to reducing energy … It can support public authorities that already have energy management software … and adequate human resources available* (EDI-NeT report, p18)

Collaborative research models can be introduced within school community collaboration for SD so that stakeholders have the opportunity to engage into it taking different roles. These roles might include problem setting, data collection and documentation, reflective analysis, and communication. Research can be used as a tool to support school community collaboration for SD.

> *The research has captured pupils' requirements for a more energy-efficient school, which they have communicated to their peers using sophisticated terminology and complex design ideas through the use of multimedia* (Charnley, Fleming et al., 2010 p73).

> *The Academic Supervisor has integrated a great deal of learning from the BSF programme back to academia – with four BSF schools becoming live design projects and a wide variety of KP findings being embedded back into lecture materials for the Institute of Energy and Sustainable Development (IESD)* (Paterson, 2016).

CONCLUSIONS: SOME THOUGHTS ON PARTNERSHIP AND TRUST

The previous examples linking the CoDeS keystones to ongoing projects into the design and operation of more sustainable schools have highlighted a number of considerations that underpin the collaboration and participation required for the implementation of a whole-system approach. Such an approach is based upon a common vision i.e. to design and operate a more sustainable school, which in turn highlights a number of additional attributes. While this vision is common to all stakeholders it is unlikely that they will agree on the priorities for, or route towards, it. Different views and expertise will mean that the search for a common route is problematic and that route may itself have to change according to unforeseen circumstances such as the withdrawal of BSF and the concurrent implementation of austerity measures. An ability to think systemically is key to a holistic approach and this in turn is built upon the need to accept and understand other perspectives and viewpoints in order to generate a 'rich picture' of what the route(s) to a more sustainable school might look like. Design, administrative, political, community, academic, student, teacher stakeholder perspectives may well differ but the tension between the central vision and the road map towards it is dependent upon one final feature that underpins effective collaboration – the generation and maintenance of trust.

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Practicing social goals of sustainability: Involve the local community in its own future

by Ton Remmers, SLO, The Netherlands

INTRODUCTION AND RELEVANCE FOR ENSI

In 2016 a mind map was published by ENSI introducing the "Whole School Approach" (Affolter & Mathar, 2016). In this approach the school is illustrated in the centre of the mind map surrounded by its social environment categorised in several different ways. An important question that can be asked about this approach is how can we find points of reference in the immediate social environment, and especially with people who do not necessarily have children at that school?

The concept of a Citizens' Summit might offer an answer to this question, and one such summit organised in Borne (a small Dutch town with 22,000 inhabitants, located in the East of the Netherlands) in 2017 offers an experience of the approach. The Citizens' Summit resulted in a wide range of ideas developed by a group of randomly selected citizens of Borne.

WHY A CITIZENS' SUMMIT?

In 2010, six organizations took the initiative to formulate a vision of the future (in Dutch "*MijnBorne2030*") in dialogue with citizens living in the local community of Borne. This *MijnBorne2030* initiative was organised by a number of groups including the:

- local village council,
- civil initiative "*Sustainable Borne*",
- local entrepreneurs association,
- civic centre,
- residential management and
- joint primary schools.

The process for creating the vision and the answer to the main question in 2010 (*What should Borne look like in 2030?)* therefore came from these core organisations in the local community, not primarily from its citizens. As result of this process Borne chose to try and reach the status of a *dynamic village*, to be realized by 2030.

A few years later however, this process seemed to have come to a halt. At the same time another development became visible as a result of a growing defective connection between voters/citizens and (local) politicians in our current democratic system. In this populism voters no longer recognize themselves in the actual political agenda and decision-making processes often because their expectations are too high and too individually oriented. I (the voter) have a problem and you (the politician) have been appointed by me to fix my problem. Individuals see themselves as owner of a problem/question, not of solution/answer. Ergo, he or she can generate unlimited problems/questions but will never generate solutions/answers. "Others" should solve them, but the "others" never seem to be able to do well enough. The result is growing displeasure of, and dissatisfaction with, the current political systems and a growing number of angry citizens.

Our experimental answer to this problem is the Citizens' Summit, initiated by the citizen initiative group, "*Sustainable Borne*". The main goal of the summit was: *let the individual inhabitant formulate what problem he or she has in mind, what solutions there may be and then to make himself/herself responsible for and the owner of these solutions or solution strategies.* The summit was based on the idea that the people living in Borne all have some interest in the place where they live and its future, both for themselves and for future generations.

Hence we started the process with the same question *What should Borne look like in 2030?*, but this time focused on what images lived in the mind of the average citizen, and then took these images as benchmarks for such a vision to come true and on the will to show ownership.

CONDITIONS FOR A CITIZENS' SUMMIT

We followed the G1000 methodology based on the ideas of the Belgian writer David Van Reybrouck. He organised the first G1000 citizen summit in 2011 in Brussels. A G1000 is a participatory meeting with a large group of citizens (in the Belgian case, the aim was to gather approximately 1000 citizens), who discuss themes and issues at stake in societal and political context. Van Reybrouck recommends that a G1000 Citizens Summit is based on the following principles:

- the Summit must be initiated by local citizens themselves – it is a citizens' initiative,
- there is an open agenda – in other words, no agenda is defined in advance,

- each person should have an equal chance to participate. *This implies that invitations are sent by the civil administration based on a randomised sample with the aim of making the group of participants as representative as possible.*
- the exchange of ideas and opinions is central – there is no room for arguing or persuasion. (Van Reybrouck, 2013)

After an open invitation to participate in the organisation of the Citizens' Summit, 45 individuals visited our first G1000 café in June 2016 and 25 of them agreed to contribute in some way to the organisational process. These 25 people formed a project organisation with several working groups including PR, finances, logistics, enrolment, participants support, coordination, participative research and evaluation. These groups communicated through the coordination group. It is important to note that the coordination group did not act as a steering group.

The main goals or the coordination group were:

a. To inform the local community (both formal and informal) about the initiative and about the goals and the perspectives.
b. To realise the financial and organisational structures needed to make the initiative a success.

The City Council and the local administration were asked to give material support to the initiative but they were also asked not to intervene in the process. More specifically, they were asked not to have any opinion about the process and about possible outcomes until these outcomes were known at the end of the Citizen's Summit.

Taking on board these goals and principles led to some hard challenges:

- The first and biggest challenge was whether we could motivate enough people to attend a meeting with an open agenda?
- The second challenge was – could we encourage a representative number of participants to take ideas forward?
- The third challenge was – could we get the social and political framework (including the local schools) to seriously accept and adopt the results of the Citizens Summit?

RECRUITMENT OF PARTICIPANTS

Some of the key points in the recruitment of participants were that:

- It should be clear to everyone that there is an open agenda and that the agenda was to be drawn up by the participants on the spot.
- Every inhabitant of the Borne community over 16 had an equal chance to participate.
- The final group of participants must be as representative as possible for the Borne community.
- The usual suspects that regularly take part in community events were avoided! The final group should be preferably composed of unusual candidates with a strong emphasis on those aged between 16 and 35, those with lower educational achievements and on inhabitants with a non-Dutch background.

Early 2017, 7,000 individual inhabitants of Borne aged 16+ were selected at random using data from the local administration. These individuals received two written invitations to participate in the Citizens' Summit with the first invitation being followed by a reminder two weeks later. Participants were asked to confirm their participation online and to provide basic personal information including gender, age, mail address, and (on a voluntary basis) information about their level of education and their mother tongue.

A total of 267 people responded to the invitation. A number of people (49) gave their apologies for not being able to attend the Citizen's Summit and a further 51 indicated that they would take part but didn't attend the meeting meaning that a total of 167 Borne inhabitants participated in the summit. This group was fairly representative for the population of Borne although the younger generation (16–35 years of age) were under-represented despite the efforts made to reach this specific target group.

THE OUTCOME

The Citizens' Summit took place on Saturday May 20, 2017 and the conversations followed a strictly structured order. Firstly, people were asked to discuss what they dreamt of when thinking about Borne in the future. The participants were then asked to think about how these dreams could be realized before saying what they actively wanted to contribute to realise these dreams.

At the end of the Citizens' Summit a list of 109 proposals was composed aiming to improve the quality of life in Borne in the future. These proposals were organized around 4 main themes:

1. social cohesion (39 proposals),
2. traffic or road safety (38 proposals),
3. sustainability (34 proposals),
4. communication with the public (7 proposals).

Six working groups were formed with a total of fifty participants and during the course of the year a new group was created. This "New Governance" group was looking for new forms of democratic governance. All the participants voluntarily committed themselves to work out a number of these proposals in specific project areas.

OWNERSHIP

These proposals and projects supported from the local community are not the only result of the Citizen's Summit. During the process the community took ownership of its own future and the proposals were a rich menu of large and small, ripe and green ideas that can help to improve the future quality of life in Borne. At this very moment the seven project groups are still active.

The next step is to expand this ownership and to gain the commitment of the formal governance structures in Borne. With this list of ideas, the partners in the previously mentioned *MijnBorne2030* vision of the future have been provided with feedback and the main goal is to incorporate the results of the Citizens' Summit in local policies. On March 12th, 2018 a new city council was elected and all local political parties built their political programs around our rich list of issues. Furthermore, the local village council may also use the knowledge gained from the Citizens' Summit in order to put their ideas on the improvement of people's quality of life in Borne into practise.

REFLECTION AND EVALUATION

In an ongoing evaluation the process of the Summit is being evaluated in four ways:

- by the organisers and the participants through participatory research,
- by the University of Amsterdam through a bachelor thesis,
- by the University of Twente through a doctoral thesis
- by the national organisation, G1000.nu.

The final results of the process are not yet known. Initial outcomes from a Citizen's Summit often focus on small, easy to solve problems and questions whilst formal political issues are wider and often linked to policies of higher authorities. This might explain the differences in perception between the citizens the local politicians about what are the most important local issues are.

ENSI'S MIND MAP

Formally the whole Citizens' Summit process ended with an open meeting on December 7, 2017. All potential partners were invited to listen to the presentations made by the project groups. Possibilities of support and collaboration were discussed and decided. But this will not be the end. It is the beginning of an ongoing process, involving the local community in bearing the responsibility for its own future world. Thus, we defined on a local level a lot of entries for the social component of sustainability.

ENSI's mind map fits these entries surprisingly well, offering a framework for local partners to look for mutual interrelations.

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ESD in work rooted on ENSI-based project SUPPORT in Malaysia

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SUMMARY

Experience from the SUPPORT project demonstrated that school children using cars to get to school rather than public transport in Malaysia resulted in a high level of carbon emissions on their travel to school from home. In a competition run by ENSI related project SUPPORT, inviting students to undertake carbon reduction actions, three projects from Malaysia won the hearts of the SUPPORT jury with two projects winning a second prize and the third a jury award. This experience spurred the author to initiate other ESD projects in the country focusing on the removal of carbon from the atmosphere by natural processes. Plants are one of the main contributors to atmospheric carbon removal as they absorb carbon dioxide from the atmosphere and through the process of photosynthesis, convert the carbon into sugar compounds such as glucose that is then used by the plants as energy. The ESD projects carried out were based on the premise that improved environmental knowledge will enhance positive attitudes towards the environment, which in turn will influence environmental friendly behaviour (Ajzen, 1991). This chapter will discuss the use of these constructs among different groups of people, followed by descriptions of various ESD activities that have been conducted. In these projects, communities were exposed to simple waste management techniques, involving green technology and growing plants for food security. Finally, current activities being carried out and future plans will also be described. This chapter is a record of activities that the author was involved in and does not claim to be a comprehensive documentation of ESD activities in Malaysia.

ENVIRONMENTAL AWARENESS

In designing ESD activities, it is important to ascertain the prior knowledge of learners together with their level of environmental awareness. Research was conducted with school students and pre-service teachers on their environmental awareness, including their knowledge, beliefs, attitude and practice related to solid waste management, biodiversity, ecological literacy and local ecological knowledge. In Malaysia, organic waste is sent to landfills and mainly generated from households, thus contributing to increased problem of solid waste management. Data from 456 secondary school children showed they had positive attitude towards waste management but poor related practices (Esa, Samsuddin, Yakob et

al, 2012). Older students at the pre-university level showed a moderate awareness of biodiversity (Ibrahim, 2012) whilst those enrolled in Biology courses showed higher scores compared to those who were not. However they all showed relatively low level of practice.

Ecological literacy refers to a person's understanding of ecological concepts and his or her place in the ecosystem (Meena & Alison, 2009), understanding how interactions occur in natural systems and the effect of human actions on these systems (Orr, 1989). An ecologically literate person has the necessary knowledge and competencies to address environmental issues in an integrated way. Thus an assessment of students' ecological literacy is a necessary first step towards creating awareness among students (Hares, Eskonheimo, Myllytaus, et al., 2006). Jiwa and Esa (2013a) reported that the ecological literacy of secondary school students was limited. They could only identify four out of 20 ecological concepts listed in the framework for ecological literacy – namely food webs, species diversity, predator-prey interactions and conservation of resources. They were unable to relate what they learnt in class with their surroundings.

BELIEF

Belief plays an important role in pro-environmental behaviour (Cary, 1993) because human behaviour is guided by belief (Ajzen, 2006). Yakob, Esa and Yunus (2012) looked at the belief about waste management held by 272 teenage students under three headings; belief about what to do with waste, composting and vermicomposting, and its effect on students' attitude towards waste management. Belief about waste management is the perception that students have about how they deal with the waste that they produce and the findings revealed that the students had a medium level of belief. Rural students tend to show more concern about waste management as rural areas generally do not have municipal garbage collection systems. Belief about composting and especially vermicomposting were significant contributors to students' attitude towards waste management.

PRACTICE

In one study of the environmental friendly practises (Esa, Ibrahim, Yunus, et al., 2012) of 351 urban and rural secondary school students, it was discovered that the activities of composting and vermicomposting were practised more frequently among rural students compared to urban ones as compost is more commonly used in agriculture to increase soil fertility. Having said this, more rural students burnt or buried their waste and generally displayed more indiscriminate waste disposal

practices compared to their urban counterpart possibly because rural areas are generally not provided with the same level of municipal waste collection services as urban areas. However, the majority of both groups generated significant amounts of waste and less than half of them practiced separation and waste reduction.

TEACHER PREPAREDNESS

Teachers play an important role in educating for sustainable development and therefore pre-service teachers are a group that need to be prepared for this role. In one study, Esa (2010) surveyed the environmental knowledge, attitude and practices of pre-service biology teachers and found that they showed a considerable readiness to integrate ESD into their teaching. Although they have knowledge of many environmental facts and concepts and have positive attitudes towards the environment, these are not fully translated into pro-environmental behaviour; however they do show a positive inclination and commitment towards such behaviour. Based on Shuman and Ham's (1997) model of teachers' commitment, the findings suggest that the teachers will, in future, commit themselves to integrating ESD into their teaching.

In preparing biology teachers for the integration of ESD they need to be knowledgeable about biodiversity itself and biodiversity issues. Jiwa and Esa (2015) investigated student teachers' knowledge of biodiversity as a measure of their readiness to integrate biodiversity education in teaching. The findings showed that most student teachers possessed good knowledge about biodiversity but some did not seem to have a strong knowledge about the threats to biodiversity, although they could relate certain human activities to specific threats. Most of the student teachers were aware of the underlying issues and perspectives on particular controversies in biodiversity conservation such as the difference between the opinions of environmentalists and economists. The majority indicated that they knew of the strategy to protect biodiversity and ways to promote the importance of biodiversity to society. It seems that the student teachers will be able to give proper guidance to their pupils about biodiversity when they become teachers.

KNOWLEDGE ABOUT AND ON INTEGRATION OF ESD AMONG TEACHERS

Teachers are important change agents and they have access to a large critical mass of young people to provide learning opportunities that can nurture them towards environmentally positive practices. Teachers also need to have sound knowledge of ESD to ensure the successful integration of ESD in their teaching as ESD can be a tool to encourage people to reduce or minimise the undesirable impacts of

human activities on the environment. In a survey of 100 teachers, Jiwa and Esa (2012) reported that good knowledge of ESD was generally displayed but that some held misconceptions about the concept. They understood the three components of ESD but showed minimal understanding of the interrelationships between these components. Knowledge of ESD alone however, is insufficient for the successful integration of ESD in teaching; adequate teaching skills to integrate ESD are also important. In another study (Jiwa and Esa, 2013b) student teachers underwent a three-day training workshop on ESD integration which successfully improved their skills to integrate ESD in their teaching.

ESD ACTIVITIES FOCUSED ON IMPROVING PRACTICE

One of the major problems in any community is the management of domestic solid waste. Being an important part of the community, school children need to have hands on experience of sustainable solid waste management so that they can then grow up to be environmentally responsible citizens. In a study by Esa, Ibrahim, Jais, and Yakob et al. (2012) students from five schools were trained to vermi-compost food waste. In this technique earthworms are used to convert rotting organic waste into compost. The students regularly collected food waste from their homes, the school canteen or food outlets for vermicomposting and as a result had a direct experience of how waste can be managed in a beneficial way, instead of sending it to the landfill. This experience increased their awareness of not only of waste disposal and waste management but also of the vermi-compost process; caring for the worms and checking on their welfare as well as ensuring that the vermi-reactor was kept in good condition.

In a different school, the vermicomposting project was focused on developing students' entrepreneurial skills and providing opportunities to carry out income generating ventures. Vermicast or worm casts from the process were collected and sold as bio-fertiliser to teachers and other school staff through the school co-operative club shop. The vermicast was well received by the school community and had many eager buyers! Another school extended their vermicomposting activity by using the vermicast and vermicompost to grow plants, especially vegetables, in the school grounds, and these were then sold to teachers and other school staff. In all these cases, food waste from the school canteen was used. This project has also encouraged the environmentally friendly practice of growing organic food and income generating activities, as well as promoting team work among students. Involvements in composting and vermicomposting activities have also encouraged students to share their experience with other people in their circle of friends and

family (Baki, Esa and Ibrahim, 2011). This intergenerational and peer sharing about waste to resource management means vermicomposting technology has not only been introduced to the students involved but also indirectly to others around them. What started out as an activity by one club in the school has encouraged other clubs and societies to take up the same initiative. It is postulated that the experience will encourage sustainable waste management practices among the students and the community they came from.

Understanding the ecology of a place is important for people to take informed action that will not harm the environment. As future leaders and decision makers, young people form a significant group for whom sound ecological thinking is necessary to ensure the continued sustainability of the earth. Ecological thinking involves understanding ecological concepts including biotic and abiotic factors, biotic interaction and the impact of human activity on ecosystems. To support this process, an ecological education project was carried out with 140 teenage students that involved setting up and caring for themed organic gardens. The projects involved students creating different kinds of gardens including: a herb garden growing local herbs, a jam garden that had sugarcane for the sugar and roselle for the fruit content, a skin care garden, and a *nasi lemak* garden. The *nasi lemak* garden had several plants growing including peanuts and chillies for the *sambal* (a typical Malaysian food), banana for the banana wrapping, pandan for the fragrance in the rice and coconut for the milk that goes in the rice. The gardens were fertilised using compost and vermicompost that had been produced from kitchen waste collected from the school canteen. This project also developed and enhanced the students' local knowledge especially as many of them did not know the names of local plants or the ingredients used in popular local dishes. It also encouraged intergenerational interaction as many had to resort to asking their grandparents and other elderly people about certain plants that are used traditionally but have begun to be forgotten by the younger generation. Overall, this project successfully expanded students' ecological thinking (Esa, Yunus, Yakob et al., 2014; Esa, 2016).

The Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets "Living in Harmony with Nature" encourage a focus on local knowledge particularly in regard to the conservation and sustainable use of biodiversity, while respecting local communities and their traditions. Globalisation and lifestyle changes have seen many traditional practices being eroded, particularly the local use of herbs for healing purposes. One biodiversity education project was conducted to encourage secondary school students to find out the local knowledge of the plants

they grew in their garden from their family members or communities (Esa & Jiwa, 2015). This project improved students' local knowledge including names of plants, medicinal value and method of use. Students also improved their positive attitudes and practices towards preserving local knowledge with this being particularly important as Malaysia is blessed with a huge variety of plant species, being one of the world's 12 mega-biodiversity regions. Malaysia's rainforest is reported to have around 1500 species of higher plants, 1200 of which are reportedly useful for their pharmaceutical value (Rasadah and Li, 2009). Furthermore cultures that have developed practices that are compatible with the specifics of the ecosystem they are part of, tend to be more sustainable (Smith and Williams, 1998).

Generally, green projects in schools involve stand alone activities. Thus an ESD project was implemented to demonstrate the ecological integration of green activities through mimicking the ecological cycle that occurs in the natural environment. The project focused on the ecosystem services that can be harnessed and as part of the project a school was selected to be the model for implementing simple ecologically integrated green technology (Khani, Zakaria, Esa et al., 2016; Esa, Hamid & Hamid et al., 2017). The simple green technologies in this project were: composting, vermicomposting, aquaponics, and phytoremediation and wetland creation. These present the different ecosystem services and show the interconnectedness in nature. The project was completed by stingless bee rearing and overall demonstrated how processes that occur in the natural environment can be replicated and connected in a complete ecological cycle. It also demonstrated the low cost and economic benefit gained from the process, as well as food security and safety assurance.

ESD related projects are also implemented within the university campus to be models for mimicking the ecological cycle and harnessing of ecosystem services. These projects also highlighted many possibilities and opportunities in terms of economically viable ventures, food security and safety, as well as possibilities for the enhancement of and transdisciplinary nature of educational ventures. One aspect of the project was the establishment of a rooftop wild garden (Salleh, Lim, & Azam et al., Esa, 2016) to demonstrate local food production within a limited space. The garden showed the possibilities of sustainable farming practices like vertical farming, aquaponics, the compost system of *Sistem Kompos Mudah* (SKM), and stingless bee honey production and provided a wide range of ecosystem services such as provision of diverse high quality health food and a habitat for animals that included the sunbird, stingless bee and honey bee.

Another project that was established more recently is the *Bukit TI* project in which a vacant and almost barren plot of land was adopted and ecosystem design technique implemented to generate a garden that features different ways of harnessing ecosystem services, and to add new features that (re)introduce ecosystem services. Existing wild plants were retained in designated areas as these produce flowers that were visited by the stingless bee that appear to come from the rooftop garden. Various simple green technologies were implemented that included different types of composting, slope protection, automatic/sustainable watering devices, and self-controlling tanks for growing water ferns to feed animals like fish and poultry to name a few. Sustainable planting techniques like the no-dig technique, mulching, companion planting were also implemented. Ecosystem design coupled with permaculture technique was employed to design the landscape of the place and in a nearby laboratory freshwater lobsters and black soldier fly larvae were reared and a tiered vermicomposting system was also established. Together with the rooftop garden and the laboratory, this plot of land has become the centre for ESD activities for different audiences ranging from students, academics, business enterprises, NGOs and other members of the public. Activities include workshops, consultations, educational tours and the garden has also been integrated into certain undergraduate courses. Currently, teachers from two pre-schools have been introduced to the activities and they plan to integrate relevant ones in their Sustainable Preschool project. There are also plans to integrate activities carried out in the centre in a newly established Environmental Science masters programme.

CONCLUSION

Participation in the SUPPORT project was an early attempt at implementing ESD activities. This experience has given rise to many other projects that have enriched ESD in Malaysia and this chapter is but a small window into the projects carried out. Research into different aspects of the implementation of ESD is necessary for better understanding. Awareness of different categories of the community will help in designing ESD activities that can address or enhance understanding of specific issues. Knowledge of different aspects of the environment is another area that is useful to study. Implementation of ESD in the different communities requires knowledge and there are educators that need help in designing activities to implement ESD. Some of the ESD projects shared in this chapter show how the projects have developed from those more focused on specific themes to current ones that focus on the ecological integration of green technology. It is always necessary to understand the people of the place and their needs so that relevant

ESD projects can be implemented to produce results that are best needed by the local community.

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Evaluative discourse and networking on ESD in ENSI: Experiences from the SUPPORT and CoDeS networks

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This paper examines the evaluation activities that took place within SUPPORT[1] and CoDeS[2], two international Comenius Lifelong Learning Networks on Education for Sustainable Development (ESD). These two ENSI projects ran one after the other, from 2007 to 2014.

A Reflective Activity Report (RAR) was one of the tools for evaluating SUPPORT network activities. The aim of a RAR was to promote reflection by the network actors. Reflective Activity Reports build evaluative discourses on ESD networks which are situated and reflect the sensitivity of the writer to negotiate the meaning of evaluative language in ESD with the reader.

This research presents a number of results and conclusions based on an analysis of the evaluative language in SUPPORT and CoDeS networks. These conclusions can be applied to the analysis of the evaluative language used in the RAR.

The SUPPORT and CODES networks were established in order to address the need to enhance the quality of educational practices and materials in line with the challenges of the Decade of Education for Sustainable Development (DESD). The overall objective of both networks was to promote ESD in European schools and introduce concepts and issues of sustainable development (SD) into education systems. Both projects were also based on one of the core concepts of ENSI which is the linking of schools, research institutions and local communities through ICT to achieve these goals. Both networks involved the co-operation of educational actors from different countries and institutions and with a variety of professional backgrounds. Collaboration between participants and best practice exchange were facilitated through three different kinds of events: special events such as workshops, contact seminars and Arion study, thematic conferences and partner meetings.

1 https://ensi.org/Projects/Our_Projects/SUPPORT/

2 https://ensi.org/Projects/Our_Projects/CoDeS/

A network is constituted through a process of maturation. This involves time, a shared space for interaction and collaborative work where learning and the creation of a shared vision takes place. In the process of building a "systemic network" (Vilar, 2008), actors with specific professional skills start from their own knowledge which then evolves into a new body of shared collective knowledge (Ubieto, 2007).

The task of evaluation in education brings benefits to the teaching-learning process in a network. ESD is a field linked to critical thinking in a complex and uncertain world and this critical approach to ESD underlines the role of education in developing future citizens' competence to participate actively in the forming and changing processes regarding the society's environment problems (Mogensen & Mayer, 2005, p.24). Therefore, in addition to promoting learning the evaluation of ESD encourages a shared reflection on the concerns of those who participate. It also attempts to identify emerging models in articulating new conceptions of ESD (Sabio, 2015; Sabio, Espinet & Martins, 2016).

The rest of this chapter examines the experience of evaluating the SUPPORT network and the final conference of CODES network from the perspective of an internal evaluator.

THE SUPPORT NETWORK

The purpose of evaluating SUPPORT was to promote reflection, gain knowledge and make decisions using the results of the evaluation so that the network reached its goals. In order to do this the network envisaged the use of three evaluation strategies: Monitoring, Internal Evaluation and External Evaluation. These were coordinated by different people who maintained constant contact with each other (Mayer & Espinet, 2008).

The purpose of the Internal Evaluation was to provide the tools and processes for participants to reflect on and learn from, each of the activities and events of the network. One of the internal evaluation tools used was a Reflective Activity Report (RAR). In SUPPORT this involved the personal reflection of those involved in the coordination of the network and in the coordination of activities (Espinet & Sabio, 2008).

The text structure of the reports included descriptive and reflective practices. The RAR's were expected to be written in first person using a free style and authors were asked for a focused reflection on topics including the organisation of events,

the venue, visions of ESD, learning opportunities, the establishment of partnerships and the building of interactions within the SUPPORT network. The authors were reflecting on and therefore engaged in, the process of thinking and identifying the most important issues in relation to successes, weaknesses, and opportunities for improvement of the activity.

Language is a means by which writers/speakers construct and interpret meanings in social contexts, i.e. it is conceived as a system of available meanings that writers/speakers select and organize in such a way as to build the text in a situated context (Ghio & Fernández, 2005). A RAR is a linguistic production that can therefore be used to help construct the meaning of ESD through the use of evaluative language.

The evaluation framework of SUPPORT was based on the "socio-critical paradigm", which took into account the ESD shared values of participants and their vision of the "quality" they wanted to achieve through the life of the network (Mayer and Espinet, 2008).

A qualitative analysis methodology based on Kaplan's Appraisal Theory (Kaplan, 2007) was used to study the meaning of the evaluative language in the discourse of the RAR so that the content and values used by the actors of international networks on ESD could be identified. Appraisal Theory evolved from the general theoretical framework of Systemic Functional Linguistics (SFL) (Halliday, 1985) and dialogism (Bakhtin, 1981; 1982). This theory is concerned with the personal meaning of language by which writers adopt stances towards both the material they present and those with whom they communicate. It is concerned with how writers approve and disapprove, who they align or do not align themselves with, actual or potential respondents, and with how they position their readers/listeners to do likewise. The theory is concerned with the construction of communities of shared feelings and values through text, and with the linguistic mechanisms for the sharing of emotions, tastes and normative assessments (Martin and White, 2005).

Some results of the evaluation include (Sabio, 2015):

- International networks on ESD promote learning, co-operation and the construction of new shared visions of ESD. SUPPORT participants had a shared interest in attending the different activities to make contacts, collaborating with each other and enriching themselves through learning in an international context. Therefore, as a new knowledge was being built in ESD, SUPPORT was

weaving a "network structure", reinforcing social links, becoming more "mature" and evolving in a "systemic network".

- The contents and discourse of ESD in the RAR varied at each SUPPORT event. This was not surprising as each of the events had a different purpose in contributing to the overall goal of the network. The Special Events for example, promoted reflection and proposed innovations and were successful because of the collaborative working approach that played an important role in articulating new knowledge about ESD. The Thematic Conferences facilitated partnerships in relation to ESD through the creation of a positive learning climate, whilst the Partner Meetings were responsible for maintaining the interaction and co-operation between the partners and the management of the project and achieved this through stressing the importance of having a comfortable space for discussion and adequate working time.

In terms of the discourse on ESD, the RAR highlighted some differences between the project events. It appeared that it was the partner meetings that encouraged open and co-operative discourse on different viewpoints whilst in contrast, the special events and thematic conferences were characterized by a language function that seemed to reject the discussion of alternative opinions. Having said this, it is possible that the objectives of each of the different activities might have influenced these differences in language.

In conclusion (figure 1), during the process of creating a new conception ESD there seems to be a harmonization of different voices and as a result, receptiveness to new views decreases. This is consistent with the increasing maturity of a network as a socio-educational process. Therefore, awareness about the amount of openness to alternative voices during reflective activity evaluations makes it possible to recognize the level of maturity of a network and the level of constructed knowledge on ESD (Sabio, 2015; Sabio, Espinet & Martins, 2016).

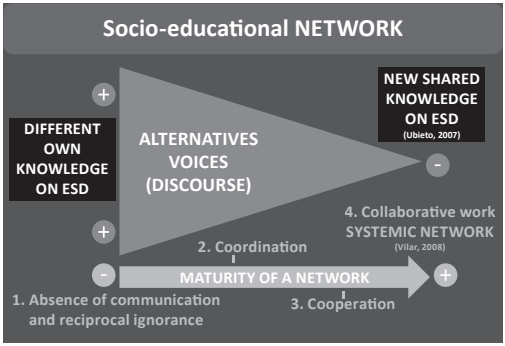

Figure 1. Openness to alternative voices during reflective activity evaluations, related to the level of maturity of a socio-educational network and the level of constructed knowledge on ESD

THE CODES NETWORK

The CODES network used the "Speakers' Chair" video-interview technique as a new internal evaluation tool based on a multi-sensory approach. A sample of CoDeS Conference participants were invited to take part in this process. The video-interview contained an element of performance as it included a stage with a "Speakers' Chair", and a panel asking common question, "How do you FEEL about School community collaboration on ESD IN THIS CONFERENCE? Could you please express YOUR FEELING with a SOUND, a SCREAM, a WORD, a MELODY,..." The Conference participants' were invited to sit on the chair and respond to the question whilst being recorded with a video-camera and the resulting video clips formed one piece of evidence for the internal evaluation of the Conference (Sabio & An, 2014; figure 2).

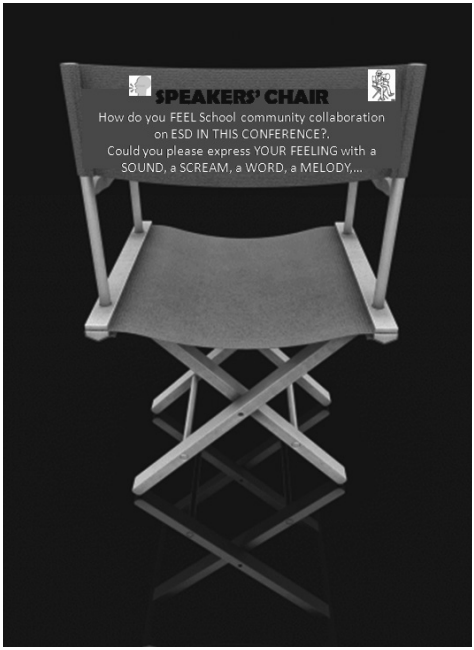

Figure 2. Speakers' Chair stage (Sabio & An, 2014)

The tool was used at the final conference and offered participants the opportunity to record and share their feelings about CoDeS. In particular the enquiry attempted to know what might motivate participants to continue collaboration on School Community for SD in the future. The "Speakers' Chair" worked well and was especially effective at motivating speakers by making them the protagonists in the evaluation process and by avoiding subjective interpretations by the evaluator (Sabio & An, 2014).

The recommendations from the internal evaluation group for the Final Conference of CoDeS Network included (Sabio & An, 2014):

- There should be more spare time given to allow further discussion between participants. This particularly applied to the workshops and the lectures.

- Giving time to share the results of the discussions from the small working groups and the workshops with all conference participants should have been considered.
- Participants need time to reflect on the ideas from lectures and then time to discuss these with other participants and the lecturers themselves. This is especially important, in cases where the workshop themes were not necessarily the same as the contents of the lectures meaning that space was needed for specific reflection.
- The majority of participants didn't seem to fully understand the process of the "Speakers' Chair" video-interview. This was reflected in the long speeches that were often given as replies. If this tool is used in the future, we recommend giving clearer explanations about the aim of the process and on how the video will be used in the evaluation process. This will enable more effective participation and so enhance the review process itself.

Finally, we believe that it is important to be aware of the diversity of languages used in cultural and ecological contexts, because words structure our way of seeing the world and our practices. Critical education can help in becoming more aware of the languages and discourses used in ESD and hence in making more effective decisions (Sabio, 2015).

As a result of the experience of evaluating the SUPPORT project using RAR I would propose that when talking about and discussing topics such as say the Sustainable Development Goals, attention is paid to the use of language in relation to ESD. In other words evaluation is made of the discourse in the context in which ESD language is produced.

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A European project on sustainability competences in teacher training curricula – the joys and sorrows of co-operation

by Regina Steiner, Pädagogische Hochschule Oberösterreich Salzburg, Austria

"Dear ESD-friends, is everybody still alive? The last two Emails say that some are. (…). I have already begun to look forward to see you again…" From an email of a project partner.

"The original objectives were ambitious, I think. But they have been made possible to a great extent. Adjusting objectives is a necessary task in international partnership and this has been done very nicely in this CSCT project" (A comment made in final evaluation of the CSCT Project).

Good co-operation and mutual understanding is one of the most critical factors for achieving the objectives of an international project and I have had this experience in each of the projects I have been involved in. The experience of the Comenius II project "Curriculum, Sustainable Development, Competences, Teacher training" (CSCT[1]) illustrates the ups and downs of collaboration where partners were torn between challenging and exciting project work with colleagues from 15 different institutions in nine European countries (Austria, Belgium/Flanders, Denmark, Germany, Hungary, Norway, Spain/Catalonia, Switzerland, UK/Wales), and the duties at home in our own institutions. Strict agreements on the one hand and an atmosphere of friendship and commitment on the other made it possible to create products such as a concept of teacher competences and a teachers' handbook with examples of good practice. Both have been highly recognized internationally and used, adapted and further developed by the participating countries.

As part of the DESD, UNECE ministers of the Environment in 2003 called for the inclusion Education for Sustainable Development (ESD) in the curricula of all education target groups, including teacher educators. In response to this, ENSI organised a Comenius-2 contact seminar in Szeged, Hungary in September 2003 and at this event developed an application for a new EU project: "Curriculum, Sustainable Development, Competences, Teacher Training" (CSCT) aimed at developing a competency-based curriculum for Education for Sustainable Development in initial

1 Competencies for ESD teachers. A framework to integrate in the curriculum of teacher training institutes. 2004–2007 – a Comenius 2.1 project. 118277-CP-1-2004-BE-Comenius-C2.1

teacher training and in-service training institutions. Willy Sleurs from the Belgian Ministry of Education and the Department of Teacher Education of the Katholieke Hogeschool Leuven (Flemish Community of Belgium) took on the role of the coordinating institution of this ENSI project. The project ran from 2004 to 2007.

"The main outputs of the CSCT project were to be a conceptual framework for competences for Education for Sustainable Development and a handbook proposing a curriculum for ESD, illustrated by case-studies. These outputs were to be developed through at six transnational workshops together with individual and institutional work in between meetings. The starting point of the project was to undertake a review of the current status of Teacher Education (TE) for ESD in the participating countries and from this review, case studies on TE were drafted and analysed. As a result of this process a common understanding of ESD in TE was arrived at and a curriculum model developed over several stages. This framework of competences and curriculum was then piloted in the partner teacher training institutions and the experiences collected to form the basis for a TE handbook.[2]*"*

EXPERIENCES IN COLLABORATION

ENSI principles such as Action Research and data based development played an important role in finding partners for the project and one of the first mails from Willy Sleurs highlighted these principles and made the conditions for participating in CSCT very clear: *"It is most important for the teacher education institutes to consider that joining the project at least implies that your institute is prepared to work on a more or less large scale within the partner-institution with an 'experimental' curriculum that is based on the ENSI-philosophy (i.e. Action Research, strong interdisciplinary approach etc.). This means that more is needed than just developing or writing materials, without implementing (perhaps partially) or trying-out."* These prerequisites formed a good basis for a common way of working between all the partners.

Nevertheless the differences, variety of opinions and perceptions between the partners were huge. The individuals taking part in the project included those working in primary and secondary school teacher education, initial and in-service training and VET institutions. Participants also came from different cultures in nine European countries from east to west, from north to south. One statement at the end of the first meeting illustrated the experience of being part of different viewpoints

2 ensi.org/global/downloads/Publications/303/CSCT%20Handbook_11_01_08.pdf

"I was surprised by our unexpected big differences of understandings of ESD, which is a very important thing to know when working together in our common Europe"

Though perhaps surprising, this mix of views is one of ENSI´s strengths and bringing together policy makers, researchers, teacher educators with different perspectives contributed to a really broad picture of the application of ESD in teacher education. The perspective from inside Education Ministries met the perspectives of Universities and teacher training colleges, of researchers and – in piloting the training curricula the views of teacher educators and student teachers.

There were also more differences in the mode of collaborating than the partners were expecting, partly resulting from the different roles that partners had within the project. For example, the project leaders naturally felt a responsibility to meet the requirements set by the EU who were funding the project, whilst others were more interested in how the results would fit their respective organisations. Right at the beginning of the project CSCT the project leader introduced a strict agenda and gave a clear picture of the results to be achieved. He was concerned about the possible failure of the project and therefore felt the need to be in charge of leading sessions and setting the rules. This led to some tensions with other project members who were used to more participatory ways of working. *"I found it hard to work on predefined tasks when we had not agreed on the way of working between us beforehand (….) For me there is a big need to discuss on the concept of competences and in what way this concept can foster ESD and in which way it can hinder"*.

Fortunately, many of the participants were long-term ENSI members with experience of working in this way and many of the "newcomers" had also taken part in project working and had experienced the challenges of balancing personal, institutional and project goals. Nevertheless while for some the topic was at the heart of their interests, for others the CSCT project work was an extra activity to be put alongside other priorities. The author of this article was in both groups. She was writing her thesis on the topic of ESD but at the same time had a full time post in an institution. *"I think all partners did more or less their part of the project, but some colleagues did voluntarily much more for the general topics than others like me. But working as a "one man company" at my institute it was not always possible to find the time I wanted to spend for optional extra work."*; *"It was important, that we had a national initiative within the topic of CSCT. This offered a cross fertilization of the discussions and products"* (two comments from the final evaluation sheet).

Other differences stemmed from varying perceptions of the way of working in general: should we focus on administrative tasks or on a participatory way of discussing; should we have a chair in charge or divide responsibilities in a more democratic way; should there be a strict agenda or should meetings be shaped as workshops with different ways of decision making; should we experiment with different methods of communication; should we spend time in official meetings with local representatives or have more time for loosening-up elements during sessions? Some of these differences possibly resulted from the different occupations we had (working in administration or in teacher education), the different cultures we came from (in Eastern European countries the visit of a local authority official seems more important than in Western European countries) or it could simply be a result of the fact that we all have different individual personalities. *"I would suggest more group work next time. I think it would be a good way to match the notion of ESD and the methods of our working"; "I would have liked to spend less time on the presentation of our institutions (as I was even not able to remember all these many information) and on meeting local authorities and school (although it was nice) and creation of the webpage, but more time on discussion on ESD and on the concept of competences…"* (Comments from written evaluation of 1st meeting).

As a result of the evaluation of the first and second meetings the tasks were divided between the project partners and at each of the subsequent meetings a different team was in charge of preparing the agenda, leading the sessions and of stimulating and motivating the others to contribute and fulfil the negotiated tasks. *"…Franz and I are eagerly waiting for your shaping of the clusters of competences. I would like to remind the working groups there has been a lot of other obligations to everybody of you of course, in the meantime and it needs some sort of remembrance now and then .. We are looking forward to your responses."* (Email by team in charge before 4th meeting).

I felt that our project manager was more at ease after realizing the high level of dedication to, and engagement in, the project by most of the participants and that work went on at a smooth pace. For the success of the project it was important to have an enthusiastic and reliable project manager who held the balance between sympathetic understanding and being demanding, who always managed to renew motivation after phases of "coup de blues". He demonstrated his dry Belgian humour when he said to one of the participants who had just narrowly escaped an accident crossing the road: *"Franz!! Not at this stage of the project!"* Good humour from the project manager helps to keep a good humour in the group – a prerequisite to dedicated common work: *"Dear CSCT friends, from the Emails that have been sent last*

days, I conclude that our time of hibernation is over now and that we all feel the spring approaching." (Email by project leader, Feb. 17th 2005 before 2nd meeting).

DEVELOPING THE FRAMEWORK OF COMPETENCES

"Processes are important to deal with complex issues: The success of CSCT was that it offered a framework for discussion and reflection among people with diverse areas of experience and knowledge. In a two years process these people were able to come up with a joint model for ESD!" (Comment from the final evaluation sheet).

It really seems astonishing that a group of more than 20 people from all over Europe and from very diverse organisations, could, in a participatory process develop and agree a common "model" of competences for ESD in Teacher Education. It seems to be one of the strength of ENSI that a culture of trust, skills in communication and conflict solving together with the vision of a common goal really does work in gaining successful results. The process of the project involving a phase of exchanging different approaches followed by the development of common approaches which were then tested in different contexts and adjusted to different needs before bringing these ideas back to the whole groups to be discussed and adapted, was a process that really seemed to work.

The goal of the first meeting was to collect and discuss the different TE structures and the status of ESD in across Europe countries and to agree on tools for quality assessment and evaluation. After this meeting the participants used a common questionnaire to investigate the different ways in which the ideas of Sustainable Development were integrated in the current curricula of their institutions.

The data collected as a result of the first meeting formed the basis for group discussions at the second and two working groups developed different frameworks of ESD competences. These drafts were discussed thoroughly with both theoretical and practical questions being asked. For example, we were concerned about how we as teacher trainers could facilitate the process of thinking about SD and the competences we and our students needed such as conflict management, communication, critical and system thinking. These discussions all led to comments such as, "We first need a vision on the importance of ESD!", "During the thinking process on what ESD should be, our focus must lie on the methodological process rather than on the content" and "Competences can be defined at different levels: pupils (pre-primary, primary, secondary education), student-teachers and teacher educators!"

The second meeting was held in parallel with the SEED conference in Esbjerg, so the CSCT participants were able to join the parts of the conference that focused on quality criteria of ESD and take part in fruitful and enriched discussions. There were two action results from this second meeting. Firstly, one of the partners took on the work of creating a draft version of the model of competences using the outputs of both working groups with the aim of having documents ready for further development at the third meeting and secondly, all the partners took also the task of identifying possible case studies and to the start the process of collecting teaching material for ESD.

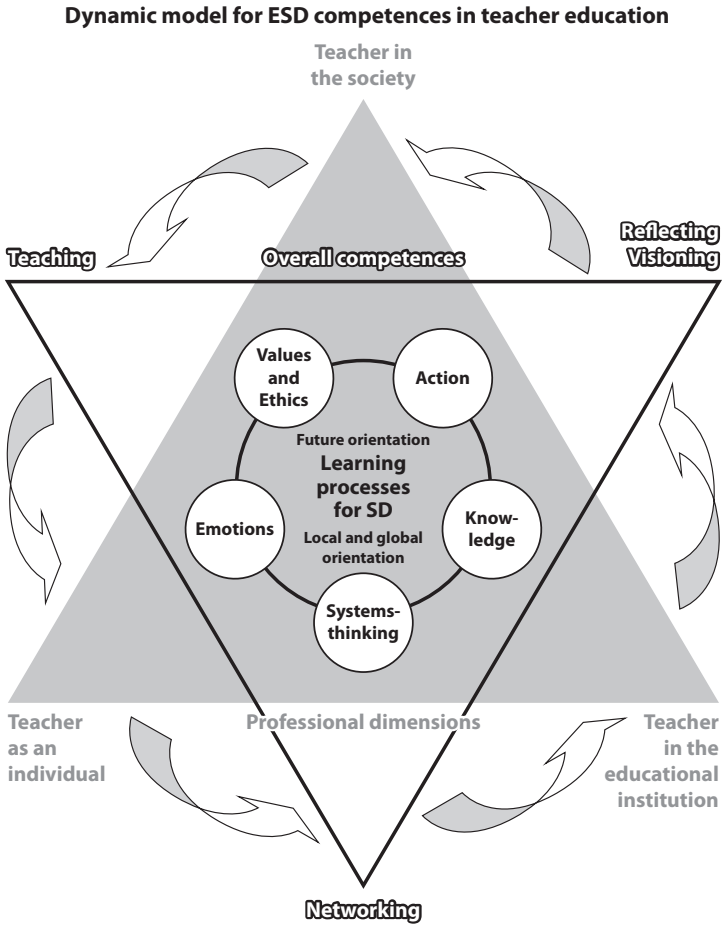
At the third partner meeting the draft competencies document was discussed with one of the outcomes being, that the project should focus on the competences a teacher needs to teach specifically for ESD rather than getting side-tracked into developing general teacher competences. Five areas of competences were identified – knowledge, systems thinking, emotions, values and ethics, action – and for each area a working group was created with the task of identifying the key competences for their specific area from the wide range of documented ESD competences. Also at the third meeting, partners related the case study ideas to the areas of competences to check if every area was covered or illustrated by at least one of the examples.

At the fourth meeting each participant presented his or her case study in the form of a poster and these were then discussed in two parallel groups using the Action Research method of "analytical discourse". The case studies were analysed against the background of the competence areas identified by the working groups and a variety of questions were asked including: where are the links between the initiative and competences; which concrete activities, approaches, and methods are used; which clusters of competencies and learning activities are emphasized in the case study and what difficulties were experienced when developing the case study in relation to the use of the competencies? Against the backdrop of these experiences the model was adapted once more. The domains were redefined and served as a framework to be tested by the participants on their own case study.

The fifth meeting was dedicated to an intense discussion of the case studies and an external expert, Peter Posch, was invited to comment on each one. In addition groups of three gave each other collegial feedback in a process that involved each case study being read by the two other members of the group and comments being made. As a consequence, new questions and ideas arose relating to the competence

model and again it was revised as a result. The competency model[3] is an attempt to give some structure to the complexity of ESD. The teacher competences are formulated to be as generic as possible and to serve as a framework for educators of all subjects and target groups. It should inspire teachers to formulate goals, content and learning processes on SD.

Graphic 1: ESD competence model developed by the EU Project CSCT



3 See: Sleurs, Willy (ed.) (2008). Competences for ESD (Education for Sustainable Development) Teachers. Brussels. p. 21. ensi.org/global/downloads/Publications/303/CSCT%20Handbook_11_01_08.pdf (Download 2018-03-08)

DISSEMINATING THE PRODUCT – CSCT INSPIRED AND LEFT TRACES

"The outcomes of the project have given us the opportunity to introduce international dimensions to our teacher education work"; "since last summer term the CSCT concept is an important part of a lecture in didactics for the student teachers in the subject Geography and therefore also of the valid curriculum. As we have to develop a new curriculum for teacher students in our institution in the next two years there is the plan to make the CSCT concept to the main part of a module for practical experience for all subjects"; "although I am a 'single fighter' for ESD in my department I am now a member of a bigger community and I have the feeling just to be at the beginning of my work of ESD at my department" (comments in the final evaluation of the project).

These quotations show how the work of CSCT has found its way into the project partner institutions. In addition the CSCT Model has also been used by various other international organisations and has appeared in a variety of publications. When browsing the bibliography of books on ESD or on competences you will find many references to the CSCT project. Effective networking by the ENSI community has helped to disseminate the CSCT Model internationally at ESD conferences in Austria, Belgium, France, Germany, Greece and Switzerland to name just a few countries and Christine Affolter, the ENSI Secretary at the time has ventured the opinion that CSCT has possibly been ENSI's most influential project. Evidence for this conclusion lies in the fact that the Competencies Model has received international recognition and influenced ESD competency discussions through channels such as the UNECE.

> *„The competences of educators are a frequent bottleneck vis-a-vis improving the quality of education (…) a priority for future implementation of the UNECE Strategy for ESD should be developing competences in ESD" (…) „At this stage a few studies are available regarding competences in ESD. One of the most comprehensive is the CSCT project, an effort to develop a framework for teacher training in ESD. (…) The outcomes of the project could serve as background material for considering the issue of competence in ESD in the education sector."* (Discussion paper on competence in ESD in the Education sector, p.2) (See the minutes of the Third meeting, UNECE Steering Committee on ESD Geneva 2008[4])

The CSCT project has also influenced national ESD competence model developments for teacher education in a number of countries including Austria, Belgium, Italy, Switzerland and others (see Annex).

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4 https://www.unece.org/?id=14883

CSCT PROJECT WORK – A PERSONAL REFLECTION

Working in international projects has always been a precious experience to me for many reasons, and participating in CSCT was especially interesting as the topic had a close connection to the theme of my thesis.

Experiencing different views on the nature of ESD, it's place in teacher education and of ESD competences in other European countries through face to face discussions as opposed to just reading about them in the literature, was highly productive. For example, I remember being especially impressed by the – for me – unusual approach to the topic of waste taught through dancing in the Catalan case study and the smooth way in which there was co-operation between ESD and Global Education in the Welsh community.

Sometimes I felt that it would have been quicker and more efficient if the more difficult ideas and occasional misunderstandings had been tackled by a small group working on their own. However, reflecting the benefit of larger discussions and the exchange of ideas was appreciated and valued not only by me, but also I believe by the majority of the partners. For me the success or the process was well worth the effort.

The products of CSCT reflect the kaleidoscope of perspectives visible both in the variety of the case studies and in the discussions that took place in constructing the competences model. I would dare to say that for nearly all participants the final products was not the end of a process but one of the stepping stones for further work and inspiring future activities.

But away from the content of the project it was the experience of hearing different views and different styles of working in an international group that for me contributed to a better mutual understanding on a European level. And of course it was most interesting to be introduced to the institutions and the beauties of the hosting groups' cities and countries. Moreover I would not have wanted to miss all the fun of working in the meetings, during excursions and evening discussions and of course some of the long lasting friendships that have resulted from collaboration in CSCT.

ANNEX: A FEW EXAMPLES OF DISSEMINATION ACTIVITIES OF THE CSCT COMPETENCY MODEL:

In the ENSI context CSCT project has been presented and discussed on conferences in

- Vienna/Austria (Oct. 20th – 24th 2008) in an ARION Study visit "Bridging the gap between Research and Science Education"
- Bordeaux/France (Oct 27th – 29th 2008) "Working together on Education for Sustainable Development"
- Leuven, Belgium (March 26th – 28th 2009): "Creating Learning Environments for the future – Sharing knowledge on Research and Practice"
- Innsbruck/Austria (Sept 20th to 24th 2009) Comenius Mobility Seminar (for teacher trainers / teachers) "Teacher Competencies for Education for Sustainable Development"
- Amfissa/Greece (May 23th – 28th 2010) "Residential Training workshop on Universities & Education for Sustainable Development"

The CSCT model was also presented in some German speaking conferences.

- *Bad Hersfeld/Germany (June 1st-2nd 2007) „Bildung für nachhaltige Entwicklung in der Lehrerbildung – Kompetenzerwerb für zukunftsorientiertes Lehren und Lernen"*
- *Bern/Switzerland (Jan 12th 2009) "Werkstatt-Tagung of the network Environmental Education in Teacher Training"*

The CSCT competences have inspired the UNECE (see minutes of the Third meeting, UNECE Steering Committee on ESD Geneva 2008):
„The competences of educators are a frequent bottleneck vis-a-vis improving the quality of education" a priority for future implementation of the UNECE Strategy for ESD should be developing competences in ESD" (…) „At this stage a few studies are available regarding competences in ESD. One of the most comprehensive is the CSCT project, an effort to develop a framework for teacher training in ESD. (…) The outcomes of the project could serve as background material for considering the issue of competence in ESD in the education sector." (Discussion paper on competence in ESD in the Education sector, p.2) Finally the UNECE-working group published the brochure "Learning for the Future", which was based on the CSCT-project. https://www.unece.org/fileadmin/DAM/env/esd/ESD_Publications/Competences_Publication.pdf

It is mentioned in publications, like

- WWF-UK (2012): WWF professional development: framework of teacher competences for learning for sustainability. The CSCT model of competences

is described and concludes with the sentence "This framework has the most extensive analysis of competences for teaching ESD of the of those listed in this table" (p. 27).

- Jucker, Rolf; Mathar, Reiner (2014) Schooling for Sustainable Development in Europe: Concepts, Policies and Educational Experiences at the End of the UN Decade of Education for Sustainable Development. Springer.
- Brunold, Andreas; Ohlmeier, Bernhard (ed.) (2013) School and Community Interactions: Interface for Political and Civic Education. Springer
- Muga, Helen E.; Thomas, Ken D. (2014) Handbook of Research on Pedagogical Innovations for Sustainable Development. IGI Global book.
- Leal Filho, Walter; Pace, Paul (ed.) (2016) Teaching Education for Sustainable Development at University Level. Springer.
- Singer-Brodowski, Mandy (2016) Studierende als GestalterInnen einer Hochschulbildung für nachhaltige Entwicklung. Selbstorganisierte und problembasierte Nachhaltigkeitskurse und ihr Beitrag zur überfachlichen Kompetenzentwicklung Studierender. Berliner Wissenschaftsverlag.

And it was the basis for further development of Competence models, like

- Belgium: Sleurs, W., De Smet, V., Gaeremynck, V. (2008). Duurzame ontwikkeling: Hoe integreren in onderwijs. De Boeck nv, Antwerpen.
- Austria: KOMBINE, (a play with words out of "Kompetenz" (competence) and a German word (abbreviation) for ESD: "BINE")
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Experiences, challenges and success of the ENSI-supported CASALEN-project in Romania

by Maria Tóth, Healthy Environment Regional Organization, Romania

The CASALEN (CArpahian SustAinable Learning Network) was established in Hungary in 2007 as a joint ESD project of the Carpathian Convention (CC) countries. The aim of the network was to facilitate social and economic change towards sustainable development in society through shared learning[1]. The Conference of Parties of the CC was held in June 2008 and at this stage Romanian partners joined CASALEN and it was at this meeting that the next steps were agreed regarding the involvement of Romanian environmental NGOs and educational authorities in supporting education for sustainability of the Carpathian Region and participation in the programme Move4Nature (M4N)[2].

As the Romanian programme coordinator this Romanian experience of Carpathian collaboration was one of the ways we could take to link our educational system to the similar European actions. The M4N training program on Education for Sustainable Development (ESD) in the Carpathians was developed by ENSI/CASALEN, in co-operation with the UNEP, the Ministry of Education Research, Youth and Sport of Romania (MER) and also involved Romanian environmental NGOs and protected areas. It was financially supported by the international corporate social responsibility initiative OMV Move & Help.

The aims and working method of the M4N program were developed in a close collaboration between the Romanian coordinators, ENSI representatives, the Carpathian Convention secretariat and experts from different Carpathian countries. Based on discussions between these stakeholders the following aims were defined for the M4N program:

- Mainstreaming environmental protection and sustainable development of the Carpathian Mountains into the teaching practices and the curriculum of the Carpathian schools;
- Distributing teaching materials based on the sustainable development of Carpathian Mountains to schools in rural mountainous areas;

1 http://www.unesco.pl/edukacja/casalen/

2 http://www.unesco.pl/edukacja/casalen/casalen-meeting-in-bucharest-17-20-june/, http://www.unesco.pl/fileadmin/user_upload/CASALEN/Workshop_Report_Complete.pdf

- Training teachers from the rural mountainous and protected areas to apply ESD using an interactive approach in the classroom

The M4N programme brought together a number of partners for the first time: teachers from various disciplines, school inspectors, the MER, protected area administrations and environmental NGOs. It was a realisation of ENSI's principle of collaboration between different stakeholders in a non ENSI country.

Writing in 2018 it is difficult to evaluate the long term impact of M4N and the CASALEN on the Romanian education system without deeper research, but a brief description of the program products and events will give some indication of the project outputs and outcomes.

The main M4N products:

1. A Carpathian ESD Teacher Training Tool Kit (TK);
2. An informative and interactive Teacher Training Tour in six counties of Romania;
3. During the period 2009–2010 more than 40 schools were trained to focus educational activities on their existing local natural and cultural resources, values and sustainable development challenges;
4. Interaction and experience exchange between the schools of mountain communities within each county, as well as on a regional level.

THE MAIN M4N EVENTS DESIGNING AND FINALIZING THE PRODUCTS

1. Collecting the Carpathian zone educational expertise

- In 2008 a meeting was held in in Poiana Brașov with representatives of ENSI/CASALEN, UNEP, MER and local educational inspectorates. Environmental NGOs and National Parks also joined the meeting to present and assess their potential contribution to a new ESD Teacher Training Toolkit for the Carpathians. Existing Romanian ESD educational tools were presented.
- In 2009, ENSI/CASALEN and UNEP invited and supported some of the NGOs from the Poiana Brașov workshop to participate in a European workshop in Trenčin, Slovakia where they, together with Slovakian, Serbian, Hungarian, Czech, and Polish organisations shared environmental project presentations. This international workshop was an essential part of the process as the main idea of CASALEN was to create a working tool that would be offered to other Carpathian regions after being piloted in Romania. The Trenčin event opened up new perspectives and facilitated the planning process for the proposed upcoming

edition of the Romanian Tool Kit. In collaboration with colleagues from other countries, we elaborated the criteria, content and structure of the proposed Took Kit and allocated people to be responsible for different sections. The UNEP/CASALEN representatives later helped us contact experts from Natural Parks and sustainable tourism organisations from Romania to help write chapters for topics where our expertise was lacking.

2. A Carpathian ESD Teacher Training Tool Kit (TK)

The first output from the M4N training programme was the development of the "Carpathian Schools' Educational Tool Kit" (TK), (Tóth, (ed.) 2009, 2011), that had been conceived at the workshops described above. The development of the TK was conceived as a participative process at international and local level. At the international level, a number of experts from all Carpathian countries, including Romania, were involved in elaboration of the TK structure and content. At local level Romanian educators and teachers contributed through participation at training events, workshops and local practical activities.

In creating the TK all authors and contributors had one common vision – to provide ESD resources and information for the teachers to enable them to incorporate elements of sustainability into their teaching methods and activities and guide them to work with the pupils and the members of their communities to consider Sustainable Development as part of their everyday lives. In developing this learning/teaching tool, the main idea was to create a book which was practical and creative, and that would encourage teachers to think critically and systemically and to experience participative strategies of learning. The printed version of the TK was created with comments being received from the teachers during local training sessions and workshops. Teachers especially contributed to the "Proposed activities" part of the TK, adding suggestions to the first draft of TK, about how each activity might be used, suitable age ranges and subjects for example. This TK was printed and distributed to the participating teachers to support continuation of their work and was uploaded in Romanian to website of the local M4N leading environmental NGO. In order to open collaboration with other countries in the Carpathian area we translated the Romanian TK into English and uploaded it to the same website, title: "Carpathian Schools' Educational TOOLKIT". We need to mention, that an another, "generalized" version of the tool kit which is, not the translated Romanian TK, with title: "Carpathian Mountains ESD Training Tool Kit" is also existing. (Mitrofanenko and Varga, 2009), but it was not distributed to train the teachers in Romania.

3. An informative and interactive Teacher Training Tour in six counties of Romania

The M4N Teacher Training Tour started with the Training of Trainers (ToT) for County training teams. These teams consisted of NGO members, teachers and inspectors. Twenty-one persons were trained through a programme with the objectives to introduce a common training structure, receive feedback on and suggestions for local inputs into the draft of the TK and to show how to incorporate the use of the TK into the training programme in each location.

This training programme created a body of enthusiastic trainers who not only participated willingly and actively in the training sessions, but were inspired and eager to actively incorporate the newly learned concepts and techniques into their own practice. Not only did they use the TK activities with students in their own classrooms, but also "spread the training" to other teachers in their respective schools. Representatives from UNEP, MER, National Parks, and Romanian CASALEN also participated in the ToT.

During the M4N Training Tour in May 2009, the trainers introduced the draft of TK to more than 120 teachers from 41 schools who were trained to apply ESD as an interactive approach and in particular to use the key activity in the TK – that of making a Study Trail, composed of natural and cultural "Key Points" around their school and their village. Because the project was supported by UNEP, both central and local educational authorities mobilised the teachers allowing their participation in the county training sessions. Usually three teachers of different subjects from a school participated at the training organized within each county and a series of training events took place during May 2009 in Romania in six counties with the participation of teachers from eight counties. As part of the training the teachers were informed about the CC (www.carpathianconvention.org, 2008) and studied the CC countries position on well documented maps from the TK offered by EURAC http://www.eurac.edu.

4. Between 2009–2010 more than 40 schools in Romania were guided through educational activities focused on their existing local natural and cultural resources, values and the challenge of sustainable development

These forty schools then undertook activities in which pupils consulted their families, neighbours, and members of the local community and together with local documentary resources identified special places in their community. These special areas included places where specific fauna and flora were found, or where there were particular natural monuments or local customs or specific products –

anything if fact that they would present to a fellow pupil from another Carpathian area. Through discussions with the pupils in the classroom, these areas and values were identified as possible places in a local trail and then the whole teaching staff selected five or six to be denoted as "key points" for the school project.

Based on the local teacher training session, each participating school developed:

- Their own map with key points in their local trail, chosen partly by selecting those which best fitted were to be included in the teaching process in accordance with the school curricula.
- For some of these key points the teaching staff elaborated a pack of materials including worksheets to be used in the classroom, plans of learning/teaching activities and proposals for educational projects.
- In parallel to undertaking the activities a portfolio containing a selection of activities devised for each point by pupils was produced.

5. *Interaction and exchange of experience between schools of mountain communities within each county, and at a regional level*

During the Final M4N Meeting in October 2010, schools were invited to show the work they had done using the TK, presenting their Study Trails, and also some of the specific activities that took place at the key points of the trail. The highlight of the event was teachers exchanging their experiences about the new type of educational work in their local M4N programme and about their local natural, cultural, economic values. After experiencing 30 presentations an evaluation committee composed of the M4N trainers, school inspectors and experts of UNEP/CASALEN, MER, selected the best Study Trail in each county and the best three M4N Study Trails in Romania.

Images from the work of the participating schools were uploaded on to: http://www.herocluj.ro/lista.aspx?t=Incarcare-trasee and are still available.

EXPERIENCES AND CONCLUSIONS FROM THIS PROGRAMME

In a centralised education system like the Romanian, any major changes are difficult to achieve. Some environmental NGOs have developed expertise in elaborating Environmental Education tools through projects aimed at educating people for environmental sustainability. Yet at the time of our M4M project our education system was not that eager to introduce these new elements into the educational process. Harald Egerer, Executive Secretary of ISCC in the Introduction to the TK (Tóth, (ed.) 2011) wrote *"UNEP Vienna Interim Secretariat of the CC (UNEP Vienna – ISCC) facilitated the necessary connections between the Ministries and contacts among the*

ESD partners in Carpathian countries to support the development of the M4N project in Romania and the first project meeting of M4N took place on the margins of the Second Meeting of the Conference of the Parties to the CC (COP II) in June 2008, in Bucharest, Romania. The initiation and development of the M4N programme also coincided with the Romanian presidency of the CC from June 2008 to 2011". These words gave a positive start to our program and was supported by the Romanian educational authorities.

The Carpathian collaboration on M4N was highly fruitful, but as is usual in any collaboration based programme like ours, we had sunny and foggy moments.

For NGOs it was very important that UNEP/ENSI/CASALEN was the programme-lead. The UNEP presence was absolutely necessary to enable the *best connections* between educational authorities, the M4N programme and the environmental organizations delivering the project. Without this leading involvement the progress we made would not have been possible. Without the participation of the Romanian educational authorities it would have been difficult for teachers to participate. The positive experience of Romanian teachers taking part gives hope that this programme will be continued and developed in the future through periodic exchange of experiences involving more schools from more Romanian counties and later from more Carpathian countries.

At the closing evaluation event thirty four participating teachers agreed to take part in creating a publication about their work and although producing such a publication in the end was not possible, at the time this indicated a commitment to the project achievements.

We calculated that – assuming only two hundred pupils being directly involved in the M4N programme from each of the forty schools – then around in eight thousand pupils would have taken part in the programme. The number impacted by the project is greater when families and their communities are also taken into account. As some of the larger schools involved more classes and more students, it is very likely that more than eight thousand pupils were challenged about sustainability issues of the local natural, cultural, economic values.

For some years now since the M4N project, there have been positive changes in the Romanian education system. One is that all teachers with their students are allowed to take part in educational activities out of the classroom. For this "special week"

the activities in the TK have proved a good resource and inspiration for teachers, not only in mountain regions for which it was designed but also for other schools of Romania.

A question arose after the end of the M4N programme: Would the collaboration between educational authorities and NGOs for ESD continue without external support? My opinion is that this kind of educational initiatives usually only continue in those countries where the central education authorities have people dedicated to supporting teachers and schools. The provision of such support is a political decision.

At the 2016 Forum Carpathicum[3] scientific conference in Bucharest the first ever educational session of the Conference was organised. This was a significant event as these Conferences have been held every two years since 2010 and this particular session was initiated by the University of Bucharest and supported by the Secretariat of the Carpathian Convention. The participants of the session reviewed the opportunities for ESD in Carpathians and presented examples of good practise projects, the M4N project among them. At the next Forum Carpathicum in 2018 in Eger, Hungary an ESD exhibition and a workshop is planned for ESD. So the Forum will offer the opportunity to meet educators, scientists and policy makers and to discuss the possibilities for further co-operation related to ESD in the Carpathians and so find new way to use the lessons learnt from the M4N project.

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ENSI – Future leading reflections

Beyond sustainability: Intergenerational change and regenerative development

by Patrick Dillon, University of Exeter, United Kingdom

The three decades during which ENSI has existed coincides with a fundamental shift from an analogue to a digital world. ENSI arose from a European tradition of Environmental Education and over thirty years it helped shape a sustainability movement with global reach. It built on and consolidated good practice and introduced innovative approaches in education, a legacy which has been handed on and developed by a subsequent generation of practitioners. The cumulative development of a 'tradition' through the intergenerational transfer of knowledge and skills was a characteristic of the analogue world. A realignment of the relationship between information and knowledge and the networking of both in the digital world has given rise to a very different dynamic of change. This chapter explores some possible directions of change and how they might shape intergenerational responsibilities.

I was born in 1950, the year chosen by palaeontologists and archaeologists to mark the 'present' and so create a baseline from which to date the distant past. The currently accepted geological epoch, the Holocene, which encompasses the growth and impacts of the human species worldwide, including all its written history, the development of major civilizations, and the rise of urban living, dates from approximately 11,700 BP (before present), a time of interglacial transition. The year 1950 is also a baseline in a much more profound sense. It has come to symbolise the beginning of what many people claim to be a new geological epoch, the 'Anthropocene', when human activity is now the dominant influence on climate and the environment. The ability to restructure the environment both purposefully and inadvertently has long been a characteristic which sets humans apart from other species, hence the designation of the Holocene. Now, it is the overwhelming scale and rate of global environmental change that marks the new era.

The 'environmental movement' had its origins in the 1950s,[1] the focus eventually moving to 'sustainability'. Many environmental organisations have come and

1 In 1955, at a symposium in Princeton, New Jersey, some of the most prominent thinkers of the day drew up an overview of the then state of knowledge. The two volumes that emerged from the symposium, *Man's Role in Changing the Face of the Earth* (The University of Chicago Press. 1956), became a foundational work.

gone since then. The Environmental and School Initiatives International Non-profit Association (ENSI-inpa, hereafter ENSI for short), which has been operational for over thirty years, has been one of the most resilient. ENSI was established in 1986 by the Organisation for Economic Co-operation and Development (OECD) as an international government-based network that places emphasis on school development in the field of Education for Sustainable Development (ESD).

With thirty years behind it, ENSI leaves a legacy. Its strength has been in the combined work of policy makers, researchers, teacher educators and their students. It has conducted research, carried out case studies, and developed guidelines for future-oriented ESD in schools and in teacher education. Because ENSI is an international organisation, the collaboration and networking achieved through its activities has supported the exchange of expertise and dissemination of good practice in both sustainable development (SD) and ESD. ENSI has exemplified the importance of working for longer-term goals. But in the face of ever accelerating global change there are significant challenges in planning for the future and ensuring continuity of good practice.

My involvement with ENSI has been peripheral for much of its life. I have known about its activities and worked with many of its practitioners but have not been formally affiliated. In recent years I have had a more active role, especially as external evaluator in one of its projects, Community-based School Development for Sustainability (the CoDeS multilateral network). CoDeS built on earlier collaborative projects in ESD and SD in Europe and gave me a good grounding in ENSI. It is not my intention in this chapter to report case studies of the work of ENSI, these are adequately documented in ENSI reports and publications. Rather, I want to look at some of the factors that influence how we understand change and how these understandings shape the responsibilities that one generation has towards the values of an earlier generation and the legacy it passes to the next. The subject of this chapter lends itself to a reflective and speculative essay with a few explanatory footnotes rather than an extensively referenced scientific paper. The viewpoints offered are my own and do not necessarily reflect the policies of ENSI or the opinions of its practitioners.

The future can no longer be regarded as a linear, incremental extension of the past where the activities of our parents and grandparents were predictive of what would happen in our own generation and how ours, in turn, would shape the next. We make claims on the future through our expectations, hopes, interventions and

imaginings. In the past these behaviours and aspirations were to some extent predictable because in many of its activities each new generation produced a re-purposed version of what had preceded it. That chain of renewal is now broken. The dynamic of change has itself changed. How then should we now regard the intergenerational transfer of SD and ESD knowledge, skills, ways of living, those things we have striven for and deem to be important?

Change is a defining characteristic of both the global environment and the human condition. Nothing is static. Everything has a finite life: even the most robust monumental structures which may look unchanging from day-to-day, be they naturally occurring or made by people, undergo continual erosion and subtle degradations. It is all a question of scale and time. The human lifetime is a bench mark for conceptualising change. Although we have an historical consciousness, and a capacity to imagine a future, it is none the less difficult for us to comprehend something that is outside experience. 'Lifetime norms' have a big influence on the way people view situations and react to them at any given time. In particular, what people experience in their childhood strongly conditions their expectations of how things ought to be.

What is precious to one generation may not enchant the next. Those of us who remember the landscape before toxic chemicals came into farming lament the loss of the once abundant wildflowers, insects and birds. Younger people who have never known this biodiversity do not miss it. To them farming landscapes look much the same as they did in their parent's day, they find it difficult to identify with the changes in detail because they did not experience the earlier state. They have other priorities. This is the root of long-standing tensions in SD, often generationally based, between a desire to promote change perceived as beneficial, resistance to change perceived to be detrimental, and indifference to change that is not personally experienced. Resistance is deeply rooted in the environmental movement: preservation and conservation are cornerstones of approaches to natural heritage, as are renovation and restoration to cultural heritage. In essence, they are all forms of management based on the principle of 'reverse engineering' to an earlier condition thought to be more authentic. The word 'heritage' itself implies handing on from generation to generation something 'unchanging'.

The passing on of values associated with sustainability is not a straightforward matter. 'Sustainability' means different things to different people. One of its central tenets, on which there is widespread agreement, is a belief in the need to avoid

compromising the conditions under which future generations will live. Implied in this belief are ideals such as the responsible use of natural resources and maintaining an environment that supports diversity of life. This is a moral stance as much as a political one because we cannot predict with any certainty the changes that will be brought about through 'development' broadly defined, nor indeed changes that will happen in the global system irrespective of our actions. But it does imply both a rejection of policy making purely for short-term gain and the unacceptable exploitation of people and the environment. By definition, if something is to be 'sustainable' it has to look to the future. There has to be some thinking about the longer-term and an effort to devise policy that is flexible enough to adjust and adapt rather than to impose and stagnate.

Democracy, broadly defined, is the principle upon which modern society is organised. Citizens express their will by electing people to represent them in government. Government generates policies which reflect the interests of the majority. This is how it works in theory. In practice the system has short-comings. Governments typically operate over a limited time-frame. Policies may be as much about ensuring the survival of the party in power as they are about creating a good and just society. Short-term thinking limits future possibilities. The interests of the majority may be subservient to the disproportionate gains of the few. Typically, 'interests' are defined primarily in economic terms, environmental externalities are ignored, and other activities that contribute to quality of life are marginalised. Nor do governments have viable strategies for dealing with the huge transnational problems of war, climate change, ideological intransigence and economic migration which displace people and dislocate communities. The human population appears to be in an uneasy state of fluidity: people across the world are losing the sense of who they are and how they relate to the places in which they live. It is difficult to embrace sustainability when there are so many ambiguities around identity.

Capitalist societies, whether democratic or totalitarian, have an uneasy relationship with the ideals of sustainability. At the heart of this is the delicate relationship between locally adapted responsibility and externally imposed regulation. Although a population may engage democratically with governance in the sense that they elect representatives, they have little influence over legislative processes which are largely derived from national and transnational socio-economic-political policies. The axis of power is through the structures of centralised authority where policies are developed and applied. At the local level, the capacity of people to

adapt policies to local conditions and develop or reinforce their sense of place is limited.

The arguments so far will be familiar to ENSI practitioners; they are the very debates that have carried forward from the early days of the environmental movement and shaped much of the recent agenda in SD and ESD. ENSI has championed building communities and engaging people proactively with shaping the places in which they live. Sensitivity to 'local' knowledge has been an important part of these activities. On the one hand it is necessary to understand how knowledge is expressed in behaviours and practices within a community, and on the other hand how lessons learned from something that works well in one place can be generalised, adapted and applied elsewhere and localised in a new context. Sensitivity is a key to the transfer of good practice in the present and, in the longer term, between generations.

Many factors influence intergenerational transfer. I will look at one of them: the changing relationship between knowledge and information, a factor which is likely to be of increasing importance in the future.

Information and knowledge have always been in a state of flux. What marks out the digital age is the change in the *relative status* of the two. Historically, information has been a raw material for knowledge. There is information potential in every living thing, material object, system and environment. People access that information through their senses and from it continually construct, deconstruct and reconstruct knowledge in dynamic interaction with their environment. Experience is embodied information, knowledge, held in the minds of individuals and expressed through their behaviours. Information has to be validated and formalised before it can be incorporated into an accepted body of knowledge. This happens through its integration with human activity and through documentation. The craftsperson, for example, requires knowledge of the properties of materials, the affordances of his or her tools, and skills in working with them. Such knowledge is acquired by learning from someone already skilled, followed by continual practice towards mastery, and finally putting one's own mark on the work. In this way, craft knowledge is restructured, generation by generation, through imagining, modelling, manipulating, making, and modifying.

Knowledge is also painstakingly collected, developed, validated and organised into disciplined domains or subjects, and held in external storage systems, books,

electronic media, the cloud. A domain comprises a body of knowledge and the contexts in which that knowledge has meaning. Through education, work and daily life we acquire, practice, and advance this knowledge. It follows that all knowledge is provisional, subject to continuous and progressive revision, so that the understandings we bring to bear on our lives and the world around us, and the way we manage our processes, systems and environments, can be continually scrutinised and improved.

These approaches to knowledge, its incremental change and progressive revision, have underpinned the pragmatic ways in which both SD and ESD have sought to meet their aims. They are embedded in the idea of 'continual quality improvement'.[2] After an enthusiastic introduction into SD and ESD, the continual quality improvement idea met with some ideological resistance. The concern was that it had been highjacked by the business community so that 'improvement' was primarily in the service of profits rather than lifestyles and the environment. Indeed, early attempts at continual quality improvement concentrated on 'quality control' of products and services and downplayed the conditions under which they were made and delivered.

In recent years, the emphasis has shifted to more inclusive views of 'quality' and 'improvement', recognising that through work human needs are satisfied, and that in 'good work' necessary goods and services are produced, skills are developed and improved, co-operative links are made with other people, and resources are used wisely. These have been the foundational ideas that have driven some of the most successful projects in SD. Typically, these projects have been small-scale and localised, but collectively they have grown into a body of acknowledged good practice with demonstrable influences on policy. There is much greater public awareness about business practices, and more critical scrutiny of organisations, of how their core activities relate to local and global humanitarian and environmental concerns.

It is the same with ESD. Despite differences in how educational systems across the world are organised, there is widespread agreement about the importance of building cumulative and collective understandings. In ENSI projects, extensive use has been made of quality improvement tools helping to clarify aims, develop

2 Mauri Åhlberg has been one of ENSI's most influential proponents of this approach. In his book *Continual quality improvement as high quality learning,* University of Joensuu, 1997, he examines, discusses and justifies the central principles and sets them in the context of an extensive literature.

collective identities, and refine processes and products. The tools have focussed on promoting research and critical evaluation, continual scrutiny, constructive criticism, and intellectual cross-examination.

Tools and approaches in SD and ESD have been based on the premise that knowledge and understandings are painstakingly accumulated and then applied in the service of gradual improvement. But that looks set to change. Information, once a raw material, now drives most of the processes on which our day-to-day lives depend. It is difficult to keep pace with the technological changes that determine the way information is collected and utilised. Increasingly, these processes are incorporated in the artefacts, systems and environments that are integral to our lives. They are self-monitoring 'intelligent systems', gathering information about their internal workings and the surrounding environment and determining how they should function. Their capacity to collect and process huge data sets is far beyond that of the human mind. This is a fundamental shift. It has far reaching implications.

For all of human history until very recently, when knowledge was incrementally accumulated and applied, technological developments were on a 'human-scale', they were limited by the capacity of human labour to turn ideas into production. Even where machines mechanised production processes and vastly increased their efficiency they were still limited by the encoded information necessary to drive them and the human effort required to coordinate them. Intelligent systems are not so constrained. Production and monitoring driven by information, controlled by computers, heralds a very different future.

There is no part of the world where the influence of humans and their technologies is not present. The interconnections between nature and the activities of people, first as hunter-gather, then through the processes of settlement, agriculture, industrialisation, urbanisation and globalisation have become progressively entwined. Now they are inextricably linked and it is meaningless to consider one without the other. 'Nature', the environment in its totality, physical and biological, and 'culture', the sum of human activity, i.e. the human niche, are as one. Environmental problems are cultural problems, as much about our desires and choices as they are about resource depletion and pollution. It is no longer tenable to regard nature as a something separate, a 'given' entity, something 'out there', detached from our day-to-day lives. To make such physical and mental separations provides an excuse to abdicate responsibility: 'I am not part of it; it is not my problem'.

What we label as nature and culture are inseparable parts of a complex set of ever changing interactions and transactions between people and their surroundings. I have suggested elsewhere that these relationships might be conceptualised as 'cultural ecologies'.[3] The global system that we call 'Planet Earth' is a cultural ecology, made up of myriad sub-systems which are also cultural ecologies, ranging in scale from oceans and biogeographical regions to locally distinctive enterprises in farming and in the manufacturing and service industries. Cultural ecological configurations recognise that human behaviour and environment co-construct each other in multifarious and complex ways.

Some cultural ecologies are of great antiquity, associated with what we now regard as 'traditional' practices that have given rise to some of our most respected lifestyles and treasured landscapes and artefacts. Many of these are under threat. Simply because a practice has a long history does not mean that it has no place in a rapidly changing world; quite the contrary, such practices are the bedrock of an intergenerational legacy, the embodiment of accumulated wisdom. To return to the example of agriculture. We know that mixed enterprise, 'organic', farming of the type that has been practiced through the ages, combining livestock with a variety of crops, where soil fertility is maintained by recycling within the system, is both economically viable and good for maintaining varied biodiversity. Its viability is an exemplification of adaptability, of how methods are constantly revised through the introduction of new techniques, of how education has alerted people to what quality really means in food production, which, in turn, creates new markets for the products.

But it is a mistake to try to 'fossilise' traditional practices and the environments associated with them. They have never been stable entities, always there is change, adjustments from within, pressures from outside. The intergenerational challenge is to understand the processes of change and to work proactively with them so that traditions can be renewed and developed and resources utilised wisely. Each generation needs to re-make place, re-new communities, blend the new with the old, and work across geographical, political and ideological boundaries to address the issues that impact on the wellbeing of humankind as a whole.

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3 For a detailed account of the cultural ecology framework see my chapter 'Education for sustainable development in a cultural ecological frame, pp. 630–643 in R. Jucker & R. Mathar (eds.), 2015. *Schooling for sustainable development. A focus on Europe*, Dordrecht, Springer.

‘Think globally, act locally’ is a slogan that defined the ‘Our Common Future’ generation. Now perhaps we should broaden that ambition to ‘act locally, influence globally’. The SD movement is a disparate spectrum of pressure groups, collectives, projects and enterprises ranging from a few people working their home patch to national and transnational organisations with millions of members. Although these organisations may have common values at a general level, they often differ in the way they express and apply those values. There is no coordinated global action and, for many of the matters with which these organisations are concerned, it is not necessary to take action on a grand scale because they remain essentially ‘local’, either geographically or conceptually.

However, some of the greatest challenges facing humankind are so called ‘wicked problems’, where attempts to solve one part of the problem causes new difficulties elsewhere in the system. But wicked problems need astute, sometimes counter-intuitive approaches. Coordinated actions are required to avoid passing problems from place to place. As yet SD organisations have not come together as a unified force on any given issue. For them to do so would require a mechanism to facilitate an adaptive ‘network of communities’. The key point here is ‘adaptability’, the tailoring of the network for different issues, some organisations taking the lead in one situation, other organisations in a different situation. This is where information technologies and what we now call ‘social media’ have the potential to change power relations and express a different style of democracy.

Cultural ecologies of the future may be shaped by such networks of networks, constantly adapting in response to new challenges. Collective effort may be marshalled and focussed on one issue and then re-formed to address another, in each case allowing different expertise to come to the fore, with different patterns of engagement with the situations and the actors involved, generating outcomes that are amenable to modification once they are transferred back to the local situation.

It was acknowledged earlier that information will have an increasingly prominent role in monitoring and managing the environment. But advances in technology will also enable ever more sophisticated and creative ways of sharing information. However, when it is moved from one context to another, information once again becomes raw material. To be effective in the new context it has to be integrated within that context so that knowledge and practices are re-structed and re-newed. This may sound self-evident, but a moments reflection shows that many of today’s problems have arisen because we have neglected this fundamental truth by

indiscriminately imposing practices on the environment without sufficient attention to local contexts.

By recognising the potential of networking, ENSI and CoDeS have offered a beginning. Through their projects they have worked at the boundaries with other organisations to find a common language and methods for the transfer of knowledge and good practice. Enhanced levels of co-operation and collaboration have enabled them to maximise the value of the collective expertise of their partners and the networks of which they, in turn, are a part.

In 1950 the global population was 2.55 billion. Estimates say it will be 9.7 billion by 2050. Behind the three-fold increase of population in absolute terms is a statistic of much greater significance, that of the relative proportions of the population leading high consumption lifestyles. Much of the population increase is in countries which have undergone rapid economic growth in recent decades, whose people aspire to the consumer lifestyles typical of western societies. If they cannot attain the desired lifestyles in the countries of their birth they are prepared to migrate. How should we accommodate the extra people and the lifestyles they seek?

In the 'business as usual' scenario, it will be necessary to create vast, new urban conglomerations and impose intensive agriculture on large parts of the planet where there are productive soils. Intelligent systems will manage and monitor these spaces. There will be a trade-off between personal freedom and the functionality of the system. There will be further resource depletion and environmental degradation. The world of 2050 will look very different from that of 1950. The losers will be global ecosystems, or more precisely those cultural ecologies which are still rich in biodiversity, along with subsistence farming communities and those indigenous populations still pursuing traditional lifestyles. All of these are likely to be reduced to 'heritage assets', primarily in the service of tourism.

How might the SD and ESD movements allay the most potentially damaging aspects of this scenario and offer something different? Of course, there are as many answers to this question as there are people to make them. The logic of this chapter suggests the following: We should continue to champion not just democracy, but democracy that works at a human scale, democracy that is sensitive to the different needs of different cultural ecologies and the things they hold to be precious, practices that are adapted to local conditions, that have been refined and sustained from generation to generation, practices that are respectful of both people and the environment.

It also follows from this chapter that we should understand the changing relationship between knowledge and information and utilise each to maximum advantage. It is often said that we live in 'post-scientific' times, where respect for knowledge is diminished and one person's opinion is as good as another's. The reasons for how this has come about are complex, but two factors are likely to have been influential: (i) ease of access to information and its uncritical use; and (ii) suspicion about 'expert' knowledge and the systems through which it is generated. In terms of SD and ESD, restoring confidence in knowledge means taking a broader view of what it is and linking it with the immediate concerns of people.

There are established academic practices for the generation, validation, revision and storage of 'formal' knowledge. Such knowledge is the foundation for collective understandings about how things are. But the knowledge which is of greatest day-to-day relevance to people is embodied in their behaviours and practices. These are 'informal' knowledge systems and structures. The interplay between formal and informal structures means that rather than treating knowledge as a relatively fixed entity to be transmitted, we should regard both information and knowledge as a set of possibilities determined by situation and context. However, the ensuing 'knowledge blends' have to be stable enough to ensure validity in the situations to which they are applied.

Not only is the quantity of information growing exponentially, networking enables it to be connected and scaled into novel configurations with potential applications that complement locally relevant knowledge structures. The new formulations of knowledge have to be sensitive to the way different cultures, from nations to individual communities and organisations, conceptualise things, have different language meanings, and have different ways of doing things.

ENSI has a good track record in these matters. It has pioneered networking and sharing practical solutions. Its practitioners have been at the forefront of generating expert knowledge, not to lie dormant in academic journals, but to be repurposed and applied to improve and enrich the lives of school-children and their families in the places and through the practices that matter to them. There is an ENSI tradition, a legacy of good practice, and a new generation of researchers and practitioners to carry forward the tradition and work for a better future

How might this legacy carry forward? Each generation leaves its own intellectual mark as well as its cultural ecological imprint. Sustainability has been one of the big

ideas of my generation, but perhaps it is time to move on? New ideas are emerging, for example, there is growing interest in the notion of 'regenerative' development championed by Herbert Girardet amongst others.[4] Girardet asks: "can SD really occur under the rules of global capitalism, where the refusal to put a price on Nature's services and on ecological and social externalities is a systemic problem"? His regenerative alternative calls for specific measures to regenerate soils, forests and wetlands rather than allowing them to be sustained in an increasingly degraded condition.

Critics may take issue with the label 'nature's services', which implies an economic imperative, but the regeneration model has at its core revitalising local communities and economies so that people have more say in shaping their localities. This means giving credence to informal knowledge that has local utility. The Sámi people of northern Europe provide an example of how this might be achieved. The Sámi respect interconnections between nature and human enterprise and see them as spiritual entities which underpin a traditional way of life founded on human solidarity and co-operation. Rules concerning hunting and fishing, reindeer grazing, behaviour in sacred sites, engagement with divinities of nature, natural spirits and powers, living in villages, forest and tundra, are unwritten – they are both a philosophy of life and the law of custom known as 'spiritual co-being'.[5] In the modern world, reconciling the customary ways of knowing which characterise Sámi spiritual co-being with the statutory laws and administrative structures of the nation state provides a foundation for location-sensitive governance with the potential to promote inclusive decision making and regeneration.[6]

Cross-cultural and cross-disciplinary approaches to taking up new ideas and involving local communities in developing, adapting and applying these ideas are heartening. Regeneration is compatible with revised thinking about continual quality improvement, that old cornerstone of sustainability. It also recognises that local, embodied knowledge and information generated and networked through new technologies can provide enhanced understandings of the particularities of localities and help tailor interventions to improve them. Networking this

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4 Herbert Girardet (2018), 'A call for regeneration', *Resurgence & Ecologist,* 306, pp. 26–28.

5 For more on 'spiritual co-being' see Mustonen, T. & Lehtinen, A. 2013. 'Arctic Earthviews: cyclic passing of knowledge among the indigenous communities in the Eurasian North', Sibirica, 12 (1), 39–95.

6 See Bunikowski, D. & Dillon, P. (2017). 'Arguments from cultural ecology and legal pluralism for recognising indigenous customary law in the Arctic', in L. Heinamäki, & T. Herrmann & (eds.) *Experiencing and Protecting Sacred Sites of Sámi and other Indigenous Peoples,* Dordrecht, Springer.

knowledge and consolidating it to address global concerns offers the possibility of outcomes greater than the sum of the parts. I would like to think that all that has been strived for and achieved through ENSI and the SD movement generally has prepared the ground for people to make restorative, adaptive relationships with the environments on which their cultural ecologies depend.

Reclaim the Streets!

by Natalia Eernstman, Plymouth College of Art, United Kingdom

This chapter intends to give an insight into the interrelation between learning, sustainability and art. Divergent thinking, the ability to be creative, imagine and 'think out of the box' are just a few of the competencies that are associated with artistic processes, and that are also named as ESD competencies (Cebrian and Junyent, 2015; Boyd et al., 2017). The ENSI report 'Research and Innovation in Education for Sustainable Development' (Lambrechts and Hindson, 2016) features the word 'creativity' (and derivatives thereof such as 'creative' and 'creatively') 30 times. The need 'to develop human creativity' is also mentioned as part of ENSI's mission statement. Having said this a report of the 2009 ENSI conference acknowledged that despite repeated calls for qualities such as *'participation, learning by doing, collaborative learning processes [and] creativity'* (Réti and Tschapka, 2012: 42) the conference mostly displayed a *'standard sort of one-sided dissemination of information'*. This suggests that despite the recognition that ESD requires alternative educational models, there is a strong tendency to stick with conventional pedagogies.

I would argue that this tendency is symptomatic of a society that structurally discounts ways of knowing other than the positivist ones that lie at the basis of traditional pedagogies. ESD is caught between needing to challenge this dominant paradigm to allow above-mentioned qualities to flourish, whilst at the same time having to justify its purpose and value through the hegemonic positivist ways of knowing it is trying to challenge in the first place. It is not the reluctance or inability of educators to change the way they teach, it is the underlying system that hampers our ability to radically change pedagogies, even in an environment as favourable as an ENSI conference.

This chapter will show how a technocratic worldview is unwittingly endemic to ESD. It will propose alternative art-based conceptions and suggest how these might inspire not just how we teach, but how we *conceive* of teaching. There is a vast array of projects and programs that are devised by artists or 'as art', that simultaneously could be described as ESD. These hold valuable insights for ESD practice and may show ways out of the 'positivist deadlock' described above.

HYPERREALITY AND THE CULTURAL TURN

In 2007 and 2010 I was part of a research committee that conducted the evaluation of the implementation of the UNECE Education for Sustainable Development Strategy (Wals and Eernstman, 2007 and 2011). I also joined ENSI and other parties in the 'UNECE Expert Group of Indicators' to formulate a set of guidelines that would make the broad directives of the Strategy applicable and measurable. On both occasions, I was struck by the instrumental and theoretical nature of the process. The good intention to accelerate the implementation of ESD globally necessitated the development of an instrument that allowed the UNECE to track whether nations were complying with the set directives. Arguably however, the need to measure and track unwittingly transformed ESD into something that it was not intended to be.

As Bruno Latour (Latour and Woolgar, 1979) demonstrated, the tools we use to understand the world are never value-free: *how* we measure to a large degree determines *what* we can measure and therefore shapes our ensuing understanding of the measured entity. How we come to know the world is therefore socially constructed; determined by the tools that we chose to apply. These 'instruments of inscription' as Latour calls them, are not neutral but in turn are assembled by the prevailing world-view that established what a 'good' instrument is. Whether that epistemology is rooted in the positivist natural sciences or in the more interpretative arts and humanities, is thus going to influence the reality that is created. This generates a self-enforcing cycle in which the application of say, a technocratic worldview, generates a more technocratic world (see also Wynne, 1996).

The inscription device that was used to monitor the progress of the implementation of the UNECE Strategy for ESD were the 'National Implementation Reports' (NIR): detailed questionnaires on six *Issues* with corresponding *Indicators* and *Sub-indicators*. Nations were asked to assess their degree of compliance to the Strategy by ticking a yes / no box associated with every sub-indicator[1]. I would argue that this device and the underlying assumption that ESD can or should be measured on a global scale, only led to the measurement of a certain type of ESD – one that could be quantified, objectified and abstracted. ESD initiatives that were more easily captured through the standardised tick-box questionnaire gained visibility over more ephemeral processes. To allow for comparison and benchmarking, the strategy and indicators had to be formulated as set and universal directives, disregarding more changeable and place-based iterations of ESD. For the evaluation

1 See for examples of the National Implementation Report: http://www.unece.org/env/esd/implementation.html

to assess what it said it would measure, these directives had to be formulated as pre-determined, closed outputs rather than open-ended, emergent processes.

Not only are certain ESD realities missed by the NIRs, as argued above, there is also a danger that the chosen evaluation device starts to direct what the measured reality should be like. As Baudrillard's (1994) theory of Hyperreality maintains, there is a danger that a simplified representation of ESD – which is conveniently fixed and neatly fits on a page – ends up being more valid than the complex, ephemeral, open-ended 'real thing'. Unwittingly the positivist and objectified epistemology that drives the need to measure and track (e.g. the UNECE's National Implementation Reports) might come to define what ESD is. This, I believe, is why despite repeated calls for more creative, open-ended, collaborative and experiential learning processes, everyone ends up doing more of the same. Alternative conceptions of learning exist beyond the hegemonic epistemology and therefore don't exist at all.

This point is echoed in an analysis of the climate change debate. In his article *'Meet the Humanities'* Mike Hulme describes how the public and political discussion around climate change is largely dominated by the natural sciences: only a small minority of sources cited in the 3rd IPCC assessment report were from the social sciences, whilst the humanities were virtually absent (Hulme, 2011). This, he argues, matters profoundly not only because it shapes the kind of solutions that are found, but also how the problem is framed in the first place in media, policy and public. The focus is primarily on positivist epistemologies that aim to increase the measurability of climate change or improve climate predictions, rather than on interpretative, subjective approaches that deal with people's values or perceptions of change and their ability to respond.

As climate change is primarily anthropocentric and affects not only our biophysical environment but also political and social systems, Hulme, along with many others, call for a 'cultural turn' in climate change studies (Galafassi et al. 2018; Buckland 2012; Fischer et al. 2007). A 'humanistic climate response' would take more notice of human experience of climate change, including affect and emotions, values and subjectivity (Hulme, 2011: 178).

As argued above, this criticism to a large extent also applies to ESD. So what would a 'cultural turn' in ESD look like? What kind of iterations of ESD might the arts and humanities offer that are currently missed?

LEARNING IS PERFORMATIVE AND GOAL-SEARCHING

Different educators have argued convincingly for the need of the arts in learning to instil these skills in pupils; see for example the writings of Eisner (1998) and Craft (Chappell at al., 2015) and pedagogies such as Reggio Emilia. These creative learning practices invite artists into schools to redesign learning environments; they involve artists in shaping the curriculum, and integrate the notion of 'multiple intelligences' in teaching (Gardner, 2006). At the same time, there is a growing group of artists that produce learning experiences as if they are works of art. Art historian Claire Bishop detects a recent 'pedagogical turn' in the arts that sees artists engaging in projects 'that appropriate the tropes of education as both a method and a form' (Bishop, 2012: 241). They do so to endow their practice with an educational purpose, or to expand the intellectual content and relational conviviality of their work. The projects in this 'turn' range from artists setting up schools as if they were art projects, to initiatives that follow a pedagogic structure but are about instilling disruption and chaos, and projects where an entire community is offered an opportunity to learn through, for example community theatre.

These different practices share a range of characteristics that distinguish them from 'non-artistic' practices in society. For the purpose of this chapter I shall focus on two aspects that seem to underlie an 'artistic' ontology and could inspire alternative ESD pedagogies in ESD.

Szerszynski et al. (2004) detect a 'performative turn' in the way a range of disciplines regard nature-human relations. Spurred on by a recognition that 'existing ways of thinking about nature are inadequate for contemporary needs', this ontology understands the world not as a set of static structures but as *activity* (Ibid.: 1). In defining the term 'performance', the authors draw on theatre theory, but arguably the idea of *practice* is central to most (if not all) art. The emphasis is on agency and process: on the doing or making of a thing or situation. In fact the authors argue certain phenomena cannot be represented as such, but only exist in the doing of them: 'they have to be continually performed to exist at all' (Ibid.: 2, see also Conquergood, 2002 and Haraway, 1988). This resembles a probably familiar experience in which we try to recount an occurrence or feeling, but halfway into the story conclude that words don't do justice to what the experience evoked or meant. The story tails off and we resign ourselves to a disappointing "you had to be there…".

The other aspect of a performative ontology concerns the contingency of socio-environmental phenomena. Every single performance of something is unique as it is performed there and then – the exact imitation of a performance would not be a performance but a reproduction of one. 'Performance is thus ephemeral, unpredictable, improvisatory, always contingent on its context' (Ibid.: 3).

This practice-based, or indeed artistic understanding of the world contrasts sharply with the way ESD is currently approached through for example the UNECE Strategy.

First of all, it challenges the notion that everything always can and should be represented through a form other than the performance itself. In an administration-heavy society, there is a tendency to assign high value to written reports and evaluations that aim to fix the activity *after* the event. This dependence on writing is increasingly placing the universal, objectified and abstract above the situational, subjective and concrete (Sanger, 1997, Ong, 1982). The emphasis on evaluation and monitoring, such as that in the UNECE reporting process, proliferates the view that events, experiences and occurrences only hold value when they are standardised and fixed in a propositional written form. The focus shifts away from the 'real' initiatives that happen in schools, communities and lives, and ESD becomes the tick-box exercise done by an administrator, away from the live action of ESD. ESD based on a performative ontology re-shifts the focus to the experiential performance rather than the propositional representation of it.

A second implication of the idea of performance is a negation of the notion that ESD can be defined or measured by pre-determined sets of universal standards. If ESD primarily relies on agency and process as argued above, then all iteration is contingent on time and place, thereby highlighting the fact that learning processes take place in the unpredictable situations of every-day life, and not on the neat desk of the evaluator or academic.

The second quality of an 'artistic' ESD ontology is the notion that the objectives of learning should not be predetermined. Anthony Jackson discusses a wide range of examples in which theatre is used as a means of learning. Practices of this type are explicitly not activities that teach people about theatre (i.e. how to do or appreciate it), but instead use theatre to expand the learning; what pupils know or can do (Jackson, 2007). Rooted in Freire's critical pedagogy as well as Dewey's ideas around democratisation of education, Theatre in Education (TIE) takes the idea of contingency to its heart, meaning that it does not aim to instrumentally

transmit a predetermined message from teacher to learner. The power of theatre lies in its capacity to create a learning environment where people generate their own meaning, and become aware of their ability to think and act autonomously to find their own solutions (Jackson, 2007: 6). This means that what is learned (i.e. the meaning that is generated) is contingent on the dynamic interrelations between time, place and people.

Heras and Tàbara (2014) describe various examples of community theatre in which the performative methods are used as means of exploration, questioning and solution-finding. A performance might play out the conflict of interests between different stakeholders in a watershed, and ask the audience consisting of the real stakeholders to give advice to the actors as to how to solve the conflict. Neither the director, nor the actors in this instance have the 'right' answer in advance; they just know how to ask the right questions and create an environment that will encourage participation and reflective thinking. These practices are termed as 'goal-searching', as the goal is framed through(out) the process of doing the practice, not determined in advance (Ibid.: 382).

What these examples of art-based learning have in common is an emphasis on open-ended and collaborative meaning-making in which the learner generates his/her personal understanding of an issue through an experiential process. An artistic approach to ESD would argue that learning how to live environmentally sustainable lives is not achieved by acquiring a predetermined cognitive understanding of set definitions that are deemed important in an 'ESD canon' set by a higher authority. Instead learning for sustainability should equal a learning process. As the French philosopher Rancière (2007) suggests it is a 'venture into the forest' where the learners are left to explore an issue on their own, reflect the experience and generate their own individual meaning. Being an (ESD) educator then is about crafting the conditions that allow participants to venture into a metaphorical forest and return with a wealth of experiences and reflections, and leave 'blanks between brushstrokes' in which meaning is made (Nicholson, 2012). In that sense, I would argue, teaching equals art and I encourage ESD practitioners and professionals to champion the importance of their practice by seeing their teaching as an art and not as a bureaucratic exercise that is done for the benefit of an evaluator's report.

RECLAIMING THE STREETS OF ESD

ENSI has greatly contributed to setting the standards and creating clear-cut language that has brought ESD to the attention of policy-makers giving them the necessary

leverage to implement ESD more widely. But we have come to a point where we need re-assess whether the indicators, directives, standards and benchmarks are still what ESD is about, or whether our teaching practice has been hijacked by a technocratic ontology that has reduced our rich stories and experiences to mere measurable such as tables, numbers, jargon and so-called 'best practices' that do little justice to what happens in the real world. A "yes or no" tick is a very poor representation of the rich activity that takes place in communities and classrooms.

Following Latour's view that this choice of inscription device is socially constructed, it is important to make a conscious decision as to what underlying epistemology is most helpful in knowing and fostering ESD. I therefore call on practitioners to re-claim the streets of ESD, shifting the focus to the active, vernacular, ephemeral, chaotic, improvised and open-ended every-day reality of homes and communities where living sustainably actually happens and carving out an ontology that truly approaches what we want ESD to be and achieve, by combining what we know works, with perspectives that might not be so familiar to us.

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When the demanding initiatives lost their controversial forces and the notion environment became an empty signifier – on the political of ENSI

by Johannes Tschapka, University Bielefeld, Germany

"THE SCHOOL" AND THE ENVIRONMENT

"Well, we had all these children out planting trees, see, because we figured that ... that was part of their education…" Donald Barthelme starts his famous short story "The School" (1974, p. 28) from the perspective of a teacher who wants his students to learn for the environment, but also to learn a sense of responsibility. But when the *"trees all died"* (ibid.) the educational efforts of tree planting went bust. Then the snakes died, and the salamanders and the tropical fish too. Hence the plot apparently describes a disastrous form of Environmental Education. The class challenged the teacher with: *"…is death that which gives meaning to life? And I said no, life is that which gives meaning to life."* (ibid.)

Barthelme's narration could serve well as one of the teachers' contributions to the Action Research endeavour which started middle of the 1980's as "Environment and School Initiatives" (ENSI). In particular the educational target of Barthelme's narrating teacher bears striking similarities to the new articulation of "Environmental Awareness" and Dynamic Qualities for schooling such as "readiness to accept responsibility" (Park, 1983; Posch, 1990). True, Barthelme exaggerated through his literal parody of a narrating teacher whose sedulous environmental activities ended badly. But through his post-foundational deconstruction (Marchart, 2013, p. 50) Barthelme criticises "interpreting and governing the world with unitary logic and fixed regulations" (Han, 2016, p. 1515). During the story the teacher's foundation broke into a "fragmental reality of contemporary society" (ibid. p. 1516), which caused the imponderability of non-productive educational processes inherent in a contingent society (Klingovsky, 2009).

Judith Butler (1992) called this multiple and often competing beliefs contingent foundations. Contingency in a society means that even dominating beliefs and foundations are accompanied by several subdominant and alternative foundations, reminding that a society could always be structured in different ways too. (Marchart, 2013, p. 50)

To understand how such a contingency in the European societies of the 1980s influenced the endeavour of ENSI, we revive political conditions, which transformed conflict lines in the field of *environment* and enabled the power of environmental *initiatives* in school systems. For analysing the political foundations of ENSI's departure we will use the hegemony theory of Ernesto Laclau and Chantal Mouffe (2014). The core assumption of this theoretical approach is that beliefs tend to dominate the discourse of the whole society, to overcome differences and to construct a centre. (Marchart, 2013, p. 137) But in certain historical and regional momenta, the social becomes open and differences between foundations become viral.

In the following chapters we discuss ENSI's genealogy through three relevant facets of the hegemony theory (Nonhoff, 2013, p. 282): Firstly, how environmental initiatives in the middle of the 1980's brought existing political antagonisms (Mouffe, 2013) into school and into educational authorities. Secondly, how ENSI articulated the differing cultural practices of educational scientists, school authorities and teachers of pilot projects into a chain of equivalences (Leurs, 2009) to challenge schools with Environmental Education programs. Thirdly, how Sustainable Development entered school systems as an empty signifier (González-Gaudiano, 2005) promising to fulfil the demands of antagonistic initiatives while keeping a hegemonic status quo, although – as we recognise in Barthelme's (1974) story above – such a promise is unrealisable in a contingent society.

ENVIRONMENT AND INITIATIVES

At the Paris Ministerial Conference of 1984 the Austrian Minister of Education, Herbert Moritz, presented Environmental Education as "one of his strongest priorities for the future of education and as a central issue of educational quality" (Posch, 2015, p. 1). To understand this statement from a hegemony theory perspective we need to know that as well as being Minister of Education, Herbert Moritz was president of the Austrian Society for Nature and Environment Protection and supported a resolution against the construction of a huge hydroelectric power plant in a Danube river forest near Hainburg (Kotanko, 1984, p. 14). In contrast to Moritz's personal engagement, his own Labour party argued for the power plant believing it would create economic growth and employment. (Mattuschka, 1985. p. 14) In fact this belief of growth and employment is found in the OECD's (1991) preface of ENSI's first book. Moritz was in a dilemma, because as Minister he had to follow the policies of his party, but as an individual he sympathised with the initiatives resisting the hydroelectric power plant (Moritz, 2004, p. 174) thus became one of thousands of protesters which included a significant number of school students.

This political background illustrates that it was far from easy for ENSI in 1986 as an OECD initiative, to reposition counter-hegemonic *environmental* projects from the antagonistic periphery to the centre of a school system, because the turbulence created by such initiatives endangered the centre and should therefore belong to the periphery. (Posch, 1991, p. 17) In Posch's perspective, teachers promoting such initiatives were riding the *hag* (fence) between the hegemonic centre of the society and the periphery of the social. Such initiatives were working at what Tom Alexander as Director of Centre for Educational Research and Development (1995) called the "grassroot level". At that time, Environmental Education was disturbing the status quo, "especially if it is associated with social and educational criticism that question common ideas and practices…" (Sauvé, 1999, p. 30)

It was therefore a strategic masterpiece of Posch and others (Posch, 1991) to instil the counter-hegemonic signifier *environment,* with Dynamic Qualities (Ibid. p 97) which were significant both for the hegemonic forces as well as for the counter hegemonic *initiatives*, including the successful resistance to the construction of the hydroelectric power plant in Hainburg (Moritz, 2004, p. 175). In various ways ENSI steered a course between the controversies of environmentalists and educationalists, between activism and reflective practices, to understand the relationship "between individual action and political and social systems" (Mayer, 2005, p. 15).

INITIATIVES AND HEGEMONY

Under the umbrella of the OECD (1991), which by definition has the goal of encouraging high economic growth and employment, the idea was that ENSI should utilise environmental *initiatives* to encourage new developments in national school policies and curricula (Smith, 2004). The pressing reason for the proposed research and innovation project was supported by comments made by Laura Conti (1991, p. 112) who suggested that schools be "a place where a vicious circle is broken". Under such a pressure, a positive or even neutral articulation of practices (Scollon, 2007) with officers of national educational authorities and educational scientists involving voluntary teachers as practitioners for environmental projects (Posch, 1991) to collaborate in case studies on projects in, about and for *environment*, seemed unlikely.

Laclau (2005) describes such forms of articulation between practitioners as demanding antagonism against a dominant force. Due to his idea of antagonism these articulations between different interest groups occur when social groups

try to resist against any hegemonic "games" of power. (Marchart, 2008, p. 35) As a metaphor for such an articulation under hegemony, Laclau and Mouffe (2014) tell us how cultural practices, such as clothing, cooking or storytelling, lose their "differential moment" and merge into the characteristics of the dominant power of hegemonic colonisers (Ibid. p. 113). Laclau and Mouffe coined this peculiarity merging of colonised cultures against dominating forces a chain of equivalences (Ibid. p. 115), chaining different elements together.

The 1980s in Europe were dominated by a certain form of a non-environmental hegemony. In this time ENSI articulated such a *chain of equivalencies*, between various groups, which tried to teach environmental issues in schools. These ideologically often diverse interest groups tried to overcome what Michela Mayer (1991, p. 325) called "a form of powerlessness of citizens as well as governments". And at the same time these environmentalist groups merged with groups of educationalists, which tried to overcome the negativity of the school education requesting changes in the practice of teachers and structures of schools. (Posch, 1991, p. 101) ENSI's chain of equivalencies between these differing groups of environmentalists and educationalists started to play "a considerable role in the renovation of *educational* systems" (UNESCO, 1978, p. 12) in the beginning of the 1990s.

Based on that success, ENSI members promoted the idea of integrating Environmental Education in the majority of schools and it was this vision that fed into the Hadeland conference on Mainstreaming Environmental Education (Benedict, 1999). Despite this Pfaffenwimmer (2008, p. 6) reported to OECD/CERI, that "we refer again and again to 'pilot projects' that reach five to a maximum of 10% of the schools in a country" and asked what about "the other 90 %?"(Ibid.). Under the assumption that environmental issues became common sense during the early 1990's the term 'environment' lost its earlier controversial significance (Sauvé, 1999) and went from the periphery of education into the centre. At the same time the second important term in ENSI's project, 'Dynamic Qualities', was replaced by the notion 'competence'. In particular the blurry definitions of competence without a coherent theory (Weinert, 2001, p. 46) decreased the controversial potentials of Dynamic Qualities for innovations in school systems and real innovations went bust. (Tschapka, 2012)

HEGEMONY AND EMPTY SIGNIFIERS

At the end of Barthelme's story "The School", students ask the teacher to make love with the teaching apprentice Helen: *"…please, we require an assertion of value, we*

are frightened. I said that they shouldn't be frightened (although I am often frightened) and that there was value everywhere". (1974, p. 28). But before the incredible situation got out of control, there was a knock on the door, *"and the new gerbil walked in. The children cheered wildly"* (Ibid.). With this absurd ending, Barthelme points out what happens, when "the resistance of traditional systems of differences is broken, and indeterminacy and ambiguity turn more elements of society (e.g. environment and responsibility in Barthelme's story*, the author)* into empty signifiers". (Laclau & Mouffe, 2014, p. 170)

Like "the new gerbil" in a certain moment of history the term Sustainable Development walked through the door of environmental initiatives and as a result, into ENSI. While the notion 'environment' initially represented something particular, controversial and not mainstreamed in society, it later became well recognised by the vast majority (Dingler, 2003, p. 197) and merged into the term 'Sustainable Development'. Therefore, the notion Sustainable Development can be identified as an empty signifier because it turned a particular idea into a generality (Ibid., p. 198). The concept was fuzzy enough to articulate differing interests and groups (Ibid., p. 199) into a form of totality which seemed consensual on the one hand but at the same time neglected any contingency. Sustainable Development not only was supposed to bring about the solution of particular issues, but also that of many other global crises as some sort of "deus ex machina" (Methmann, 2014, p. 256). Hegemonic groups defended their interests less through repressive power, but neutralised antagonistic initiatives by arguments of common sense (Gray, 2003, p. 12).

Researchers in ENSI were aware of the transition, "where the focus was shifting from Environmental Education to Education for Sustainable Development". (Mogensen & Mayer, 2005, p. 10) But in some ways ENSI might have missed to warn more clearly about the danger of that empty signifier Sustainable Development.

The shift became visible when naming projects. ENSI project titles shifted from "School Development through *Environmental Education*" in 2002 to "Partnership and Participation for a *Sustainable* Tomorrow" and "Community-based School Development for *Sustainability*" for later initiatives. Those projects were highly relevant and well recognised in the global community of Environmental Education (Wals, 2009, p. 62), but ENSI's original strength of a "combined work of policymakers, researchers, teacher educators and their student and pilot schools with teachers and students" (Ibid., p. 62) had been weakened with the loss of support from

governments in that originally "government based" project (Smith, 2004). We can assume only that the universality of the *empty signifier* Sustainable Development gave certain interest groups actors in governments the illusion of a consensual foundation (Mouffe, 2000), where the original demand, to integrate controversial environmental initiatives from the periphery into the hegemonic centre, vanished.

EMPTY SIGNIFIERS AND THE PARTICULAR

In this reflective paper we have examined three facets of hegemony theory observing that initially the demanding environmental initiatives questioned the hegemonic foundations of economic growth and employment, and opened up a space for contestation and counter-hegemonic articulations. (Bengtson & Östman, 2016) ENSI played a crucial role in building chains of equivalencies between initiatives at the periphery with school authorities at the centre of the formal school system to integrate the particular issues of the environment into curricula and programs. ENSI steered a course between the different positions within a discourse that constituted the social fabric (Laclau & Mouffe, 2014, p. 143), highlighting particularities and putting the environment and school initiatives in their cultural and historical contexts. There is still a need to explore the potential of grass roots societal movements to examine radical alternatives to dominant discourses on sustainability (Grange, 2017). Endeavours like ENSI are indispensable in encouraging the research of antagonistic initiatives "not to overcome differences – in language, culture, visions – rather to manage them in the construction of trust and reciprocal understanding" (Mayer, 2014, p. 10).

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The Pendulum Swings but is it Moving? Spiralling towards sustainability the ENSI-way

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CYCLES AND SEASONS

Thirty years of innovation and activism 'end' with this book, commemorating the achievements of ENSI and looking forward at what might be ahead in the post-ENSI era. Michelle Shocked's song 'the secret to a long life' is not about sustainability. In fact, it is about Billy Barlow, a poor boy who robbed the Union Grove Bank. When I first heard the song, in 1987 or so, during the time that I was a graduate student at the University of Michigan with Bill Stapp as my mentor, I did not listen to the lyrics very well. All that stuck with me was the catchy somewhat melancholic refrain and its deeper meaning. First, I thought it meant that not delaying going to the toilet, not trying to hold it in, but going when you need to will guarantee old-age. Later, its meaning became more sophisticated, more profound perhaps, when I thought that to be able to continue for ever in a healthy way requires the courage to say: 'We have done this, it has served its purpose and there is no need to keep it going just to keep it going; instead it might be wiser to turn our energy and attention elsewhere.'

The secret to sustainability and indeed to a long life, is to know that there are cycles and seasons. There is not just Spring, with its excitement, growth and expansion, there are other seasons as well that are critical and are about consolidation and even decay and contraction. Sometimes we need to let go to move on or to enable others to move on. This is not easy. In our epoch – whether we call it the Anthropocene, the age of neo-liberalism or the post-truth era – there is a push for continuous innovation, adaptation to 'inevitable' change, life-long learning to keep up and stay competitive on a shrinking and dynamic labour market. We need to keep going, be on the move. Slowing down, being happy with who we are and where we are, sharing goods and services, closing cycles, looking for meaning, rather than for excitement and thrills, are not seen as helping the economy grow – which somehow has become an existential goal. This is not to say that everybody in the world is as privileged as I am or as the people who are reading this text are. There are plenty of people who live under unacceptable conditions, who are not happy where they are or with the conditions which they are forced to live in. There is a continued need to reflect on what sustainable development means in different contexts. Perhaps, when interrogating the notion of development itself and bearing in mind the four

seasons, we need to begin to think of sustainability as an *alternative to* development. This brings us to the deeper questions.

CONVERGENCE AND OVERCOMING BINARIES

Throughout the years, ENSI provided a platform for educators, research-practitioners and policy-makers seeking to become more reflexive, to pause and ask deeper questions about the meaning of education in a globalising world that fails to live within planetary boundaries. It also sought to create cultures of learning in our schools, as opposed to cultures of accountability that stifle creativity and school's own initiatives. In the past 30 years, it created an alternative story, a counter-narrative, if you will, that challenged the taken for granted, normalized, binaries such as the ones between 'research and practice', 'school and community', 'science and arts, humanities' and between 'local-global', 'nature-environment' and, more recently 'environment and sustainability'. ENSI brought together two kinds of concerns that up until then had not been much connected; a concern for empowerment, participation and democracy in education on the one hand, and a concern for the environment on the other. Put differently, it brought together participatory Action Research and Environmental Education which paved the way for more emancipatory forms of Environmental Education; Environmental Education that looked beyond instrumentally using schools to change pupil's environmental behaviours. Although elsewhere in the world there were similar turns away from instrumental Environmental Education towards more emancipatory Environmental Education (think of Action Research and Community Problem Solving as it was initiated in Michigan (e.g. Bull et al., 1988; Wals, Stapp and Beringer, 1990) or the work by Ian Robottom in Australia (Robottom, 1987), and the work of Rob O'Donaghue in South Africa ('O Donaghue and McNaught, 1989), all in the late eighties and early nineties, ENSI pioneered such an approach in Europe.

The emancipatory perspective put more emphasis on the second E in EE so to speak: education. Up until then EE had been dominated in most parts of the world by experts and policy-makers with an environmental or ecological background and a concern for the well-being of the planet. With ENSI it seemed more the other way around: people with a pedagogical or, more generally, an education background and concerned with the well-being of children and teachers, became connected to socio-ecological-environmental matters of concern. Through ENSI, key-thinkers in educational Action Research like Peter Posch and John Elliott, became connected to the idea of engaging schools in environmental concerns. Their interest in 'environment' also generated interest from others connected to education but not

to Environmental Education, in looking at environmental concerns as a catalyst for educational renewal on the one hand, and as a way to live healthier, more equitably and, as we say today, more sustainably, on the other. This convergence can be seen as a major contribution of ENSI to some current manifestations of EE and, indeed, of ESD that are grounded in critical thinking, reflexivity and more systemic views of schooling, teaching and learning.

TRANSGRESSION

As Paul Hart (2007) noted over 10 years ago, the ENSI approach opened up possibilities for social learning as a healthy departure from up until then, the dominant individual learning rooted in cognitive psychology. Already in 1999, John Elliott, in reflecting back on ENSI's first 10-year accomplishments, pointed to the transgressive and counter-hegemonic qualities of the work and the network. He observed (Elliott, 1999) that ENSI's agenda transgressed traditional educational boundaries (e.g., across subject specialisms, formal and informal, school and community, teaching and research, knowing and acting, childhood dependency and adult responsibility). By doing so, ENSI was again, well ahead of its time, as today we talk about learning ecologies, boundary crossing and transgressive learning (e.g. Lotz-Sisitka et al., 2016). These transgressions, as Hart (2007) suggested, were intentional, arising from recognition that adequate educational response to environmental concerns requires education that prepares people to participate in shaping the social economic and environmental conditions, local to global. ENSI expanded notions of what counts as knowledge and what constitutes learning, by creating spaces for the active generation of knowledge by children and teachers within local communities with real-life issues that require critical reflective and thoughtful action (Posch, 1999). As such ENSI was one of the first programmes that raised fundamental issues about the nature of knowledge and the nature of learning, not just theoretically but at the interface between theory and practice.

Elliott (1991) referred to ENSI shortly after its creation as a form of 'practical wisdom' (see also Peters and Wals, 2013) that emerges from forms of action-based inquiry through which students reflect on their experience of living in the environment, identify problems and then develop and test practical solutions. Knowledge acquisition is integrated into a process of enabling students to clarify and resolve problems as real and personal for them. This type of inquiry and practical wisdom building pre-supposes a sense of student initiative and self-discipline, but also teamwork, open dialogue and co-responsibility and a learning process requiring high levels of decision-making and problem-solving skills in both teachers and

students. As such ENSI connected well with Action Research and Community Problem Solving (ARCPS) that also started in the early ENSI-years (Wals et al. 1990).

There is no doubt that ENSI challenged existing learning cultures. Inevitably this work created disruptions and controversies among school staff and community members. As Posch (1991) noted in the early years, many cultures do not expect teachers or their students to define and tackle real world issues independently and to monitor themselves. Hart (2007, p. 320) adds to this observation that, *"the prevailing culture of teaching and learning in most countries is conservative and static. Today, however, the roots of complexity lie in the conflicting new demands on schools given rapid changes in notions of work, technology and knowledge itself."*

WHOLE SCHOOL-COMMUNITY APPROACH FROM SYSTEMATIC TO SYSTEMIC

ENSI also can be seen as a predecessor of what we nowadays refer to as a Whole School Approach to sustainability. Already in the 90's ENSI embarked on the idea of creating schools, learning environments and school-community relationships that would create a school ethos that would, so to speak, 'breathe' inclusion, democracy, good health and environmental and cultural sensitivity. A Whole School Approach to sustainability education means '…working to make the educational institution a microcosm of the emerging sustainable society, rather than of the unsustainable society (Sterling, 2001, p.33). Through the ENSI-related CoDeS network these somewhat abstract and seemingly utopian ideas were developed, tested and shared in many European countries.

So where 30 years ago the seeds of a whole school-community approach were planted, we now see a movement, albeit slowly regrettably, from the fringes of education towards the mainstream. The ENSI niches are, again slowly, becoming regimes and landscapes to use transition management speak (Geels and Schot, 2007). As such ENSI has paved the way for a more systemic approach to sustainable development and a more pedagogical perspective on the role of education. The ENSI-way will continue to remain critical in the coming years during which we are to engage meaningfully with the United Nations Sustainable Development Goals (SDGs). Piece-meal or ad-hoc approaches where schools and the communities of which they are part, add bits and pieces of the sustainability puzzle, without creating synergies or considering the system as a whole, simply won't do. ENSI has always seen the reciprocity between education and sustainability as mutually reinforcing processes where a focus on sustainability can be a catalyst for the kind of school redesign, educational innovation and school-community engagement that

is more likely to lead to deeper, value-based local responses to global sustainable development challenges. Such an approach, in the end, will be far more effective than conditioning people to behave in a certain way.

It must be acknowledged that currently both primary and secondary schools across Europe are trying to engage in Sustainable Development. Based on the limited research available it appears that their attempts fail due to a number of factors, including rigid national curricula that lack responsiveness to emerging topics, lack of awareness and understanding of critical sustainability challenges, a strong emphasis on measurable outcomes in science areas that are covered by international rankings such as PISA, the lack of capacity, tools and methods in approaching cross-cutting themes holistically, inadequate teacher education, weak school-community relations and a lack of integrative approaches (Manna and McGuinn, 2013).

Indeed, it may seem that we haven't moved much in 30 years. As many of these barriers have been around for quite some time, the pendulum swings between hope and despair. Schools can be very resilient in an unhealthy way, in that they are hard to change even when the world around them is in flux. At the same time, we must also recognize that things are changing in a positive way (see for instance UNESCO's Global Education Monitor Report, UNESCO, 2016). The ENSI-way has provided ideas, concepts, tools and inspiring examples of systemic approaches to sustainability that surely have influenced such positive changes. ENSI has also shown that members of the school community, including those belonging to local businesses, NGOs and government, as well as scientists, can work together in jointly investigating and testing ways to improve schools in an all-round way. As such, ENSI advocated co-creation and multi-stakeholder social learning well before these concepts became popular in sustainability governance (Sol et al. 2017). So, yes, the pendulum swings but there is movement when looking at the bigger picture and when zooming in on those niches of resistance and co-creation.

What has become clear over the years is that successful school development is co-operative and participatory and needs to be a part of a wider societal or social movement or, as we say today, part of a transition towards more localized, semi-autonomous 'off-the-grid' but networked systems. Such systems require forms of reflexive self-regulation, high levels of trust in the capabilities of all involved and freedom to learn and experiment. In the end it is such freedom, trust, reflexivity and capability, when connected to an ethic of care that will create a world that is more sustainable than the one in prospect. ENSI has played a crucial role in educational

transformation towards sustainability, but now it's time to pass on the baton and to let the lessons learnt travel further. Its time has come, it's time to go.

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What Networks do we want for Environmental Education and Education for Sustainable Development? Implications from ENSI and TEEN

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INTRODUCTION

Our society is facing a diversity of issues such as a reduction in biodiversity and socio-economic crises, as well as worsening poverty, inequality, and climate change. The world in the 21st century has reached a turning point with the importance of sustainable development being highlighted. However, this myriad of issues facing the whole world are not simple – they are difficult to resolve and hard to understand as well. This is because both daily activities such as preparing meals, the purchase of clothes and mobile phones, and the use of energy, as well as global issues such as climate change, biodiversity, poverty, and so forth, are set within very complicated environmental, economic, social, political, and cultural contexts.

The role of Environmental Education (EE) and Education for Sustainable Development (ESD) should be to consider and understand the diversity and complexity of issues, highlighting the involvement of diverse stakeholders in the process. Also, the significance of global co-operation among neighboring countries or various parties with similar interests should be emphasized as a way of resolving problems collaboratively and creating better synergy.

In the case of Europe, the Baltic Sea Project set up by countries bordering the Baltic is widely known as a successful and meaningful network. The Environment and School Initiatives (ENSI) is another successful network initially established in Europe but later expanded to include Asia and Australia. ENSI has implemented diverse projects including SEED, CSCT, SUPPORT, and CoDeS all with the aim of promoting collaboration in EE among members and nations concerned.

A number of different networks also operate throughout north-east Asia including Korea, China, and Japan such as the Korean-Chinese-Japanese Environment Teachers Association and Rivernet. Others have carried out various activities in the private sector. The Tripartite Environment Education Network (TEEN), an Environmental Education network including public and private sectors, has also participated in different initiatives. TEEN was launched in 2000 and has held annual meetings on

a rotational basis in Japan, China, and Korea, hosting a variety of events such as Tripartite Environmental Ministers Meeting (TEMM) Youth Forum (Aug. 2017), the 18th TEEN Workshop & Symposium (Nov. 2017), school visits, and co-operative teaching.

The aim of this chapter is to explore possible collaboration and social learning through global EE networks and thereby offer implications for the future direction and management of international EE networks. The focus will be on the work of ENSI and TEEN.

TEEN

TEEN is a TEMM project, which means it is a government-initiated EE network, but operated by non-government organizations including the Korean Society for Environmental Education (KOSEE), Japan Environmental Education Forum (JEEF) and the Chinese Center for Environmental Communication and Education (CEEC). TEMM meetings first started in 1999 and have been held on an annual basis[1]. TEMM aims to promote and take a leading role in regional environmental management and contribute to global environmental improvement. These goals have been delivered through different projects and activities including a TEMM Website, a Joint Environmental Training project, a Freshwater (Lake) Pollution Prevention Project, and Environmental Industry Co-operation. The Tripartite Environmental Education Network (TEEN) was established to raise the consciousness of environmental community and the objective of TEEN was to create a network of Environmental Education human resources and organizations in the three nations. The network was established according to a MOU between the three countries signed in 2000.

The main activities of TEEN are annual workshops and symposiums held in rotation in China, Japan and Korea. Workshops are semi-closed for workshop participants and delegates from three countries to present and discuss specific topics and themes. Symposiums are open to the public and educators to enable the three countries to share the status of EE and good EE practice in specific topics and to publicize TEEN. TEEN also has additional programs including a database of EE Programs and Environmental Organizations, school visits, field trips EE program development, EE material development for children, and youth exchange camps.

1 http://www.temm.org

The themes considered by TEEN are categorized into three areas; Environment, Environmental Education (EE) and Beyond EE. Different subjects are covered in workshops and symposiums with sometimes, one subject being considered, but at other times three or more topics are presented and discussed. Air quality, biodiversity, rivers, coastal regions and local communities are included in the "Environment" category. The status of ESD, EE database construction, EE programs for children, EE and the youth, EE leaders in higher education, leaders for a Green Society and EE/ESD strategies are included in the category of "EE". The UN DESD, Environmental Networks, EE and Partnerships, EE and the Industry, and government involvement in and contribution to EE fall into the category of "Beyond EE", and relate more to the context and circumstances of EE. The theme of the 2017 TEEN Workshops and Symposiums was "Bio-Cultural Diversity and Community-Based Environmental Education", which was related to the more general topic on "The Overall Status of EE in China, Japan and Korea".

TEEN has operated based on support from the Ministry of Environment in each country and with close collaboration between KOSEE, JEEF, and CEEC which acted as focal agencies for the initiative. Administrators of the three agencies promote collaboration through regular communication, discussing the themes of TEEN workshops and symposiums and related projects. They search for participants for each theme, ask them to take part in meetings and deliver presentations, and organize or implement events. When carrying out specific programs such as the development of research projects or textbooks for children, they also play a leading role in contacting appropriate researchers or instructors. For the past 20 years, a diversity of groups including teachers, researchers, social/environmental educators, officials, and the youth have taken part in TEEN workshops and symposiums, youth forums, and projects, creating more informative and in-depth events. However, TEEN is still mainly controlled by focal agencies or administrators, leading related parties to argue that it should be more a network of networks.

ENSI

ENSI – Environment and Schools Initiative, launched in 1986 and closed in 2018, was a research-based Environmental Education network that during the period of its work became an international learning organization for EE and ESD.[2] ENSI aimed to help schools and communities have a better awareness of the environment and to promote dynamic characteristics such as activeness, autonomy, individual

2 http://www.ensi.org

responsibility, and so forth (Mayer, 2004). Taking into account that modern society is based on change and complexity, the facilitation of these dynamic characteristics and ways of reacting to change and complexity through EE and ESD through critical thinking, decision-making, problem-solving is highly important. The objectives of ENSI in operation were:

- To establish stable networks among schools, homes, communities, and workplaces.
- To encourage students, to become active citizens, and participate democratically in creating good environmental conditions for their lives and workplaces.
- To take part in comparative research on development processes in the context of different regions and countries as a means to provoke public discussions.

ENSI was launched as a OECD/government-based network, and had a variety of coordinators including Environment Ministry officials, Education Ministry officials, professors, researchers, and NGO staff. They participated in ENSI's annual meetings and projects, translated ENSI deliverables and implemented projects in each nation. More specifically put, they conduct surveys of Eco-School related cases, teacher training for CSCT projects, and examples for CoDeS projects, encouraging related researchers, teachers, and practitioners to take part in the initiative. In other words, they contributed to organizing various projects and conferences implemented through ENSI; by translating comparative research deliverables (such as the Quality Criteria) and making publications that were integrated into or based on Eco-School projects and thereby raised public awareness. On the other hand, government officials and researchers chosen for ENSI made active contributions to creating and implementing meaningful projects.

IMPLICATIONS AND RECOMMENDATIONS FOR EE AND ESD NETWORKS

Network-based exchange and continued participation

In the early days of TEEN in 2002, a survey was conducted to establish a database for EE. As a result of this survey, environmental educators in Korea stated their expectations of an EE network (Lee, 2002; 2006):

- Share know-how on EE programs with educators in each nation.
- Expand exchange with organizations in other nations that are interested in similar themes.
- Promote exchange with environmental educators and ecologists in each nation having an interest in EE.

- Establish a basic framework for co-operation with related organizations in regions.
- Set up a database to have a better understanding of EE in each nation.
- Establish EE networks in Korea and then expand them for networking with programs in China and Japan.
- Promote communication and co-operation with environmental groups in each nation.
- Form EE-related networks among the youth in the three nations.
- Present a role model for school-society collaboration.
- Develop EE research and activities that Korea, China, and Japan can share.
- Hold social and Environmental Education workshops for teachers.
- Introduce ecological trips to each nation and promote networking.

In other words, they hoped that exchange and networking in related areas with similar themes would be facilitated by building a database to promote communication and co-operation among the three nations and to better understand EE in each nation. They also looked forward to seeing Korea, China, and Japan co-operate in EE research and related activities and set up EE-related networks among their teenagers. In reality, TEEN activities played an important role in establishing a database and promoting exchange and mutual understanding. However, in many cases, many parties other than focal agencies and other key players had difficulties in taking part in TEEN on a continuous basis. Despite that, learning at an individual and group level was realized, showing that more informative and in-depth discussions on EE and ESD were conducted over time.

The biggest strength of ENSI as a network was to promote the active and continued participation of various stakeholders. The backgrounds of the coordinators from each country were diverse and included officials from the Education and Environment Ministries, professors, researchers, and NGO staff. Other groups of people such as teachers, principals, students, company employees, and others also took part in joint projects including SEED, SUPPORT, and CoDeS. They promoted exchange and communication with groups with a similar or different identity through workshops and projects and in the process, worked hard to learn and understand different EE and ESD perspectives. The projects served as an opportunity for members to have regular contact through partner meetings, conferences, and so on. In the process, they were able to have a better understanding of one another and to more effectively review project progress and achievements. In other words, the ENSI network itself was able to act as a professional learning community.

Implementation of specific projects and research-based deliverables

Specific project implementation and deliverables beyond a simple exchange of ideas have an important meaning in connection with the development of quality networks. In the early days of TEEN, members carried out projects such as the establishment of EE agency databases and visits to different institutions. From the middle phase of TEEN EE, information for children was developed and published in booklets including "Environmental Wisdom in Traditional Culture", "Our Future", and "Sustainable Cities". Based on these booklets, Korean teachers taught Japanese and Chinese students about environmental wisdom in Korean, Chinese, and Japanese traditional cultures. Japanese teachers also gave Korean students classes on the same topic. These classes provided opportunities for teachers, students and TEEN participants to have a more in-depth knowledge of the culture and Environmental Education of each country.

The deliverables and outcomes from ENSI projects including SEED, CSCT, SUPPORT, and CoDeS clearly show how ENSI worked. ENSI planned their projects through three day long intensive workshops attended by members selected by the ENSI community. The final project plan was submitted by the leading partners and successful projects were conducted for three years. Partners in each country were in charge of holding partner meetings/conferences, implementing projects, or gathering case studies. Members collected and described appropriate examples of issues facing EE and ESD in each country delivering processes such as "workshop-linked poster presentations", "workshop-type case-study presentations and discussions", "case reviews and the discovery", "deliverable compilation, review, and revision", and "process examination and implications identification". These processes were reviewed and implemented with improvements following an "Action Research processes".

Deliverables from such processes included "Quality Criteria for ESD Schools" and various other materials published through ENSI that function as support for co-operation between schools and communities. The Quality Criteria for ESD Schools have been translated into 18 languages including Korean and has been used by schools as important reference material. ENSI materials are noted for their high quality and many deliverables have been adopted and used in a variety of school environments as significant reference resources.

Innovative pedagogical framework

One of the key elements in networking is an innovative pedagogical framework. Participants in international networks generally are given opportunities for exchange and learning via workshops, symposiums, field trips, school visits, culture tours, and joint projects. It is meaningful that those with similar and different interests in the three nations gather together through global networks to discuss matters of common interest from diverse perspectives. Mutual benchmarking activities can be conducted in the process of discussing and sharing EE-related systems in each nation. Facilitating TEEN, Korea and Japan established the Environmental Education Promotion Act in 2008 and 2005, respectively[3].

One of ENSI's strengths was an innovative pedagogical framework and this closely related to ENSI's orientation towards research-based policy-making. Researchers participating in ENSI were well aware of the importance of integrating research and practice and therefore, innovative educational approaches, rather than international networks, were more frequently used, providing more opportunities for participants to integrate their expertise. In many cases, workshops were organized to enable all members to take an active part in the initiative. Partner meetings, conferences, and workshops served as opportunities for speakers and members to analyze and explore case studies and perspectives together rather than in isolation. For instance, through one and a half to two hour-long presentation sessions, the process of analyzing and discussing examples and case studies was carried out simultaneously. The 2012 CoDeS conference was held in Vienna as a working congress where poster presentations took the form of workshops featuring active presentations followed by Q&A. For example, a 30-minute presentation and workshop on an example from Austria regarding collaboration between national parks and middle schools gave participants the opportunity to analyze and discuss related issues, as well as the meaning of co-operation, from the perspectives of parents, students, community members, and national park staff.

In 2013, at a CoDeS conference held in Kerkrade, various stakeholders including researchers, principals, teachers, students, entrepreneurs, government officials, and community RCE staff were able to give their opinions, discuss issues and lead workshops whilst the 2014 CoDeS conference in Barcelona served as opportunities for junior researchers to try out different activities such as those related to assessment

3 Korea started discussing the Environmental Education Promotion Act in 2000 earlier than other countries in Asia, which was presented in the TEEN workshop and symposium in 2001. However, the enactment thereof was delayed until 2008 due to domestic circumstances.

and evaluation and well as participate in producing deliverables. Such innovative pedagogy that leads to active participation makes it possible to share experiences and expertise and enables members of the network to develop professionally.

Strong support from secretariats and central governments

Strong administrative and financial support from secretariats and central governments is required for the active operation of networks. TEEN does not have an independent secretariat, with the result that environment ministries, focal agencies, and related staff conduct TEEN business. A nation holding a TEEN symposium or workshop plays a leading role in carrying out TEEN business as a temporary secretariat. The host country offers more financial support for TEEN networking than other participating nations.

ENSI had a powerful secretariat for more than 30 years with dedicated staff that enabled the network to function as a hub for communication and business. The Swiss government provided financial and administrative support to enable such effective networking and this support made significant contribution to the stable operation of network. However, even the hard work of the secretariat failed to ensure the sustainability of the network which has closed, largely due to a fall in the number of member nations who were expected to make a financial contribution. Several elements including a lack of younger network members and a drop in the number of member countries can be cited as reasons for the failure to secure sustainability. However, the biggest reason might be that ENSI, which was launched as a government-based network, was not successful in aggressively promoting a structural diversity of membership.

CLOSING

It is really regrettable to see the end of ENSI as the organisation has played a leading role in the development of EE and ESD in both domestic and international contexts and has enabled innovative learning among ENSI members, partners and participants through projects and conferences. For more than 15 years, I have participated in ENSI networks and have learned a lot as a result. Recognizing the dynamic characteristics of ENSI, I sincerely hope that members who took part in the learning community will be able to rebuild ENSI as another entity in the near future that can contribute to the global development of EE and ESD.

In that new EE and ESD network, different kinds of members should be able to participate, sharing good practices and quality case studies with each other, carry

out concrete projects together, and benchmark each other as TEEN and ENSI did. It should be a network that can reflect on such processes, results and good practice and produce research-based outcomes, as ENSI did. Within this network, an innovative pedagogical framework can be attempted, to build a learning community where older and younger generations can work and learn together, just like ENSI did. However, in terms of the critical issue of securing membership and the sustainability of the network thoughtful considerations will be necessary. To ensure that diverse membership can interact dynamically as in ENSI, under solid support by government as in TEEN, a more realistic and clever strategy will be needed. Then, educators all over the world can appreciate and learn from the outcomes of the network and direct them into policies and actions to improve EE/ESD practices towards a sustainable future.

School development and engagement – is mental ownership the holy grail of Education for Sustainable Development?

by Søren Breiting, DPU, Aarhus University, Denmark

INTRODUCTION

This chapter discusses school development through the engagement of teachers, school principals and educational researchers with a focus on empowerment of students.

It is a rather personal account, building on the author's long engagement in school development and educational research in a number of countries, both with the aim of developing practice in schools alongside a theoretical understanding of education as two sides of the same challenge.

When I visited schools a number of years ago I sometimes observed a so-called environmental project on the school ground and could often see that *nobody was taking care of it*. I usually asked 'why?' The answer from teachers and the headmaster was that the teacher in charge had left the school.

Many school projects start with some incentive from the outside community to enhance certain aspects of the teaching or daily life in school. Such endeavors easily become isolated efforts, or at least have a limited duration in the everyday life of the school. When the external funding or other incentives dry out, the outcome of the project might also vanish. In many cases school projects start as invitations from outside to the leadership of the school, from where they are funneled down to individual teachers and classes. Such situations are easily becoming top-down approaches to school innovation.

The approach of ENSI from the very beginning challenged these conventional top-down approaches for educational development by focusing primarily on the competencies and empowerment of teachers under an umbrella of a quest for Environmental Education and the empowerment of students (Posch 1995).

Such multi-faceted experience generated through the co-operation of ENSI offers us an insight into the essential mechanisms for the successful development of Environmental Education from the school level to the individual student, an

experience that should also be taken into account in the development of Education for Sustainable Development. An ENSI publication "Quality criteria for ESD schools. Guidelines to enhance the quality of education for sustainable development" addresses some of these issues (Breiting, Mayer and Mogensen 2005) and has been translated into many languages. It's background and reach are discussed in Breiting & Mayer 2015.

Understanding which mechanisms generate a feeling of ownership of projects, ideas and innovations, i.e. the conceptualization of mental ownership, is offered in this chapter as a theoretical framework for creating successful interaction for school development and the empowerment of students.

SCHOOL BASED PROJECTS AND CO-OPERATION WITH RESEARCHERS: A CHICKEN AND EGG QUESTION?

Denmark became involved in the ENSI network in 1991 when Christian U. Christensen from the Royal Danish School for Educational Studies (RDSES) and two schools joined this international co-operation (Christensen ed., 1994). Around that time, we had established an informal research co-operation at RDSES, The Research Centre for Environmental and Health Education, to develop the field of school based research and development related to Environmental Education and to Health Education (Breiting & Wickenberg, 2010).

From our focus on environmental protection and the wellbeing of people in general, we considered that schools should have a much more important function in meeting these challenges than they actually had. At the same time, we had the impression that the current mainstream approaches were not really successful in doing this.

In our view, linking environment and health was obvious for a number of reasons. A poor physical environment will have a negative impact on the health of people, so without including the promotion of a healthy environment in a focus on health in schools would mean missing one of the conditions for having healthy lives.

We need to link environmental problems with a healthy environment because without understanding that a 'healthy environment' is a precondition for people's physical health and wellbeing we are without a value relationship, or measure to judge and decide on environmental matters. In our view a healthy environment should include thinking of the diversity of nature as being a common good for

human life physically and mentally. This was opposite to a prominent American view of the time that Environmental Education should "provide for training in and opportunities to apply appropriate citizenship behaviors which will result in a population's lifestyle that balances the quality of life with the quality of the environment" (Hungerford, Peyton & Volk, 1994, p. 13), i.e. a rather antagonistic relationship.

What was equally important in pairing Environmental Education and Health Education was the view that innovations in the pedagogy of both should have much in common. We believed that the weak long-term effects of traditional approaches through 'preaching for the correct lifestyles' and persuasion strategies for environmental friendly behavior had to be addressed.

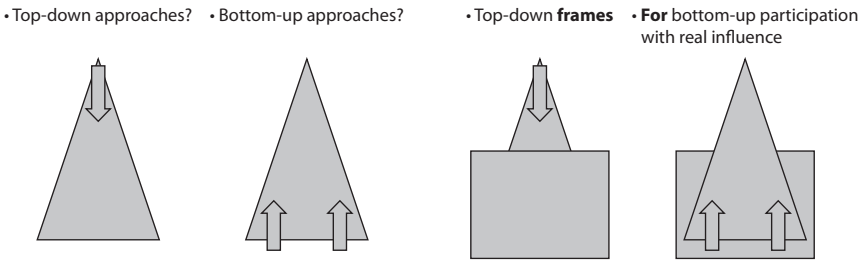
The engagement in the ENSI network with its approach through school-based development interacting with pedagogical researchers and professionals fitted very well into our own step-wise approaches to alternative engagement.

At that time, our institution (RDSES) had the lead responsibility for in-service training of all teachers in Danish primary and lower secondary schools and around 20 % of all teachers took part in significant in-service training each year. This gave our research center the possibility to develop our research interests in tandem with innovation at schools and develop a strong co-operation between the RDSES and selected teachers and schools.

Following the route of ENSI approaches rather than the traditional route of program implementation we wanted to ensure that our co-operation with the teachers should be of real help to their own development (Breiting & Jannicke, 1995). Accordingly, we needed a set-up where we could offer challenging ideas in an overall direction for teachers to strengthen Environmental Education whilst at the same time engaging in open research questions, partly generated through the co-operation with the teachers.

In figure 1 this intention is described as creating 'frames' for school innovation with an Action Research cycle.

Fig. 1. Different approaches to school development. Top-down approaches have many limitations. Bottom-up approaches will, by nature be more spontaneous in asynchrony. If we want to induce change, we need to create frames from the top that allow for bottom-up participation with real influence by the practitioner.



THE CORE OF ENVIRONMENTAL EDUCATION

From what we saw at schools labelled as Environmental Education in the 1980s, both in Denmark and other countries (Mogensen & Mayer eds. 2005) it was obvious that there was a need to elaborate a more distinctive profile for EE (Breiting & Mogensen, 1999, Breiting & Wickenberg, 2010). The notion back then was that EE was 'simply' teaching and learning about the environment and as an approach, it didn't seem to work when the goal was to develop citizens who were knowledgeable and engaged in environmental issues. On the other hand, we acknowledged that much of the teaching about concepts and mechanisms related to the environment such as nature ecology would be required within a normal school curriculum but did not deserve the label "Environmental Education" or claim the goal of active citizenship.

Reflecting on the background for EE we see that communities locally, nationally and globally, face a variety of environmental problems or challenges that have no predefined answers. Environmental Education is a quest we need to pursue to support communities. We would also like students to maintain an interest in environmental issues as they grow up and ensure that their voice be heard, despite the controversial and complex nature of issues related to people's use of the environment.

Essentially we ask, "What should EE contribute to the students learning and competencies that are not already an established part of the school curriculum?"

To answer this question, we gained important experience from co-operation with 10 pilot schools in advance of a nation-wide one-year in-service teacher training course in EE in 1988 and in that way could address both points of our reflection (Schnack ed., 1990).

We felt it important to encourage school classes to investigate local environmental problems which the class (i.e. – the students) had identified and that teachers shouldn't 'teach solutions' but help the students to focus and investigate the issues they had identified. The teachers should help the students to develop an understanding of environmental problems as issues related to opposing stakeholder interests in the use of natural resources. Viewed in this way it is important for the students to listen to people with different interests and opinions about specific environmental issues as part of the learning process and as background for making up their own minds. Teachers should also challenge the learners' views and intentions before helping them to do something about their chosen issue.

The desired outcome of such Environmental Education projects should be to enhance the *action competence* of the students (Breiting & Mogensen, 1999). This action competence approach (Jensen & Schnack, 1997, Breiting 2000) is a paradigm shift away from the dominant and to some extent still current *behavior modification approach* to EE (and HE, see Jensen, 2004). For many reasons the action competence approach could be seen as a "New Generation of Environmental Education", as shown in the table below. This new concept of EE can be seen as more or less synonymous with Education for Sustainable Development (ESD) and each of these paired aspects deserve a chapter of discussion of their own.

NEW GENERATION OF ENVIRONMENTAL EDUCATION (EE)

Table 1. The New Generation of Environmental Education compared to 'former versions of Environmental Education' (EE) as a new paradigm with a number of interrelated characteristics. Here divided in sections of main aspects, despite that the aspects are closely interrelated. From Breiting 1993 and Breiting et al. 1999 with a few revisions.

Previous versions of EE	**New generation of EE**
Main target/goal: *Behavior modification*	**Main target/goal:** Further development of *'action competence'*
Background: View on society	
The past as a gauge for activities of today.	Visions for the future.
We must halt or delay development.	There are several possible development trajectories.
Human needs as a factual, constant entity.	Human needs as a normative and cultural-historical entity.

Background: View on environmental problems and society	
Previous versions of EE	**New generation of EE**
A quest for living in harmony with nature (the notion of 'nature's balance').	A quest for earning the respect of posterity.
Nature has intrinsic value.	Humans have values and interests regarding life in and with nature.
'Conservation' means preserving nature, avoiding human interference.	'Nature protection' is especially about allowing nature's diversity to unfold.
Human society as opposed to nature.	Human society and nature are inseparable.
Argument for nature protection/ conservation: 'We pity the animals'.	Argument: 'It is a pity to deprive future human generations of plant and animal species'.
Cause as few changes as possible to nature!	Avoid irreversible change to nature!
A trade-off between human life quality and environmental quality.	A trade-off between the needs/life quality of present resp. future generations.
'Sustainable use' understood as utilization within a nature-defined limit.	'Sustainable use' understood as a manmade measure of what we estimate as the acceptable limit to reasonable utilisation and risks, allowing for availability to future generations.
Acceptance of leadership and adaptation to 'the system'.	Civic participation.

View on Environmental Education	
Previous versions of EE	**New generation of EE**
We (environmentally conscious adults and teachers) know how best to solve environmental problems.	Decisions on how to solve environmental problems need to involve all.
Natural science is considered the mainstay of Environmental Education	Humanities and social sciences are no less important than natural science in Environmental Education.
Focus on natural ecology ('Nature's household').	Focus on human ecology ('Man's house holding with natural resources').
Nature experience is the pivot of Environmental Education.	Community experience is equally important.
Environmental ethics.	Ethics dealing with decent behavior towards other humans, today and in the future.
The health concept is not prominent in Environmental Education.	The health concept is a key component of Environmental Education.
Focus on different values.	Focus on conflicting social interests, and on personal (inner) conflicts/dilemmas.
No focus on equality between individuals and peoples.	Considerable focus on equality between individuals and peoples.

WHAT DO STUDENTS APPRECIATE IN ENVIRONMENTAL EDUCATION?

The Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) co-operated between 1991–1996 in a school-based approach to develop EE based on an action competence approach, and to a greater or lesser extent working along the ideas outlined above (Breiting, 1996). This happened under the acronym MUVIN and generated focus and involvement among hundreds of Nordic schools. The outcome was real school development together with a number of research and school reports.

Among the outcomes described in the Danish research publication was a list of what aspects of this new generation of Environmental Education students seem to appreciate. This list is included as table 2 and these findings might be recognizable to many ENSI researchers from other countries.

Table 2. The MUVIN project's findings of the elements and characteristics of The New Generation of Environmental Education that were especially appreciated by the students, after Breiting et al., 1999 / 2009.

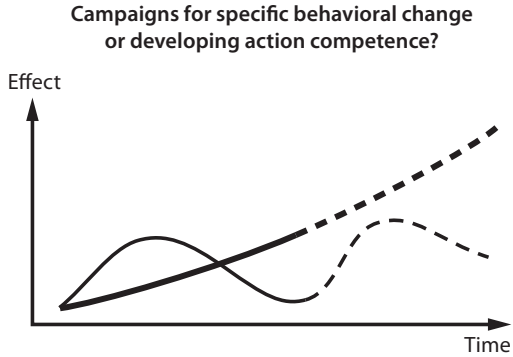
– What do students appreciate about Environmental Education?

- ✓ Working with real problems that engage people outside the school.
- ✓ Taking part in a learning project that also creates interest among people outside the school.
- ✓ Being respected for their work, both by the school and by outsiders.
- ✓ Working in groups, with a free hand to organize their work and have ideas for studies, etc.
- ✓ Co-influencing the actual in-class education in terms of target, content, organization, and concrete design.
- ✓ Obtaining 'quasi-professionalism' at some of the things they are able to accomplish.
- ✓ That people from outside the school have expectations for the work and outcome of the class.
- ✓ Having their self-esteem in class boosted.
- ✓ Learning something from education that gives them greater confidence in their own power of influence.
- ✓ Working on issues that engage them existentially, and which appear to carry weight for their future.
- ✓ Meeting adults outside the school.
- ✓ Experiencing institutions and milieus outside the school.
- ✓ Getting an opportunity to do something towards solving or counteracting environmental problems.
- ✓ Doing cross-disciplinary work that implicates methods, approaches, perspectives, general knowledge and 'real-life studies' in a productive manner.
- ✓ Acquiring new knowledge and insights that strike them as being useful and meaningful.
- ✓ Having opportunities for processing their impressions both intellectually and emotionally.
- ✓ Getting to meet thought-provoking people and viewpoints.

(After Breiting et al., 1999 / 2009.)

If we take a bird's eye view of the differences between the action-competence approach to EE compared with the more traditional behavior modification approach the differences are visualized in fig. 2.

Fig. 2. A tentative visualization of the impact or effect of two different approaches to inducing change: The slim curve: A campaigning approach like the behavior modification approach. The bold curve: An empowerment approach like the action competence approach. From Breiting & Mayer, 2015.



You can teach students to sort waste in a predetermined way and get some good results of eagerness to support sorting waste at home on a short-term basis. In the long run however, the students will lose interest in sorting waste unless their family easily accepts the idea. In many cases the student will have to live with a kind of frustration between what he or she has learned in school as the 'right way of behavior' and the reality at home and elsewhere. New inputs to support the student's environmental friendly behavior will be needed – again and again (Breiting & Mayer, 2015). The alternative action-competence approach helps the student to believe in their own abilities to make a difference; that is a clear empowerment strategy. In our Nordic version (Breiting, 1996), it is also a genuinely democratic approach as it enhances children and young peoples' understanding of how citizens can be influential in shaping the future development of society and how so-called environmental problems are better understood as societal issues involving conflicting interest related to the use of natural resources (Schnack, 1998).

The teacher will immediately experience that this strategy is a slower and long-term strategy in contrast to the rather quick behavior modification strategy. In theory it doesn't take long to teach children to sort clean paper from other kinds of waste using the behavior modification approach, however it will take several lessons if you want really to engage a class in such issues through an action competence strategy. On the other hand, if students feel they are becoming more and more in charge of environmental matters they will often start with new engagements and be much

more willing to listen to that kind of news and innovations. When it is working on its best the action competence approach will be a kind of self-enhancing process.

An additional benefit is that students often develop more self-efficacy and become better learners in their overall school life as a result of the action competence approach (Mogensen & Schnack, 2010).

WHY NOT COMBINE THE BEHAVIOR MODIFICATION APPROACH AND THE ACTION COMPETENCE APPROACH?

From time to time it is argued that the school needs to change students' immediate behavior related to environmental matters *as well as* build up long-term empowerment of the students as future citizens. One argument for this is that we do not have time to wait (see, e.g. Smyth, 1995) and another is that we need both perspectives along-side each other (e.g. Vare & Scott, 2007).

According to our experience with the action competence approach one of the fundamental issues is the importance of ensuring that students really feel that they are trusted in their opinions and proposals. All too often students in class participate in the 'pedagogical game' called 'guess, what the teacher expects us to say and do'. Children and young people have a strong feeling for when they are genuinely being taken seriously and when they are not.

The behavior modification approach will inevitably be 'teaching solutions', when for real environmental issues fixed and finite solutions do not exist. This approach will therefore often direct the attention of the learners towards what we can call technical solutions that do not take into account the complexity of the environmental issue or the opposing interests involved in finding solutions, i.e. being of limited educational value. A much more valuable alternative will be, if a class ends up with 'their idea' of the best solution to an environmental issue and they emphasize it in relation to who it is good for, in a short-term and a long-term perspective, with the latter often expressed as in the interests of the students' grandchildren.

Any school and home makes use of guidelines for proper behavior, such as wiping your shoes before entering rooms and other aspects of 'environmental management'. That is a part of normal upbringing. When they are a part of a daily routine, research, including EE research, has shown that they are not *educational* in the sense of Environmental Education (Robottom, 1993). On the other hand, when a school expects and allows students to initiate change then the educational

process becomes a fruitful ground for strengthening the action competence of the students if they are genuinely involved in the decisions. In this way the process will support their feeling of ownership, not only of the solutions and action but more importantly of the underlying issues causing the problem.

ENGAGEMENT AND A FEELING OF OWNERSHIP

Interest in environmental and development issues might be hampered by their complexity and controversial nature. They might be experienced and seen as topics that are too complicated and with too much potential for disagreement to become involved with. Clever and experienced teachers will have an arsenal of approaches to try to overcome these obstacles to engage the class in a topic the teacher finds important, such as environmental issues but generally throughout the process students will feel that they are dealing with the teacher's problem and not one of their own.

When we really want to create engagement by our students for environmental problems and that all of us have a potential to make a difference in our society, their feeling of ownership becomes crucial. This requires a different approach to learning. The notion 'psychological ownership' is used in management psychology (Pierce et al. 2003); but related to education and empowerment I prefer the term 'mental ownership' (Breiting, 2008), see aspects to take into account in table 3.

Table 3. Aspects to enhance the development of a feeling of ownership (mental ownership) at a school or in a class to issues, ideas, innovations, and concrete changes. Based on Breiting (2008).

• **Aspects to take into account to support the development of mental ownership among participants**
• All involved participate in the goal setting or strategy formulation
• All concerned are regarded as 'equal' partners in the process
• All have a direct interest in the changes
• All involved give input to the process
• All can find their 'fingerprint' in the final outcome
• All receive some form of social recognition for their contribution to the process
• All feel they really understand the issue

The former table 2 shows what students appreciate in the new generation of Environmental Education. On the one hand the action competence approach to EE enhances the engagement of the students in real life issues related to environmental

issues. On the other hand, this approach is supported when compared to table 2 by the mechanisms that generate a feeling of ownership of issues, involving not only environmental problems but a much broader perspective related to the lives of other people now and in the future of the community, outside the immediate life of the students. In this perspective these findings should be applied to the development of Education for Sustainable Development (ESD), too.

At the level of school development exactly the same mechanisms are in play among teachers and other professionals to innovations and outcomes and to the long term sustainability of educational results.

It isn't necessary to fulfill all the aspects listed in in Table 3 to support students feeling of ownership of the challenges at hand, but the more the better. When these aspects are at play in the work with EE/ESD we can expect more engagement in the class work and with issues outside school.

The ethos of the ENSI has from the very beginning been to empower students and teachers in school development. An understanding of mechanisms involved in generating mental ownership seem to be helpful knowledge when planning school development, as well as in the concrete matter of teaching of students to achieve more valuable outcomes for all involved. Using this approach these outcomes fit well, not only with Environmental Education and Education for Sustainable Development, but also with a quest for democratization of schools and communities.

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Learning 'for' the future and 'in' the future

by Wim Lambrechts Open University of the Netherlands

INTRODUCTION

The title of this chapter, "Learning 'for' the future and 'in' the future", is challenging for several reasons. Firstly, the statement learning 'for' the future indicates that we want to prepare current students for their role in a future society. However it implicitly also assumes that we know what future generations will require in order to fulfil their needs. This might be problematic as it imposes specific competences and learning outcomes that we think will be relevant for the future, but at the same time we are uncertain what that future will be like (see on this issue Jickling and Wals, 2008). Secondly, learning 'in' the future indicates that it is possible to predict how future learning will be organised. Despite the possibilities we have to foresee and make scenarios and forecasts, the future will inevitably hold unknown and unforeseen aspects hence it becomes difficult, if not impossible, for us to predict what learning 'in' the future will look like.

How then, can we develop a vision of both learning 'for' and 'in' the future? In this contribution, I take two perspectives, the contemporary and the historical. The future will evolve in a direction that we cannot entirely predict but we know that the future will be grounded in society today. Therefore, I will look at some of the societal developments that influence present learning. These contemporary developments are grounded in near and far history and pose difficult and fundamental questions for society and education. After deploying a vision of learning 'for' and 'in' the future, I will reflect on the role and contribution of the ENSI network and projects on learning processes and sustainability.

CONTEMPORARY PERSPECTIVE

Contemporary learning is characterised by an extensive focus on skills, competences and learning outcomes. This shift in focus is grounded in social constructivism theory which states that the learning process depends on the individual student who constructs knowledge and skills based on different sources. In theory, this could be seen as a positive evolution, however looking at how learning is organised in practice reveals otherwise. The problem with the competence debate is that it has been used and interpreted in different contexts such as education and business, and that these different definitions and interpretations have become mixed. The competence debate not only leads to a blurry discussion about an elastic concept, it

has also been implemented inadequately in educational contexts, for example with a sole focus on knowledge or skills whilst neglecting values; or oriented to solely put education in a job market perspective (Lambrechts & Van Petegem, 2016).

This is the result of the societal developments, especially those of the last decade. Education has become influenced by neoliberal market thinking which focuses on economic efficiency and neglects crucial learning processes oriented toward critical thinking and reflection: "it is almost a truism that for many students school work fails to become a flourishing-instantiating activity simply because it does not carry meaning for them. Instead, they become ensnared by anxiety, emptiness or apathy" (Kristjánsson, 2017, 98). Also the attention towards Education for Sustainable Development and the Sustainable Development Goals could be seen as a 'weak', neoliberal inspired answer from education and society to much more fundamental societal issues at stake (Sterling, 2017).

How then, can we reorient current learning processes to be fit for the future? Part of the answer lies in the past which inspires us to construct a vision for learning 'for' and 'in' the future.

HISTORICAL PERSPECTIVE

Throughout the ages, philosophers have pondered the question about the aim of education and however fundamental it might seem, this question is more relevant today than ever. The basic aim of education as proposed by Aristotle and that is generally supported today, is to develop a person in order for them to lead good and flourishing lives, with discussion revolving around what it means to lead a flourishing life. Furthermore, the aim of education for the individual is complemented with a societal aim in which education should contribute to society as whole. However, over the years the societal dimension has been reduced and eventually replaced by an economic one. Under the influence of the Industrial Revolution economic merits were increasingly put to the fore in the nineteenth century. Adam Smith, in *The Wealth of Nations*, reduced the role of education to its economic usefulness and this became a signpost from his age up to the present day (Kitcher, 2009). The contemporary development in which education is required to provide economic efficient training (Nussbaum, 2010) thus has historical roots.

Reaction to this overly economic aim of education came in the nineteenth century, with the American philosopher John Dewey as the most important critic and proponent of the social function of education, in which individual citizens are

prepared to participate in the life of the group to which they belong. He stressed that education should prepare citizens to be adaptive in a changing society. In the context of economic developments and economic crises he also criticised the reduction of education to serve economic purposes (Dewey, 1916).

It is exactly such reductionist approaches that currently influence education and as this contemporary context and situation is comparable with the one Dewey criticised, we might find inspiration from him on how to create a future oriented vision for learning processes (Lambrechts et al., 2017). Dewey reconnected with the Aristotelian notion of the flourishing life. Another major influence on Dewey's thinking was the publication of Charles Darwin's 'On the Origin of Species' (1859). Darwinism forced an interpretation of the nature of knowledge radically different from traditional metaphysical thinking with the central thesis in Darwinism being that species adjust and adapt to their environment. As a consequence, the process of knowledge is an interaction between the organism and its environment with the ultimate goal being to successfully adapt to that environment. For Dewey, the origin of thought is a biological adaptive behaviour, and the purpose of thought is to control conditions of the environment (Sidorsky, 1977). As a result, Dewey interprets learning as an active and dynamic construct, building on the initiative and experience of the individual with the aim of social improvement. Furthermore, values and virtues play an important role in learning as they lead to flourishing lives. This interpretation of learning seems to be relevant in the contemporary context and one that is acknowledged in current educational philosophical writings (e.g. Nussbaum, 2010; White, 2013). Framing current educational initiatives for sustainability in a Deweyan perspective might help to enhance the focus on 'flourishing' in the learning process, rather than focusing on solely economic perspectives.

REFLECTION: ENSI'S CONTRIBUTION TO LEARNING FOR AND IN THE FUTURE

ENSI has been active in the field of Environmental Education and Education for Sustainable Development for three decades. As concepts, insights and perspectives change over such a long period it might be interesting to examine how ENSI initiatives were framed and presented in the context of education, society and sustainability. In this reflection I will primarily focus on the ENSI projects funded by the European Commission as described in Table 1.

Table 1. Overview of ENSI projects (2004–2014) (source: ENSI, 2018)

Acronym	Title	Timeframe	More information
CoDeS	School and Community Collaboration for Sustainable Development	2011–2014	Affolter & Réti (eds., 2014); Wagner-Luptacik & Smith (2014); Espinet & Zachariou (2014); Liarakou et al. (eds., 2014); Espinet (ed., 2014); Maso (ed., 2014); Lambrechts & Hindson (eds., 2016)
SUPPORT	Partnership and participation for a sustainable tomorrow	2007–2010	Ulbrich et al. (eds., 2010); Project-team Co2nnect (2008); Benedict F. (2010); Czippan, Varga, Benedict (2010); Mathar (2008)
CASALEN	CArpathian SustAinable LEarning Network	2008–2010	Tóth et al. (2010); Tóth (ed., 2009)
CSCT	Curriculum, Sustainable development, Competences, Teacher training	2004–2007	Sleurs (ed., 2008); Sleurs, de Smet, Gaeremynck (2008)
SEED	School Development through Environmental Education	2002–2005	Mogensen & Mayer (2005); Breiting et al. (2005); Kyburz-Graber et al. (eds., 2006); Espinet et al. (2005)

ENSI projects have focused on a variety of topics in Environmental and Sustainability Education and some characteristics have been common to all projects. The reflection here is based on the project information available on the ENSI website.

One of the key characteristics of all ENSI projects is collaboration between different stakeholders in learning approaches. Collaboration is critical when it comes to dealing with the complexity and uncertainty of sustainability issues and it is clearly framed within the social role of education as foreseen by Dewey. The CoDeS project specifically focused on school community collaboration, a critical aspect in learning for and in the future. A second main characteristic of the ENSI approach is professional development. Educational change and innovation cannot succeed without awareness and empowerment of teachers to focus on sustainability and on future-oriented issues in education. As such, professional development enables teachers to become change agents in their own school. The vast collection of project

outcomes (publications) is an example of how ENSI has contributed to professional development initiatives. Thirdly, ENSI projects were enablers of connections between different stakeholders (educational, business, governmental, non-governmental, teachers, students, researchers), as well as connections between the environmental dimension of sustainability and social and economic dimensions, thus emphasising the social role of environmental and sustainability education. Fourthly, ENSI focused on specific and tangible tools to support education including the development of a competence framework, quality criteria, various guidelines, case studies and toolkits. ENSI therefore provided an example of how to transform learning processes starting from the current context and working towards a future vision.

Through its constant critical reflection on the connection between education and community, ENSI has contributed to preparing citizens to be adaptive in a changing society. This happened in a time when neoliberal market thinking gained more and more influence in educational settings. While focusing on the social and environmental issues at play in education, ENSI could be seen as a forerunner of learning 'for' the future.

ENSI initiatives and outcomes leave us with footprints along the road. These footprints contribute to the construction of a vision of learning 'for' and 'in' the future with a focus on transdisciplinary collaboration, professional development and transformational capacity, capabilities to deal with the complexity and uncertainty of sustainability issues, and values and virtues. Looking at the historical context, the footprints lead towards a (re-)connection between education and society, and a (re-)definition of the role of education focusing on adaptability, resilience, transformative approaches and community collaboration that will provide further stepping stones for learning 'in' the future. Stepping stones that will follow the ENSI footprints along the road.

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Life After ENSI: New Directions, Different Models and More Flexible Support Structures

by Syd Smith, Former Australian Representative of ENSI

ABSTRACT

There are signs now that some western nations are less committed to caring for the environment and supporting sustainable practices. The USA, for example, has decided to pull out of the 2017 Paris Climate Change Agreement; the science of climate change is still rejected, questioned or denied by a number of politicians, and in countries like Australia, governments have tended to hinder or even reverse anti forest clearing legislation and continue to expedite the development of renewable energy. Yet, more alarmingly, they still plan for more coalmines.[1] This has a direct connection to the level of government support for Environmental and Sustainable Education (ESD) and leads to the reduction of funding for their programs. This, in turn, causes non-profit environmental organisations to face new challenges in order to survive. This paper investigates the opportunities and options governments and nations may identify in order to help educators and non-government groups to have a major impact on implementing ESD. To begin with, educators have to adopt new management practices, establish different support structures and learn to operate more collaboratively and politically as well as developing closer partnerships in a world where even less funding and support are likely to emanate from governments and sponsors in the future.

There is no single pathway that supporters of ESD can take in this uncertain world, nor does this paper pretend there to be. This is merely an analysis of what might be possible given current global trends, to offer possible options and ignite a positive debate and discussion on the most relevant of possibilities.

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1 The **Carmichael coal mine** is a proposed thermal coal mine in the north of the Galilee Basin in Central Queensland, Australia. Mining is planned to be conducted by both open-cut and underground methods The mine is proposed by Adani Mining, a wholly owned subsidiary of India's Adani Group. The development represents a $16.5 billion investment.
At peak capacity the mine would produce 60 million tonnes of coal a year, much of it «low quality, high ash». In court, Adani said it expects the mine to produce 2.3 billion tonnes over 60 years. It would be the largest coalmine in Australia and one of the largest in the world. The mine would be the first of a number of large mines proposed for the Galilee Basin and would facilitate their development. The mine has drawn immense controversy about its claimed economic benefits, its financial viability, plans for government subsidy and the damaging environmental impacts. Broadly, these have been described as its potential impact upon the Great Barrier Reef, groundwater at its site and its carbon emissions.

ENSI HAS LEFT A LEGACY

What made ENSI unique over its 32 years of operation was its "emphasis on the implementation of Education for Sustainable Development across the **whole** educational spectrum "through research based projects in the fields of quality development, competence enhancement for teachers and students, co-operation among schools and the civil society and development of new skills for VET students."[2] In the past ENSI had been successful in connecting "institutional/ governmental interests, with school practices along with educational research in a common collaborative work". These three ENSI pillars are still very important and should not be lost in any new management practices or support structures now that ENSI has gone. In other words ENSI did not separate the field of research from the development of teaching and learning resources for teachers nor how teachers could improve their practice. Most similar support organisations in the world today usually keep all these areas separate or support only one or two of them.

Another of ENSI's strengths was its acceptance that it was not an isolated education island living in its own bubble, but rather an organisation that successfully co-operated with other major international organisations such as UNESCO, UNEP, UNECE, RCE/UN-Universities, CEE India, Baltic 21 and others. Over its 30 years, ENSI has been very clever in adjusting to the changing economic and political challenges that were thrust upon it. From its early days when it was under the umbrella of OECD's Centre for Educational Research & Innovation (CERI) to its reorganisation when all decentralised networks became independent in 2004, to the time ENSI was recognised as an international NPA in 2008, to the current situation, ENSI had made the necessary adjustments and continued to function as a self-supporting organisation. As external funding and human resources from member nations declined ENSI remained a force, albeit somewhat weakened, but still dependent on selected, dedicated members. The lesson we learn from this, however, is that no longer can we depend on external funding, especially from governments or ephemeral private providers and, like ENSI, we must become more adaptable to change and new challenges.

There are two questions now that we need to ask. Is the decline of ENSI, unfortunate as it is, such a bad thing and what external holistic factors have caused its decline? If we examine these issues we are more likely to find new ways to influencing students, teachers and even the general public to embrace more sustainable practices and

2 From ENSI website: https://www.ensi.org/About_us/Whats_ENSI_all_about/

enjoy a more habitable planet. While it is important to look at these issues globally most analysis here will be based on the Australian situation and its potential to be relevant to most other countries.

The first truth one has to accept is that when an organisation becomes extinct it isn't necessarily a bad thing. Times have changed and a new approach might be needed. The way a support organisation operates could be outdated or its goals may be less relevant than previously. Often, when one door closes another opens. As Churchill once said:

"Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning."[3]

ENSI had difficulties because the political landscape was changing. By enabling politicians to understand that the complex concept of sustainability as a long term process, essentially global in nature, futures oriented and based on systems thinking, we realise that this has not only exacerbated the struggle for serious recognition of ESD'S importance, but presented us with a much bigger challenge as educators. Planning projects or policies at government level usually involves a terminal or completion date with milestones, achievement targets or identifiable goals along the way, but unfortunately sustainable goals are long term and unfortunately ongoing. While the *UN Decade of Sustainability* till 2014 was a welcome development in itself it now requires many more decades of similar developments with ongoing goals to ensure we have continued success towards a more sustainable future. Changing the economic and social priorities over short time periods may work well for government; sustainability with its 3 integrated pillars of social, economic and environmental does not. This quote from the Liberal Party Opposition's policy statement in the state of Victoria, Australia demonstrates the poor understanding of some politicians and their advisers when it comes to dealing with the term sustainability.

"The State Opposition has vowed to overhaul the Victorian curriculum and instil Australian values in students if it wins the state election.

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3 Quote from a speech by Winston Churchill on the Battle of Egypt in the Mansion House 10 November 1942.

And in a move that is likely to infuriate academics, the Coalition has flagged ***ditching sustainability****, Indigenous histories and Australia's engagement with Asia as cross-curriculum priorities.*

Victoria's curriculum lacks academic rigour, and is consumed by ***ideology and educational fads****."*[4]

Sustainability is an ideology? Obviously this policy from the Opposition says so and little wonder leading educators in Victoria are so angry in having to confront such a massive level of ignorance.

While other states in Australia do not have this misapprehension and endorse the national cross curriculum priorities in the above 3 areas, we find that encouraging teachers to integrate sustainability concepts into specialised syllabuses is still a challenge particularly for secondary teachers who are more subjects oriented.

The Australian Federal Government also has difficulty in presenting a genuine sustainability face even if its policies and claims dictate otherwise. Officially Australia has pledged to reduce emissions to 26–28 per cent on 2005 levels by 2030. This was its promise at the 2017 Paris Climate Change Conference. The target represents a 50–52 per cent reduction in emissions per capita and a 64–65 per cent reduction in the emissions intensity of the economy between 2005 and 2030. How this is to be achieved is uncertain, if not impossible, according to most scientists when the same government supports the approval of the world's largest Coal Mine in the Galilee Basin of Queensland.[5]

At State Government level similar discrepancies occur. The NSW State Government has passed legislation allowing farmers greater power to clear their land from 2017 onwards.[6] The changes, which the government says were developed through a "rigorous, transparent, scientific and evidence-based process", allow farmers more freedom to clear land without having to find equivalent areas of offsets. Conservation groups have argued the new legislation significantly weakens wildlife, soil and water protections in the state, put 2.2 million hectares of koala habitat at

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4 Victorian Liberal Party Policy on Education. *Liberals National School Education Values Statement: Improved Standards, Better Outcomes, More Opportunities for our kids;* M Guy MP, P Walsh MP; Melbourne Victoria; January 2018

5 Adani Carmichael Coalmine. See footnote 1.

6 NSW Forest Act 2012 No. 96 and subsequent amendments in 2017 /2018

risk, allow a significant increase in broad-scale clearing and increase the state's greenhouse gas emissions.

Similarly the NSW Government through its Office of Environment and Heritage in an effort to cut administrative costs has abandoned that section of its website where it used to support schools with teaching and learning resources for ESD. However, a two-year agreement was finalized in late 2017 with the Association of Environmental Education NSW to take over the program from the Office of Environment and Heritage.[7] These and other developments can be listed as evidence of a diminishing commitment by government to support ESD. This is even more alarming when a number of politicians are skeptical or even in denial about climate change and scientific principles in the first place.

This scenario confirms again that the old ways have gone and a new approach is necessary. No longer can we depend entirely on governments for assistance but new ways of funding and management are necessary if ESD is to make a continued impact in our schools and tertiary institutions. It is equally relevant that the political world in which we exist is not separate from our work in supporting ESD and for this reason we need to devise our future plans with these realities in mind.

FACTORS SUPPORTING AN ESD GLOBAL BODY

Despite the negative and perhaps depressing picture presented above there are optimistic signs that all is not lost and there is much hope that greater outcomes can be achieved with new management structures and different methods of operating. Some of ENSI's conventions and processes are commendable, certainly still relevant and should continue in some form by ESD support networks in the future.

The idea of a number of ENSI's member nations working co-operatively together, for example, has brought immense benefits to each one of their national curricula but if additional countries outside of Europe were now included, with contributions from regions such as North America, Oceania, Africa, South and South East Asia, this would give ESD greater influence, stronger impact and perhaps a greater opportunity to attract funding from UNEP, NGOs and individual governments. There are already many similar support non-government organisations involved in ESD

7 In 2017 The Australian Association for Environmental Education NSW Chapter went into an agreement with the NSW Office of Environment and Heritage to manage its school resources support program. With initial funding from the NSW Office of Environment and Heritage for 2 years AAEE NSW will take over the program from this government department.

internationally but most remain isolated, often competing against similar bodies for resources and usually inventing the "same wheel". Obviously it's a major challenge to achieve global unity. Each nation and, even organisations within nations, often have high ownership of their programs and may baulk about sharing them, let alone agreeing to form a global partnership body. ENSI had this frustration in 2003 with New Zealand when that nation rejected an offer from ENSI to join because it felt its own programs were already excellent and no overseas information would be of benefit to it. However, if the ENSI family (or whatever its new name might be) were to expand, its attraction to others would be enhanced and a larger international body would have more credibility.

There are other similar global organisations currently operating of course. *The Blue Flag Project* developed in Denmark in 1987 with a membership of over 50 nations is multi functional and multi purposed with connections to UNESCO, UNEP, Earth Charter, International Council of Marine Industry Awareness, the International Union of Conservation for Nature, United Nation World Tours Organisation, European Environment Agency and others. Oversighted by the Foundation for Environmental Education (FEE) Blue Flag offers a number of educational programs including *Eco Schools, Young Reporters for the Environment, Green Key and Learning About Forests*. Blue Flag as is evident here has its environmental/ sustainability function as well as an ESD function; both sustainable projects and ESD related to each other along with being global in nature. The Blue Flag program has survived because it is not dependent on volunteers and is so large that external funding can come from a variety of sources.

As noted previously some governments have softened their support for sustainability and with this decline have allowed the related curriculum to develop as a lower priority. Since there appears to be a direct relationship between curriculum priorities and government environmental/ sustainability policies it follows that educators need to develop closer contacts with environmentalists, environmental government departments, NGOs and others and make strong connections to link all these groups together. A unified approach across all sectors is more likely to be more noticeable by governments and would lead to a more concise set of policies that are of advantage to schools and student learning and lead to more effective integrated planning overall. In essence educators need to be a stronger lobbying force, not only on curriculum matters but for the wider development of sustainability issues as well.

AGENDA 2030

Perhaps the greatest hope for a global ESD body lies in the goals and subsequent implementation of *Agenda 2030*. There is some concern however about the fragmentation of the Agenda into too many objectives; in this way each state could choose 3–4 of them, without understanding that they are connected in a whole transformational challenge. But we have learned a lot from the days of Agenda 21 at Rio where education and local government as an educational force were included hurriedly at the end as a somewhat final afterthought (Chapter 36). The way forward lies in Sustainable Development Goal 4 (SDG4) of *Agenda 30.* ESD educators will welcome SDG4 for a number of reasons. First it embraces good practice across all sectors and learning stages but puts sustainability and ESD as its central core. Moreover SDG4 relates to a large number of other goals in Agenda 2030:

SDG4: *"Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all."*

The document covers all aspects of sustainability including access to education for all, skills development, entrepreneurship, caring for disabilities, enhancing literacy and numeracy, overcoming poverty, VET, improving teacher training and raising the level of economic activity in African and island nations. It is Goal SDG4.7 that ties the whole section together.

"By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development."

Similarly in the Climate Change section (SDG13) ESD plays a key role:

SDG13.3: *"Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning."*[8]

Any global ESD program to replace ENSI should use Agenda 2030 as its basis of operation, employ its objectives wherever possible, link ESD to the total curriculum

8 Sustainable Development Goals on the UN website: https://sustainabledevelopment.un.org/sdgs

and seek a working relationship with leaders of the UN Sustainable Development Summit of 2015.

One management model an ESD program might adopt is that of the *Global Environmental Education Partnership* (GEEP)[9] a global initiative comprised of ESD policy makers, providers, and practitioners who represent government and/or non-governmental sectors in countries throughout the world.

"The goal of the GEEP is to strengthen environmental education around the world by building capacity and focusing on collaboration, sharing best practices, and networking opportunities. Key focus areas include policy, environmental education guidelines to drive excellence, climate change education, and professional development."

GEEP aims to do this by:

- *Promoting global expertise and sharing experiences on improving the quality, practice, and impact of ESD.*
- *Addressing the major obstacles to improving EE in member countries*
- *Expanding the reach of EE by working with new and underserved audiences and communities*

FUTURE DIRECTIONS

On reflection it appears there are certain principles that any ESD support body could promote, recognising that the challenges will be difficult and there will be many other national and global bodies all of which are attempting to do similar things. The following proposals are provided, not in order of importance, but for discussion and debate only and on the understanding that everything listed here is easier said than done. The proposals are neither extensive nor finite of course.

- A global ESD organisation is required to recruit as many member countries as possible. All nations should be eligible, albeit a necessity, to become members. Member countries should take turns in serving as the central administrator and all countries should be assured their local projects and programs will still be

9 GEEP or Global Environmental Education Project (www.thegeep.org) was launched by the United States Environmental Protection Agency, the Taiwan Environmental Protection Administration, and the North American Association for Environmental Education in 2014. The mission of the GEEP is to create a vibrant learning network designed to strengthen Environmental Education globally to create a more sustainable future for all. There are over 41 participating countries (31 active) with a website that provides details of videos, case studies and a list of advisory groups.

their own. The European Union may be available to lead and instigate such an initiative from the beginning.

- Other international support groups not attached to specific nations (e.g. IUCN, WEEC) should be advised of the new global ESD support body and invited to provide advice, information or even become partners.

- Regional sub groups of countries should be formed from the central list of countries and their specific issues and potential resolutions should be shared internationally.

- Specialised groups should be formed and made responsible for each of Agenda 2030's major goals including curriculum support and resources, teacher training, research, VET, Tertiary Education and the other major areas listed.

- All existing global ESD support groups should be invited to join this new global ESD group and be encouraged to make submissions and provide feedback on how to improve ESD and reach new and underserved audiences and communities. Agenda 2030 would be an effective stimulus from which the invitation could be made.

- The new global ESD group should recognise the existence of the numerous alternative groups worldwide and even those groups within countries.

- To secure recognition the new ESD global group should first approach the UN making a detailed submission and offer a plan to support and implement the goals of Agenda 2030.

- Younger representatives should be encouraged to join and take active positions in this new super support structure and plans should be made to ensure that as some personnel retire there should be adequate advance training and preparation for a continuous supply of replacement officers.

- A lobbying group should be formed to advise nations of sustainability issues and to understand the importance of ESD. Training programs should be developed to assist nations to lobby their governments and providing politicians and senior bureaucrats with information and programs to assist in their understanding of sustainability and ESD issues.

- While it is hoped the UN would assist in funding the new ESD support body, strategies should be in place to seek funding from other government and NGO groups.

- Many ESD groups survive because they have some unique quality or a specialisation in one aspect of sustainability. Should the above proposals appear too great a challenge then this idea or model would be less preferred but at least better than nothing. The challenge is to identify which areas of specialisation would be attractive globally.

- As a final gesture ENSI may consider writing to governments of all member ENSI countries, past and present, informing them of its achievements over 30 years, and to thank them for their support and contributions. ENSI should also advise them that with no replacement group now available it would be more difficult to achieve the goals of Agenda 2030 and the Paris Agreement on Climate Change 2017.

CONCLUSION

The future of ESD is dependent on the commitment of government and the support of millions of citizens who are prepared to stay for the long haul. Without appropriate legislation and sincere action ESD faces an unenviable challenge. We therefore need to continue informing governments of the importance of sustainability and ESD and ask that they treat it as a permanent ongoing priority rather than a separate educational concept unrelated to government environmental policy. Continuing to let politicians view sustainability as an ideology and of declining importance is to be at our peril. But there is continued hope as evidenced by the work of other support groups within and beyond countries. Where there is success among other successful ESD global support groups there is a partnership among academics, governments, private enterprise and educators.

List of abbreviations

AAEE: Australian Association for Environmental Education
AGM: Annual General Meeting
AR: Action Research
BJIM: Division of Industry & Community Network (DICN) Malaysia
BSF: Building Schools for the Future – United Kingdom
CASALEN: ENSI-UNEP network „CArpahian SustAinable Learning Network"
CC: Carpathian Convention
CEE: Centre for Environmental Education
CEEC: Center for Environmental Communication and Education
CERI: OECD Centre for Educational Research and Innovation
CoDeS: ENSI project „Community and School Collaboration for Sustainable Development
CSCT: ENSI project „Competencies for ESD Teachers"
DESD: Decade for Education for Sustainable Development
DESECO: Definition and Selection of Competencies (OECD 1997)
DMU: De Montfort University
DRR: disaster risk reduction
EE: Environmental Education
EECs: Environmental Education Centers – Greece
EfS: education for sustainability
ENITE: ENSI project Environmental Education in Teacher Education"
ESD: Education for Sustainable Development
EE: Environmental Education
EfE: Environment for Europe
EPSRC: The UK Engineering and Physical Sciences Research Council
ERGS: Exploratory/Experimental Research Grant Scheme Malaysia
é21: éducation 21, Switzerland
FRGS: Fundamental Research Grant Scheme – Malaysia
FWF: Fonds zur Förderung der wissenschaftlichen Forschung – Austrian Science Fund
FEE: Foundation for Environmental Education
GEEP: Global Environmental Education Project
HE: health education
IAS: Institute of Advanced Studies
ICT: Information and Communication Technology
IESD: Institute of Energy and Sustainable Development – United Kingdom

IPCC: Intergovernmental Panel on Climate Change
IUCN: International Union for Conservation of Nature
JEEF: Japan Environmental Education Forum
KOSEE: Korean Society for Environmental Education
KP: knowledge partnership
KTP: Knowledge Transfer Program – Malaysia
LA: local authority
M4N: ENSI related project: Move4Nature
MDGs: Millennium Development Goals
MER: Ministry of Education Research, Youth and Sport of Romania
MOU: memorandum of understanding
MUVIN: Miljøundervisning i Norden – Environmental Education in the Nordic Countries
NAPEESD: National Action Plan for Education for Sustainable Development – Cyprus
NPA: Non-profit association
NCC: National Core Curriculum – Hungary
NGO: non-governmental organization
NIR: National Implementation Report
NSW: New South Wales – Australian State
OECD: Organisation for Economic Co-operation and Development
PISA: Programme for International Student Assessment
PNS: post-normal science
QC: quality criteria
RA: Rhetorical Argumentation
RAR: Reflective Activity Report
RCE: Regional Centres of Expertise
RDSES: Royal Danish School of Education Studies
RUI: Research University Grants – Malaysia
SD: sustainable development
SDGs: Sustainable Development Goals
SEED: ENSI project „School Development through Environmental Education"
SSEEP: Schools' Sustainable Environmental Educational Policy – Cyprus
STEM: Science Technology Engineering and Math
SUPPORT: ENSI related project „Partnership and Participation for a Sustainable Future"
TE: teacher education
TEEN: Tripartite Environment Education Network – Japan, China, and Korea

TEMM: Tripartite Environmental Ministers Meeting – Japan, China, and Korea
TK: toolkit
ToT: Training of Trainers
UN: United Nations
UNCED: United Nations Conference on Environment and Development (Rio 1992)
UNCSD: UN Commission for Sustainable Development
UNDP: United Nations Development Programme
UNECE: United Nations Economic Commission for Europe
UNEP: United Nations Environmental Programme
UNESCO: United Nations Educational, Scientific and Cultural Organization
UNICEF: United Nations Children's Fund
UNU: United Nations University
VET: vocational education and training
WEEC: World Environmental Education Congress
WHO: World Health Organization
WSA: Whole School Approach
WWF: World Wildlife Fund

“Environment and School Initiatives” (ENSI) was an international network, offering a platform for cooperation among practitioners, researchers and policy makers in the fields of Environmental Education and Education for Sustainable Development. Innovative environmental projects, Action Research, Quality Criteria for ESD schools, Teacher competencies for ESD and the Whole School Approach are main features that ENSI promoted throughout its lifespan. The current book gives an overview on ENSI’s history, its impact on national contexts in three continents, its ways of collaboration and the lessons learnt in thirty years of work. More than forty internationally acknowledged experts share their experience and provoke forward-looking thoughts about education, science, sensitive problems and new concepts for networking.

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