Planting seeds of **action**

The environmental learning process of ENO Schools since 2000

ENO

Environment Online

Planting Seeds of Action: The Environmental Learning Process of ENO Schools since 2000

Publisher	ENO Programme Association / ENO-verkkokoulun tuki ry http://www.enotuki.net Siltakatu 12 B 14, 80100 Joensuu, Finland info@enoprogramme.org www.enoprogramme.org
To order	info@enoprogramme.org
PDF online	www.enoprogramme.org
Editors	Mika Vanhanen Heli Paulasto
Design and layout	Siiriliina Riikonen
Printing	Kopijyvä oy, Kuopio

ISBN 978-952-93-0708-1 (paperback)
ISBN 978-952-93-0709-8 (PDF)

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Foreword

The environment is a global language everybody understands. Environmental awareness is important but without actions it's like a leafless tree. Every action towards sustainability is needed, starting from the grassroot initiatives. This book is about one of them, called Environment Online. A seed was planted by a classroom teacher at a rural school of Eno in Eastern Finland. In 12 years this virtual school and network for sustainable development has extended its branches to nearly 10 000 schools in 151 countries.

The success of this initiative lies on three cornerstones: technology, structure and empowerment. The basic element is ICT that has enabled schools to network and learn online. Secondly, everything is based on the co-operation between teachers instead of a hierarchy or byrocrats: we all are equal. And last but not least, learners have been empowered not only to take part in campaigns and activities but to invite other schools to join us. Language, prosperity or religion or can be barriers but the environment is a global language everybody understands. We can also make peace through the environment. Perhaps this was in the minds of the ENO schools in Israel and Palestine when they planted their trees to celebrate Ahtisaari Day, a day for reconciliation, in November 2011.

Planting Seeds Of Action is meant for the public at large despite its pedagogical approach. The following greeting is from Heidi Hautala, Minister for International Development in Finland, followed by an introduction into ENO. Pedagogical and scientific articles about sustainable lifestyle and the ENO process have been written by Finnish educational experts and professors. The book proceeds with concrete examples from South East Asia and Latin America and ends with stories by students about peace, the crucial element for sustainable development.

Tree planting is the most popular activity in ENO. Schools aim to plant 100 million trees by 2017. Every tree planted symbolizes a concrete deed for the environment. 100 million trees is not a big number of trees globally. More important than the number is the process that involves us, the schools and their communities in the communal learning process. Every drop counts and together they form a Sea, a Sea of Action. We hope you enjoy this book and plant a tree with us. If not a real tree, then plant a seed of action in your heart.

On the International Mother Earth Day, 22 April 2012

Mika Vanhanen
founder and director of Environment Online

A greeting from the Finnish Government

In 1992 members of the United Nations gathered in the Earth Summit in Rio. Hopes were high: the concept of sustainable development was brand new and the world community expressed its worries over the environment. It was agreed that sustainable development can only happen if the ecological, social and economic aspects are balanced.

In 20 years the term sustainable development has become everyday vocabulary. However, the global environmental threats are even more burning now: the global warming proceeds, biodiversity loss accelerates and desertification gains more space. Shortsighted economic gains have taken over long term sustainability and we have lost the vision of the interconnectedness of humanity.

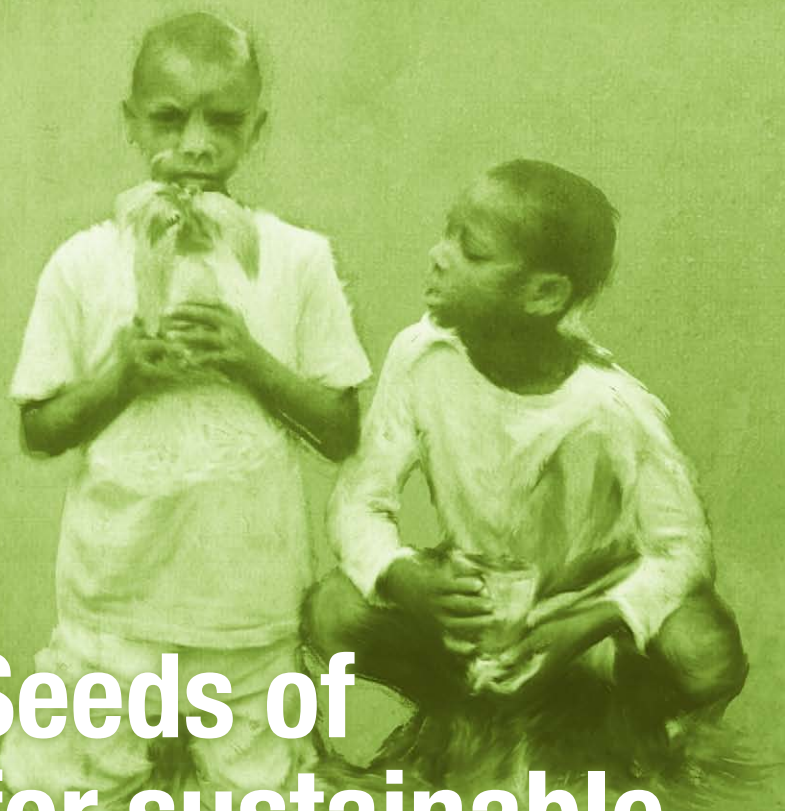
In many places in the developing world, long term sustainability is a victim of the fight to survive to the next day. However, the promotion of good environment provides livelihoods and food security for the poor, gives them clean water, provides the basis for good health and gives a shelter against natural disasters. For example by planting trees we could gain and improve these useful ecosystem services, which are essential for our wellbeing.

Despite the slow progress in combating the global environmental threats, the need for sustainable development is all the more urgent. And while the global politics move slowly, people and citizens are fast. The ENO network is an innovative and inspiring example of how a local initiative grows into global awareness and concrete action.

I planted my latest tree in March when I was visiting Water Services Trust Fund (WSTF) project in Kenya. I was moved by the energy of the common efforts to get clean water to all inhabitants of the village. Once again, I was assured that when we work together we can change the world. The seeds are growing.

Heidi Hautala
Minister for International Development
Ministry for Foreign Affairs of Finland

Mika Vanhanen
Director, founder
Environment Online - ENO



ENO – Seeds of action for sustainable development

It's midday at the end of May. The students and I sit down on the ground to take a little break. The girls run off to drink some water from the spring because the air is warm and muggy. The boys are throwing pine cones and taking pictures. The students have just planted thirty spruce saplings to the nearby forest. Before heading back to school, we go look at old spruces at the neighbouring conservation area. There we rest a while. All of a sudden the silence is broken by a beeping mobile phone. A text message arrives. And another. And a third. Sanna is reading messages from other tree planters from Iraq, Slovenia and South-Africa. She has a smile on her face. The messages are translated together and discussed. Today is the Tree Planting Day of the ENO virtual school.

ENO – Seeds of action for sustainable development

ENO brings together thousands of schools worldwide through different activities, theme weeks and local events. In the virtual school, the students learn global responsibility for environmental issues from each other through active participation. The chance to take a look at what others are doing only confirms the idea that we are not alone. The ability of schools to do concrete deeds in environmental projects is remarkable. Often these projects promote environmental awareness more efficiently than other forms of education. ENO is a good example of how the work to benefit sustainable development at the grass-roots level is spreading and growing all over the world.

Do what's necessary

Environment Online – ENO is a virtual school and network for sustainable development that was founded at the beginning of the millennium in a village called Eno in North Karelia in Eastern Finland. In the virtual school, environmental issues are studied, information is shared and learning is promoted in campaigns both locally and globally. Doing things together is important. What started as a small-scale project has spread to nearly 10 000 schools in 141 countries. Operations are coordinated by the ENO Programme Association in the city of Joensuu.

As Saint Francis of Assisi said, "Start by doing what's necessary; then do what's possible; and suddenly you are doing the impossible". Francis practised his own philosophy. His example inspired people, and his religious message spread from the small town of Assisi across the whole world. Nowadays a message can spread even to the furthest corners of the world with the help of electronic media. Francis's motto is needed also in spreading environmental awareness and global responsibility. The seed for that is sown at schools.

Do what's possible

The aim of the ENO virtual school is to encourage students to become active and environmentally aware citizens who utilize information and communication technology for the purpose. The virtual school focuses on the student, his or her immediate environment and

activities. The activities direct the student to search information from his or her own village or town. After each study theme, a campaign is held, and the results of the campaign are reported at school and in the local community. The results can also be found from libraries and other public places. The aim is to make students understand that they can make a difference to the state of the environment. At the same time, students see how important their contributions are among the international group of students and schools. Students of the virtual school strive for active citizenship and participation. In Finland, the projects are an integrated part of the curriculum, whereas in different parts of the world, the projects are integrated as part of school subjects or are carried out as club activities. Regular themes have been climate change, forests, water, consumption and cultural themes.

A tree planting event was started in 2004. It is a concrete act to save the environment, and for many schools it also includes campaigns against climate change. Trees are planted throughout the year but the main events are held at the end of May on the UN International Day for Biological Diversity and in September on the UN International Day of Peace. The event has its own theme song and a play that has been translated into 40 languages. An online book called Peace Forest, made by the students, was published in autumn 2011. Ap-

Tree planters in Chipembi secondary school, Zambia in May 2010.

proximately seven million tree saplings had been planted by the year 2011. The aim is to have a forest of hundred million trees by the time Finland turns hundred years in 2017. Last year was the UN's International Year of Forests, thus, forest is a current topic.

ENO is one of the most well-known Finnish educational innovations in the world, and it has received several awards both in Finland and abroad. The most notable international recognition include a Cyber Oscar in GKP Youth Awards in Geneva in 2003, a special mention in the Stockholm Challenge Awards in 2006 and a win in Global Junior Challenge in Rome in 2007. The material produced by the students of the ENO virtual school has been used also as UN's study material. In 2009, ENO was selected as the best project in Finland in the Energy Globe Awards. The same year ENO received an award for The Forestry Achievement of the Year by the Society of Finnish Professional Foresters. The latest recognition has been my nomination as a finalist in the UN's Forest Heroes Awards in 2011.

Schools and sustainable development

A little over twenty years ago in the UN, Gro Harlem Brundtland brought up the concept of sustainable development. It is global continuous and structured development of the society whose goals are to guarantee current and future generations the possibility for a meaningful life. In order for sustainable development to influence everyone's actions, it has to be taught at schools. In Finland the concept was adopted with the curriculum reform. Unfortunately, sustainable development has not become as a part of everyday life as was hoped for. It is mentioned as one topic of the 2004 curriculum of basic education: Sustainable development is to be included in different school subjects and in schooling events. In practice, however, this has proved rather challenging but we are heading for the right direction.

Environmental education supports lifelong learning. It also starts to shape our actions, values, and knowhow to better serve sustainability. Sustainable development education is often used as a synonym for environmental education. The most noted international environmental education projects that are coordinated by the Finnish National Board of Education (FNBE) are The Baltic Sea Project and Eco-Schools Programme.

Rio Summit laid the foundations for ENO

In the Rio Summit in 1992 Al Gore took the initiative towards the GLOBE program. It is one of the first environmental and science education networks where students make environmental observations and then sent the data to a common database. This data is available for free for all students, scientists and, in fact, for everyone. In Finland, GLOBE was launched in the mid of the 1990s, and the school I worked for then, Eno primary school, was one of the first to attend the program in Finland. The GLOBE was an interesting project but it required quite a lot of patience and perseverance from the schools that participated in it. Perhaps the fact that GLOBE is science-oriented and it lacks international interaction is why the program did not spread to Finnish schools more widely. However, information spreads through networks, and together we can achieve much more.

Change is the key word in environmental education. Changes and their impacts can be seen in Eno village, as well as in Finland and other countries. Climate change and the loss of biodiversity are examples of a global shift. It is the responsibility of schools to raise globally responsible children who become active citizens. Educating children to understand global issues is the pedagogy of understanding the world where equality is pursued and human rights are respected. The aim is no more and no less than to make the world a better place.

ENO Flashmob in Taichung, Taiwan on February 12, 2012

The road from a musician and a tech nerd to an environmental educator

Robert Frost writes in his poem The Road Not Taken about a diverging road in the woods and how he chooses the less walked one – and now everything is different. I found my road also by chance. My dream was to graduate in music from the Sibelius Academy. However, I chose a job as a class teacher in my home region specialising in music. At the beginning of my career, I was also interested in computers and international affairs. The school bought a computer and a modem that enabled an access to the world. Freenet, a service directed at schools, was found on the Internet, only in a text-based format though. We sent an email with the students to President Ahtisaari, for example, who answered quickly from Malaysia where he was golfing at the time. The announcement of a new GLOBE environment program that would select 40 schools from Finland was also found from Freenet. An international project got us interested and we were accepted in. At the time, it was a big deal for a small and remote school like us. The contents of the program started to interest us more and more after a training held by the FNBE. First and foremost it was because the local environment was included in the program. Both students and their parents were exited. Weather observations were made, in addition at schools, during weekends and holidays. I also educated myself further in a university to widen my knowledge. A previous nerd became an environmental educator, and soon the GLOBE project spread to all schools in the Eno municipality.

During the next five years, an idea of my own project was developed. My school now had an international network I wanted to utilize more efficiently in different school subjects. The idea of a virtual school for sustainable development was born, and for that, the school received new computers. The name of the virtual school was taken, naturally, from the name of the municipality. ENO was founded in 2000 as a virtual school project of the FNBE and as an umbrella project for NetD@ys of the European Commission. The project was coordinated by the educational system of the Eno municipality. Fifty schools in thirty countries participated in the project during the first year. Studies were started by getting to know the other schools with the help of the network. Interactivity was encouraged with the use

of online chatting sessions that were organized regularly. Discussions were also archived. Teachers chatted online on Friday afternoons. I and my class chatted about health issues with students from Botswana and about climate change with students from Paris, for instance. Information on living environments was collected from students with different kinds of surveys and the results were summarized. Themes were divided on a weekly basis which proved to be rather difficult for the schools abroad.

Thus, some of the schools only used our website as an additional resource for studying. Our first thought was to do everything possible online. We had to abandon this idea already during the first spring semester because many schools only had an occasional access to the Internet and the connection was often slow. Therefore we started creating additional material to be used in teaching outside the site. Year after year we had new schools from new countries participating in the project. At the same time, the manner of managing information and the activities on the website were changed. There were no more resources to summarize the data, and instead, we focused on themes, events and campaigning. The most important aspects were shared learning and actions benefitting the environment.

Suddenly you are doing the impossible

There was no stopping the project that first started at the small primary school of Eno village. Demand was high, and new schools especially from the developing countries wanted to participate. Conferences were held both in Finland and in South-Africa. The interest increased even further through different campaigns. From Indonesia alone, over 4000 schools have participated in the tree planting campaign. The interest is phenomenal. Voluntary country coordinators and secretaries in over 140 countries are spreading the news of the project. They also translate material to their own languages and recruit new schools to join the project. The success of the virtual school is based on equality where everyone functions at the grass-roots level. International networking and friendships between teachers have also made the network strong and efficient. How else could it be possible that in six years schools have planted seven million trees already? The goal is to have a “common forest” of hundred million trees by the year 2017 when Finland celebrates its one hundred years of independency.

Nobody is a prophet in their own land. The hardest part has been financing the project, even finding the salary for one person. The FNBE and different municipalities have financed the project but no permanent funding has been found. Not even after the virtual school has won several international awards and gained recognition. We are not giving up though. A national ENO Programme Association is in charge of the school's operations, and with the help of the association we are going forward strong.

The best environmental education is to do things together

The students are interested in doing things themselves and influencing their surroundings by their actions. "I didn't know that shopping and travelling had such a huge impact on my ecological footprint. I had a sort of an awakening!" This was said by my sixth grade student after she had monitored her consumption habits and calculated her ecological footprint. "When we researched our water consumption at the school, we found a leaking tap and we fixed it", reported a school from Australia.

Our campaigns that improve environmental knowledge and functionality spread information forward in our network both locally and globally. The campaigns add to the feeling of togetherness and inspire people to take action. If we want results, that is to say the knowledge to spread to as many people as possible, it is best to act big.

We have utilised drama, arts and music to support learning in our virtual school. During the annual Climate Change theme, for example, the students have written articles and plays and made presentations. Frank The Frog mascots made of recycled paper have been showcased all over the world at the same time during the campaign collecting people's pledges to

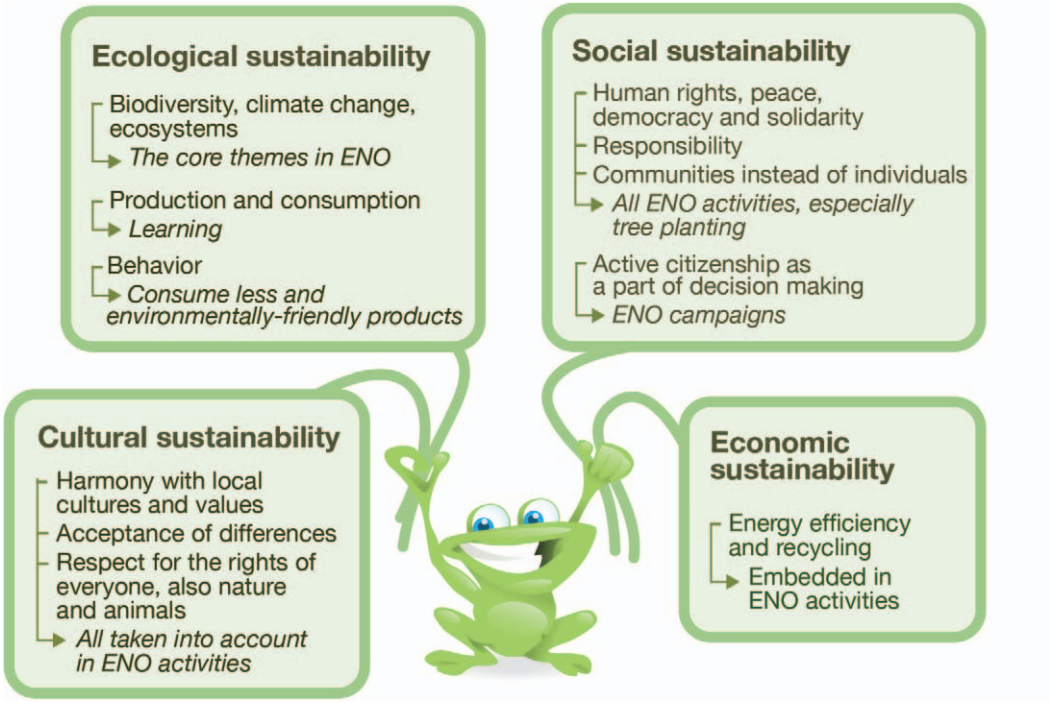
improve everyone's consumption habits. The popular song about Frank The Frog urges to act instead of just talking: "Turn down, switch off, recycle and walk: four small changes, we act, we don't just talk!"

Sustainable development in the ENO Programme

Sustainability is often seen to be composed of three pillars: environmental, economic and social. In ENO we want to include a fourth aspect and that is the cultural pillar. We feel that sustainable development should also be based on values, traditions, identity and worldview, as well as moral values and relationship to nature.

See below the ENO mascot Frank The Frog holding the four pillars of sustainable development. Frank shows how those dimensions are embedded in the ENO Programme.

ENO activities lay focus on:



Internationality as a reason for taking environmental action

It is not necessarily easy to get people interested in environmental issues in their own city or country. That's why we need different approaches in this issue. The idea behind ENO virtual school is to introduce students to environmental issues through internationality. Thus, we get students to acknowledge first the environment elsewhere and then in their own country. The same has been noticed by a South African ENO teacher Janet Snow. Snow states that "ENO virtual school uses internationality as a reason for taking environmental action". Students are interested in comparing their own experiences with those of students their own age. By studying the same environmental themes at the same time and by sharing experiences, the students compare their own environment with the environment of other countries. This means that they do not only see the differences but they take action too. The simplest way to do this is by comparing pictures. When information comes from a peer group, other schools in this case, environmental issues become concrete and come closer to the students. Through thousands of photos that are available in the network and that are divided into categories by continent, students get to know other students, environments and photos form Tree Planting Days.

Tree planting in Romania in May 2011.

Internationality is best reached through networking. There are dozens of networks that operate on different basis within the ENO network itself that has been developed for over ten years. The networks represent, for example, internationality, environmental education, peace education, development cooperation, ICT education, school networks of different countries and continents, larger organizations' environmental activities directed at children and the young and international youth networks. In addition, schools form their own small networks and act together to benefit the environment. There is power in networks, and if that power is harnessed, we can move things forward also at the grass-roots level.

Email has so far been the most important tool in activating people with environmental issues, and it is a powerful tool still. Emails still reach people the best because they can be sent also over a slow Internet connection. Text-based chatting was also tried, and teachers had their own chat. A big transformation was the video service YouTube because with the help of it, the operations of the virtual school could be more easily presented online. YouTube is very efficient in spreading both good and bad news, and it is used by children and the young in particular. ENO virtual school has its own channel there. The virtual school's play The Drops Of Life was also spread via YouTube. Teachers have translated the play into 40 different languages including all the official languages of South Africa.

The basic principle of the school is that it's free of charge. Free services such as blogging and Google, who has created an application for schools for working on documents online, have been utilised in spreading the message. Without these services it would have been impossible to gather a document collection about climate change or to arrange a play writing competition whose material can be found free from our website. Social media offers great chances to a more comprehensive networking. Friendships grow stronger and the network becomes more efficient when people are in touch on a daily basis sharing successes and failures. The most efficient new tool is Facebook that the ENO virtual school uses to extend its operations and to recruit new schools. Thousands of members have joined the Facebook group and the majority are from outside Finland. Many have also participated in Facebook events. Facebook brings learners to a social environment making the virtual school as a part of everyday life. Facebook has been used to spread environmental awareness also in

Finland – even though sometimes it feels that there's a longer distance to Helsinki than there is to Congo from Joensuu. Through Facebook, the network has grown exponentially and it has got people interested in environmental issues also from outside the virtual school. Facebook is an excellent way of presenting concrete actions as text, pictures and videos. Finnish people may consider the openness of Facebook a bit odd but without openness people won't find the network. Everyone is welcome to join us.

Networks bring strength to ENO

ENO is surrounded by support networks who aid the virtual school with their resources. First network of this kind is the network of mothers. Teachers educate children at school but often it is the responsibility of the mother to bring up her children, especially in the developing countries. Many mothers also worry about the state of the environment. This network welcomes mothers from all over the world. The most noted members in ENO's mother network are Jane Goodall, Queen Noor and Margot Wallström. Jane Goodall's Roots&Shoots program works in close collaboration with ENO.

ENO PROGRAMME
GREEN CITIES NETWORK

Ljubjana, Slovenia

Taichung, Taiwan

Cape Town, South Africa

Tree planting ceremony in Turkey.

As a new venture we are starting collaboration with the cities of the world. The cities that belong to the ENO Green Cities network have promised to support environmental activities at schools, especially the planting of trees to green areas and nearby forests. The first cities chosen as members of the ENO Green Cities network were Cape Town from Africa, Taichung from Asia, Ljubljana from Europe and Sao Paolo from Latin America.

Music gives wings to the message

A recently published Finnish study has shown that people's willingness to listen to music is biological, and that at the gene level listening to music is associated with social communication and feelings of affection. Music belongs to every known culture. It is a universal language understood everywhere.

In my teacher's profession I have taken music as a part of different school subjects. I have also written musicals. After a win at a national composing competition, I was encouraged to write music also for the ENO virtual school. I have written songs that have been sung in events all over the world. The songs are about climate change and planting trees, for example. Their basic message is acting together for a common cause, for the environment in other words. There is power in music and in singing.

I have received plenty of positive feedback, and inspired by that, I have offered my songs also to local music teachers. It was awesome, for example, hearing the song I had written for the virtual school Hi and ho we plant trees when nearly 10 000 children were singing it to celebrate the arrival of summer in Joensuu's Sing Arena. I'm certain that the message of the song reached many singers as well as listeners.

ENO virtual school's first play The Drops Of Life had its premiere in May 2006 simultaneously in 200 schools in 65 countries. The play describes the importance of teamwork and planting trees. I wrote the songs for the play and made the backing accompaniment, which all are available online. It has been quite interesting hearing songs, for example Water Blues in Arabic.

I wrote a song called Act Now! Forest Matters to pay tribute to the International Year of Forests. It was also the theme song in our international conference whose protector Jane Goodall is. Awareness of the forests of the world and the actions taken to protect them can be spread also with music.

Helmi Vanhanen performing 'Act now! Forest matters' at the Act Now Conference 2011.

Act Now! Forest Matters

Feel it in the air, remember what's been told:
A third of the ground out there is our greenest gold.
Don't waste it, show you care so that people everywhere
Understand and see our forest from the trees

You need to act now, plant it in your heart
The simple fact of how we can do our part
For future generations. Step up and make a vow,
'Cause forest matters, our time is now.

They are homes for plenty of species in the Earth,
A livelihood to many, of so much they are worth.
Use wisely what's been given and give back what you owe.
We need them for our living - we want our forest to grow.

You need to act now, plant it in your heart
The simple fact of how we can do our part
For future generations. Step up and make a vow,
'Cause forest matters, our time is now.

This seedling in my hand, I will let it grow
for those who built our land so many years ago.
We have all the keys and after centuries
if our game is fair the green gold will be there.

You need to act now, plant it in your heart
The simple fact of how we can do our part
For future generations. Step up and make a vow,
'Cause forest matters, our time is now.

Peace and sustainable development

Without peace there is no sustainable development and the ENO virtual schools wants to promote peace. As a sign of this is the annual planting, there is an annual planting of Peace Trees on 21 September, on the UN International Day of Peace. Trees were planted the first time when the late Wangari Maathai won the Nobel Peace Prize. Al Gore, another person to inspire the virtual school, has also won the prize. Peace and acceptance are promoted by taking care of the environment and also by concrete actions. Peace is a universal value that lives in all of us.

The tenth President of Finland, Martti Ahtisaari, has also won the Peace Prize. As a tribute to him, people celebrated Ahtisaari Day directed at schools for the first time in November 2011. The theme of the day is reconciliation. The ENO virtual school also participated in the event in its schools worldwide. Disagreements and solutions were discussed at schools. Many schools planted a tree to tribute the day. This also happened in the joint event of Israel and Palestine which started collaboration between these neighbouring countries in the ENO virtual school.

We Finns are quite environmentally aware, yet passive. We must focus on children and youth in Finland and abroad. Children must be raised as environmentally aware and active citizens and for that every possible measure is needed. Through internationality and with its varied methods, ENO virtual school gets students interested in their own environment and gets them to participate and act for the good of the environment. Little drops become an ocean, and trees grow into forests. Animals, children and nature were important also to my role model Saint Francis of Assisi. He mentioned in his day: "As long as there are children, flowers and birds in the world, there is hope".

About the author

Mika Vanhanen is a classroom teacher who founded Environment Online in 2000. He is coordinating this programme and has received many awards for that, awards for this, most recently the State Award Award for Public Information in 2011.

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Sustainable lifestyle

Background: Decade of Education for Sustainable Development 2005–2014

The importance of sustainable development in Finnish education policy has increased in recent years. It is emphasized in the Government's Development Plan for Education and Research for 2007–2012 and in the forthcoming Draft Development Plan for Education and Research for 2011–2016, which was going through a consultation process at the time of writing this article.

Sustainable development aims to guarantee equal opportunities for a just, safe and healthy life for current and future generations while safeguarding the preservation of ecological carrying capacity and natural and cultural diversity. The current levels of natural resources usage and our patterns of consumption, production and operation threaten the Earth's capacity to cope. People's health, safety and well-being are also being endangered by several factors.

The United Nations Conference on Sustainable Development, Rio 20+, will be organised in Rio de Janeiro in the summer of 2012. One of the key themes of the conference will be green economy, which is seen as playing an essential role in achieving the goals of sustainable development and eradication of poverty. In addition to environmental and development policies, sustainable development must also be included as part of economic policy, in order to achieve real changes.

In Finland, the requirement of sustainable development focuses attention on climate change, the state of the Baltic Sea, conservation of natural diversity, and adaptation to rapid changes in the global economy and to demographic change. Besides climate change, the most significant global challenges are related to global poverty, inequality and population growth. These global challenges are also in evidence in Finland.

Experiential learning and wondering at nature provide pupils with positive experiences of nature.

In 2002, the United Nations General Assembly proclaimed the years from 2005 to 2014 to be the *Decade of Education for Sustainable Development (DESD)*, which is being co-ordinated at international level by UNESCO. The vision of the UN decade is to develop a world where everyone has the opportunity to benefit from quality education and learn the values, behaviour and lifestyles required for a sustainable future. In Finland, the authorities drew up a strategy entitled *Sustainable development in education – Implementation of the Baltic 21E programme and Finnish strategy for the Decade of Education for Sustainable Development (2005–2014)*. The objective was to educate motivated citizens who are committed to a **sustainable lifestyle** and who want to accumulate the knowledge, skills and attitudes needed for promoting sustainable development as an integral part of lifelong learning.

Learning a sustainable lifestyle will have an influence long into the future. School education must develop pupils' future-oriented thinking and building of the future upon ecologically, economically, socially and culturally sustainable premises.

Different areas of competence

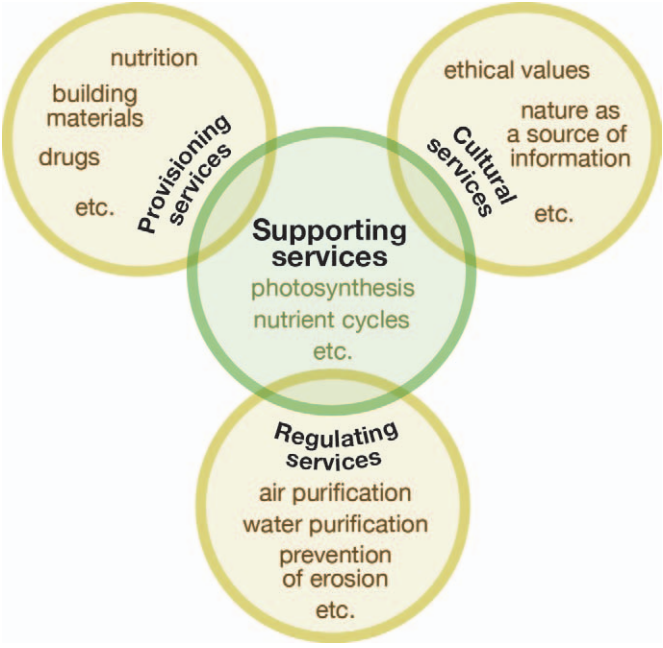
Knowledge: environmental awareness, significance of ecosystem services and prerequisites of a sustainable lifestyle. Positive experiences of the environment develop children's and young people's **environmental awareness**. The younger the children in question, the more important it is to focus positive attention on the beauty, pleasantness and fascination of the environment. Children cannot be blamed for environmental damage. Instead, it is important to develop their **environmental sensitivity**. The best way to do this is to perceive the environment by making equal use of the senses of sight, hearing, smell, taste and touch. Diverse sensory observation also develops older pupils' environmental sensitivity, which forms the basis for educating environmentally aware citizens.

Experiential learning has proven to be the best way of promoting adoption of a sustainable lifestyle. Through personal experiences, pupils' **relationship with the environment** becomes deeper, creating personal meaning for sustainable lifestyle choices. The key factors of environmental education can be summarized as per the figure below.

Key factors of environmental education.

Progressive inquiry learning methods allow pupils to gain in-depth understanding of aspects concerning natural, built-up and social environments. They need to know how nature works, how human activities change the environment and in what ways the environment can be nurtured. It is important for pupils to become aware of their own dependence on the environment as well as of the consequences of their own actions and how these are linked to environmental problems. Guiding children and young people towards **ecological thinking** calls for familiarisation with local nature and environments. In upper grades, pupils move from observation of their own local environments to dealing with global problems and their potential solutions. In expanding global awareness a special focus should be laid on understanding the dynamics on how the globalization effects the local and how the local and the global are interlinked. The central task of education is to equip learners to make informed and responsible choices.

At present, the theoretical foundation of a sustainable lifestyle is based on the concept of **ecosystem services**. Ecosystem services refer to all material and immaterial benefits that people obtain from nature. Our life, well-being and culture are fully based on nature. We



Ecosystem services are divided into four categories: supporting, regulating, provisioning and cultural services.

need food, fuel and other basic commodities derived from different organisms. Provisioning of all the above-mentioned services is based on much more complex, supporting ecosystem services, such as nutrient cycles and photosynthesis.

Ecosystem services are free and essentially at the disposal of each and every one of us. However, they are distributed very unevenly over the globe. Ecosystems are also vulnerable and limited. The reason behind many conflicts and wars is damage to ecosystems or struggles for the right to use the ecosystem services available in a certain area. Typical examples include desertification and declines in fish stocks. The survival of ecosystems depends on human activity. The key in school education is for pupils to understand that a human being is part of nature's great diversity. People have the chance to destroy, to preserve, to protect, or even to restore and to revitalize ecosystems and biodiversity. Also the wise, ethical and responsible choices are open to the humankind, and already in the making , but on a too modest scale.

Skills: sustainable competencies

Building a sustainable future calls for skills relating to ecological mobility, living and eating. Every one of us can influence the environmental burden caused by these actions through our own behaviour. The Finns' greenhouse gas emissions amount to an average of 10,000 kg per year. About one third of emissions come from housing, another third from transport and the remaining third from consumer goods. Limiting global warming to two degrees would require cutting emissions to about 2,000 kilos per year. Means of cutting emissions include energy savings and reduction in the use of fossil energy sources in particular, switching to renewable sources of energy, such as wind, bio, water and solar energy, and **changing consumption habits**.

Building a sustainable future also requires sense of history and visionary skills. What kind of sustainable cultures in past, in present and in future we have had, have and could have? How to create paths to sustainable futures and how to do it together with many, also internationally and globally? How to learn to share in a just way nationally and globally? Skills and competences are answers to all these questions.

Learning sustainable lifestyles requires practice. Good practice for sustainability should be rooted in the operational culture of the schools as well as into teachings of all subjects. At school, this means developing environmental thinking and skills, listening to young people

Students of SMA Negeri 13 Medan in Medan, Indonesia, planted teak and avocado trees around their school area on 20 May 2011.

and, say, expanding learning environments. Ecologically sustainable development may be carried out at school through environmentally friendly everyday practices. Pupils can study together saving energy and water, waste recycling and preventing waste generation, sustainable consumption and sustainable food choices. They can obtain a theoretical basis for learning a sustainable lifestyle by means such as studying product **life cycles**, calculating their own **carbon footprints** or comparing the **ecological backpacks** of different products. Awareness of the fact that their own actions matter motivates them towards adopting a sustainable lifestyle.

Social and cultural sustainability skills cover **inclusive thinking**, life skills and the ability to take personal responsibility. In these respects, education focuses on cooperation, interaction skills, consideration for other people and good manners. Through participation in discussion and decision-making children and young people get the feeling that they can make a difference.

Culturally sustainable development involves tolerance towards other people. Schools can find partners and experts to co-operate with in their local areas. Children's and young people's empowerment is consolidated by knowledge of their own roots and possibilities for making good changes: where I come from, my cultural background, the things that I want to commit to promoting and the people I want to do this with.

Students attending a workshop at the Act Now! ENO conference 2011.

Climate change campaign celebrations in Lebanon.

In order to become reality, a sustainable lifestyle calls for **structures, technologies and approaches and visions that maintain and promote sustainability**. It is important to recognize the connection between a sustainable everyday life and its external prerequisites in the local community as well as in production and consumption patterns near and far. Examples of the infrastructures of a sustainable society include cycle paths and an efficient public transport system, energy networks using renewable sources of energy, or eco-efficient buildings. Citizens and consumers can also be steered towards a sustainable lifestyle by means of taxation, legislation, certification and eco-labelling. Art also has a wide range of means to inspire environmental responsibility. Taking action to promote a sustainable lifestyle also involves **knowledge of various steering methods** and advancing their introduction.

In terms of economic sustainability, schools can educate pupils to become conscious and competent consumers, guide them towards moderation and frugality and to share, lend, borrow and reuse goods, and to introduce them to sustainability of products and services and to **fair trade products**. Learners' thinking is steered from the culture of consumption towards an economically sustainable culture. It is important for learners to learn to understand the mechanisms of the global market economy and to recognise how global and local economies are intertwined and how they can favour more equitable and healthy economic development through their own choices as citizens, consumers or customers, or in their future employment. Questions of a more modest lifestyle and economic degrowth cannot be avoided. It is important to recognize that in each country there are groups of people who consume too much, who already practice sustainable lifestyle and who need more for a dignified life.

Students of Viinijärvi school in Liperi, Finland, plant a tree for the 10th anniversary of ENO on 21 September 2010.

Education for sustainable development at school provides children and young people with opportunities to practise **critical thinking** and participation in decision-making processes as well as taking responsibility and **collaboration**.

Will: the will to act in a sustainable manner as a responsible global citizen

Acquisition of the knowledge and skills required for a sustainable lifestyle is motivated by attitudes, values and will. A sustainable lifestyle is about **choice**, **responsibility** and **action**. Learning a sustainable lifestyle starts with participation in dealing with matters concerning one's own school community and extends to the local community. Interaction with people from different cultural backgrounds opens up opportunities to understand diversity and expand the shared sphere of life. An advocate of a sustainable lifestyle reaches out to co-operate even with far-away partners, who may be from different continents. The key is to commit to the common good, which may take a concrete form of action such as planting trees or may come in the shape of a cycling event, for example.

Citizens need to be able to assess their own lifestyles and have the will to reform their ways of action as builders of a sustainable future. Critical reflection of our own lifestyle and pondering what really matters in life helps us perceive opportunities for change. As part of growth towards a sustainable lifestyle, empowerment takes place especially in those pro-

cesses and situations where learners recognize that things are not right and that they need to do something to bring about change. This may be by refraining from perpetuating the sufferings of farm animals, saving natural resources, protecting the environment, a development co-operation campaign or, say, fighting racism. The sense of empowerment opens up opportunities for and forms part of making a difference. Joining networks of like-minded people, social media and other groups brings about confidence in the possibility of change and may lead to structured social participation. Schools play a key role in guiding learners towards constructive criticism and innovative social action.

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The learning process in environmental issues at the ENO school 2000-2010:

Assessment of the survey made for ENO teachers, cooperators, and stakeholders in 2011

The survey conducted in 2011 had three basic aims, the first of which was to obtain data for describing the learning process on environmental issues, and to find out how the process takes place in various subjects as the general learning goal of the ENO schools. Because of the variation in the training of the teachers taking part in the project, they were first asked about their personal experiences, and then about what they found to be their students' most important achievements during the learning period. This is of obvious interest, because one might expect that teachers with different kinds of studies at universities and teacher training institutes would stress different learning achievements.

The second point of focus was success and failure: what has been successful in the ENO project, and what should be improved on in the instructions, learning materials, mutual communication, and feedback on the results.

The third aim of the survey was to collect data for building the basis of ENO environmental pedagogy, which can later be used to improve the process in ENO and in other international learning processes concerning environmental issues.

The basis for the assessment of the survey

The survey was made on the Internet, involving the participating schools and teachers of the ENO project in 2011. The answers came from 38 countries and were collected by Mika Vanhanen. The taxonomies for the evaluation were obtained from the values didactics of Reijo E. Heinonen (1993, 36).

According to the taxonomy of learning results by Benjamin Bloom, the results have three levels: a) knowledge, b) skills, and c) attitudes. This was a useful tool for the assessment, and many of the answers could be identified with the help of this distinction.

Using another taxonomy by M. Roth, the learning results were more specifically described as a) repetition, b) transfer, and c) problem solving. This taxonomy concentrates on the formal learning process as such rather than its contents. Its advantage is that the descriptions given by the teachers can be used to cover the whole process of learning during the ten years of assessment.

Thirdly, cognitive functions are assessed with the help of three categories in order to describe the level of involvement of the teachers and students in the learning process. These are a) memory, b) conclusion, and c) awareness/becoming conscious. They differ from each other with respect to the level of creativity. This means, e.g. that although memory as a cognitive function is more than repetition in the taxonomy of M. Roth, it is furthermore usually seen as less than conclusion or awareness as a creative phenomenon.

The questions made to the teachers in the survey

The survey questions can be divided into four groups. In three of the questions, the emphasis is on the self-assessment of the teachers. In question 7, the teachers were asked to describe the most important issue in the project. The question was therefore expected to produce subjective assessments. Also in open questions 10 and 12, 'What are the most encouraging moments in ENO?' and 'Personally, what has been pedagogically most important in participating in the ENO programme?' the standpoint was very personal and combined with emotional experiences.

The perspective in question 11 is on how the teacher evaluates the achievements of the students: 'What has changed in the minds of your students during the project?' Here the teachers were challenged to be objective in assessing their students, also using their previous knowledge about them. Needless to say, teachers must be cautious when using previous impressions about the work of their students. The kind of practical and emotionally motivated learning that is the goal of ENO can change the learning strategies and interests of the students. It is possible that the students connected to the ENO process show quite a new side of their personality. Their intensity of commitment towards tree planting, for example, points to this direction.

In a third type of question, no. 9, we asked: 'What have been the most important teachings regarding the environmental issues?' Here the perspectives of teachers of different subjects might vary, and according their values basis, the 'most important teaching' could depend on the contents of teaching. However, it can already be said that because of the teachers' enthusiasm and devotion towards environmental issues, these differences did not appear. It seems that every teacher is applying the environmental information of ENO in his or her lessons, pinpointing the mutual cooperation as the most important part of ENO.

Fourthly, question 8 on 'the reasons for the success of the ENO programme' represents another perspective towards assessing the ENO project, the focus being on the whole project. All participants, including teachers, stakeholders, and students, and their interaction and cooperation are evaluated through this question. As expected, it is the attitudes of

the participants that matter the most. It is significant how unanimously the teachers express a common positive attitude towards the ENO project.

The results of the ENO survey 2011

The results of the survey can be summarized in the following eight points. They are based on the findings indicated in the table which sums up the teachers' responses to the six questions at hand. The taxonomies are indicated by the Roman numerals I-III, numbers 1-3 denoting the three levels in each taxonomy. The numbers in each cell refer to the number of responses that were categorized under each level.

QUESTIONS	I B. Bloom			II M. Roth			III Cognitive function levels			TOTAL
	1 Knowledge	2 Skills	3 Attitudes	1 Repeating	2 Transfer	3 Problem Solving	1 Memory	2 Conclusion	3 Awareness	
7	9	13	9		16	3		3	17	70
8	2	20	21		12		1		5	61
9	9	23	9		1				13	55
10	2	27	19		16	1			8	73
11	3	10	15		1			2	27	58
12	2	19	28		4	1		1	3	58
	27	**112**	**101**		**50**	**5**	**1**	**6**	**73**	

A summary of the results to questions 7-12

1. The ENO project generates new challenges and alternatives. It is not based on repeating old modes of thinking about and acting on environmental issues (II/1=0, i.e. repeating as a learning result is not mentioned in relation to any of the questions).

2. ENO creates a new attitude towards nature, sustainable development and forests through the planting of trees (I/3=101). This is the issue that had the strongest impact on the participating teachers and students. The results emphasize the 'interest-directed learning' (Isolde Steiner), which is also in focus in the present didactic (Reijo E. Heinonen). A genuine interest can be evoked by using genuine contents and earnest commitment. This is in direct opposition to pedagogical working arrangements which try to motivate students through elements such as entertainment or rewards, not belonging to the ethos or contents of the learning process.

3. The precondition for the change of attitudes is the awakening of new awareness about values connected to environmental issues. This means that a change in the whole worldview is needed for the development of global ethical responsibility (III/3=73). In other words, one acquires 'new eyes' to see the world around oneself. This new perspective is no longer egocentric but allocentric, taking into account the whole of humankind. In order to be able to reach this, we need a new pedagogy which urges to develop the imaginative capacity of children and their teachers.

4. A new attitude and a new awareness lead to a new organization and transfer of this knowledge to the environmental perspective. Furthermore, they lead to a new assessment of the state of the world and the role of human beings as a part of the whole. What teachers and students have learned before is reorganized and the global perspective emanates through the whole curriculum (II/2=50).

5. In order to be able to reorganize the previous knowledge, teachers and students need new information about environmental problems, such as climate change, and about the means that individuals have to work towards their solutions. It is significant that the information delivered through the ENO schools functions at an international level, influencing opinions and giving advice and inspiration in a consistent way worldwide (I/1=27).

6. The new consciousness, new attitude, and the reorganization of the previous information together lead to the development of new skills in the protection of nature and environment. They may also lead to a new understanding of nature, so that, e.g. trees are no longer con-

sidered instrumentally, as something which only materially contributes to our wellbeing, but as intrinsically valuable, i.e. valuable as such. From the professional point of view, this improves the pedagogical skills of the teachers (I/2=112).

7. Although the reorganization of the learning material is combined with problem solving, this process does not show in the survey. Two factors may explain this: The answers tend to be rather broad in scope and general in meaning, and furthermore, the process of conclusions is not differentiated in the survey (III/2=6). It is also possible that on many occasions the process of teaching already implicitly involves some kind of problem solving, and teachers understand that this is a natural part of their profession. It is therefore not necessary for them to label this as problem solving.

8. The role of memory has not been highlighted either, for the same reason (III/1=1). Memory is a precondition for all learning and teaching.

It is important to realize how the encouraging and positive ethos of the ENO project influences and inspires teachers and students to human innovations and personal commitment in the global perspective.

The participating group of countries and teachers and their access to information about the programme

One of the survey questions was: 'How did you get to know about the ENO Programme?' Answers to the question were given by 70 teachers from 21 countries on three continents, mostly in Africa and Asia. There was one school from each country taking part in the survey, apart from Romania and Portugal, where there were four and two schools, respectively.

The countries were the following: Azerbaijan, Bangladesh, Belarus, Bosnia, Bulgaria, Burundi, Eritrea, Ghana, Lithuania, Malaysia, Namibia, Nepal, Philippines, Portugal (2 schools), Romania (4 schools), Serbia, Slovenia, South Africa, Taiwan, Turkey, Zambia.

The age group with the largest number of teachers was 40-49. This means that they must have been professionally active for quite a few years, which in turn has presumably helped

Student group celebrating ENO Tree planting day in Point Vert Environnement, Brazzaville, Congo RC.

in integrating the new environmental information into the curriculum of various subjects.

The answers to the question on how the teachers learned about the ENO programme shows that the role of information and communications technology (ICT) has been substantial. 43% of the teachers learned about the programme through the Internet. Moreover, in 15% of the cases the connection to Joensuu and ENO was established through e-mail. The colleagues of the teachers were another important source of information about ENO with a share of 34%. Other, undefined ways lead teachers to cooperate with ENO in 6% of the cases.

It needs to be stressed that all endeavours of the teachers and students have been based on voluntary, non-profit activity. This tells of the earnest commitment and moral sincerity of the participants.

The benefits of ENO for the teachers

In addition to the open questions 7-12, the survey also included some half-structured questions. Question 7 contained both open and structured sections. If we consider the structured part of the question with its three categories, 'increase of professional skills', 'new ideas on pedagogical/theoretical issues', and 'personal enrichment', the professional side of the project is highlighted.

The most important contribution of the project to 57% of the teachers was 'new ideas on pedagogical/theoretical issues', and to 19% of them 'increase of professional skills as teachers'. 24% of the teachers mentioned 'personal enrichment' as the most important issue.

This means that the aims and achievements interpreted by the teachers and differentiated through the taxonomies mostly linked to the professional and pedagogical process. This result leads us to dispute the potential view of the project as an actionist, one-task movement, and emphasize the long-term pedagogical impact of the whole ENO project. This challenges us also to sum up the pedagogical side of the project so that the experience gained through ENO and the new ideas can be distributed to future partners and teachers.

Question 8 was also half-structured, and it shows that the most significant factor in the success of the ENO Programme has been 'the engagement of the teachers' (57%). The next important factor influencing the success is 'world-wide political emphasis on the environment' (41%) and 'idealistic commitment of the youth' (37%). Reflecting on the factors motivating the engagement of the teachers, we could think that the 'political emphasis' comes from outside ENO and the encouraging commitment of the youth from the inside. As an inspiring element, many of the participants also mentioned the positive role of Mika Vanhanen as the leader of the project.

Defining the values behind the project

Question 13 focused on the distinct values that motivated the students in the ENO Programme. The teachers were asked how they saw the influence of a) having-values (concerning material, technical things) b) loving-values (social relationships of people in communities) and c) being-values (concerning personal values and experiences dealing with basic questions of the worldview).

The majority of the teachers (38%) assessed that 30% of the motivation of their students was created by having-values. Four teachers assessed that these values rated as high as 90%. This indicates that the students are to a great extent motivated by the material and technical having-values.

This can be interpreted through the concrete actions of tree planting. Also the immediate benefits which the improvements in ICT skills provide explains this result. Still, it should be noted that the significance of the material/technical values was not overwhelming, and also loving-values were important. 32% of the teachers assessed that their students were 40% motivated by the loving-values. This can be understood against the background of mutual interconnectedness and cooperation in the project. According to 32% of the teachers, then, being-values created 30% of the students' motivation, but interestingly, the being-values were in fact the predominant (90%) source of motivation for the majority of the students. We must, of course, remember that the assessments were made by the teachers. Despite this perspective, the results may mean that the students received new ideas related to their whole worldview.

Through understanding the various values of trees towards a new ecological worldview

The distribution of values shows that the students do not assess forests and trees only from the perspective of material and economical benefit (having-values). Their social values (loving-values) show that the working community is also appreciated. The forest can be a living environment, the home or source of new creative ideas, and furthermore, a source of new perceptions and thoughts (being-values). Questions 14-17, then, dealt with how the students assess the instrumental or intrinsic values of trees.

It is possible to define human cultures just by asking what kind of a role the instrumental and the intrinsic values have in a society. How are the kind of phenomena that are not reducible to money – let's say the love of parents towards their children – assessed as an end in itself? What kind of a role do immaterial values have in the society? Are work, action, education or beauty assessed mainly as instrumental values that can be used to gain something better that is usually measured in money? In this distinction it is possible to see a vital criterion also for the future. Do we have, on a large scale, values which are ends in themselves and which do not 'cost' anything other than human awareness and consciousness? By pointing out the necessity to strive towards harmony between instrumental and intrinsic values concerning nature and especially trees, the ENO Project is contributing to ethically

sustainable development, and through this, towards a more harmonious world culture.

This creates preconditions to understand that unlimited growth is not possible in a limited ecosystem. There is one exception: unlimited growth is possible in the human consciousness by immaterial means.

At this point, it would have been of great interest to know how the instrumental and intrinsic values of trees are assessed on different continents. Are there differences? In any case, the ability to make this distinction exposes something important about the culture of a society.

Question 14 was: 'How much in percentages are your students motivated by the value of trees as the target of business and trade (instrumental values)?' 21% of the teachers assessed that 30% of the motivation towards tree planting was created on the basis of the instrumental values of trees. A further 9% considered these values almost the only motivating values (90%). At the same time, 4% of the teachers did not see that instrumental values had any motivating impact. This result leads us to expect that immaterial and idealistic values would have a rather large role in regarding trees as intrinsically valuable.

This is in fact the case, as revealed by the answers to question 15 concerning tree planting: 'How much in percentages are your students motivated by the value of trees as living organisms, "friends", and playmates (intrinsic values)?' The importance of the intrinsic value of trees comes out in the assessment of the teachers, 15% of them observing that 90% of the motivation of their students is created by these values. Also, according to 21% of the teachers, 50% of the motivation of the students is created by these values.

Reflecting on this result, we state that it is the intrinsic values of trees that are more important in planting trees than the instrumental values. How are we to understand this, when on one hand, forests are economically important to many countries, and on the other, their significance for the conservation of the planet and protection against climate change is articulated in scientific terms? Where does the emotional and philosophical orientation towards trees and forests come from?

The next questions, 16 and 17, give some clues. Question 16 was: 'How much do your students observe trees and environment from the human point of view?' According to 29% of the teachers, 50% of their students observe trees from the human point of view. This result is possibly affected by school education and its human-centered orientation. It must be remembered that the ecological orientation, born especially after the publication of the Report of the Club of Rome, The Limits to Growth in 1972, is not very old, and the information in the teachers' textbooks does not usually contain the latest state of discourse.

Encouraging results, however, are obtained in the answers to question 17: 'How much your students observe trees and the environment from the point of view of the whole ecosystem?' According to 28% of the teachers, 50% of their students observe trees from an ecological point of view. This means that the human and ecological points of view are represented equally. A difference is revealed, however, when we observe the groups of more committed students. According to 12% of the teachers, ecological thinking creates 90% of their students' motivation. The success of ecological teaching is perhaps even clearer in the finding that 44% of the teachers consider ecological thinking to create 60-90% of the students' motivation to observe and care about trees. In turn, there were no observations of students for whom the ecological motivation would have been under 30%.

Pedagogical conclusions

For future development of the ENO programme it seems necessary to find a pedagogical model which could combine leisure and non-profit activities with the educational duties of the students and teachers. As mentioned above, we view this as interest-directed learning.

In order to be able to identify the knowledge, skills and attitudes that the students have acquired through their hobbies, teachers need to develop their imaginative capacity. This could enable pedagogical innovations needed in finding connecting points between the aims of the school lessons and the knowledge, skills, and attitudes of the students.

An example could be a student whose hobby is philately and who is trying to write an essay on history. His assignment can be formulated so that he can use his expertise on the pictures and symbols on stamps. Alternatively, he might be able to tell the history of, e.g. ecology

using stamps and other materials of his own, describing the decisive moments in the historical development.

What is essential in this process is that the previous knowledge, such as that of stamps, can be connected to the aims of the learning process. The old knowledge forms the basis for learning new contents which are either given or chosen. When the basis is pleasant and known well, it provokes an interest to the new learning material. The interest begins to direct the inventing and sampling of new data and motivates to committing to the new learning process.

Another useful tool for the ENO learning process could be the causal attribution theory by B. Weiner and A. Kukla (1970, cited in Steiner 1983, 94). It could help change the assessment of the failures and conflicts in the world governance of ecological development to a constructive direction. Causal attribution assessment could be used, e.g. to examine the reasons behind the difficulties to implement the Millenium goals.

First we have to decide if famines and poorness depend on external circumstances or internal human orientation. Some people like to say that poorness and famine are dependent on the expansion of the world population; we cannot reduce poorness and famine because this is not in our control. According to the well-known proposal by Thomas Malthus, nutrition grows only in arithmetic but the world population in a geometric equation. This leads to

Kindergarten Pedenjped in Slovenia participates in Tree planting day in September 2010.

famines and hunger catastrophes. If we think that this is an unavoidable, constant issue or a law of nature, we are tempted to do nothing other than try to secure our own survival. This can be taken as an example of an external steady causal attribution.

If we on the contrary accept the correlation between the growth of the world population and the growth of nutrition as an external challenge to be faced to change the development, we see the circumstances from a different perspective, as ones that can be controlled and influenced. We develop in this hypothetical case various theories as to how to control the growth of the population and increase the production of food.

Secondly, we can reflect on our own role in this development by saying, e.g. 'I have no information about world politics, and also, I do not have the gift of abstract thinking'. In this case we are describing internal unchangeable issues, which seem to allow us a fatal passivity. It could be called 'learned helplessness'. If we, however, understand that the problem can be solved and the inner reasons can be controlled, we use a different causal attribution strategy which challenges us and gives hope.

The ENO project, focusing on global environmental issues, could adopt such pedagogical tools to convince people of the necessity to change their causal attribution strategies. Instead of favouring passivity by leaning on the inner and outer unchangeable reasons, they could be encouraged to think that both the inner and outer reasons for the problems can be changed. This requires an analysis of the students' causal attribution strategies in the problem solving situations. Furthermore, it is necessary to be aware of how the students analyze the problems.

The aim of ENO could be to act as a change agent in environmental problem solving. Factors labelled as inner or outer unchangeable, steady reasons can be transformed into inner and outer solvable problems and changeable attitudes and actions. Tree planting is one example of how this can take place.

The precondition for the growth of the attitudes and actions for sustainable development is that the tree planting is a conscious process which informs students about the meaning of the single actions in the perspective of the whole. Trust in the possibility to change things

and in the efficiency of tree planting – despite difficulties and setbacks – requires closer analysis and a deeper sense of the role of trees in the ecosystem. During this process it is possible to find also other innovative means to develop sustainability of the ecosystem.

The results of the ENO survey support this task, because the programme's greatest impact on the students seems to be in the realm of attitudes and awareness (table 1). It is possible to interpret this as a sign of a new worldview, implicating a new global ethical responsibility. It is our hope that is a contribution towards the greatly needed change of attitudes from egocentric towards allocentric solutions to world problems.

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ENO School – Global interconnectedness related to trees and forest

Forested regions everywhere in the world can typically share the developmental problems of rural areas. The challenges of rural forested regions are nowadays mainly linked to the degradation of forest ecosystems. According to the mainstream understanding, this process is causing biodiversity decline and less opportunities of livelihood. A long time before the theories of biodiversity were introduced, the development of mankind was linked to the change of forested environments into agricultural fields and further from agricultural environments to urban industrial and service-based environments.

During the last few decades, especially educated young people have started moving from the cities to rural villages, where they are connected to everywhere in the world through sophisticated ICT applications. The idealism that this 'back to the forest' –thinking is based on has gained only very limited popularity in the post-modern societies and the main flow of people is still from the forests to the towns and cities. However, ICT is increasingly available also to people who are living in the forest, on forests and for forests. They are able to share knowledge efficiently and may feel concrete interconnectedness even if they live far away from each other. The ENO School has shown that the concept of Internet-based networking related to sustainable development and forests works in practice between teachers and students of many countries and continents.

Forests – bioresources for the global village

The world's forests cover 31% (4 billion ha) of the total land area. This means that globally there are 0.6 ha of forests per capita. Five countries (Russia, Canada, Brazil, USA, and China) have more than 50% of the world's forests. Forest area variation per capita is great, and even within one country this variation may be remarkable. For instance, in the most northern regions of Europe, in Finland, Russia, and Sweden, the forest area per capita is more than ten hectares, while in the densely populated Central Europe in Belgium, for instance, the forest area per capita is less that 0.1 ha. Everywhere – in Africa, for instance – the forest area per capita varies greatly from country to country and the variation is even higher than in Europe.

During the last decade, global deforestation and forest loss has been annually about 13 million ha. Although the area is far too large, the upside is that the loss has been 3 million ha per year less than in 1990s. Annual afforestation and forest expansion have been about 7 million hectares during last few years. Net losses have been the highest in Africa and South America, while in Europe and in Asia forest area has acquired net gains during 2000-2010. The Asian net gain is mainly caused by the huge afforestation programmes in China. China currently has the highest afforestation rate of any country or region in the world, with 4.7 million ha of afforestation in 2008, for instance (Qu 2011).

Researchers have proposed that the forest area change in a country follows the forest transition (FT) theory. It is evident that at the beginning of the development, a country is characterized by high degree of forest cover and low deforestation rates (HFLD countries). The history of forests has shown that due to the increase of population and in many cases due to the industrial development, the forest cover of countries has started decreasing. At a certain stage during the deforestation development, a certain stabilizing of the forest cover takes place and the forest cover may even start increasing due to the active afforestation. Nationwide the nuances of forest development vary from country to country depending on the population growth, the developmental aspects of the economy, and forest policies of the governments.

The ENO School has the great challenge of exchanging information and knowledge from different locations at different stages of the forest transition to all the networking schools. Through the exchange, the teachers and students would understand their own path of development with respect to transitions in the environment of the other schools. The increased understanding would increase confidence towards the development opportunities in their own environment. Relevant observations dealing with the developmental framework can open opportunities for proactive action with respect to trees and forests.

Forests for the people

According to FAO statistics, 1.6 billion people are dependent on forests in different ways. Among these are 60 million aboriginals who are, with respect to every dimension of sustainability, directly dependent on forest and living in forests. In many industrialized countries an important share of the people's income is based on forestry and forest industries. In Europe alone, forest-based industries offer job opportunities to almost three million citizens (Forest Based Industries 2008).

Multiple uses of forests are the core elements of rural economy in many forested countries. Timber, non-wood products, eco-tourism, and recreation together with many kinds of ecosystem services can provide a strong basis of livelihood in various combinations and alongside with agriculture. Many of the basic problems of forest-based livelihoods are similar

everywhere in the world. People of remote locations who have been lacking knowledge will have improved access to modern networks for distributing and receiving information and knowledge, and improving understanding related to the best practices.

People who are and will be dependent on forests have to be able to meet at least two basic challenges on the basis of modern knowledge and understanding. Firstly, they need to have the skills to manage the existing forests properly in a sustainable way, and secondly, they have to be able to afforestate new forest in the areas which have been covered by forests sometime in the past. Globally, the major actions have been directed to the existing forests and less emphasis has been placed on afforestation. However, afforestation that has taken place in China during last few years shows that large-scale forest ecosystem recovery is possible if enough knowledge and resources are available. Both sustainable management of forests and afforestation of treeless areas need a lot of knowledge and understanding related to trees and ecosystems and to many kinds of interface functions between societies and forests.

Lack of native genetic structures of forest ecosystems, for instance, is a special problem of afforestation since there are no trees growing in large areas of many countries. In such cases exotic species or genetically modified trees have to be introduced to the treeless areas. This sort of challenge demands special knowledge and understanding, since the growth of trees is everywhere based on the interaction between specific genetic structures and the respective, specific environments.

A group of tree planters in Argentina.

The ENO School has good opportunities to provide even the remote schools with specialist knowledge from the most appreciated researchers of the top universities. For the university specialists, the ENO School can offer problem-oriented tasks related to rural development of villages. This requires new openness and trustful partnerships between various kinds of institutions. First and foremost, it requires good governance, a supportive attitude, and even courageous decentralization of decision-making from the central administration to the school networks in questions related to local developmental problems.

Urbanization takes place almost everywhere in the world, and from the cultural point of view of sustainable forestry, the migration of people is continuously remarkably diminishing human resources in many forested regions. However, the population, rapidly urbanized as a result of fast migration in many countries, still wants to experience forests, especially forests of the childhood environments, over and over again and loves the forest passionately and in many ways. A great number of people from urbanized societies value experiencing the forest and wandering in the woods picking berries and mushrooms. They enjoy the landscapes while also utilizing efficient forestry and competitive forest industry.

It is common that the attitudes that city and rural dwellers have towards forests are differentiating. As a result of conflicting values, the debates on forest use and the ensuing decisions evoke strong and contradictory feelings among people. All those participating in the debate on forests would like to promote the prosperity of regions and nations in their own way, while also searching for cultural, ecological, economical, and social sustainability of forestry.

The ENO School can build a bridge of understanding between urban and rural teachers and students and provide knowledge and understanding dealing with the basic ecological functions of the globe. These functions are necessary regardless of the location of the inhabitation. Internet-based study programmes might show that people are interconnected by and fully dependent on green, photosynthesizing plants, especially trees in the forest ecosystem. The carbon cycle and the related oxygen production which are fundamental for the survival of the global village are maintained to a great extent by terrestrial ecosystems such as forests. The bridge of connection may also demonstrate credibly that people have to be able to find

a balance between preservation and local and industrial utilization of forest ecosystems everywhere in the world.

The new challenges of the global village

The relation between human beings and forests is changing together with the globally connected development of societies. A new concept called bio-economy was first defined in late 1990s and then gradually introduced, especially as a tool of rural development in a great number of industrialized countries (Biobased Economy 2011). Recently both OECD and the EU published similar policy documents which outlined the opportunities to develop new bio-based economies in the industrialized countries (The Bioeconomy to… 2009; En Route to… 2007). These documents put serious emphasis on the sophisticated and sustainable utilization of forest biomass resources. Due to the remarkable resources which will be allocated for research, development, and innovations, we may expect new opportunities of development in many forested regions, and not only in the industrialized countries. New challenges are also available for the developing countries that are capable of taking this challenge seriously and providing the society with relevant education and other needed resources.

The development will be fast since especially developed countries and also some powerful BRIC countries are allocating a lot of human R&D resources for bio-economy based applications. These will promote development in various sectors from energy to nutrition and construction.

The ENO School can provide teachers and students with the opportunities to follow the latest outcomes of R&D and help people in the vicinity of remote schools to adopt bio-energy based solutions in their own villages and towns. The network can serve especially those schools that are surrounded by people suffering from poverty and lack of opportunities to utilize natural resources sustainably, especially in Africa, South America, and Asia. Sufficient ICT applications are increasingly available everywhere in the world. The challenge of skilled specialists in ICT is to design proper software applications for simple laptops and mobile phones. There are good examples of such opportunities which have been developed for agriculture and the

health sector in developing countries. The main aim is to connect talented young people of the developing countries with the fast developing knowledge of bio-economy in the industrialized countries.

Energy as an example

The most urgent area which needs efficient steps of development is the bioeconomy-based energy sector. Increasing prices and a threatening lack of fuels are causing economic and political problems almost everywhere. The solutions may be different in various parts of the global village, but ultimately they depend greatly on the skills, competence and creativeness of the local people. Global energy companies may not be able to provide proper solutions everywhere. Strong demands for finding practical and sustainable solutions are causing great challenges for education and training in various societies. Relevant knowledge is available, since the serious development of biomass-based modern energy solutions already started more than ten years ago in Europe and North America.

Although the amount of scientific knowledge has increased exponentially in the industrialized world, there is a lack of knowledge among the consumers in many societies, since it is difficult to introduce new subjects in the curricula of schools. Also, training teachers to almost completely new areas of teaching needs time and resources. This is a challenge especially in the developing countries, as the resources for supplementary training of teachers are very limited.

According to studies conducted in select countries such as Finland, Slovakia, Turkey, and Taiwan, upper level students in primary schools would like to get more information on forest bioenergy (Halder & al. 2011). Probably due to the lack of relevant information and knowledge, the students were generally quite sceptical towards forest biomass-based energy. Similarly, the perceptions of Chinese forestry students of the Northwestern Agricultural and Forestry University were critical towards forest-based bioenergy, while they were very positive with respect to biogas production, for instance. The positive perception was based on the students' good practical knowledge about biogas, as it has traditionally been used in the Chinese countryside (Qu & al. 2011). It is evident that in many African countries, espe-

cially in the countryside where the demand for sustainable biofuel-based energy solutions is great, the new knowledge would really be needed.

New innovations related to the dissemination of special knowledge can remarkably improve students' opportunities everywhere in the world. The ENO School is an excellent example of an arrangement through which updated knowledge will reach even the remotest schools. The challenges of fast-developing societies can be met with fast Internet connections and with the excellent partnerships and networks built by teachers. Would it be possible, in the global school network, to compare the best practices of energy-farming forests and to find the best possible trees for oil seed or biomass production in each location?

Students of Kazinczy Ferenc Általános Iskola és AMI, Debrecen, Hungary, planting a tree on 22 May 2009.

Innovations open the avenue for rural development – the Suonenjoki example from Finland

Various countries present excellent examples of schools acting as the necessary links in knowledge and technology transfer chains of the rural development-related innovations. Let me introduce you to just one example from Finland, which shows how important a school can be for the development of a village or a community.

One hundred years ago Suonenjoki was a peripheral commune in the forested Eastern Finland. Primary school teacher Olavi Leskinen read the gardening instructions of the Finnish School Administration from cover to cover and planted 200 strawberry plants in

the demonstration garden of his small school in Halolanmäki village in 1910. The strawberries grew fine and the teacher planted more, and finally he had some hectares of strawberry fields around the school. Strawberry cultivation was not known at all in those days, especially in the forested Finland. After the teacher bought one of the very first cars in the commune, the school children and their parents began to be interested in the teacher's strawberry fields. They quite correctly linked the new car to the teacher's strawberry business. Teacher Leskinen taught the skills to cultivate the new plant, not only in his own village but in other villages in Suonenjoki, as well.

Today, Suonenjoki is called the Strawberry Centre of Finland. The old teacher passed away in 1948, but strawberry cultivation increased, as did the standard of living along with the widening strawberry markets in the country. The growth was fast especially in 1960s, and during the subsequent years a real boom took place. The widely known strawberry festival of Suonenjoki was founded in early 70s.

The short history of Finnish strawberry cultivation contains many important elements of natural resources utilization. Technology and knowledge transfer is a precondition for the beginning of new innovative production. The teacher of the remote school had a strong vision and he worked hard to show the villagers that strawberry cultivation can really increase income. The fact that the teacher made it possible to buy one of the very first cars in the municipality was such a concrete benefit that it opened the eyes of the people in his village and in other villages, as well. People found a motivation to want to learn the basic skills of cultivation. Land-based rural economy got a new cornerstone and together with the diversification of livelihoods, the economic sustainability of the area increased remarkably.

Once the pioneers of berry cultivation had the needed skills, they could really benefit from their expertise when national strawberry business was begun in 1960s. Regional business became national and the knowledge and skills of the people in Suonenjoki were soon respected all over the country. Even if strawberries are produced in many other regions in the country, the Suonenjoki strawberry is even today a brand that is highly valued at the famous open markets of the Capital City Helsinki.

The past and the present of strawberry cultivation in Suonenjoki are based on three processes that are preconditions for the development. Firstly, schools have always been important institutions of technology and knowledge transfer. Secondly, competent teachers have the skills to introduce new technologies that can be applied in the local communities. Thirdly, competent teachers can provide students with the skills to find and learn relevant knowledge as well as with the methods to understand the applicability and importance of the new information.

Challenges of forest-based livelihoods in the bioeconomy-driven societies

Looking back at the past decades we are forced to realize that the way the world around us works is not the way it will work in the future. This fact has to be taken into consideration in every sub-field of the bioeconomy-based forest sector. It holds for modern wood-based construction, nano-fiber technology, developing intelligent materials, as well as bioenergy. The way we meet our basic energy needs, for instance, might appear a given. However, looking back only a generation or two teaches us that these systems used to function differently and suggests that during the time of the coming generations such systems might again go through fundamental changes (de Haan & Rotmans 2011). By keeping our eyes in the present only, we may think that the main energy solutions for the future already exist and only marginal changes will take place. However, will it really be possible that the rapidly growing vehicle fleet in the developing counties can be fuelled using similar products of the energy industries that have been used during last century in Europe and North America?

Any sort of fundamental change such as a radical new direction of a certain technology means that society is going through a challenging transition. It is not only meaningful to understand the forest sector transition or energy or construction sector transition but the value chains from the basic production of biomass to their end use by the consumers, or even beyond this, until the end of a product's life cycle. More and more remarkable transitions are directly connected to innovation studies and to the innovations and related technological or socio-technical changes (de Haan & Rotmans 2011).

Fundamental innovations usually require more and more research and development capacity in specialized and globally interconnected institutions than in the past. This means that a greater and greater share of young generations will be trained and employed for the RDIT (Research, Development, Innovativeness, Training) sector. In addition to the mainstream R&D-based innovation, remarkable and important innovations may fortunately also take place in small workshops, being based on in-depth thinking and the highly motivated performance of individuals. This kind of creative people may live everywhere, from the biggest metropolis to the smallest rural village. Innovations which are elaborated without remarkable resources may efficiently lead to real development steps and may be especially important for rural citizens.

Internet-based school networks such as the ENO School could well bring forth local innovators who have really helped their villages or communities. The innovations may be social or technological; both are needed. Even a small share of the resources of developmental aid, when allocated to disseminate information dealing with rural innovations, could make the contributions of donors more effective.

The importance of grass-root actions

The strawberry cultivation example from the small Finnish village shows that students and teachers of local schools may be very important stakeholders in the development of societies. The very same school-based concept of knowledge and technology transfer will be extremely important for meeting the challenges of sustainable development, especially in the poorest rural regions in the world. It is not likely that more advanced infrastructures of technology and knowledge transfer will be available to those rural communities, since everywhere in the world these kind of institutions have the tendency to operate only in the biggest cities. When the local people have a key role in the implementation of the new developmental actions, they may be able to avoid too instrumental and anthropocentric approaches to resource utilization which may be more typical of the outcomes of institutional R&D organizations.

Globally known tree-based action for rural development started in late 1970s in Kenya.

Tree planting in Miguel Obach Memorial School, Iligan City, the Philippines on 21 September 2010.

Professor Wangari Muta Maathai made one of the best-known forest related innovations, when she established the Green Belt Movement. She introduced the idea of planting trees to people in 1976, many years before innovation as a concept became a core element of development theories. The social innovation that she elaborated is based on a grassroots organization whose main focus is on women planting trees to conserve the environment and improve the quality of life. Basic knowledge of tree growth was connected to practical skills to organize people and their work. In 1986, the Movement established the Pan African Green Belt Network and expanded to many other African countries. It was realized that the needs are similar everywhere and people found a mutual interconnectedness with respect to nature conservation and sustainable forest management. As a practical outcome of the innovation, tens of millions of trees have been planted on farms, schools, and church compounds. As recognition of the appreciated social innovation, professor Maathai was awarded the Nobel Peace Prize in 2004.

Over the past 30 years, accelerating change has been one of the defining attributes of rural landscapes around the world (Ryser & Halseth 2010). The process has directly touched upon both people and their environment and threatened all dimensions of sustainability. However, this sort of change has an even longer history in the previously forested communities where forests have been totally destroyed hundreds of years ago in Europe and elsewhere. As a result of the acute scarcity of wood in the mining industry, German mining administrator Hans Carl von Carlowitz started formulating the concept of sustainability in forestry. On the basis of his observations he published the first written document on sustainability in 1713.

The networks of training such as the ENO School have an important task to combine spatially and temporally distant issues which are fundamental for learning about the sustainability of the global village. Similar perceptions and attitudes of people hundreds of years ago as well as today, and in locations thousands of kilometers apart in Kenya and in Germany, demonstrate the universal and everlasting nature of the process towards sustainability. Learning together and acting together on a global scale is the strength of the post-modern world. This is the strength of anyone who is working in forests, on forests and for forests today and in the future.

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Prof. Paavo Pelkonen qualified as MSc in Forestry in 1973, as Licentiate in Forestry in 1976 and as PhD in Forest Sciences in 1981.

Prof. Paavo Pelkonen has been teaching and carrying out research at the University of Helsinki, at the Finnish Forest Research Institute, at the University of Eastern Finland (former University of Joensuu) and at Forest Research Institute in Ontario, Canada. He has acted as Dean of the Faculty of Forestry at the University of Joensuu from 1986 – 1990 and from 1998 – 2002 and as Rector of the University of Joensuu from 1990 – 1998.

In addition to his career at the Universities prof. Pelkonen has acted as a chairman of the committee of the Research Council for Biosciences and Environment at the Academy of Finland and a member of the Board at the Academy since 2006. He acted as chairman of the directorate of the Finnish Forest Research Institute (2009-2012). Professor Pelkonen is vice-chairman of the global forestry education network (The International Partnership for Forestry Education (IPFE)) and a member of the Board of European Accreditation Agency for the Life Sciences. He is also acting as honorary adviser of the TERI-institute (India) and has been nominated as honorary doctor at St. Petersburg Forest Technical Academy and Pedrozavodsk State University (Russia).

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Towards a new understanding of ethical dimensions in forest policy

In order to reach a breakthrough in the consultations on the prevention of climate change, we need a profound change in the attitudes of the citizens. This could push the decision-makers and politicians to a consensus on concrete actions. The efforts cannot be motivated by particularistic, anthropocentric values, or there will be hundreds of competing proposals based on varying human and ecological circumstances. They may block each other out in the competition for funds or they can create an uncertainty about what should be done first and immediately, as we noticed at the Copenhagen Climate Summit 2009.

We need commitment to universally accepted principles, global ethic, through which also the intrinsic value of trees and forests can be comprehended. As unique representatives of their species they contribute to the destiny of the planet. For this change, we need a group of pioneers creating a critical mass. However, although we need thousands and hundreds of thousands of change agents, the real ethical change of attitudes is never a question of masses but of individuals. This is the difficult road we must take when aiming for a profound change. Simply put, the masses can become aware of a new opening only if individuals embrace the new values. At the centre of change is a growing awareness of the necessity of personal engagement for common good.

The problem lies in the concept of common good. As regards the protection of the environment and especially forests, we can observe four main approaches related to environmental ethics.

How we deal with forests depends on our evaluation of their value: whether we acknowledge the intrinsic value of trees or whether we give them an instrumental value only and assess their usefulness for our own purposes. Secondly, there is the question of how we identify ourselves as actors in the ecosystem: whether we understand ourselves as rulers of nature or as part of it, and hence, its co-operators. Do we assess the forests from an anthropocentric or non-anthropocentric point of view?

There are researches who represent a consensus model, such as Bryan Norton (1987), the leading contemporary defender of anthropocentric environmental ethics. Instead of delving into the intrinsic value of nature, forests, and trees, we should according to Norton expand our conception of human wellbeing. The counter-argument here is that if we expand our sensitivity and relationship to nature from an anthropocentric point of view, the selfish and one-sided instrumental motivations may remain. They will be another way to maximize our own wellbeing.

However, Norton makes a valid point when he states that "[i]f we rest environmental ethics on as broad and firm foundations as possible, we can best ensure its rapid implementation" (cited in Callicott 1995: 677). Although we see the huge power of market values and money in the decision-making in politics, Norton believes that we do things that are not directly steered by money. They add to our own wellbeing also in ways that are not concrete and connected to the economic *having*-values. We must ask, how realistic is it to think that we, in the name of our own wellbeing, can take into account the social *loving* and existential *being*-values?

Let us look at the difference between the anthropocentric and non-anthropocentric approaches. In the anthropocentric approach the preservation of trees and cultivation of forest industry is motivated by selfishness and dictated by the so-called market rules. However, our own wellbeing can also be more directly dependent on forests. The problem lies in the varying circumstances of people on the earth. Some people have very near and intensive relationships with forests; their lives are conditioned by nature even without belonging to a fishing or hunting culture. Others can own forests but visit them very seldom. To the latter, forest is only property and used as a market target.

Students of The Indian Public School in Dehradun, India.

Furthermore, there is a great difference in the attitudes between those who need forests for their everyday energy and those for whom forests have more or less only aesthetic value, observed from a distance. It is very difficult to determine what is right or wrong for both groups at the same time. The anthropocentric approach does not lead to a strategy that both groups could accept.

From the non-anthropocentric point of view, the value of forests and nature is not primarily – or at all – in their economic or aesthetic properties but in the forests themselves. Humans are seen as part of nature and their privilege to use nature according their will is questioned. Forests are not *proprium*, private property, according the concept of Roman law. They are part of common wealth, *dominium*, which should belong to all the people in the community. Its care is given to some actors, but it is not allowed for them to take un-proportional advantage of it.

If we understand our planet as common dominium and the role of humanity to gain and preserve it, we should ask every day what kind of an effect our attitudes, values, and deeds have on nature and its bounty. This means that we act not on the basis of anthropocentric values but values that concern the wellbeing of the whole ecosystem. This does not mean that we underestimate the needs of human beings and the fostering and cultivating of the human mind, but the non-anthropocentric starting point makes us more responsible for the ecosystem in its entirety.

In order to do this, we need the ability to discern the differences in our own value system. It is necessary to find out on which value basis our philosophical, theoretical, cultural, and economic-political thinking and decisions are laid. It is said that our concrete actions today are decided on the basis of monetary gain. This means that the *having*-values are emphasized or overemphasized. If the interests of market economy are allowed to rule, there is reason to fear that human beings with their aspirations and religious and philosophical experiences are not taken into account. The preconditions to moralize the globalized market are then lost. Awareness of the importance of the existential human *being*-values is vital for our understanding of the deep dependence between the faceless market and individuals.

This can be examined by noting that every economic decision has an impact on human relationships. To be unemployed is in many cases a human catastrophe. It is the price that the worker pays for the wins of the company. This indicates that social responsibility is not anchored to the socioeconomic culture of the community. The anonymity of the decision-makers and their distance from the daily work makes it easier for them to set aside the *loving*-values of mutual care.

Environmental and here especially forest ethics need the implementation of the three value groups: *having*, *loving* and *being* (see also Heinonen, this volume). Together they create the preconditions for using and preserving the nature and the forests.

The commitment of the youth to the promotion of ethically sustainable forestry is vital

The wellbeing or unwellbeing of forests is a matter of the community, a global concern. What happens to forests, in their function as the lungs of the planet, happens to the whole ecosystem. Forests are an indicator of the state of the world, but at the same time, their condition indicates the values which steer forest policy and environmental goals. From the perspective of the ENO-project – its activities to engage the youth of the world in planting trees and its commitment to promote sustainable forestry – we could consider forests as a metaphor for the ecosystem, or moreover, a metaphor for nature itself.

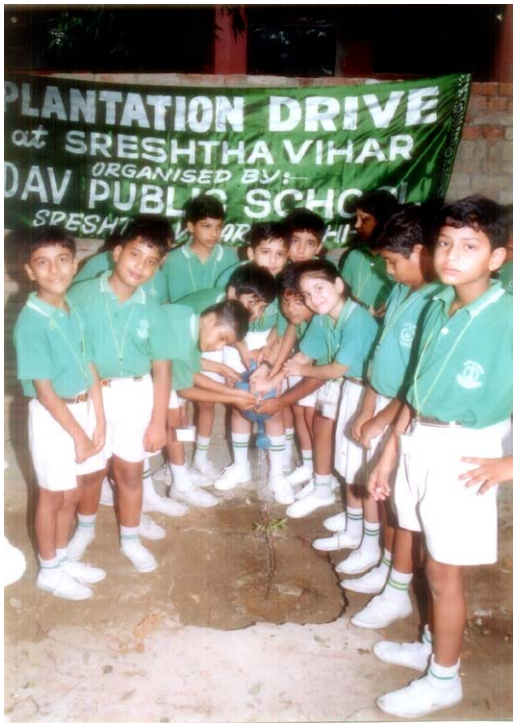
The youth represent the future, and they often also hold more critical views and attitudes than the average adult. In many cases they are not as fixed on old practices and solutions. However, one cannot really speak about 'youth' in the singular form. There are many different youth cultures as well as orientations to nature and forests in the world. It depends on the education and values awareness of the surrounding society, and especially of the school-teachers, how the children's relationship to nature develops. As we know, many emotional experiences in the childhood are carried along through the years of adulthood. Sensitivity towards trees and forests can be taught, similarly to art education. We could, for example, learn much from the Japanese ikebana and respect for nature. This sensitivity and a new relationship towards trees can be cultivated through education, as the ENO project shows.

Trees were planted on Ahtisaari day, 16 November 2011 in Israel and Palestine.

Vital in this process of education is the creation of balance between the three groups of values, *having*, *loving* and *being*. None of them can rule the whole process, if we aim for ethically sustainable forest policy.

The *having*-values of the forest industry must be taken into account but they must not subordinate the interests based on the other value groups. The same can be said about the *loving*-values of society, aiming to maximize the use of forest as a living environment. The existential, philosophical *being*-values of individuals are often based on holistic emotional reactions, but as the only starting point, they can lead to one-sided reactions and unproductive clashes.

Among the youth, there is a great deal of sensitive and intuitive understanding of moral argumentation and ability to engage in concrete action, if only the parents, NGOs and schools will help create the preconditions for them. The moral commitment to ethically sustainable forestry is one of the most important contributions of children and their teachers. In childhood, human beings usually have great imaginative capacity to see the world around them and interpret their perceptions in a creative manner. This should be developed further. Children and youth can give names to things without accommodating to the in-



DAV Public School, Sreshtha Vihar in New Delhi, India, attending tree planting activities.

herited conventions and formulations. They can create symbols for phenomena which adults are not able to perceive or pass as non-real issues. We should remember the well-known maxim of Antoine de Saint-Exupéry, a poet and pilot of the French air force in WWII: "There is no better way to see than through your heart."

With the imaginative capacity in their play, children see many values in trees adults do not perceive, including their intrinsic value. With the eyes of children, it is possible to see a dense forest already in small plants. When he was five, my son planted some acorns in old yoghurt pots and put them on the windowsill at home. At first nothing happened, but after the frail saplings came out of the earth I asked about his aim. The answer surprised me: "They will be my climbing trees, in which I can play."

In Africa I have admired the way children make toys of waste materials pots, stones, bricks, and wire. The imaginative capacity is in every child, but the way it is developed and cultivated through education varies. Also the precondition to comprehend and experience the intrinsic value of trees and forests is everywhere. It belongs to human nature as a universal faculty. It is my suggestion that we, inspired by the ENO project, develop an alternative pedagogy for forest ethics based on the possibilities of imaginative intelligence combined with the old learning-by-doing pedagogy. Through the already existing network we have all the ideas arisen in various countries and continents at our disposal for common pedagogical use. The task of teachers and researchers, then, would be to sample them into the three value groups (*having, loving, being*) and work out new models to look after our environment

and forests. This would promote the creation of a common motivational basis. We need a new strategy and a new paradigm for our environmental and forest policy; one which we today are so sorely lacking.

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ENO Asia Coordinator from Malaysia

Tree planting in Malaysia

Our school joined this great movement and network of tree planting in 2006. Environment Online - ENO was introduced to me by Joyce Sang of UNEP, when we were looking for an international tree planting network to join. When we looked through the work done by Mika Vanhanen – The Great Forest Hero Champion of ENO – we immediately joined this great network in 2007 and started to follow the project every day.

Our school had the opportunity to participate in the ENO Conference in April 2008 in Joensuu, Finland, where we met people, adults and kids, from 65 countries doing a remarkable job in planting trees all over the world. I noticed that this programme has very good potential for young kids' contribution to sustainable development.

I played my part in helping to start the ENO Asia Network during the conference. With the network, we can help promote tree planting and other ENO environmental activities for sustainable development in Asia through our other networks.

At the conference I was appointed as the ENO Asia Coordinator. To help sow the seeds of hope and care for our nature through tree planting in Asia, I took up the challenge from that day onwards to help promote tree planting.

Mika's trust in my involvement in tree planting with the school kids in Malaysia was a milestone. He asked Malaysian students to take part, on behalf of ENO, in the United Nations Online Cyberschoolbus videoconference on 28 May 2008 in conjunction with World Environment Day. It was also an important event for the IT Internet era in our beloved school, Teloi Kanan. With limited resources we managed to start the participation in the videoconference. The students suggested tree planting work as a solution to climate change. The videoconference involved schools from Canada, America, Australia, and Malaysia.

The launch of 100 Million Trees in Malaysia

In the same year a new tree planting campaign was launched with the help of the ENO School Network worldwide, involving 10,000 schools in almost 120 countries. The campaign called *100 Million Trees by 2017* was officially launched at the Teloi Kanan Secondary School on 5 June 2008 with Mika Vanhanen's help. The campaign hopes to get 100,000 schools around the world to become members of the ENO School Network in order to join hands and achieve the target of planting 100 million trees by 2017.

A new life started for me. By helping to promote the tree planting campaign for sustainable future, I suddenly discovered that I had travelled to almost 35 countries promoting ENO and the tree planting campaign as a part of my holiday. I was travelling to countries that I had learned of in my geography and history classes in my younger days. I never imagined that I would travel to countries like Finland, Sweden, Norway, Bulgaria, Romania, Macedonia, Slovenia, and Estonia.

But not only I travel now; also students from my school have begun travelling with me lately to participate in many international environment workshops and competitions. ENO has made all this possible. We have won many international and local awards for our tree planting campaign for sustainable development, bringing our school to the top list in Malaysia. We also won the National Youth Award for Science and Technology in 2009.

The Sultan of my home state Kedah awarded a special award called Bintang Semangat Jerai to 7 ENO students and 1 teacher, and more are on the way to my students. This indicates that the Sultan has recognized the work done by the younger generations.

Comments by a student and the principal

Comments by a student Norfarhana Nadhirah Azizan, an active student in ENO says: "While other friends were away having a nice relaxing school holiday, the ENO students were having fun sticking their hands and feet into mud to do their bit for the environment. We travelled almost 250 kilometres to Teluk Rubiah, Kuala Gula, a fishing village in the Kerian District, Perak, Malaysia to plant over five thousand mangrove seedlings and two thousand seeds in a 10 hectares area, which is the designated site for the Mangrove Rehabilitation Project."

Students of Teloi Kanan Secondary School

According to YM Ungku Aznan Ungku Ismail, the principal of Teloi Kanan Secondary School, the school has planted almost 200,000 mangrove saplings and seeds. The Teloi Kanan ENO Students aim to plant 100,000 trees every year. The students envision that the rehabilitation of the degraded mangrove area through planting and increased protection will improve the surrounding mangrove habitat. For the coming years they will join Global Environment Centre and the Malaysian Scouts to mobilise students nationwide to plant 10 million trees. We hope that this can be achieved in the Kuala Gula Area, which is one of the few remaining mangrove sites along the west coast of Malaysia.

Why do we plant mangroves?

In the past two decades, Malaysia has lost more than one third of its mangrove forests. The mangrove habitat is slowly decreasing year by year due to unsustainable practices and forest destruction. Mangrove forest disturbance results in the decline of fisheries, loss of migratory bird habitats, disruption and pollution of clean water supplies, salination of coastal soils, coastal erosion, and land subsidence.

Mangroves support a diversity of wildlife, many of which are endemic or threatened, and rich vegetation, some of which has great medicinal values and is yet to be discovered. This is one of the easier tropical forest types to regenerate because of their reproductive biology and adaption to inter-tidal conditions for coastal protection.

Mangroves act as windbreakers against strong wind and waves, thus providing natural coastline protection. Mangroves also prevent erosion. Mangroves act as sinks for nutrients and sediments as their vegetation can absorb them. The nutrients remain in the mangrove forest where they support the growth of other organisms.

The term mangroves refers to plants that grow in salty or saline water in the intertidal and coastal zone. Mangroves grow better in protected estuaries, as very few species are able to grow in this environment. Mangroves are an important breeding ground for our fish, prawns, crabs and crustaceans, which are our major source of food. Trees from the mangroves can be used for timber, construction material, firewood, and charcoal. Mangroves

also produce non-timber products such as herbs, which contain medicinal value, nipah, tannin, etc.

The mangroves and adjacent mudflats form a very rich ecosystem with crabs and prawns, which in turn support a large variety of birds and mammals. Besides recycling nutrients and providing protection against coastal erosion, mangroves are also breeding grounds for many marine species.

Mangroves are the only defence against sea storms and tsunamis, and without them, coastal villages such as Kuala Gula will be left defenceless and at the mercy of nature. Kuala Gula covers 6,870 hectares and has a potential Ramsar Site (Wetlands of Global Importance). It is a small fishing village and an important eco-tourism site, renowned as an important migratory bird research and observation site. However, over recent years, the mangroves along the coastline have been degraded. Following the tsunami in 2004, there has been an urgent need to address the lack of mangrove protection.

The damage done by the tsunami on 26 December 2004 was mentioned by the Asian Wetland Symposium in their special report session: "Certain wetland types played a role in reducing the tsunami impact, especially in locations further from the epicenter, including coral reef and mangrove which broke the impact of the waves and absorbed some of the energy and protected area further inland. Mangroves also stopped people being washed out to sea and trapped debris, reducing further damage."

Planting in Kuala Gula

We choose Kuala Gula for our mangrove planting. Kuala Gula is about 220 km from our school**.** Kuala Gula forms a part of Matang Forest Reserve, which is one of the few remaining vast stretches of tidal mud flats and mangroves. Fishing is an important economic activity to the local community as Kuala Gula is a fishing village that supplies fresh cockles, crabs, shrimps, and fish.

Kuala Gula is an important flyway, though which migratory shorebirds fly from their northern breeding grounds and wintering areas to the southern, warm areas. It is home to various

resident water birds and supports globally threatened birds such as Spoon-billed Sandpiper, Asian Dowitcher and Nordmann's Greenshank, Black-headed Ibis, Masked Finfoot and Chinese Egret. The mangrove forests of Kuala Gula also provide sanctuary for the globally threatened Mangrove Pitta, Black-bellied Malkoha, Chestnut-bellied Malkoha, Jambu Fruit Dove and Cinnamon-headed Green Pigeon. Two stork species are found here, the Lesser Adjutant and Milky Stork, both of which are globally threatened.

In view of its importance, Kuala Gula has been designated an IBA (Important Bird Area) in accordance with internationally accepted criteria proposed for such sites. Efforts are being made to get it designated as a Ramsar Site.

Our partner Balu Perumal from Global Environment Centre says: "We have to save one of the few remaining vast stretches of mangrove habitats along the west cost of Malaysia. Students work with the local people in sustaining the economic value of Kuala Gula. Mangroves are an important defence against sea storms and tsunamis. As a part of environmental education, mangrove ecology is taught in subjects such as science and geography. Hence, they learn about the subject through on-site experiential learning. More than 10,000 primary and secondary school children and 400 teachers have utilized and benefited from the establishment of the Mangrove Ecology Education Centre."

Local challenges and the future

We have also faced many challenges. Schools are willing to participate but they have problems with communication and the Internet. Another problem is funding. In Malaysia only local non-governmental organisations get funding for tree planting. The government does not give funds to schools for their actions for sustainable development. We also need to change the attitudes of the citizens. People do not appreciate what is given to them or know how to preserve it. They feel that environmental activities do not concern them but it is the government that is responsible for the environment. Some irresponsible people have destroyed thousands of planted mangroves. Trees have also been cut without the monitoring of our government. The decline of forests is due to activities such as reclamation for agriculture, housing, aquatic livelihoods, and tourism. Shrimp farming is causing the clearing

Mika Vanhanen and Kalaimani Supramaniam in the Koli National Park in 2008.

of massive mangrove areas. To overcome all this we need more forest reserves, awareness among all stakeholders, and environmental awareness and education for all. We are change-makers in ENO.

I have visited many countries in the last three years promoting ENO, and people have been very positive. The ENO programme is flourishing in many countries. Together we have enabled many schools to participate in all of our tree planting activities. But we cannot do it alone. Supporters are needed as friends of the ENO network, to help schools in their own regions with their environment projects and programmes. They are needed from every sector of society: public, private, and third sector. Only together we will reach our target of planting 100 million trees by 2017. We hope that the younger generation will be given the chance to voice their concern about their future forests and how to take care of them. One day, ENO will surely get a Nobel Prize for promoting sustainability development.

About the author

Mr Kalaimani Supramaniam is a teacher at SMK Teloi Kanan in Malaysia. His school officially launched ENO 100 Million Trees Campaign in 2008.

Mr Supramaniam is also ENO Asia Coordinator.

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Rosa Maria de Sousa Santos
Environmental Education Project Coordinator

The ENO Programme in Brazil

In 2010 the ENO programme celebrated its 10th anniversary. Its Mission, established in 2000 by the founder Mika Vanhanen, relating to global environmental actions, remains the same. In 12 years of action, the programme has reached other countries and people, enriched by sustainability education proposals.

In each country, new environmental actions are incorporated in the ENO programme, and this is also the case in Brazilian schools. The proposals for transforming actions and possible daily practices are increasing in the school community, because we believe in the power of these actions to face the environmental crisis, to transcend the walls of schools and reach outside them.

This program allows students and teachers from different parts of the world to get involved in environmental questions, thus realizing values like solidarity, commitment to the planet, autonomy, and respect towards differences. These values empower citizens to find solutions to the problems in their environments. If these experiences are gained in childhood, a person's commitment to environmental issues remains all the stronger during his or her life.

In Brazil, the schools are greatly involved in the planting actions during the ENO Tree Planting Day. Besides tree planting, groups of children participate in the event, either at school or in the community, through music, eco walks, video productions, plays, water monitoring, awareness workshops, and collective cleaning actions. The tree-planting day is a day for conscience, mobilization and effective actions towards the change of behaviour so necessary in the world of environment degradation and exaggerated consumption that we live in these days.

The schools register for the event with photos and then build a great wall with all the participants. The students learn a lot through the international wall, as it provides a view of the actions done by the participating countries as well as their culture, habits and especially their efforts to reach a balance with the planet. We live in a time when the socio-environmental problems challenge us to increase the actions of the programme to involve greater numbers of people to collectively decide on our future.

The participants' statements reveal that these activities incentivize to work for the global collective, as well as providing a critical point of view and a new way of thinking and learning, interacting with the place where they live and connecting this process to the technology that is changing our relationship to the world. As the ENO programme is an on-line network that put us in contact with a variety of teachers and students, we have the opportunity to exchange ideas about the actions that we are taking as well as to implement each other's actions. It gives us the opportunity to multiply our own actions in other parts of the world and thus inspire other people.

The education volunteer is an action that belongs to the ENO programme in Brazil and has a very special mission at schools. Besides mobilizing students and teachers to environmen-

tal actions, it reinforces the role of the school as a citizenship centre, a place of harmony and respect towards differences and collective work.

As the quality of life on the planet has been compromised, we have become aware of the need for global actions. We have been incentivized to consider school volunteers as a priority in order to carry out these transformations not only locally but also in a worldwide way. The experiences in schools show that there are innumerable ways to participate in this environmental transformation, such as tree planting and creation of new actions. To transform the world, commitment and change of attitudes are needed, as well as awareness of sustainable consumption patterns whose strain on nature is bearable.

I believe that a great chain has been built by us, the educators of the ENO programme, who have joined our efforts in the hope of achieving a transformation in education, to make students aware of the possibilities to improve the quality of education and work towards environmental preservation.

And so, the goals of the ENO program are being achieved. It is possible to see the results of the actions taken in the statements of the teachers and students that follow. However, we are certain that there is still much work to be done to create the worldwide commitment that is so necessary for a sustainable world.

Tree planting day in Escola Estadual Dona Carola, In Curitiba, Paraná, Brazil, on 21 May 2010.

Comments by participants

"I am very proud to say that I am part of an international program of educational practices to raise awareness and action and where the planting of trees is the motto that symbolizes this movement across the world.

The experience I have and I can now share is that it is not only by theories and theses that one acquires knowledge, the practice is transformative. Dinora School had already developed environmental awareness actions but without the results that we see after the ENO activities. The kids like them so much that they ask us for events during breaks on the environmental agenda of the school and tell us when they see, in their neighbourhood, people throwing garbage in the stream of Putins Creek, where they do the water monitoring and when they see fires in cerrado vegetation around the school ... and that is what learning is, when our actions are transformed through knowledge.

Another important fact to report is that in Brazil, specifically Sao Paulo, to study a second language, English, is part of the curriculum for many years, though the children never were interested in foreign language and never engaged in learning. By influencing of the exchange that happened between ENO students in Brazil and India students, I perceived the increased interest and motivation in learning English, one more reason to cheer.

The visibility that the program brought to the school's actions is the object of celebration, once many NGOs, the local media, even the state Department of Education, other schools and other institutions look for us to know how the program develops its actions and what results we get, so that they can use this experience in their school units. After ENO, the School Dinora has gained visibility and credibility in the community, feelings that are very important for the proper development of the students and realized by improving the contents and results. The construction of a significant school is what we seek in our day to day work, it is this school that transforms the lives of children that are socially vulnerable and which I am part and for which the ENO Programme has contributed."

Andréa Reis, Geography teacher
São José dos Campos, SP

"The Carioca Experimental Gymnasium Anísio Teixeira is a UNESCO associated school and it was by it that we started participating on ENO Program in 2007. The event was organized to that all students perceived the value of tree planting and the development of peace between men. In 2008, the students staged the suggested play "The Drops of Life", an educational experience about endangered animals in their natural habitat. The school campus is large and the seeds and trees planted still flourish and fructify making the harvest done by students into moments of great joy. The school participation in this global event magnifies our teaching practices when promoting the growing of environmental awareness, allowing experiences that certainly bear their citizenship actions not only locally but globally".

Celi Araujo
Rio de Janeiro, RJ

"I had the wish to write some words to you of ENO program and hope that these words can show a little bit of how much I recognize so precious mission of protect our planet. I thank God to allow us to know you and share these wonderful experiences. I believe that actions like ENO Program can make difference in our students' lives and mainly in the life of the planet. With much respect and sincere wishes of peace, love, happiness and much hope that these actions multiply and reach even more people".

Sioni Oliveira, teacher
São José dos Campos, SP

"I believe that being part of the ENO Program helped our students to realize the importance of Environmental awareness. When the Project started, we could see the interest it sparked, and the enthusiasm from our kids when they saw the results of their actions. Small things, like planting a seed, became an important event, and taking care of a kitchen garden was considered a source of joy for them.

We also had the opportunity of taking part of the Cultural Exchange with students from a public Indian school. Our school had the privilege of hosting them, and we could see the wonderful effects this experience had on our students, teaching them not only about the Environment, but also about different cultures, the importance of learning a second language,

Students of São José dos Campos start tree planting in 2012.

of studying History and Geography. I believe that this is the foundation of a meaningful educational experience, and that being part of ENO enriched their lives in more ways than we can imagine."

Mariana Chazanas, Psychologist, Education master and ENO Program volunteer interpreter, São Paulo, SP.

"We are proud to be part of the ENO family since 2005. ENO is a global virtual school and network for sustainable development and because of this, we have been spreading this programme throughout the State. We would like to thank the Secretariat of Education in the State of Paraná for inviting public schools to take part in it and also to thank all the schools that have been participating in this programme for strengthening the ENO movement locally as well.

Being part of the ENO programme has helped to raise awareness of the importance of sustainable development and promote activism that benefits our Community, State and Nation, and also the cause of international understanding and global peace."

Dulce Pazinato Casarin, ENO Brazil secretary
Curitiba, Paraná

"We performed the 1st Ecological walk from our school in the district and mobilize students and the community to participate, I was the speaker on the planting of trees and was very pleased to be able to participate and collaborate with this important issue for our planet."

Ideon Ytallo, journalism student
Rio de Janeiro

"Students of the Municipal School João Brazil (Niterói, RJ), enpowered by the experience of exchanging letters with seeds with students of the School Prof. Dinorá Ramos Brito (São José dos Campos, SP), welcomed the idea proposed by the teacher of Geography to join a world event of tree planting.

The next step was to get the seedlings. The donations were made by the Botanical Garden of Rio de Janeiro. Together with the teacher, two student representatives assisted in the transport. 20 seedlings were obtained, including: Pau Brazil, jaboticaba, pitangão and cocoa. The arrival at the school was marked by students' curiosity to know what are the species planted. Many showed surprise and admiration to find the tree that gives its name to the country or that gives the fruit from which chocolate is made. Each class planted a seedling in the bed in front of the classroom, to closely monitor its development throughout the school year. According to the size of the tree, it was chosen where each one would be planted.

João Brasil school, Niterói, Rio de Janeiro state.

Teacher Cláudia Renata Vilela and students plant 5000 trees in a degraded area at UNIVAP - Universidade do Vale do Paraíba (Paraíba Valley University), 2010.

The intention is to transform school grounds into a teaching garden with native plants and fruits of the country, giving students contact with Atlantic Forest species known only from books. It was something different and fun, which led the school to plant new trees, due to the great involvement of students. Since then, the school has participated in all "ENO Tree Planting Day", sowing environmental practices that culminated in 2011 with a membership of over 20 network schools, including kindergartens to this global event, through the Niterói Municipal Foundation of Education ."

Rogério Lafayette, Geographer and Professor of the Department of Education of Niterói, RJ, Brazil

About the author

Rosa Maria de Sousa Santos, Geographer; Specialist in Citizenship, Ethics and Sustainability, Education Environmental Projects Coordinator.

Peace forest stories

Art and creativity have been an important part in ENO Tree Planting events. "The Drops of Life" was written for these events, a play about the importance of trees and global co-operation. This play had its premier simultaneously at 200 schools in 65 countries, in the UN year of desertification 2007. Based on the play, ENO students wrote their own stories for an online book called "Peace Forest". Enjoy some of these stories here!

Lemon tree

By Zeineb limam, 17 yrs from Tunisia

It was a beautiful sunny day, and little Zouzou went out in the garden to play. However, she saw an unusual view: all the trees were packing and heading to the gate.
- Where are you going? asked Zouzou in an anxious trembling voice.
- Well, little Zouzou, we're leaving, answered the lemon tree, the oldest of them all.
- But...why? Don't you like my garden anymore?
- My sweet girl, we can't live here anymore. It's too unhealthy, too polluted.

- How am I supposed to hide from the sun if I can't find your shadow?
- You should have thought about it before you, men, started building everywhere and destroying green spaces.
- And where are birds supposed to make their nests?
- Haven't you noticed that all the birds left your city?
- Oh my god! How are we supposed to get our wood, our fruits...?
- I guess you'll have to stick with your poisoning fuel and your industrial products.
- Mister "lemon tree", how come you decided to leave now? Wasn't it the same a decade ago? Why now?
- Let me tell you our story little Zouzou.

Mister Lemon tree came from a small seed, like thousands of other trees. He was planted with love, by a poor farmer who only cared about the health of his plants and the food of his family. Year after year, people took branches from the original tree to plant them in their garden, creating a beautiful green zone, allowing the air to regenerate and the small animals to live.

However, the economy wasn't about agriculture anymore, and industry took over. People cared less about trees and more about cars and air-conditioners. Things got so bad that a big grey cloud was formed over the city.

- And that's why, my friend, we need to leave this place and find ourselves a new kind population that would take care of us.
- Noooooooo!! Don't leave me! screamed Zouzou
- Zouzou, zouzou...wake up!

The little girl woke up in her bed, in the arms of her mother.

- It's time to go to school honey, I will drive you.
- Thanks mum. I will take the bus today!

She ran to the garden and hugged her favorite tree: "Mister lemon tree".

- Thank you very much my dear friend, from now on, every day is plant-a-tree-day!

Me, a piece of paper

By Karin Sarkhail, 9 yrs from Iran

When I think of the past, I remember the time I was a tree. I was green and glorious and birds would sing sitting on my branches: the time when I felt the sunlight. Sometimes the worst of my nightmares come to my mind. The time when they cut me to make paper. I cannot speak of those events for the fear of those moments. I can only tell you that I became a page of a pocket-book; the book which a poet always carried. I was fortunately the page on which appeared the favorite piece of the poet. The only thing that made me happy with being a book was that I could build a relation with the emotions of the poet by the words written on me. I was just forgetting about the forest in which I was born when the poet, went to the forest where to write a new piece of poetry. But I couldn't find any trees when I looked about. There were millions of stubs yet.

Saba School in Iran attending the tree planting day on 22nd May 2009

All at once an image of my birthplace came to my mind and I found myself there. A stub of me was all that remained. There the poet decided to go to a place with more trees and greens. But, he cast a sudden look at me. He read again and

again the piece of poetry written on me. I conveyed to him the pain I had from seeing the destructed forest. He closed the book and hurried home. I was disappointed. I expected him to plant trees again… He came back later with his little son and daughter. The poet and his children planted some seedlings and watered them. When I came back to the forest with the poet in the year which followed, it was full of young trees. The poet cast a look at me smilingly. Then, he cut me from among the pages and fixed me on a tree with nails; "you are back to your real birthplace now" he said and went away with weeping eyes. Sometimes I find him now watering the trees; casting a look at me and leaving. Anyone coming to the forest now after years, finds a piece of paper nailed on a huge tree: me, a piece of paper.

Teacher: Maliheh Mohseni
School: Kherad School

The Enchanted Forest

By a student group, 7 yrs from Lebanon & Australia

In a forest there lived a bear, a raccoon, a deer, and a chipmunk with their families. It was a beautiful place to live. Fairies and elves danced under mushrooms with beautiful butterflies and buzzing bees watching close by.

Then one day the animals noticed their environment changing. The river wasn't clean anymore. The grass and plants were turning brown. The forest had bad storms with wild wind. The animals became frightened. Barney Bear asked Sparkles the fairy about their problem. She told them the environment is changing due to global warming and they had to get to the Tree of Wisdom for help. The fairy showed the way with its fairy dust and the animals set off to find the Tree of Wisdom. They followed the dust

and then, there it was...tall, bright, and beautiful!

Barney Bear and his friends asked the Tree of Wisdom for advice. The Tree told them that they need to put posters up to protect the environment. The posters should tell everyone to recycle plastic, glass, and paper. Also they need to try and reuse unwanted things when they can and save their rainwater in tanks. The tree gave them some special seeds to plant. These plants will be everlasting. The animals thanked the Tree of Wisdom and set off back to the enchanted forest.

After returning, the animals talked to everyone about changing their polluting habits and putting up posters. The forest looked so much better! The trees were growing taller, the grass was getting greener, and the special seeds started growing. What Barney Bear and his friends didn't know was that Nasty Gnome and his gang were watching their every move as they realized how much better it was to work as a team and how beautiful the forest had become. They saw how happy everyone was! They talked to Barney Bear and his friends about how much they wanted to be a part of their team.

After that, everyone became aware of the importance of keeping the forest clean to avoid pollution. They realized how living in a clean environment helped them become happy, healthy, and comfortable in their own homes.

"The Enchanted Forest" is a shared story between two classes with each class writing a part alternate weeks:

Students: Makassed Khalil Shehab School in Beirut, Lebanon & Hatton Vale State School in Queensland, Australia
Teacher: Rawya Shatila & Amanda Eleison

Cleaning

By Ieva Navickaite, 15 yrs from Lithuania

It was a sunny and warm summer day. The soft breeze was blowing, the small birds were flying between trees and tweeting, a lot of animals were resting at their home. Only the old Fox was going to the Old Oak to see the Owl. She was crying.
"What happened?" the Owl asked sitting on a branch of the Old tree.
"Oh, I have a big problem…" groaned the Fox.
"Tell me, please, what it is and maybe I will help you."
"Yesterday I saw how a few people left a big piece of meat near my lair. I thought that it would be a delicious dinner for my children so I took it and gave to my babies. But today they are sick. What should I do? How can I cure my little children? Help me please, wise Owl!"

The Owl overlooked the forest and sighed sadly. "It's all human fault. People will destroy our home, poison our children… You must find the doctor of the forest, Mr. Woodpecker. I am sure that he will cure your children," said the Owl.

"Thank you, wise and kind Owl!" said the Fox and walked away. The Owl was waiting for the next animal that needed her help when a small bird landed on the branch. "Have you something new, Tit?" asked the Owl.

Over 70 people took part in a tree planting day event in Traku Voké secondary school in Vilnius, Lithuania, on 21 September 2010.

"Since the beginning of this summer, Mr. Woodpecker has had more patients. I heard that the Wolf had slipped on banana skin and broke his leg. There is a lot of litter: plastic bags, packets, tinned food lying everywhere!"

"It's terrible! People pollute our forest! We must take measures. Invite all animals here, Tit. I have an idea," ordered the Owl. A few hours later, all population of the forest was under the Old Oak waiting for what the Owl would say. "Recently, I have been talking to a few of yours and I concluded that contamination is growing and growing. So we must do the cleaning," said the Owl.

"Are you sure that it's possible?" asked the Bear. "We don't know how to do it."

"Don't panic," requested the Owl. "I'll help you. We won't just collect the litter but we will sort it as well. Come here!" The crowd followed the Owl. When they reached a clearing, animals saw lots of litter around, the Old Owl took a fragment of a plastic bag and said: "It's plastic. You should put it separately."

Then the Owl showed a piece of paper, a chip of glass and other litter. "Do you understand?" asked the Owl. "Yes, sure. It's not really so hard as I have thought before," said the Fox and others agreed with her. "So, let's start!" shouted out the Owl.

All started to work. The birds carried small pieces of litter in their beaks, the foxes, wolves and other stronger animals dragged away the biggest ones. After an hour of hard-working the forest was clean and there were four mountains of litter in the small area. "We've done it!" shouted everybody. "We've cleaned our forest, our home!"
Then they heard the sound of a coming car. "Let's hide!" ordered the Owl and all animals disappeared behind the trees.

Two men got out of the car. They looked around and saw four stacks. "Who's done this?" asked the first Man. "I can't imagine," answered his friend. "Boss said that we have to collect all this litter."

"OK, we'll tell him we've done this," decided the first Man. They put everything in the plastic bags, loaded them into the car and drove off. All animals observed them leave with smiles on their faces.

If animals care about their home why don't all Men do the same?

Teacher: Rasma Stuokiene

Plastic bag and bang in the tree

By Hana Cizej, 12 yrs from Slovenia

On a warm sunny day Janez the Bear sat by the stream and thought about… well the things that bears are usually thinking about, stuffing himself with the honey he had stolen from the bees about an hour ago.

A few stone-throws away a stork was flying in the air, sunbathing and enjoying the mild breeze that was going through her feathers. When suddenly a plastic bag came flying by and covered her eyes. The poor stork overlooked a tree and crashed into it in a not very lady-like manner. It would almost have killed her and she landed in the Bear's lap with a big bump on her head.

The Bear gave her a concerned look, picked her up and ran quickly to doctor Badger. He laid the Stork on the table and asked the doctor if she was going to be all right. The Badger laughed and assured him there would be nothing worse than a big bump. The Bear let out a long sigh of relief and hopped out of the doctor's office.
But great balls of fire! There were some very angry bees waiting for him at his doorstep for stealing their honey. They were calling him names and demanded his permit for harvesting the honey. The Bear argued that he was hungry, that that's just the way that the food chain works and so on. They were nagging and buzzing until a wolf and a fox came out of the forest. They made a sly suggestion that they rather think about what made the poor Stork land into the tree. Everyone agreed and the fight was over.

They all went to the doctor's office. The Stork was awake but doctor Badger looked worried nonetheless. He told them that the Stork's flight was interrupted by a plastic bag that got carried in the wind.

They were all thinking about how to prevent these sorts of things in the future. The Fox and the Wolf, who were the craftiest, came up with a plan. It was actually a rap song and when they rapped it went something like this:

Let's go get their plastic bags,
turn the plastic into rags,
so they can live more eco friendly
our lives will be as sweet as candy.
Cool, isn't it?

And that's what they did. The Fox gathered her pack and charged to the west, the Wolf and his team took the east, the bees and the Bear went to the south and the badgers to the north. They stole all the plastic bags and the humans were so angry that they rushed towards them with guns but when the animals showed them the stack of plastic bags and the photos from the woods, even the humans realized how stupid it was. They changed and started leading different lives.

The Stork was grumbling over her bump but it went away in a month. The plastic bags incidents were fewer and everyone lived happily in their safe and clean woods.

But there are still many humans that are polluting their environment. That is why you need to stop using plastic bags too and start recycling! And if you're clever enough you'll try to get your friends and family do it too. That way you'll be making a big step for ecology and it might get us far enough.

School: Domžale Grammar School, Slovenia
Mentor: Maja Juvan

Animals save our climate in Finland

By Sanna Hirvonen, 12 yrs from Finland

Puma, panda, gorilla, owl, dove and wind spread their message about environment and peace. They got many new supporters, endangered species from every country. Their message flew even reached Finland. Flying squirrel and Saimaa ringed seal joined the cause from Finland. They also needed the support by people but how they could make people understand that the world is not only theirs? That was a problem for animals in the world. Together these animals from every country started to solve it.

The tree seedling grew in Africa. It was not small anymore but became a beautiful Eucalyptus tree that was surrounded by the whole family, Eucalyptus forest. But it was concerned about the problems of the world.

Following the other animals, flying squirrel and Saimaa ringed seal started to spread the message of peace in Finland. They shared this message with the Baltic Sea but it couldn't stream anymore. People had polluted it as well. "Oh, poor me, poor sea that could not stream away from here. People have spoiled my water and I cannot make it by myself. Dear wind, make waves that even a small part of me could forward my message!"

Wind started to blow water far, to coasts of world. It was busy because dirty water cannot be blown just like that. Wind could though do it because it knew that this matter was very important for the rest of the world.

When wind was blowing the message forward, the Saimaa Ringed Seal and flying squirrel were working in Finland. They planted birches, alders and aspens to make people understand that world does not belong only to them. Saimaa ringed seal and flying squirrel were trying to tell them about the drops of life that were also important for people. Or at least they should be.

Eucalyptus tree recalled its friends. Every day it watched the plays of small tree seedlings and were thinking wistfully of puma, panda, gorilla, owl and dove. It was not longing for the Wind as it dropped out during its journeys to say hello. Eucalyptus was happy about that because small seedlings were not so good company. They were mocking to Eucalyptus that they won't ever grow to big and lonely trees. Eucalyptus was sad for it as it was true: during the years it has grown big and lonely.

Meanwhile Wind was blowing Water. Wind was exhausted as it was difficult to blow dirty and heavy water forward. But finally it reached America. Using its last energy it blew water to coasts and almost collapsed. It did not have any energy left to move for a week, so tired it was after that big effort.

Water was very glad. It has brought its message to world, got many new friends like a baby dolphin. Also baby dolphin was concerned about the state of climate.
"I can also spread this important message", it once shouted.
"That would be great", Water said. "How will you do that?"

"Me and my parents are to go to see our relatives in South America. We can then share this message with them and all the other dolphins, what we have to do against the climate change!"

"You are right!", Water cried out. "But now I have to return to Finland. Though I don't know how because Wind has gone away and I cannot manage alone", Water said.
"But I can call the Wind", baby dolphin offered. "It plays often with me."
"Thank you so much, oh thank you!", Water praised. "I can return to Finland! But ..... It's such a pity that I cannot see you again..."
"Yes it is! Could we meet again one day? Wind can carry our messages to both of us, probably."
"A good idea! So now I can return to Finland. What about if you call the Wind right away?"
"Yes I do. Like this", baby dolphin said and honked out a strange noice. But like from hit of the tail of dolphin the Wind came. Friends said goodbyes and the Wind was ready to take the water back to Finland.

Work for the climate is making progress like this today. It might be that one day you will meet one of these friends spreading out the information about the state of climate. Go then to greet them and tell them that you have read this fairy tale!

School: Eno Primary School

Credits

Published in 2012

Editors

Mika Vanhanen
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Cover design and book layout

Siiriliina Riikonen

Graphics information

All graphics and artwork by Siiriliina Riikonen, with the following additions:
Graphics on page 16 based on the original by Mika Vanhanen
Graphics on page 27 based on the original by Lea Houtsonen
Graphics on page 28 based on the original by Ministry of the Environment, Lumonet
Graphics on page 37 based on the original by Reijo Heinonen
Artwork on page 62 based on the original photo by Antti Varonen
Artwork on page 82 includes an element by Nikolai Tiitinen

Photo information

Pages 15, 30: Siiriliina Riikonen
Page 20: Antti Varonen
Page 25: Mervi Aineslahti

Every action towards sustainability is needed, starting from the grassroot initiatives. This book is about one of them, called Environment Online. A seed was planted by a classroom teacher at a rural school of Eno in Eastern Finland. In 12 years this virtual school and network has extended its branches to nearly 10 000 schools in 151 countries.

The book contains pedagogical and scientific articles related to sustainable lifestyle and the ENO process, written by eminent Finnish scholars in the fields of education, ethics, and forestry. It also presents concrete examples of the activities and effect of ENO in South East Asia and Brazil, and ends with environmental stories by ENO students from different parts of the world.

This seedling in my hand, I will let it grow
for those who built our land so many years ago.
We have all the keys and after centuries
if our game is fair the green gold will be there.

Environment Online - ENO

- a global virtual school and network for sustainable development launched in 2000
- follows the mission and goals of the United Nations
- focus on less developed countries
- forests, water, biodiversity and climate change as regular themes
- thousands of schools from over 140 countries take part
- ENO schools aim to plant 100 million trees by 2017

ISBN 978-952-93-0708-1 (paperback)
ISBN 978-952-93-0709-8 (PDF)