



Effective Approaches for Outdoor Learning

Conference Report

Real World Learning Network
Sluňákov, Horka nad Moravou,
Czech Republic
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1. Introduction to the Conference

The first Real World Learning Network conference took place at Slunakov in the Czech Republic, November 2013. Fifty-six people gathered from ten countries to explore effective approaches to outdoor learning.

Outdoor learning is widespread across Europe, taking the form of science through to sensory based learning. The conference explored how to create successful outdoor learners. Through keynote speakers, workshops and forums the following questions were debated, discussed and investigated:

- What is the relationship between real world learning and sustainable development?
- What is the role of science in sustainability?
- Which competencies are necessary for a sustainable future?
- How can we make a difference?

Participants took part in workshops around the two key conference themes of: developing competencies for sustainable change; and understanding fundamental concepts of science and sustainability through outdoor learning. Keynote speakers added external views to challenge and inspire, and also to raise key questions during the workshop sessions. The workshops were delivered by the RWL Working Groups on Science and on Green Careers.

Conference participants were also encouraged to present their own workshops.

In this report you will find the detailed results of the workshops as well as keynote speakers and details of the participants.

What is the Real World Learning Network?

How do we learn about the world around us? Can we deliver better learning using the outdoors? How can science help to change behaviours towards a more sustainable world? These are just some of the questions that the Real World Learning Network is exploring.

The Real World Learning Network is a consortium of outdoor learning providers across Europe. Our goal is to explore and share successful approaches to outdoor learning that increase action for sustainable development. We believe that outdoor learning offers one of the best approaches for young people to engage with the world around them, and provide a stimulating context to explore how we can all contribute to a more sustainable present and future.



2. Keynote Speakers

Dr Robbie Nicol is a senior lecturer in outdoor and environmental education at Moray House Institute, the School of Education of the University of Edinburgh. He has worked as an outdoor educator within the public, commercial, charitable and voluntary sectors. He holds a wide range of national governing body awards in canoeing/kayaking, mountaineering and skiing and maintains an active participation in these activities through journeying.



“My life motivation comes from the realisation that human activities are fundamentally altering the planet’s ability to sustain us in the long term. As an educator I believe that the outdoors provide places where individuals can rediscover their direct dependence on the planet through embodied experiences. As such my teaching and research interests are directed towards the theoretical development and practical implementation of environmental education, sustainability education and epistemological diversity (different ways of

knowing) particularly in the outdoors.”

Katalin Czippán is a senior adviser in education and communication, and organisational development for sustainability. In the past 3 years Ms Czippán was the deputy head of the strategic department at the Office of the Ombudsman for the Future Generations.



Previously she managed projects of the Higher Education for Sustainability Program office at Eötvös Loránd University and The House of Professors, served as a director for Environmental Education and Communication Program Office in Hungary (2000-2005), a governmental institute whose task was to develop strategies and policies for all types of education. As a main initiative of the Office she led the development of process of the Forest School Programme and network – its slogan was Where (the fragments of) the World can be patched. Ensuring the relevant support by the field studies/ eco schools centres the office coordinated a development process for quality management and certification system.

Dr. Dušan Bartůněk, Ph.D. is the Managing Director of the Outdoored Company Ltd. and supervisor of educational programs. He is an experienced corporate trainer and leads experiential learning programs, focusing on corporate clients since 1999. He is also a lecturer on the international master program Outdoor Environmental Education and Outdoor Life at the University of Linköping in Sweden. He was the International Team Leader for the implementation of courses for teachers from EU countries for Comenius 3.1 project called Outdoor Environmental Education. He has been a member of expeditions to Scandinavia, Asia Minor, Russia, Indonesia, Australia and New Zealand.



Notes from each keynote speaker are included below, and their presentations can be downloaded from www.rwlnetwork.org.





2.1. Keynote 1 - Changing Behaviour Towards a Sustainable Future

Robbie Nicol

Some Starting Points

We are fundamentally changing the planet upon which we live. The ability of the planet to provide the conditions for human survival is threatened.

The outdoors provides places where individuals can rediscover their direct dependence on the planet through embodied experiences. Traditionally these outdoor experiences have been associated with developing self-esteem, self-awareness and inter-personal relationships through activities such as rock climbing. The argument is that industrial society creates anxieties, children lack self-esteem and outdoor activities challenge people mentally and physically. This is a flawed assumption.

There is an assumption that self-esteem is low to start with and that people without training in psychology can recognize it. Clearly self-esteem can be very high in some people, it just might be directed towards activities that society feels are inappropriate (such as car theft). We need to be very careful in the assumptions and qualities we ascribe to outdoor learning. This should have an influence on our practice.

“It is often assumed that there are all these benefits, particularly for youngsters, in having high self-esteem – whereas there aren’t. It is overrated. There is no link between self-esteem and academic success...”

Carol Craig, Chief Executive of the Centre for Confidence and Well-Being

Note that Carol Craig is not saying that self-esteem is unimportant only that other qualities such as humility and effort need to be considered.

Outdoor learning is not just about having a good time and we need to think much more carefully if we are to be successful.

Is knowledge enough?


“Environmental problems are not caused by ignorant people.”

David Orr

The IPCC findings represent the greatest scientific consensus on anything, ever, but what has changed? Global temperatures continue to rise and governments, communities and individuals are not sufficiently motivated to act. There has been a significant amount of research into pro-environmental behaviour that point out knowledge is not enough. The New Ecological Paradigm Scale measures individuals’ worldviews and the assumption is that worldviews influence behaviour.

Another model is the deficit model. This says that a lack of knowledge is responsible for our lack of environmental values and thus a lack of pro-environmental behaviour. The Connectedness to Nature Scale provides a measure of an individual’s levels of feeling emotionally connected to the natural





world. It suggests that nature-based experiences are important in determining environmental behaviour. There are many other models exploring these themes some of them popularised through, for example, the books of Richard Louv (Nature Deficit Disorder).

Often we are asked, at least by environmentalists, to become more ecocentric (humans as part of interrelated web) and move away from a human centred anthropocentric view of human life. This makes some pretty big assumptions that we want to view the world this way and align with the sorts of lifestyles ecocentrics promote. Many environmental campaigns have historically taken this approach. Does it really matter whether we are anthropocentric or ecocentric? There are lots of different motivations for doing what we do.

“There is no reason why a proponent of ontological dualism must be motivated to act badly in her relations with natural things”

Simon James

The real issue is that we place a high value on the experience of nature but a low level on taking action to protect nature. Because of the range of choices open to us as consumers it is difficult to identify why this value-action gap exists. Theories of rational behavior suggest that knowledge will guide us. Linear theories based on psychological methods are of limited use to understanding our work. They do not account for situational factors, processes and social contexts. The main criticism is that they are based on rationality and the human condition is not simply rational (even when they acknowledge the importance of emotions). So the big lesson here is be careful about research (and education programmes) that simplify a complex situation. It is simply not true that people take pro-environmental action only for ecological reasons: for example some people join environmental groups to meet new people, be a part of their community, get fit (digging the ground) or simply because their friends are doing it.

Looking back we can see that outdoor learning has come a long way. However, research into the effectiveness of outdoor learning has been superficial, the wider world in which outdoor learning operates has changed and there has been a shift from greening the environment to the triple bottom line of sustainability (i.e. social, economic and environment).

Looking forward – some starting points

Epistemological diversity (different ways of knowing) is important to outdoor educators. The well known environmental education trinity of head, heart and hands matters. Or as Geddes states the order should be emotional/aesthetic (heart), physical (hand) and intellectual (head). Outdoor learning is good at encouraging different ways of knowing (the following model based on the work of Professor Peter Reason, www.peterreason.eu):


Experiential knowing is through direct face-to-face encounters with person, place or thing. It is known through empathy and resonance.

Presentational knowing emerges from experiential knowing and provides its first expression through forms of imagery such as poetry and storytelling, drawing, sculpture, movement, dance and so on.

Propositional knowing is knowing about something through ideas and theories, and is expressed in abstract language or mathematics.

The defining aspect of this model is practical knowing, which is knowing how to do something and is expressed as a skill or competence. If as educators we cannot see actions in our programmes then we





are not really engaging behaviour change, and we should give up the hopeful belief that learning transfers from one place to another, that skills learnt during an environment programme automatically transfers to the home.

Epistemological diversity can be used as a teaching template. Experiential, presentational and propositional knowing is probably very well delivered. However, how we will realise action is much more challenging...how will we know we are delivering behavioural change?

There is plenty of research that spending time in the natural environment is good for us but there is little evidence that this is good for the planet as well. We are still a long way short of working out what the motivating factors towards sustainable behaviours might be.

Each of us is motivated by a wide range of values leading to differing views of ourselves and the world around us. They are not fixed and subject to change. Our values can be broadly separated into those which are driven by extrinsic desires such as image, popularity and financial success; and those driven by intrinsic desires such as self-acceptance, affiliation and community. This approach is often translated into circumplex models which visually illustrate compatible and opposing values (see for example Tim Kasser's work, faculty.knox.edu/tkasser/aboutme.html).

Which values should outdoor learning promote? Some suggestions:

- empathy towards those who are facing the effects of humanitarian and environmental crises.
- concern for future generations, and recognition that human prosperity resides in relationships – both with one another and with the natural world.

(Tom Crompton (2010) – Common Cause: the case for working with our cultural values)

Values are not character types. Each of us is motivated by all (to varying degrees). Values can become 'engaged' through experiences and 'reminders' help us to respond in particular ways. Strengthening of one helps 'bleed over' to another value in close proximity. The implications of values and goals in outdoor learning presents enormous challenges, these challenges are not simply about tinkering with content and method. It has to be about how to create 'disruptive' experiences that help challenge existing values, ensuring these experiences are long lasting, and helping learners re-orientate their values as our knowledge of how we impact on the world changes.

Some final thoughts

What do we need to teach? Here are some suggestions, they are not new but are we succeeding?

- How ecological systems of the Earth function.
- How we are personally tied into these systems in our lives.
- How can we make changes (individually and collectively) in order to lessen our impact upon these systems

This is not new. Steve van Matre has been saying this for over 30 years

We need to pay much more attention to assumptions within outdoor education if we are to provide learning than leads to sustainable behaviour change. We need to pay more attention to the values outdoor learning promotes and whether our programmes really result in action.

The ecological, economic and social environment of our planet will change considerably in the 21st century. The education systems of the world will have to adapt to prepare young people for an





uncertain future. Young people will need to be prepared in terms of knowledge and skills, critical awareness, attitudes, personal and social qualities, and above all the capacity to continue to learn. Our young citizens will have to address these issues. We need to work harder to develop programmes that deal specifically with these challenges.

Who will do this work?

“...if we do not strive to love one another, and to love our planet as much as we love ourselves, then no further human progress is possible here on Earth.”

(Flannery, T. (2010) Here on Earth. Allen Lane: London)





2.2. Keynote 2 – Science, Sustainability and the Big Issues

Katalin Czippán

What is science?

Science can be defined as using scientific knowledge and skills to discover the world around us. More specifically related to sustainability, science explores the human interactions with the world around us and how we affect and influence it. In this respect science is holistic and must include social science and economics.

What are the big issues?

We can say that a big issue emerges when we move from the safe operating space whereby activities do not adversely impact on other operating systems and instead reach a tipping point, a point whereby large and potentially irreversible change might take place. This leads to some key questions: what is the current status of the earth, are we heading towards tipping points, what will be the impact, how to we return to a stable planet?

The work of J. Schellnhuber, in Steffen, et al., Challenges of a Changing Earth, 2002 has identified several areas of concern termed switch and choke points: instability of Greenland ice sheet, performance of marine carbon pump, instability of west Antarctic ice sheet, collapse of Amazonian forest to name a few. This work has been further developed by Rockström et al into the concept of planetary boundaries, designed to define the safe operating space for key environmental functions essential for sustainable development. These are:

- Climate change
- Ocean acidification
- Stratospheric ozone depletion
- Biogeochemistry nitrogen cycle
- Biogeochemistry phosphate cycle
- Global fresh water use
- Land system change
- Biodiversity loss
- Atmospheric aerosol loading
- Chemical pollution

Whilst detailed research has not been completed on all of these, there are worrying trends. Biodiversity, climate change and the biogeochemistry nitrogen cycle are all beyond the safe operating space. In terms of biodiversity we are already losing species and cannot return to the same state, the same can be said for climate change with its impacts being felt around the world.

How is scientific understanding important?

We need the ability and willingness to understand the natural world. We need to be able to identify questions and draw evidence based conclusions. We need these to be able to understand the changes caused by human activity and to act responsibly as citizens.





What are the causes behind the big issues?

There are, of course, a range of human activities that influence and drive unsustainability: greed, lust for power, selfishness. These are important and should not be ignored. However, from a scientific point of view we need to understand how systems work.

Natural systems are cycles, materials constantly flow through closed-loop systems at sustainable rates and gain their energy via the sun through open systems. They are in balance. Human intervention has radically upset the balance in these natural systems. Our activities are taking more out of systems than can be replaced, and add toxic waste into systems that cannot be metabolised. In short, we are taking out more than we put back in, and over a timescale that is alien to nature which operates over millions of years not hundreds. If we are to live within natural systems then we need to redesign our society and economy to fit within them.

In address the big issues we need to go beyond the boundaries of science, or science needs to be better integrated into economics and social issues. The subject of science is often limited to the direct understanding of the state of a given system e.g. the state of water quality. From this science is involved in the measuring of impact and the pressures that affect the state of the system. However, if we are to respond to the drivers of change with meaningful action, the science behind the big issues need to link with society, economics and human psychology.

For many years the pre-dominate approach to protecting the natural world has been one of guarding it through national parks, wildlife reserves and environmental legislation. But this approach has clear limitations. To truly restore and conserve nature requires learning that changes the conscious relationship we have with the natural world.

How do we learn to change?

We are in the UNESCO decade of Education for Sustainable Development, but what has changed? ESD is certainly a move away from 'classical' environmental education towards a holistic view of the world and away from strict subject boundaries.

Outdoor education can be classified in three ways: about nature including scientific understanding; in nature including engaging the emotions through enquiry, experience and emotions; and for nature fostering a sense of responsibility and citizenship. Real world learning should be where all the pieces of the jigsaw come together: social, economic and environmental. Where nature, society, culture and ways of living are explored and connected.

The challenge remains for educators in this attempt to deliver real world learning to:

- Remain flexible and alive to opportunity – no control on every minute
- Being prepared to say “I do not know, let’s discover together!”
- Motivate children, parents and their colleagues.
- Build partnership, find resources, time.
- Becoming a living example every day.

Love not loss

(www.iucn.org/lovenotloss)



2.3. Keynote 3 - Changing the way we Deliver Outdoor Science

Dr. Dusan Bartunek

Dusan sang, danced and lead the participants on an outdoor adventure to explore their ideas of using the heart, hands and head in outdoor learning. Words do not accurately reflect Dusan's presentation, only pictures.



3. Scientific Concepts underpinning Sustainability

Report from Working Group Two



3.1. Introduction to working group two and conference participation:

Working Group Two remit is to look at which scientific concepts are best taught in an outdoor environment and how these concepts could be useful to support sustainable thinking and behaviours. The working group has links to other aspects of learning, for example experiential aspects such as how emotions affect learning. It also has links to working group three which deals with the pedagogical approaches to outdoor science. It has a tight focus within these wider issues, and will consider just the aspects of science which are best taught in an outdoor environment as oppose to how these can be taught.

The working group is focusing on three questions:

1. How could scientific concepts support sustainable thinking, behaviours and competencies?
2. What are the key scientific concepts, which if understood, would support sustainable thinking, behaviours and competencies?
3. Which of the key scientific concepts can the outdoor environment enhance the understanding of?

The main focus for this conference was to look at questions 2 & 3, what are the key scientific concepts that can be best taught outdoors and that would support sustainable thinking, behaviours and competencies.


The process was to explore the thoughts of delegates regarding the large sustainability issues that we are facing, and to identify what the scientific concepts are that need to be understood. Furthermore, to understand these issues in terms of how they manifest themselves and in terms of how we might be able to find solutions from them.

The first session delivered by WG2 was a workshop session on understanding fundamental concepts of science and sustainability through outdoor learning. Several presentations were given on a big issues relating to sustainability.

The six working group members delivered presentations looking at (see Annex 1 for details):

- Systems thinking as a holistic approach
- Eco-footprints to investigate an individual's impact



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- - Ecosystem services as a way of illustrating the importance of biodiversity loss
 - Green Island – a programme of study from Slunakov centre that looks at development and protection of habitats and resources on a volcanic Island
 - Making the complex simple – attempts to make the complex nature of sustainability issues accessible to learners by looking at case studies that illustrate impacts of unsustainable behaviours
 - Mass Tourism as a model of un-sustainable actions that can be witnessed and explored first hand.

Following the presentations delegates were asked to comment on each of the presentations and to place post-its on labelled posters that would answer the following 3 questions:

1. What is the science, knowledge or concepts behind these ideas?
2. How could you explore the big idea at a local scale?
3. What big ideas do you know that could help encourage sustainability?

Main feedback on these questions are contained within section 3.3 below.

The next session that was run was: putting outdoor learning into practice – a range of practical workshops exploring different approaches to assessing outdoor science. Four practical sessions were run on day three of the conference that explored some ways of introducing these ideas in the outdoors. These were (see Annex 2 for details):

- Observing the River
- The Little Minimum
- Bird's Nests
- Naturalness key

The final session of the conference was spent trying to tie down what issues were really the big sustainability issues and then identifying the science behind these.

3.2. Presentations on understanding fundamental concepts of science and sustainability through outdoor learning

Following on from the keynote, in this session WG2 looked at the big ideas of sustainability and science and how you can develop these and how these can be demonstrated by learning in the outdoors.

The presentations covered a range of issues, as listed in section 2.1 above. A number of common themes were threaded through these presentations. The idea that the environment should be viewed as a system of interrelated elements, and as a holistic system, has led to the idea of a model for assessing the demands that human populations make on the whole environment, such as eco-footprints and eco-system services. These ideas could be applied to issues we are facing such as mass tourism, as examples for learners to start to understand the concepts of sustainability and how science underpins this understanding.

Biological carrying capacity was also a central theme, discussed in the Ecological Footprints and Complexity presentations. The Green Island presentation was an illustration of how these ideas could be delivered to outdoor learners over a series of sessions, by providing opportunities to consider



aspects such as water provision and population growth and cycles. The Green Island presentation was an example of how science could be constructed from facts and figures on a small scale; a bottom up approach to understanding bigger unfolding themes.

By contrast the Complexity presentation, made a top-down approach to the understanding of sustainability and impact on the climate. Global syndromes, such as the disappearance of the Aral sea, were used as a stimulus for investigating at the local scales and drilling down to the selection of science concepts that support understanding of the big over arching syndromes.

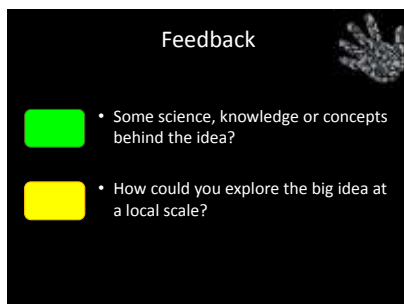
Details of the presentations can be found in Annex 2

3.3. Feedback from discussion forum on fundamental concepts

After the presentations, a discussion forum was set-up to look at the big concepts that had been presented. The questions discussed looked at what was the science behind these big ideas and how could we explore these at a local scale with learners.



Ecosystems services could be a useful idea, but how do we translate that into a Real World Learning experience? One way suggested was to tackle small elements of this in a section by section aspect, so that students can construct their own knowledge of the concept and take responsibility for their own gaps in their knowledge. A suggestion discussed was - how does soil form from rocks? The science behind this idea question could be demonstrated with




experiments and practicals outside and this relates directly to the idea of sustainability. Another aspect discussed was the concept of economics and the costs relating to providing eco-system services, it is cheaper to maintain what we already have rather than build services from scratch. So is it cheaper to maintain the soil we have or is it easier and cheap to make new soil? These ideas could easily be demonstrated outdoors so that learners have to make soil and maintain the soil, thereby making direct comparisons.

One of the areas of discussion was related to the emotional commitment to change and how this drives the behaviour change of people. Personal values have a key role to play in this. Using the ecosystem services model, the pricing of an ecosystem service might be used to justify its conservation, whilst also used to justify its destruction if a 'higher value' use is proposed. Therefore, what we 'value' matters. In conclusion delegates felt that this model has tremendous usefulness in education.

Eco-footprints were also discussed at length as well as the Green Island concept. These related closely together in terms of exploring limits to resource use. Individual behaviours were discussed and many ideas were shared about the ways in which positive real local examples could be used to engage learners.

The discussions surrounding making complexity accessible were often relating to the pedagogical aspects of delivery. The system is chaotic and messy and therefore the education delivery can also be chaotic and messy for this area. This means that the scientific understanding behind the concept needs to be well understood by the teacher before it is delivered. The assessment of learners learning is difficult when teaching complex ideas, as you might be filling in the gaps, so a wide range of knowledge is needed by the teacher. Again breaking the big ideas down into smaller ideas that can be





delivered in localised areas was a theme of this discussion. Discussions also looked at how we train students and teachers and parents in the ways of getting outdoors so that these ideas can be illustrated in the locality that people live, making the ideas more relevant.

A big part of all the discussions was about modelling sustainability in a positive way, so that the science behind the big ideas becomes a way of thinking rather than a way of stop behaviours. Modelling and talking about the big ideas in science was discussed for younger children and the conclusions thought about were that the ideas can be taught in chunks. Leaving out some of the complex terminology could also be a way of developing the science ideas, but using children's current levels of language. Individual modelling of behaviours was discussed in the Eco-tourism forum and again this highlighted the smaller building blocks of ideas and local examples as a way of stimulating behaviour changes.

3.4. Outdoor Practical Sessions - Putting outdoor learning into practice – a range of practical workshops exploring different approaches to assessing outdoor science

Delegates spent a session outdoors, in a variety of sessions, details of which are in Annex 2. Aspects of big science were woven into these sessions and participants discussed ways in which science could be incorporated into existing activities, if they weren't already.

One example was a typical activity of building bird nests, which is a common activity though-out environment education. Aspects such as disappearing habitats, invasive plant materials and predation were all discussed as connecting to the big picture of climate change and bio-diversity change. Some bird species are arriving in breeding grounds earlier in the season, when nest building materials are not yet developed enough, this produces unstable or delicate nests which may be more susceptible to predation. This activity is an opportunity to make this link for learners. One of the other aspects that could be focused on is that shifts in phenology may change the life-cycle events of the food that nestlings depend on.

Another activity that was considered was looking at the local river, this incorporated aspects such as flooding, water quality and fresh water security. Activities such as measuring the speed of the river were related to the possibilities of hydropower and connections made to the increase in methane given off, when the water is drawn off a dam, thus providing opportunities to link local scale measurements to the bigger issues of science.

3.5. Plenary and conclusions from conference

The aim of this session was to identify what issues the delegates thought were the most important issues regarding sustainability and to identify what the science is that is behind these issues. We also wanted to look at where the work of the group might go in the future based on the ideas that had been raised and discussed during the conference. Science that would be needed to understand the issue, science in terms of monitoring impacts as a result of this issue, or science in terms of what we might need to know in order to find solutions to the issue.

After a brief introduction to the plan for the session and the intended outcomes delegates were asked to identify if any issues were missing from the list of science issues provided by WG2. Any new issues were either added to the list or included under the issues already identified if appropriate. Delegates then voted as to which they thought were most important.

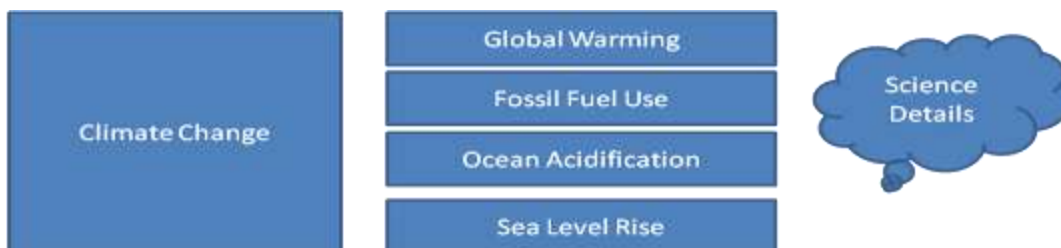


The main conclusions from the work at the conference were that science has "Big" areas that can be broken down into smaller, more accessible issues for learners. Learners need the "Big" issues to tie the ideas into useful understanding that they can act on, whereas they build their understanding in smaller accessible chunks. We acknowledged that many things impact on these big areas, such as social issues such as corruption or politics, and that as educators we may need to tie the science into the bigger picture for students. Many key ideas came out of the conference as a consensus:

1. Science has big overarching themes that can help understanding about sustainability for example climate change or bio-diversity Loss
2. That these big overarching themes are just convenient ways to group science together to organise learning and aid understanding
3. That these big over arching themes can be broken down into smaller aspects of science and that this is valuable to enable learners to grasp the ideas and understand implication of the big ideas
4. The these big over-arching themes can be drawn together using other concepts or models such as systems thinking, ecosystem services, emergent properties, feedback, self-organisation, eco-logical footprints
5. All the big ideas of science and the over-arching themes or models should be framed within an affective, emotive and experiential learning model for people to benefit from motivation to sustain behaviour change.
6. That existing outdoor learning has many opportunities to integrate Big science themes as well as smaller science details, into the activities, as long as educators are aware of the science behind the big issues



3.6. Next Steps - where is the working group going next



Working group two will next be collating the information debated at the conference with the work they have completed so far. This outcome of this will be a list of the main over-arching scientific issues that support sustainable thinking and behaviours, this will be in a similar format to the example above but with the addition of many details. As we have found that the educators clear understanding the



details of the science is a large part of filling in learners gaps, we will produce brief details to support the explanation of these ideas. The drafts of this document will be available in all partner countries for comment on by RWL network partners and other experts in the countries.

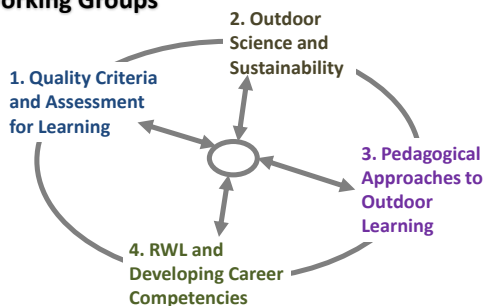
We will also be following up on some of the question raised at the conference and gathering evidence on which of the over-arching ideas teachers and educators think is important for sustainability and how they already teach the science outdoors to support the ideas. We will be collecting some 'best practice' case-studies to demonstrate how the key scientific concepts for sustainable action can be enhanced through outdoor learning. The case-studies will cover a range of ages and science and provide resources, videos and materials to enable them to showcase how to engage learners with the bigger picture science needed for sustainable thinking and behaviours.

We will also be looking at helping educators get science into the activities that are already being taught outdoors, to enable educators to maximise the benefits of the outdoor learning that is already happening. We will consult with a range of professionals and experts in each country to develop a set of guidelines and recommendations to support this process of helping educators to incorporate science for sustainability into outdoor activities. The guidelines will also cover how the outdoor environment can enhance understanding of scientific concepts. Each country will be involving universities, schools and outdoor educators in these activities and will be looking for involvement from a range of experts to progress the work of the RWL group through-out the next 18 months.

Another of the key aspects that working group two will be working on, is supporting the work of the other three working groups and exploring how scientific concepts can support sustainable thinking, behaviours and competencies.



Working Groups



4. Competencies and Values for Green Careers

Report from Working Group Four

4.1. Workshop introduction

The workshop opened with an introduction to the working group members and the journey that the group had been on in their work leading up to this conference. This was an opportunity to introduce the topic and research findings and to include the participants in the journey.

The working group members started by introducing themselves by name, outlining their values and green competencies used in their work and finally their job role. This helped set the scene of the work being undertaken.

The journey of the working group from the findings of the baseline surveys, through the first working group meeting, Terms of Reference and development of a work pathway were outlined by Tom Deacon. A brief introduction to the methods used to explore some of the key sustainability issues through community based movements, policy documents and academic work was given. The term 'green job' was discussed and defined, and an emphasis was made on the group's agreement to work with the idea that green career competencies should work towards promoting sustainable behaviours in all jobs, not just 'green jobs'.

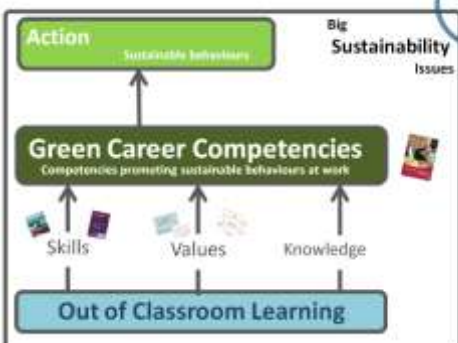
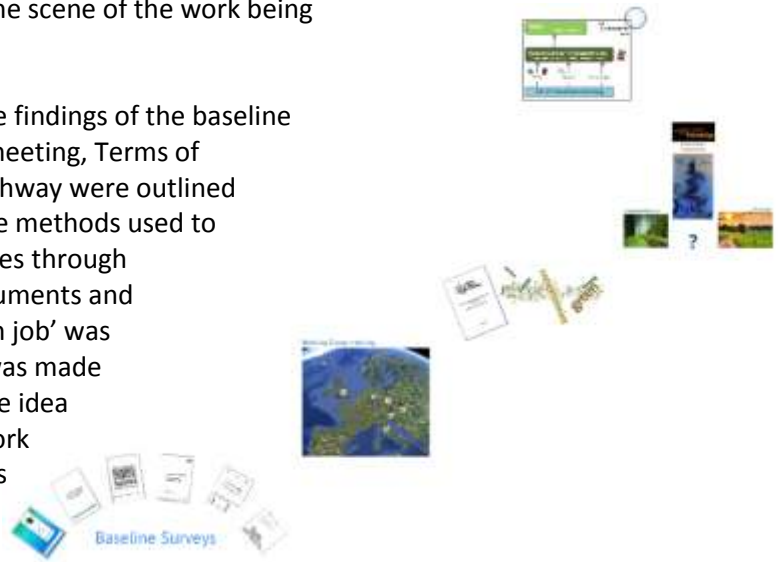
The work of the group defining the term 'competency' and 'green career competencies' was shared, and the framework for future work of how the project can look at ways out of classroom learning can support green career competencies. The three main strands of promoting and developing skills, values and knowledge were the focus. During this framework part of the introduction the research of the group into current practice in education and business across Europe in connection to green competencies and the supporting elements were outlined.



Real World Learning
Working Group 4

The role of WG4 is to find ways to develop sustainable thinking that will be carried into the world of work by promoting green career competencies through outdoor science learning.

- Workshop Outline**
- The partners and journey
 - Fish bowl discussion
 - Speedy competency dating
 - brief refreshment break-
 - Exploring values (3 groups)
 - Workshop summary





4.2. Panel discussion – Fishbowl

The Workshop “Developing competencies for sustainable change” started with a panel discussion combined with the fishbowl discussion method¹. The aim of the workshop was to introduce the theme of competencies, to gather information about the guidelines to develop competencies through outdoor learning and to involve participants in the discussion.

The following experts were invited:

- Nada Pavšer – she was the first Coordinator of Eco schools Programme in Slovenia and was for many years involved with introducing green competences in the Slovenian educational system;
- Robbie Nicol - he is a lecturer in the outdoor and environmental education section at Moray House Institute, the School of Education of the University of Edinburgh;
- Vlastimil Kostkan – he is a lecturer at Olomouc University and member of CONBIOS Ltd (Conservation Biology Service) which offers advisory and consulting services in the field of environmental conservation; and
- Luca Petitto – he is responsible for “Legambiente Scuola e Formazione” (Legambiente School and Education) the professional association which gathers more than 130 educators and teachers from Lombardy. Legambiente (League for the Environment) is the most widespread environmental organization in Italy, with 20 Regional branches and more than 115,000 members.



Angelika Schichtel introduced the discussion by asking experts if sustainable behavior at work is considered a topic for general discussion in their country.

Nada Pavšer stressed that in Slovenia they started to work and talk about sustainability 20 years ago. And they also developed their educational centre with a systematical approach, supported by government. With their Eco-schools project they try to understand how to develop green competencies through the school education system, with their main focus on a whole school approach. All schools

in Slovenia are supposed to work on sustainability, with companies and municipalities also trying to include sustainability development in their practice.

Luca Petitto pointed out that in Italy they had different situations depending on territories. Over the past 20 years there were several governments with different approach to this issue. They have a high level of sustainability focus in the first years of schools, however less in high schools. Schools should be able to develop competencies but they still have problem to connect the world of school with the “work-field”. This connection could be an important way to develop competencies and also to promote a more sustainable approach.

¹ On the panel one chair is left vacant and everybody in the conference room is invited to sit on that chair and ask questions, give statements or share experience with all. <http://www.kstoolkit.org/Fish+Bow>





Regarding the UK situation Robbie Nicol voiced concerns of a general problem of consumerism being strongly promoted within society. He highlighted the need to promote broad competencies for making informed product choice as a starting point to address this issue. He also talked about the presence of agencies in the UK which specialize in advertising green jobs. He felt that engaging with economy is a necessary step for Working Group 4, as the economical system is currently only interested in sustainable development if it generates profit margins.

Vlastimil Kostkan reported that in Czech Republic different NGO's provided environmental education. The problem is about the gap between researchers thinking and the decision makers focus on education, with a need for this to extend to working-people not only schools.

Angelika continued asking for some examples of good practice to promote green competencies. At this point, one of the participants intervened to point out that it is more important to make every job a green job rather than just promoting green competencies.



The discussion concluded by inviting each expert to indicate the competence most valuable for their work. These are the competencies mentioned:

- Luca Petitto: Learning to learn; as way to understand the issues and to take action.
- Nada Pavšer: Learning to learn; whole approach and systems thinking, learning to do.
- Vlastimil Kostkan: Learning in practice; knowledge of actual problems and working with people. Connecting research level and decision making level.
- Robbie Nicol: Dealing with paradoxes ("Despite the fact we're trying to change the economy, we're living in it").

A video record was made of the discussion to help Working Group 4 analyse the discussion and draw out the big ideas, comments etc. There is a plan to use a short video from the discussion for sharing on the RWL Network project website.

4.3. Green Competency Speed Dating

The aim of the activity was to gain a green career competence list from the participants according to their own experience with their job. Participants were asked to think about 1 green competence important for their job and write it on a post-it note. In the next 5 minutes participants were motivated to meet as many people as possible and try to find somebody with a similar competence to make a couple. At the end of the 5 minutes the 'competency couples' (or in some cases groups or singles) were collected and a short summary was made. Following the session these competencies were collated into a working list to feed into Workshop 3 on the following day (see workshop summary for more details).





4.4. Common Cause workshop

This workshop aimed to stimulate reflection on the values being promoted by outdoor educators and their organisations across Europe, and to explore how using a values framework can help align the strengthening of core environmental values through outdoor real world learning. The workshop was based on an abbreviated version of a day-long workshop created as part of The Common Cause (www.valuesandframes.org), a framework developed in the UK to explore values drawing on decades of world-wide social psychology values research.



Participants were first asked to step outside of the conference space to take a moment in the outdoors to consider what it is they value highly in life. The workshop then started by collating a brief list of highly valued aspects in life to allow consideration of how these might fit with a path towards a more sustainable individual and collective future. The importance of values was highlighted as a means to promote ‘bigger-than-self’ thinking and awareness, empowering individuals and promoting collective action toward positive and meaningful behavioural change for a sustainable future. This form of thinking placed into a values framework stimulated participant comments such as: - “Giving hope is important: we need positive examples of people who are working on change” and “We need to take the chance to change something”.

Values were defined as an abstract and rarely conscious set of guiding principles for life that transcend specific actions and situations.

Participants were challenged to consider which four values (from the values framework developed through the research) a society that had successfully addressed all environmental, social and economic global issues would hold at its core and which four would be deemed least desirable. A

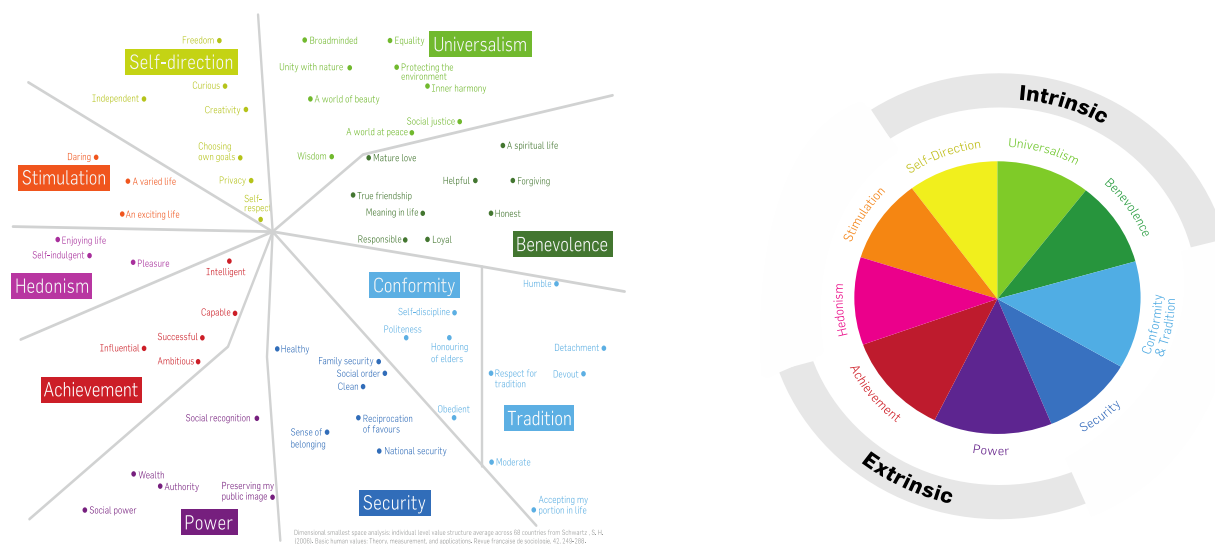




values framework developed by Schwartz using data gathered from research including 65,000 individuals from 68 countries across the globe was used to collate the participant's response.



From observing the distribution of values deemed important and undesirable in a sustainable future, and by further exploring how they fit within the framework of the research, participants were able to consider how this work can help to inform our understanding and promotion of pro-environmental values through real world outdoor science learning (see graphs below). The key importance of recognizing our own values and those of our organizations, how we model these through our behavior and how we frame environmental messages was highlighted. This discussion was underpinned by the understanding of how the values displayed by the study represent data points in a smallest space analysis. This spread of data shows how values can be more strongly aligned (closer together) or more strongly opposed (further apart), and that this spread can then be divided into ten values areas forming a values circle (or circumplex).



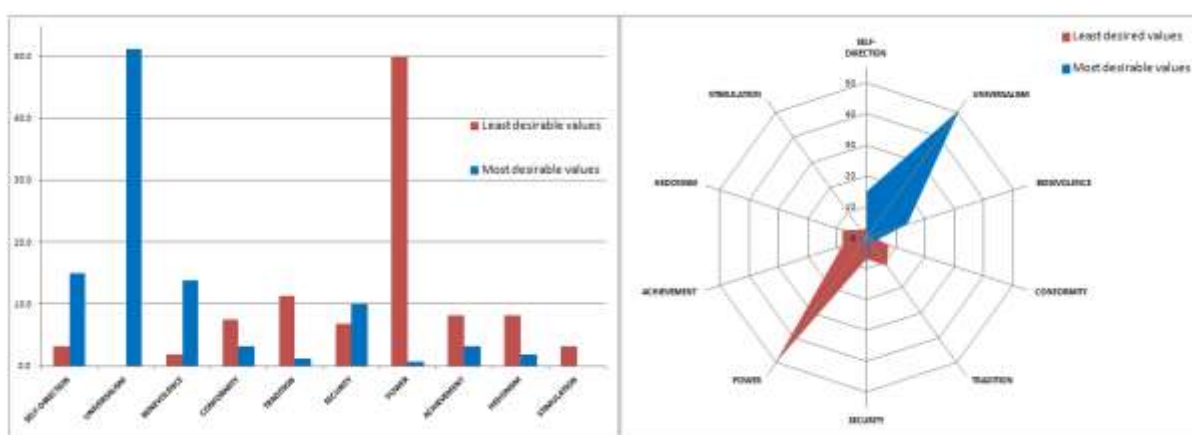
The relevance of understanding this circle and applying it to our work to support green career competencies through outdoor learning stimulated much interest, room for reflection and thoughtful discussion. The data collected from the participants will be taken forward as part of the research of Working Group 4 to help inform the development of a framework of green career competencies that can be supported by outdoor science learning in the real world. A number of participants also expressed an interest in applying this work within their organizations to promote reflective practice, values development and steer practice toward pro-environmental values and behaviours.





This exercise has been carried out with a broad range of professionals across Europe since its publication in 2010. This was the first time it had been carried out with professionals from across Europe working in the outdoor learning sector. This data will be of great value not only in developing the work on green career competencies, but also as a contribution to a larger data set collected through the ongoing Common Cause research.

Some initial analysis of the data collected during this workshop shows very strong agreement among the participants from across Europe that values falling within the ‘Universalism’ category are the foundation values upon which the green career competencies should be centered, with those categorised in ‘Power’ being the least desirable values. This can be clearly seen from the two graphs below (blue being the most desirable values in a sustainably behaving society).



A bar chart (left) and radial graph (right) showing the % of most desirable and least desirable values in the values circumplex categories as selected by the workshop participants in the poster activity.

4.5. Developing Recommendations for the Future: Green Career Competencies

This workshop was aimed at building on and developing the work done in the previous WG4 workshops looking at green career competencies and values. The session was designed to offer insights into current thinking across Europe relating to ‘green career competencies’ for the participants, and for the working group to gain some valuable steerage from the participant’s opinions and discussion surrounding these competencies.

The conference participants were divided into two groups, working with facilitators of WG2 and WG4. At half time the two groups changed places. The following report outlines the two part program of WG4. First the participants used an implementation of the world café method² seated around 5 tables. On the



² For more information about the method, please, follow the link: <http://www.theworldcafe.com/method.html>





tables there were different lists and models of green competencies that have been developed in education and industry across Europe and in Canada. In addition to these lists and models a list of green career competencies created by the participants during a “competencies speed dating” exercise in the previous day’s workshop session. The participants were asked to examine and discuss the lists. Their task was to select the competencies that they found the five most and five next most important, also select and drop to the ‘incompetence bin’ those ones that they found either not important or to the “recycle” bin those that can be further examined if necessary. For the selection process scissors were placed on the tables. They also had the opportunity to come up with – according to their opinion – more relevant, better competencies if they wished so. They had about thirty minutes for the discussion and selection. They were informed that the next group would review and continue their work.

Green Competencies Career Profile

Name: _____
Organization: _____
Job title: _____
Four main things I do in my job: _____

BEST GREEN COMPETENCIES I USE TODAY

VALUES BASED: _____
KNOWLEDGE BASE: _____

BEST COMPETENCIES WISH TO

VALUES BASED: _____
KNOWLEDGE BASE: _____

Definition: The skills, knowledge and understanding, qualities and attitudes which are essential for the development of a green career.
© Green Competencies 2012
GreenCompetencies.com

In the second phase of the workshop the participants received a green competency profile form. The facilitators asked them to reflect on their own competencies that they use in their everyday work. Their task was to identify their competencies that are based on their values, knowledge and skills and also to list the competencies they wished they had. These forms were collected by the working group to use as part of their continuing work on green career competencies.



When the time was up, the groups changed rooms and a new group of participants (that had previously worked with WG2) continued the workshop. Similarly to the first group, they examined the outcome of the first group’s work with competency-lists, criticized and developed them. After that phase they received the competency profile form and were given the same task as the first group.





4.6. Where next?

Working Group 4 will now use the work carried out in this workshop along with the valuable data collected from the values workshop to help inform their development of a green career competency framework, list or model. This will in turn be used by Working Group 3 in their task exploring pedagogical approaches to delivering real world outdoor science learning that will promote these competencies. This framework, list or model will be further honed through the future work of Working Group 4 as they utilize their country networks for feedback and advice, start to gather career profiles exemplifying these competencies in practice, and gathering examples of good practice in outdoor science learning that is supporting the development of these competencies.





ANNEX 1: Details of Presentation – Scientific Concepts underpinning Sustainability

Holistic approach, systems thinking (big idea)

MÉTA naturalness measure for everybody (practical)

Péter Szandi-Varga, Hungarian Society for Environmental Education

One of the basic principles of sustainable development is to apply a holistic approach or systems thinking.

The Government of Hungary prepared the National Sustainable Development Strategy in 2007. In the Strategy we can see the definition of the principle of holistic approach: “Things must be viewed as a system of inter-related elements, the elements themselves also being systems interacting with one another. Any intervention may trigger ripple effects even in remote systems. So local challenges can be adequately addressed relying on the knowledge of the wider environment and global trends alike.”¹ So, systems thinking is the process of understanding how things influence each other.

Without applying systems thinking we cannot understand the main threats to sustainable development like global warming, antibiotic-resistant strains of bacteria, poverty, or the loss of biodiversity. In nature, various elements such as, water, soil, air and the living organism (animals, plants) make a complex system of systems we call the ecosystem. Mankind invented the social and the economy systems, which are also very complicated systems, so understanding the holistic approach is very important, because everything around us consists of systems. We can see the relationship between the environment and the system in figure 1. The system operates well when the environment meets the condition of the system.

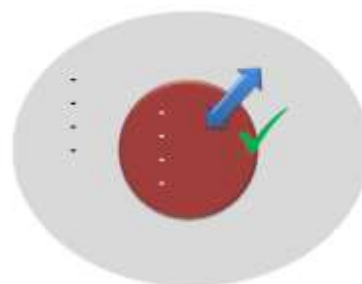


Figure 1

The system and its environment are in constant contact with each other. When the system is in a balanced state things can go well, and the system is more or less resistant to impacts coming from the exterior. But higher stresses can move stable systems out of their equilibrium. When a system falls out of its equilibrium (because we changed the environment of the system) the system starts working incorrectly/unstable. Because systems are made of sub-systems and those systems are sub-systems of larger systems, and the sub-systems and their parent systems interact with each other, the effect can travel through the entire hierarchy of the systems.

In figure 2 can we see the hierarchy of the systems. Thus we ought to notice that when we cause disturbance - for example at the cellular level (with POP (Persistent Organic Pollutants), or any another toxin - it may cause a problem on a global level. For example DDT figure 3. DDT is a synthetic pesticide, which was used to kill bugs and plant pests in several parts of the world in the 1950s. But it turned out that DDT accumulates in the food chain, even

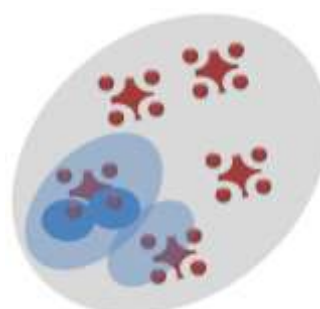


Figure 2





today it can be detected in breast milk. Only now are we beginning to fully understand the negative effects of DDT (osteoporosis, reproductive problems, occurrences of tumors and behavioral modification).

Systems thinking is very important in order to understand our role in the world (figure 4.) and understand our responsibility for the loss of bio-diversity. Because we may be the witnesses of the rapid transformation of our landscape in these times.

In the conference we presented the MÉTA naturalness evaluation tool to the participants

<http://www.novenyztiterkep.hu/en/english/node/106>



Figure 3

This Naturalness evaluation tool helps to identify the natural and degraded habitats in our surroundings. This tool is very easy to use and very useful for outdoor activity. The user only needs a pen or pencil, the data sheet - which is available in the link above -, knowledge of some common plant species (e.g. reed, oak, rosehip or black locust) or plant identification guide.

This method is not very accurate, but can help to understand what features of the vegetation indicate naturalness. 8 participants attended the trial of the Naturalness key evaluation tool. We surveyed the state of 3 different areas of Sluňákov.

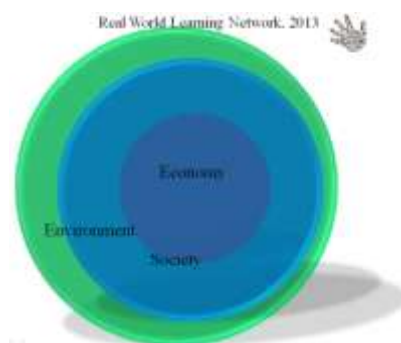


Figure 4

Mass Tourism Syndrome

Simona Žibert Menart, Centre for School and Outdoor Education

In the 1996 annual report of the German Advisory Council on Global Change (WBGU), the central problem fields of worldwide future change were described as syndromes of global change. The Mass Tourism-syndrome shows development and damage of natural areas for recuperation reasons and tourism. Mass tourism has an effect on many regions in the world. Typical 'hot spots' are coastal areas and mountainous regions. The Mass Tourism-Syndrome describes the network of causes and effects generated by the steady growth of global tourism in recent decades which lead to certain regions of the world. The symptoms are: loss of biodiversity, enhancement of greenhouse effect by air travel, lack of freshwater supply, soil erosion, inadequate disposal of sewage and waste, fragmentation of landscapes by settlements, high-consumption of resources.

Our students are now travelling with their parents. In a few years time, they will travel on their own. They need to think, they need to internalise what the negative symptoms of mass tourism are and how they can avoid it.





One example has been very well described. It is a problem of mass tourism in Tenerife.

There is in an excellent study. Primož Skrt, University of Ljubljana, Faculty of Arts, Department of Geography, thesis for bachelors degree with a title Negative Impacts of Mass Tourism, Unsustainable Development of Tourist Region on Example of Tenerife.

Link to his work is on http://geo2.ff.uni-lj.si/pisnadela/pdfs/dipl_200707_primoz_skr.pdf

I also got some another good example on the following web site:

<http://www.seos-project.eu/modules/landuse/landuse-c04-p01.html>

How are we going to achieve for students to think about mass tourism and to react in a sustainable manner towards the environment while they are tourists?

Work with our students. Tasks:

1. Task: To get to know about mass tourism in Tenerife - links to two examples
2. Task: Students have to describe positive and negative effects of mass tourism in Tenerife
3. Task: Students have to find some examples of mass tourism in their own country
4. Task: Students have to research how people do tourism in their own country
5. Task: Students have to think about how their family does tourism (What was the distance between their home and the place where they were staying? Did they travel by plane, car, train, bicycle ...How many towels did they use on holiday? On a scale 1 – 10, how touristy was the place where they vacationed?...)
6. Task: Students have to do ecological footprint about travelling by a car, air plane, train, bicycle ...
7. Task: Students have to find their solution for their family to put minimum impact while they are tourists
8. Task: Students have to find the solution for mass tourism in their country
9. Task: Students have to find the solution for mass tourism in general

Green Island

Petra Koppova, Slunakov

The aim of the project - connections to education areas and interdisciplinary subjects: *Environmental Education*. The project, which we have named "Green Island," is based on the true story of Krakatau Island. Despite being completely destroyed by a volcanic eruption, life returned to once again make Krakatau a green island teeming with life.

Scientific concept behind: volcanic activities, the origin and extinction of life on Earth, the diversity of life, human influence on the development of nature, sustainable future.

The story encompasses the important events on the island, from the time of the volcanic eruption to the present day, and is accompanied by black and white illustrations.

At the same time, the island is a symbol of the planet Earth, the only known island of life in the universe. We would be pleased if the project helped develop children's relationship not only to





“their” planet, but mainly to our planet Earth, as this is the only way we can change our behaviour and the way we live.

The presentation shows the main parts of the project Green Island, examples of worksheets, graphic sheets, coloured cards and “good examples” how the project is already used in Czech schools.

Eco-system Services

Chris Ford, Field Studies Council

A 15 minute presentation looking at how we can engage people with the importance of biodiversity loss through the concept of ecosystems services i.e. the economic value that may be gained by the functioning of an ecosystem.



Biodiversity is an issue that many people are aware of but often the scale of that decline is either under-estimated or is thought of as something that doesn't matter to them. The scale of the issue was highlighted by looking at species loss in England. The average over the last 200 years is over 2 species per year including all taxa and includes 7 species in the last decade that had Species Action Plans. While for many people the facts of this are enough to drive an emotive response that may lead to behaviour change there are significant proportions of the population that do not see the worth of 'bugs'.



The National Ecosystem Survey (<http://uknea.unep-wcmc.org/>) attempts to identify what the services we use are that derive from ecosystems. These include basic fundamental services such as producing the Oxygen we breathe through to production of fuel, food and fibre, to how ecosystems can regulate things such as climate, hazards, disease etc or just the value as a resource for recreation and health (both physical and mental). With this in mind it might be able to engage otherwise disenfranchised individuals by illustrating just what that 'bug' helps to do for you the individual.





The ecological footprint - A model for assessing the demands human populations make on their environment

Luca Baglivo, CREDA Onlus

Summary: Humanity needs what nature provides, but how do we know how much we are using and how much we have to use? And which behaviour changes do we need to make to ensure a sustainable life and a future to the next generations? The Ecological Footprint has emerged as the world's premier measure of humanity's demand on nature. This accounting system tracks, on the demand side (Footprint), how much land and water area a human population uses to provide all it takes from nature. This includes the areas for producing the resource it consumes, the space for accommodating its buildings and roads, and the ecosystems for absorbing its waste emissions such as carbon dioxide. The accounting system also tracks the supply of nature: it documents how much biologically productive area is available to provide these services (biocapacity). Therefore, these accounts are able to compare human demand against nature's supply of biocapacity. Many of the major scientific concepts underpinning the measures of the ecological footprint could be explored through outdoor experiences. This indicator is suitable to explore the complexity of big issues such as climate change and loss of biodiversity and to mind the gap between general big problems and what everybody can do in the everyday life to contribute to reduce our impact.





ANNEX 2: Outdoor Sessions

Building Birds Nests

Simona Žibert Menart, Centre for School and Outdoor Education

Group: primary or secondary school children

Materials: different bird nests, photos and names of the birds who built those nests, clothes-pegs and tweezers

Goals:

- getting to know different types of bird nests,
- getting enthusiastic about how the nests are built,
- finding out in what ways birds build their nests,
- experiencing the process of building a nest by using a clothes-peg and tweezers, and then placing the nest on a suitable location – depending on the type of bird,
- becoming aware of the importance of choosing materials for building a nest,
- deducing how the acquired knowledge can help us with building own apartment,
- realising the importance of a well-made nest for the continuity of the species.



Procedure:

In the classroom: Show bird nests and the type of birds who built them

Outside the classroom: Each group of students makes a bird nest by using a clothes-peg which they are holding with their mouth. Later in the process they are also allowed to use tweezers. They use the materials which they find in the surrounding area. They place the nest on a suitable location.

Evaluation: teacher and students – usage of the materials, placing the nest, the value of the nest for the continuity of the species, testing the solidity of the nests; wind, water, cold, predators.





Naturalness Key

This Naturalness evaluation tool helps to identify the natural and degraded habitats in our surroundings. This tool is very easy to use and very useful for outdoor activities. The user only needs a pen or pencil, the data sheet - which is available in the link below -, knowledge of some common plant species (e.g. reed, oak, rosehip or black locust) or plant identification guide. This method is not very accurate, but can help to understand what features of the vegetation indicate naturalness. 8 participants attended the trial of the Naturalness key evaluation tool.

<http://www.novenyzetiterkep.hu/en/english/node/106>

Observing the river

Participants: a group of 15 persons

Where: river bank

Materials: educational form, string, scissors, sheets, meter, watch, pens

Summary: An outdoor activity to discover the river as an element of the physical geography, as a part of the landscape, as an interesting habitat and as a resource for humans.

Description:

1. Read the map. The river as an element of physical geography.
Participants looked at a local map, explored the site and answered to some questions about the geographical situation. At the end of activity, we had a speech about other related learning activities. Primary school: creation of a geographical map. Secondary school: role-play game (RPG) about sustainable management of a river-area.
2. Look at the river. The river as a landscape and as a habitat.
The participants looked around themselves, observed the landscape and filled the form by flagging the right features of the river area. Related learning activities: primary school -> sensorial exploration; secondary school-> digital map with GPS and chemical/biological water analysis

WATCHING THE RIVER...

We can know and study a river reading a map or watching it during a walk along its banks.

Read the map

Before your Aik, look of the river on the map. A topographical map is better.

The name of the town where you start your hike is: _____

The name of the river that we want to study is: _____

Is it a tributary of another river? Which one? _____

Are there tributaries along the way? What's their name? _____

Where is the source of the river? _____

Look at the river

Month of observation: _____ Location of observation: _____

The town and its landscape	* fields	* abandoned fields	* pasture	* woods
Around the river	* bridges	* roads	* irrigation structures	* mills
there are	* few houses	* many houses	* factories	* farms
The banks				
The banks are...	* steep	* rocky	* sandy	* forest
The vegetation is...	* dense	* sparse	* trees	* shrubs
Are there waste?	* not	* few	* many	* the bare vegetation
Is so, what kind of trash?	* not	* few	* many	
Water				
How much water is there?	* flood period	* average flow	* in dry	
The water is...	* clear	* cloudy	* with foam	
The river flows...	* straight	* furious	* turbulent	* calm

Measure the river

You need a string, a clock and a bit of courage...

The river is wide: ... less than 5 meters ... more than 5 meters

The average speed of the water current is: ... speed = space (meters) / time (seconds)

The speed of the river

You are along the bank of the river. Choose a point S (start point) and walk along the bank to E meters. Now you're at the point E (end point). Come back at the point S and throw a piece of wood into the water with a shot (perpendicular to the river). Measure how in any seconds the wood gets to the point E. Calculate the speed in meters using mathematical formula: speed between S and E = meters / seconds measured.

Repeat the measurement several times and find the average measurement (sum of the results / their number of repetitions)





3. Measure the river. The river as a resource for humans.

The participants realized an „inquiry activity“ to calculate the speed of the river. The water flow can generate energy in a renewable way. One of the main element that should be known is the velocity of the river to estimate the energy available. But the speed is important also relating to the ecological vitality of the river.





ANNEX 3: Keynote Speakers Biographies

Dr Robbie Nicol

Is a senior lecturer in outdoor and environmental education at Moray House Institute, the School of Education of the University of Edinburgh. He has worked as an outdoor educator within the public, commercial, charitable and voluntary sectors. He holds a wide range of national governing body awards in canoeing/kayaking, mountaineering and skiing and maintains an active participation in these activities through journeying.

My life motivation comes from the realisation that human activities are fundamentally altering the planet's ability to sustain us in the long term. As an educator I believe that the outdoors provide places where individuals can rediscover their direct dependence on the planet through embodied experiences. As such my teaching and research interests are directed towards the theoretical development and practical implementation of environmental education, sustainability education and epistemological diversity (different ways of knowing) particularly in the outdoors.

I am currently the Programme Director for the MSc in Outdoor Environmental and Sustainability Education and supervise PhD and MSc students in a range of topics including place-based education, child development, emotional intelligences, the use and application of learning models, and cross-cultural education. I have authored more than 50 articles and most recently co-authored *Learning Outside the Classroom*, Routledge (2012). I have delivered keynote conference addresses in Japan, Sweden, Canada, Slovenia, Denmark, UK, Finland and the Czech Republic.

In addition I am involved in Continuing Professional Development with a European Union funded Socrates programme titled 'Outdoor Education: Authentic Learning in the Context of Landscapes'. I am a co-opted board member of the European Institute for Outdoor Adventure Education and Experiential Learning, a member of Cairngorms National Park Outdoor Access Forum, a member of the Advisory Panel for the Wilderness Foundation and a regular reviewer for various academic peer-reviewed journals.

Katalin Czippán

Is a senior adviser in education and communication, and organisational development for sustainability. In the past 3 years Ms Czippán was the deputy head of the Strategic department at the Office of the Ombudsman for the Future Generations.

Previously she managed projects of the Higher Education for Sustainability Program office at Eötvös Loránd University and The House of Professors, served as a director for Environmental Education and Communication Program Office in Hungary (2000-2005), a governmental institute whose task was to develop strategies and policies for all type of education. As a main initiative of the Office she led the development of process of the Forest School Programme and network – its slogan was Where (the fragments of) the World can be patched. Ensuring the relevant support by the field studies/ eco schools centres the office coordinated a development process for quality management and certification system.

At the beginning of her carrier she collected her experiences from the field at the Göncöl Foundation– organising nomadic environmental camps, building study-path, leading water quality





monitoring with children and using the data initiating changes in local authorities' operation by children.

Ms Czippán is editor and author of several books. As a member of Hungarian Society for Environmental Education she co-ordinated the Hungarian part of SUPPORT network and have been a co-author of the book *K. Czippán, A. Varga, F. Benedict ed. Collaboration and Education for Sustainable Development (2010)*. Creating an experiential basis for the book the members of the Support network collected and she analysed 17 case studies on school – community and/or research partnerships to see what kind of changes were caused in the learning processes by working in partnerships to work on “real world” challenges. As a result of the analysis the editors, the authors and the members of the network developed a framework that guides the schools and their partners how to build a partnership as an effective support for learning.

She has been supporting the participative community development, strengthening the learning organisational culture, encouraging system thinking, and using communication and education as a strategic tool - through organising and running workshops, trainings, facilitating organisational development processes, giving lectures. Among the others recently she was the European vice chair and the member of the steering committee of the Commission on Education and Communication of IUCN. She is an affiliated partner of the Learning Organisations for Sustainability Foundation Hungary, that's establishment she supported. Its mission statement represents her views as well on the role and aim of education and communication in targeting sustainability: “to contribute to regenerate system approach based, ecologically conscious, sustainable societies through supporting competency based personal and organisational learning which opens the heart, stimulates the mind and lifts the spirit”.

PhDr. Dušan Bartůněk, Ph.D.

- Managing Director and supervisor of educational programs
- Experienced corporate trainer and experiential learning programs - focusing on corporate clients since 1999
- Lecturer in international master program, Outdoor Environmental Education and Outdoor Life at the University of Linköping in Sweden.
- International Team Leader for the implementation of courses for teachers from EU countries for Comenius 3.1 project called Outdoor Environmental Education.
- Member of expeditions to Scandinavia, Asia Minor, Russia, Indonesia, Australia and New Zealand. Co-author of travelling photographic exhibition WHATEVER WAY.
- Author and co-author of professional publications, which inspire instructors and trainers to work in nature.





ANNEX 4: Conference Programme

Day 1 Arrive

Evening event – a welcome dinner and opportunities for participants to get to know each other.

Day 2

- 0900 Opening of the Conference
- 0930 Welcome by Slunakov Director Michal Bartos
- 1000 What is Real World Learning – an introduction to the project
- 1030 Getting to know each other
- 1100 Coffee break
- 1130 Keynote Speaker 1 – changing behaviour towards a sustainable future
- 1230 Q&A
- 1300 Lunch & guided tours of Slunakov
- 1430 Workshop 1 – developing competencies for sustainable change
- 1700 Plenary and review of the day
- 1900 Evening dinner
- 2000 Evening entertainment – an informal evening for participants to share their experience with some music, games and activities

Day 3

- 0900 Keynote Speaker 2 – science, sustainability and the big issues
- 1000 Q&A
- 1030 Coffee Break
- 1100 Workshop 2 – understanding fundamental concepts of science and sustainability through outdoor learning
- 1300 Lunch
- 1430 Share Zone – a chance for participants to share their ideas and resources
- 1530 Putting outdoor learning into practice – a range of practical workshops exploring different approaches to assessing outdoor science.
- 1900 Dinner
- 2000 Live Cimbalom music and dancing

Day 4

- 0900 Keynote Speaker 3 – changing the way we deliver outdoor science
- 1000 Workshop 3 – developing recommendations for the future
- 1130 Conference Evaluation and Planning for Future
- 1230 Plenary
- 1300 Lunch & Close.





ANNEX 5: Delegate List

Country	Name	Organisation
UK	Richard Dawson	Field Studies Council
UK	Tom Deacon	Field Studies Council
UK	Sam Rudd	Field Studies Council
UK	Chris Ford	Field Studies Council
UK	Beth Gardner	Council for Learning Outside the Classroom
UK	Sally Ann Thompson	Council for Learning Outside the Classroom
UK	John Rhymer	Bishops Wood Centre
UK	Barrie Cooper	RSPB
UK	Richard Irvine	Duchy College
UK	Harriet Agbenowu	St-Josephs School
UK	Robbie Nicol	University of Edinburg
Sweden	Karin Bergmark	Sundsvall School
Sweden	Anna Gröning	Sundsvall School
Slovenia	Ida Kavcic	CSOD
Slovenia	Simona Menart	CSOD
Slovenia	Nada Pavšer	CSOD
Slovenia	Živa Pečavar	CSOD
Slovenia	Alenka Bradac	
Slovenia	Darja Dimec	University of Ljubljana
Slovenia	Nataša Sardinšek	CSOD
Lithuania	Rytis Vilkonis	Siauliai University
Latvia	Astrida Zeile	Kuldiga
Italy	Daniela Conti	Creda
Italy	Luca Baglivo	Creda
Italy	Valeria Ratti	Creda
Italy	Mara Gargantini	Legambiente
Italy	Luca Pettito	Legambiente
Italy	Daniel Pezzotta	Legambiente
Hungary	Katalin Széger	HSEE
Hungary	Katalin Czippán	Commission on Education & Communication, IUCN
Hungary	Mondok Zsuzsa	HSEE
Hungary	Peter Varga	HSEE
Hungary	Bela Csuta	
Hungary	Gabriella Leskó	Esterházy Károly College, Eger





Hungary	Richárd Novák	
Germany	Thorsten Ludwig	ANU
Germany	Betina Post	National Ranger Association
Germany	Angelika Schichtel	ANU
Germany	Thorsten Kosler	Leuphana University of Lueneburg
Germany	Carolin Duda	Wechta University
CZ	Irena Opršalová	Slunakov, Olomouc
CZ	Dusan Bartunek	Outdoored
CZ	Vendula Křivánková	Tereza, Prague
CZ	Jiří Kulich	Sever, Horní Maršov
CZ	Jindřiška Bátková	Oáza, Zábřeh
CZ	Lenka Uherková	Lipka, Brno
CZ	Kateřina Mrázková	Lipka, Brno
CZ	Martin Šrom	Lipka, Brno
CZ	Romana Palkova	Slunakov, Olomouc
CZ	Martin Kříž	Chaloupky
CZ	Petra Koppová	Outdoored
CZ	Markéta Dvořáková	Slunakov, Olomouc
CZ	Lucie Černická	Vespolek, Jindřichův Hradec
CZ	Tomáš Kažmierski	
Azerbaijan	Susanne W. Schwarz	
Austria	Helga Spitzer	Carinthian Network ÖKOLOG
Austria	Josef Grober	Carinthian Network ÖKOLOG





ANNEX 6: About the Real World Learning Network

How do we learn about the world around us? Can we deliver better learning? How can science help to change behaviours towards a more sustainable world? These are just some of the questions that the Real World Learning Network is exploring.

The Real World Learning Network is a consortium of outdoor learning providers across Europe. Our goal is to explore and share successful approaches to outdoor learning that increase action for sustainable development. We believe that outdoor learning offers one of the best approaches for young people to engage with the world around them, and provide a stimulating context to explore how we can all contribute to a more sustainable present and future.

What is the Real World Learning Network trying to achieve?

The overall aim of the network is to explore and share successful approaches to Real World Learning through the outdoor classroom that leads to action for sustainable development. The network will investigate different approaches to outdoor learning across Europe, understanding why they are effective and how they can be shared with others. The network will have a particular focus on how outdoor science contributes to sustainability. The network will provide support for organisations delivering outdoor learning through discussion groups, research, news and events.

Seven outdoor learning providers from six countries have come together to start the network, however, we hope it will grow many times over the coming years. The Real World Learning Network will provide opportunities for organisations and practitioners to explore and share how outdoor learning is delivered and what makes it effective.

We will:

- Review good practice across Europe.
- Develop criteria for successful learning outside the classroom.
- Provide model lessons and case studies that promote a first-hand experience of the natural world linked to action for sustainable development.
- Explore how to ensure science appeals to a wide cross-section of learners, especially addressing the gender imbalance.
- Explore how outdoor learning promotes competencies for the green economy.
- Provide easy access to information, knowledge, expertise, guidance and resources.
- Develop a network of good practice amongst educators to continually share ideas and resources.
- Increase the profile of outdoor sciences across the partner countries and the EU.

Working Groups

The Network will establish four working groups to explore outdoor science and sustainability.





Working Group 1 - Developing quality criteria for success and assessment for learning

The overall goal of the group is:

‘to explore different success criteria throughout the EU and explore a common set of quality criteria taking into account the pre, during and post learning experience of the student’ and ‘to review different assessment approaches, recommendations to ensure that RWL can be assessed and evidence learning/behavioural change.’

Key output: Quality Criteria and self assessment process for Real World Learning.

Working Group 2 – Outdoor science and sustainability

The overall goal of the group is

‘to explore how outdoor science and real world learning can help learners understand the fundamental concepts of science and sustainable development’ and ‘to demonstrate practical methods of teaching and learning based on the outdoor classroom.’

Key output: Guidance for schools on science, sustainability and outdoor learning.

Working Group 3 – Pedagogical approaches to outdoor learning

The overall goal of the group is:

‘to review a range of approaches to Real World Learning and outdoor science with a focus on linking learning to behavioural change promoting action for sustainability.’

Key output: Review of pedagogical approaches and their effectiveness.

WG4 – Real world learning and developing career competencies

The overall goal of the group is:

‘to link science learning to appropriate career pathways that support a green economy and responsible citizenship.’

Key Output: Guidance on competencies for a green economy and responsible citizenship.

For further information contact Richard Dawson – richard@field-studies-council.org





ANNEX 7: About the Real World Learning Network Partners

RWL is a partnership between:

Field Studies Council: The FSC is a leading environmental education NGO in the UK. Founding in 1943 the FSC managed 17 environmental education centres and each year provides courses for over 100000 people, most of whom are school and university students. We also deliver a significant teacher training programme for both in-service and per-service teachers, as well as professional development courses for environmental practitioners. The FSC is also involved in the development of policy and research in out of the classroom learning and is a leading publisher for identification charts.

www.field-studies-council.org

ANU (Association for Natural and Environmental Education): The ANU (Association for Nature Protection and Environmental Education) is the umbrella association of non-school environmental education in Germany. Since 1990 the ANU has organised the networking of environmental education centres, educators and freelance providers, their further training, work in specialised groups and outside representation. Currently the ANU has about 900 members and the association increases steadily. The ANU experts are often called upon by other educational institutions and in many states by ministries in charge of environmental education and frequently advise governmental institutions and foundations when granting funds. As education in Germany is the responsibility of the individual states, the ANU has established 12 regional associations to operate on a state level.

www.umweltbildung.de

Sluňákov – the Centre for Environmental Activities of Olomouc City: Sluňákov Centre for Environmental Activities is a non-governmental, non-profit organisation established by the City of Olomouc when the construction of its low-energy building was finished in the winter of 2006. The main aims are:

- To provide pupils and students with an environmental education and to enable them to build their own relationship with nature (through experiencing amazement at nature's wonders);
- To organise seminars for teachers how to teach environmental education in practice;
- To publish methodologies and other teaching materials for teachers of environmental education;
- To raise general public awareness on environmental issues (via holding public discussions, movie presentations, or Ecological Days Olomouc; the festival in April and May every year, etc.);
- To take part in nature conservation.

www.slunakov.cz

Centre for School and Outdoor Education: CSOE is a non-profit organisation, founded in 1992. Now has it 272 employees. It consists of headquarter, which employs 23 people and of 23 centers - homes and 14 day care centers, where 130 teachers work. We have our own, independent accounting and administration. CSOE is a reliable public institution. 85% of our business is a public service for primary and secondary schools. These activities are funded from the of the Ministry of Education and Sports. The Centre is part of the European Institute for Outdoor Education (EOE), in collaboration with him last year CSOD organized an international conference Encountering, Experiencing and Exploring Nature.





www.csod.si

CREDA Onlus: a non-profit organization, accredited association, founded in 1987 by WWF (World Wildlife Found) Agesci (Association of Italian Guides and Scouts), Italia Nostra and Legambiente. The association carries out research projects, training, education and communication on environmental issues and sustainability of urban areas. It is addressed to institutions, organizations, public and private agencies. The association has consolidated its role over the years, becoming a reference center for environmental education services and education for sustainable development in the territory of the Lombardy Region. It is a member of the national and regional environmental education INFEA net (Information, Training, Environmental Education), promoted and coordinated by the Ministry of the Environment and the Lombardy Region, and works closely with other agencies, environmental laboratories, associations, public and private companies.

www.creda.it

Hungarian Society for Environmental Education: HSEE was established in March 1992 by 53 devoted environmental educators. It now has nearly 1 000 members. Most of the members are educators, ages are from teenagers to retired academicians. Two-third of them live in countryside.

The goals of HSEE are:

- Increase environmental awareness, knowledge and responsibility of those who regard Education for Sustainable Development (ESD) for a mission of themselves, and - through them - of whole Hungarian society.
- Collect and disseminate knowledge and methods of ESD; help environmental educators, encourage and organise their co-operation.
- Study, understand and improve personal relationships and effectiveness for creating harmony amongst people and between people and environment.
- Develop responsible thinking in planetary and century scale; improve cooperation and patience.
- Identify, train and practice skills and competences needed for the ecological sustainability of the Earth.

www.mkne.hu/index_english.php

Council for Learning Outside the Classroom: The Council champions learning outside the classroom (LOtC) and encourages young people to get out and about because research shows that children learn best through real life experiences. We believe that every child should be given the opportunity to experience life and lessons beyond the classroom walls as a regular part of growing up. These experiences expand the horizons of young people, opening their eyes to the wonders of art, heritage, culture, adventure and the natural world. We ensure that more young people have access to these life changing educational experiences by providing support on the ground, facilitating the sharing of best practice and promoting the benefits of LOtC in raising attainment and aspirations, reducing truancy and re-motivating those who are disengaged from their education.

www.lotc.org.uk





For more details on the project and how to get involved please visit www.rwlnetwork.org

or contact Richard Dawson richard@field-studies-council.org.





ANNEX 8: Conference Evaluation

Evaluation Form

Please could you spare a short time to answer some questions about the conference?

Key Note Speakers

	1 Not useful	2	3	4	5	6	7	8	9	10 Very useful
Robbie Nicol – Changing behaviour towards a sustainable future								XX	XXX XX	XXXXXX XXXXXX XX
Katalin Czippán – Science, sustain ability and the big issues					X		X	XXX	XXX	XXXXXX XXXXXX
Dusan Barftunek – Changing the way we deliver outdoor science					X			X	XXX X	XXXXXX XXXXXX XXX

Comments:

Robbie's presentation should be the first one, it looks like he just repeated what the others said day before.
 Many words and thoughts are new for me, and I don't know what it is coming to mean for me
 Good sequence of the keynote speakers
 Interesting, but I am missing the link to the announcement of the conference: "New Approaches ..."
 All inspiring with lots of food for thought
 Missed Katalin
 Not sure what to take from Dusan session. Nice format, little tangible output
 Great mix of content and presentation styles. However, on reflection I came out of Robbie & Katalin's presentations with much more
 All three lecturers were interesting and opened some new topics or ideas for discussion.
 Dusan's lecture would have been a great introduction into conference on day 1

Workshops





	1 Not useful	2	3	4	5	6	7	8	9	10 Very useful
Workshop 1 – developing competencies for sustainable change					X	XXX	X	XXX XX	XXX	XXXXX X
Workshop 2 – understanding fundamental concepts of science and sustainability through outdoor learning			X		XXX	XX		XXX X	XXX X	XXXXX X
Workshop 3 – developing recommendation for the future			X	X	X	X	XX	XXX X	X	XXXXX XX

Comments:

The discussion among people of one group has not connected with chosen topic
 Really good prepared, but I missed deeper explanation and conclusion
 It was really interesting to meet Paula/Romania in the rainbow and that was a little bit like that I do at home
 Values stuff was great
 Very good that you have made many workshops and made it possible for us participants to take part in the process of forming the thoughts and work
 The science concepts workshop/presentations lacked strong linkage to the project in parts
 Science workshop was **very** long! I liked the individual examples eg natural phenomena, Green issues, etc.
 Values workshop was excellent – lots to think about and take away.
 Workshop on last day seemed a little doing it for the sake of it. Note sure why.
 Workshop of WG2 was interesting (the first part) but not very applicable to my work. The outdoor activities were so much more useful to me though
 The workshops were quite good and useful

The Real World Learning Network

We are encouraging more people to join the Real World Learning Network. What should the network offer?

	1 Not useful	2	3	4	5	6	7	8	9	10 Very useful
Regular news letter				X	X	XX	X	XX	XX	XXXXXX XXX
Updates of courses and events							XX	X	XXX XX	XXXXXX XXXXXX
Forum for debate		X				XX	X	XX	XX	XXXXXX XX





Advice service						X	X	XX	XXX XX	XXXXX
Best practice guides							X	XX	XXX X	XXXXXX XXXXXX
Guidelines for outdoor learning							X	X	XX	XXXXXX XXXXXX
Advocacy and lobbying	X					XX		X	XXX	XXXXX X
Other..... International Training Events Books										XXXX

Development of outdoor education thru Europe and World

Would you be interested to join the Real World Learning Network? (membership is free)

xxxxxxxxxxx Yes No xxxx Not sure

Please provide your name and email so we can contact you about membership

(Personal details removed)

As a result of the conference do you feel that?

	1 Not at all	2	3	4	5	6	7	8	9	10 Yes a lot
I have a better understanding of teaching science outside	XX	X		X	X	XX	XXX	XXX X	XX	XXXX
I have a better understanding of teaching career competencies through science	XX	X		XX	X	XX	XX	X	XXX XXX X	X
I know how behaviour change to sustainable development can be taught through outdoor learning		XX		X	XXX	X	XXX	XXX	XXX XX	XX
I have shared ideas with partners from across Europe				X				XX	XXX	XXXXXX XXXXXX XX
I know more about outdoor learning in other countries				X	X			XXX	XXX XXX X	XXXXX XXX





And finally...

Please explain what has been the highlight of the conference for you?

This conference managed to join my job activities with my PhD. Study. I didn't believe it will happen sometimes
To meet people and see that I am on right way in my practise
How to find out values from the groups
Everybody has an opportunity to share ideas / experience: Give and Take
Sharing the ideas, best practises, getting to know other people
Outdoor activities
Was not new to me. Exchange
Philosophy - to change way of thinking
Social Interactions , networking and philosophical discussion
Keynotes - all
Wednesday was the day I felt most engaged myself. The meeting of many nice and interesting people – many interesting conversations – and the hospitality of the hosts.
Having the opportunity to share WG4's journey and engage, challenge and cause reflection in partners and participants
Guided walks, seeing beaver lodge and tracks, seeing black woodpecker
Dusan Bartunek workshop
Working as a part of WG4 it would be the information the group got from the conference
All content was very good
Changing the way we deliver outdoor learning
The cooperation of outdoor learning providers and pedagogy – education is possible in European level, and it starts now

What are the three most important messages you will take away from the conference?

I want to teach outdoor more than before. We all have to deal with rules and regulations that don't support outdoor learning. My PhD thesis could be useful for my job at environmental centre
In to be out
Hope
And that my acting is important
Work on Green competences. How outdoor learning helps for better indoor learning. How we can influence the change of our values
Good mood of everybody. The Slunakov Center central part of everything is a teacher (H/S behaviour)
Share, Participate, Think, Enjoy
Be active, act real
Dušan: "We do not always have to look for new methodology"
How to promote OL
How to change?
It's possible to do 'anything' outdoors
Outdoor learning can provide changing of behaviour towards sustainability
Hopefully these will crystallise in the next few days





Values, Model good outdoor learning

Keep on working for sustainability, we are many in Europe working for it

Outdoor Learning is interpreted in different ways with different emphasis across Europe

Self reflection on practice is v. important and an ongoing process

Always enter networking opportunities with an open mind and heart

Remember the simple things like the guided walks and long lunch breaks for networking are useful to include in future conferences

Outdoor learning – our future

The field is evolving and positive things are coming from the project

New contacts for activities we did all contents from this meeting

Values – competences

There are many good practices of outdoor education to share among all countries and persons interested in... There is a great common understanding of outdoor learning issues. Outdoor learning has future





Thanks for all!

Great accommodation, but unfortunately we weren't stationed in Slunakov. Food – not so impressed on Sunday or Monday lunch, but then it was great. The Slunakov team was amazing – always there and willing to do anything

Thanks a lot

I would like to come back again!

Thank you for spending the time to fill in this evaluation form

