



GOTHENBURG JUN 29 - JUL 2 2015

WORLD ENVIRONMENTAL EDUCATION CONGRESS

8TH WEEC Planet and People

- how can they develop together?

WEEC2015

Summary Report

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Introduction

World Environmental Education Congress – WEEC – is an international congress addressing education for environment and sustainable development. The 8th World Environmental Education Congress took place in Gothenburg, Sweden, between June 29 and July 2, 2015. The host was the Centre for Environment and Sustainability (GMV) at Chalmers University of Technology and University of Gothenburg and the co-organizer was MCI Scandinavia. The WEEC Permanent Secretariat is found in Torino, Italy.

About 800 people from 73 countries took part in 418 presentations in 120 parallel sessions (11, 5 hours or about 217 hours combined) plus poster presentations.

Co-chair Summary

People and Planet – how can they live together? That is the question that keeps us busy more than ever. As inter-connected sustainability challenges such as; climate change, loss of biodiversity, loss of food and nutrition security, continued pollution of air, water and soils, are rapidly becoming the key challenge of our time, the need for forms of education and learning that can help citizens – young and old – respond to these challenges adequately and responsibly, is greater than ever. It is no surprise that many early childhood centres, schools, universities and communities are looking for ways to re-orient teaching and learning towards these challenges and the competences they require. Indeed, even within the world of business and the private sector niches are emerging in which the P of Profit is no longer sacred and the idea of continuous growth revisited. Within those niches learning and capacity-building for alternative business development that is mindful of people and planet are increasingly as key elements of a transition towards a world that is more sustainable than the one currently in prospect. During WEEC2015 we wanted to create a platform for sharing innovative practices and research in environmental and sustainability education in a wide range of contexts from different parts of the world. The 11 thematic strands we created showed the range of possibilities for utilizing education and learning in actively engaging citizens in highly complex and often ambiguous existential issues. If there is any take home message from the congress it is that environmental and sustainability education must also engage in deeper 'ontological' questions about what it means to be in the world and to be educated in the world. As has been stated by several presenters albeit in different ways: harmonizing people and planet requires a rethinking of the values and relations that have been established in subtle and sometimes not so subtle ways, and opening up possibilities to develop alternative ways that do not compromise the carrying-capacity of the Earth and the well-being of people and the non-human and more than human world. Put differently, educators have a responsibility in exploring alternatives to homogenizing neo-liberal agenda's that accelerate consumerism and the erosion of meaning. Environmental and sustainability education needs to be critical and transformative – an adagio that seems to resonate among the participants of the congress. WEEC2015 offered a wide spectrum of possibilities for education and learning for a transition away from, what some speakers referred to as, global systemic dysfunction and towards a healthier, more equitable and balance way of living. Not by propaganda, force or prescription but rather by discovering, (re)connecting, questioning, disrupting, experimenting, reflecting and, indeed, continuous learning.

We are proud to have been co-chairs of what we consider to be a highly successful congress with excellent contributions and a wonderful atmosphere of critical friendship. We are also proud to have been a part of an organizing team supported by most impressive volunteers from different parts of Sweden and beyond. As stated in the introduction of the program booklet, we hope that WEEC2015 will travel further and will have a ripple effect when the lessons learnt are shared back home. Only then will the ecological handprint of the congress be greater than its ecological footprint!



Arjen Wals & Ingrid Pramling Samuelsson

List of Themes

1. Taking Children seriously in addressing global challenges

We only have one planet, it's simple, it's the only one we have, and we have got to look after it. But when we explore 'People and Planet and how they can develop together', what people are we talking about? In this strand we focus on the young both as victims, heirs and catalyst and agents of change: not only the children growing up in affluence but also those growing up in poverty. How can we create spaces for them to become fully self-actualized members of society who can ably and meaningfully contribute to a transition towards a more sustainable world in which People and Planet develop together?

2. Reclaiming sense of place in the digital age

Place-based approaches emphasizing the importance of place and place-based identity in determining our relations with the planet are on the rise across the globe. The focus on place and identity is timely as the complexity and uncertainty brought on by globalization and the rapid pace of technological and social change resulting in enormous cultural shifts which include a search for meaning and affiliation in locally defined identities. Although there are some who are worried about the 'disconnect' between people and place that results from a pre-occupation with and dependency on information and communication technologies, there are also those who see the use of ICTs as a way to reconnect people and places. There are numerous examples of citizens monitoring changes in the environment (e.g. changing bird migration patterns, changing quality of water, soil and air, changes in biodiversity) using GIS, cell phones, and specially designed monitoring apps. This strand explores the opportunities for reconnecting people and planet locally in a rapidly changing world.

3. Environmental education and poverty reduction

As the millennium development goals are being replaced by sustainable development goals and there appears to be a shift from 'education for all' to 'quality education for all', an important question is: what is the role of EE in reducing poverty? Already in 1975 (Belgrade Charter on EE) and 1977 (Tbilisi Declaration) EE was assigned a role in overcoming inequality and questioning unsustainable economic models to help alleviate poverty. But what has EE done concretely since? And why has reducing inequity and poverty been under-emphasized in the DESD? As poor people around the world are disproportionately affected by the impact of climate change, mining, resource depletion, loss of food and nutrition security, and so on, environmental and sustainability educators need to look for ways to engage multiple stakeholders (schools, communities, governments, private sector and civil society organizations) in strategies to reduce poverty and improve livelihoods. In this strand we look for researched practices from around the world that seek to do so.

4. Learning in vital coalitions for green cities

Transition towns, eco-villages, urban agriculture, green schools with edible school gardens, are becoming more and more mainstream and widespread. These initiatives all require forms of joint learning with sometimes unlikely partners. Organizing such learning, also referred to as multi-stakeholder social learning, requires a new role for environmental and sustainability educators and policy-makers. A new task might be: brokering and supporting vital coalitions that are both energizing and generative in engaging citizens, including children and youth, meaningfully in greening urban areas in order to contribute to local food security, health and ecological stewardship. This thematic strand explores these emerging and expanding initiatives from a learning perspective: What kind of learning is taking place? Who is learning? How can such learning be supported? What is the impact of these coalitions on the learners themselves, the organisations they represent and the community they seek to improve?

5. (Re) emerging concepts for environmental stewardship and sustainability

Since the birth of environmental education in the sixties of the last century emphasis has been placed on systems thinking and a more holistic approach to problem solving or situation improvement. Over the years many learning activities and curricula have been developed by environmental educators but still the challenge of enabling people to see connections, relationships and interdependencies, is as big as back then but the urgency to so is greater than ever. In meeting this challenge there are calls for re-discovering and utilizing indigenous ways of knowing but at the same time there are new concepts such as bio-mimicry, cradle to cradle and life cycle analysis that show promise in strengthening integral thinking and design. In this strands the educational potential of old, new and blended ways of 'thinking the earth whole' is explored.

6. Mind the gap! Moving from awareness to action

Early EE was informed by insights from behaviourist social psychology suggesting that an increase in environmental awareness would lead to more responsible environmental behaviour. This assumed linearity between increasing knowledge-growing-awareness and changing-behaviour has shown to be

weak. Attitude-behaviour models have since then been revised to include a number of additional factors and feedback loops. Just providing information, raising awareness and changing attitudes apparently is not enough to change people's behaviour. But still policy-makers and donors want 'evidence' that education leads to a change in behaviour and improved environmental quality. In this thematic strand we re-visit the 'gap' by exploring new behavioural models and new forms of 'evidence' taking a critical look at projects and approaches that successfully influence and/or change behaviour.

7. Assessing environmental and sustainability education in times of accountability

In this thematic strand the focus is on assessment of learners in school settings (K-12 and vocational education). In many countries there is a call for climbing the rankings and excelling in math, science and languages (cfr. the Pisa rankings). This often leads to a focus on the testing of 'universal' knowledge. At the same time schools – in their own context – need to pay attention to sustainability, health, citizenship, arts and humanities while preparing learners for a rapidly changing world and workplace. These claims seem to be competing with one another. How can environmental and sustainability education navigate this force field? Are there alternative ways of assessing learners that provide more space for meaningful learning around real/authentic issues?

8. Beyond the green economy: educating and learning for green jobs in a green society

Driven perhaps by mostly economic interests and technological innovations, companies and governments are beginning to re-orient themselves to what is commonly referred to as the 'green economy' and its related 'green skills' and 'green jobs'. The demand for a workforce that is capable to work in such an economy is on the rise and (vocational) schools are responding by re-orienting their curricula. From an environmental and sustainability perspective it is important to critically follow this trend in order to make sure that the P for People and the P for Planet receive at least as much attention as the P for Profit or Prosperity. In this thematic strand we invite participants to discuss the role of environmental and sustainability education at the interface between school and community and the world of work.

9. New perspectives on research in environmental and sustainability education

The increased attention to 'engagement' in environmental learning has resulted in a greater focus on the agency of citizens, young and old, and their active participation in all phases of learning and inquiry. Positioning citizens in such roles is consistent with calls for treating all people as responsible agents capable of participating in changing and improving their circumstances. Doing so is considered crucial as the complexity and seemingly overwhelming nature of sustainability issues can easily lead to negativity and action paralysis. This is why some environmental education researchers emphasize not only the intellectual engagement of people in socio-ecological issues, but also their emotional engagement. For environmental education research to contribute to citizen engagement in socio-ecological-environmental issues, forms of civically engaged scholarship with appropriate research methodologies and methods are needed urgently. In this thematic strand participants are encouraged to share, reflect on and discuss emergent perspectives on research in environmental and sustainability education.

10. Educational policy development for environment and sustainability

Communities, schools and universities are affected by a number of educational policies that are not always consistent with one another and offer varying opportunities for addressing environment and sustainability in a meaningful way. This strand investigates existing and new policies and innovations that offer the most promise for enabling educational change for a more sustainable future, including in relation to educational institutions' approaches to curriculum, research, facilities operations, governance, and broader engagement with community and place.

11. Education and learning for climate change adaptation and resilience

Communities, both urban and rural, are experiencing the impacts of climate change in sometimes subtle (e.g. the shifting of seasons, change of bird migration patterns) and not so subtle (e.g. flooding, droughts) ways. How can education and learning help communities adapt to these impacts and become more resilient in their response? How do communities strengthen their capacities for social resilience, reduced vulnerability and an integral risk management? Or should the focus be on 'adaptation' and 'resilience' reflecting the inevitability of climate change while de-emphasising climate change mitigation or prevention?

Themes Summary

The below reports from the theme chairs show that a wide range of interesting discussions took place during the congress.

Education was discussed from different angles bringing up for example the need for a whole school approach, to seriously critique education as a whole and re-imagine a more complete version of education that respond to the challenges of our times, creating sustainability learning standards for higher education. Theme 11 discussed that teachers' conceptual knowledge is poor related to climate change and that in many cases teachers are dependent on media reports when educational materials are in scarcity. Theme 7 discussed the analyzing of students' understanding of sustainable development and whether everything that environmental and sustainability education aims at *can be assessed and should be assessed*. If assessment helps us to make more visible the outcomes and impacts of environmental and sustainability education and its contributions to *high quality education*, this will be a strong support for the Global Action Programme on ESD and its objectives.

Community engagement and non-formal education was discussed in some themes. Theme 1 brought up the idea to have pop stars advocating for EE and ESD in order to make it "cooler" but also the need to promote intergenerational activities.

A topic debated in many themes is the need to go beyond traditional EE and ESD in both research and practice. A question is "why haven't we accomplished more"? We need to be more critical and innovative. We will not resolve current problems "by using the same thinking that created the problems in the first place".

Whether IT is an asset and a facilitator for EE and ESD or a burden in that it brings you further from the sense of place has been widely discussed mainly in theme 2 and 3.

A provoking issue discussed in theme 3 was that ESD tends to reproduce inequality through the tendency to approach local communities or individuals in “isolation” and thus overlook broader structural inequalities and causes of poverty. Another contested issue concerned whether ESD interventions carried out by various external actors has a tendency to overlook the existence and importance of local/traditional knowledge in relation to environmental sustainability.

Theme 1

Theme: Taking Children seriously in addressing global challenges

Chair: Ingrid Pramling Samuelsson

Main trends

Children’s competences and adults’ and researchers’ underestimation of these.

Intergenerational activities, actions, programs and research need to be promoted – we need to collaborate in supporting and developing agents of change!

Projects developed across the life course include collaborations between education sectors. This has big implications for funding. Early Childhood Education is underfunded and marginalized and would also benefit from the involvement of subject specialists and students working with families and community groups in activities located in preschools.

Focus is often on school children and a question is how much it is often framed by the adults or if we are prepared to hear children’s ideas.

The need to go beyond traditional environmental education concerns. For example, Traditional composting, can be quite fun for children, when they discover life there, and it is a good way to begin with the youngest, but it is not enough!

Can we make education for the environment and sustainable development more “cool”? For example the Water Sanitation and Hygiene campaigns (WASH) in schools have football players promoting. We need to recruit pop stars...

Provoking ideas or discussions

We have to question what traditions, lifestyle practices and philosophies impact there is on Efs in various countries. What practices are not sustainable?

How can politicians and the media give voices to children?

People still think that young children should be sheltered from sustainability questions, but they are not sheltered at all. Currently they are the major victims.

Disaster risk reduction is not really understood in the developed countries, children are not included. The development of resilience need to be better understood. Dispositions may be masterful or helpless in the context of sustainability.

Other comments

There is a need to develop more intergenerational and inter-education sector collaborations. This means practicing what we preach in ESD recognizing the multiple stakeholders and address the need for interdisciplinary approaches as well as supporting each other in the common educational efforts. It is in this light that a proposal has been tabled in the UNESCO GAP Network “Building capacities of educators and trainers” (Network 3). For network partners to collaborate in the development of training resources that may be applied across the learning life course and illustrating progression in ESD project work across the educational sectors from Early Childhood to school, college, professional, adult and work based learning.

Theme 2

Theme: Reclaiming sense of place in the digital age

Chair: Rolf Jucker

By way of introduction I would like to quote Arjen Wals and Jifke Sol to underline the importance of the theme:

“There is a whole body of scholarly work emerging that suggests that (re)discovering and (re)connecting with place can be:

- restorative (therapeutic, healing, etc.)
- generative (leading to new ways of seeing, sensing, experiencing and learning)
- empowering by enabling people to shape and care for a place.”¹

Main trends

The trends ranged across a wide range of spectrum. It went from almost an aversion to technology in this context, to a non-interest in technology (since it is simply not needed because there are other ways of interacting with nature to create a sense of place), to an almost entirely uncritical, unreflected worshipping, hyping of IT as an amazing new way of creating connection with nature and a sense of place.

Provoking ideas or discussions

- There was certainly again and again a question whether and how the digital age and its new tools can actually lead to a sense of place, can get people to go out into nature and so at least have an opportunity – otherwise not given – to develop such a sense of place.

¹ Jifke Sol, Arjen E. J. Wals: ‘Strengthening ecological mindfulness through hybrid learning in vital coalitions’, *Cultural Studies of Science Education*, DOI 10.1007/s11422-014-9586-z, published online 11 June 2014.

- The arguments for such a use of IT tools concentrated mostly on the argument: ‘you have to accept the world as it is and that means that most people, especially young people are primarily interested and fascinated by the online world, not nature’. This is seen as a way of drawing in people otherwise not attracted.
- The counter-argument would go something like: ‘these tools only get into the way of a meaningful and in-depth relationship with a place, with nature, they usually degrade nature to a mere backdrop of the IT-world. It is better to do away with these tools and use other tools such as storytelling, long experiential periods in nature, collective and in-depth research which lead to a deep and meaningful sense of connection with the place’.
- A further interesting notion for connecting to a place went as follows: if you work the land with your labour, ‘give’ to the land with for example gardening, the land/place gives back to you food/nourishment, thereby closing the ecological cycle and deeply connecting you also in a bodily sense and quite existential sense.
- The Aboriginal notion of ‘dadirri’ stands for an intense, multi-sensory experience in nature which can produce an intense, whole-person connection to a place. It is distinctly NOT meditation: you are out there in nature experiencing the interdependence with the place, whereas meditation is a retreat into yourself and a closing-out of the world).

Other comments

- a. Tidball & Krasny make an important point in the conclusions to their important anthology *Greening the Red Zone*: a true sense of place which produces & yields all the proven positive benefits of being in nature (such as resilience, improved cognitive functioning, deepened social relationships etc.) only comes into being with ‘greening activities’, i.e. with actual interaction with green spaces: urban gardening, tree planting or forest caring, etc., in other words with a sustained interaction with the place over a period of time.²
- b. In comparison, many examples of IT-Tools for ‘creating a sense of place’ (such as species identification games, use of iPads in gathering scientific data, etc.) seemed to suggest that you can short-cut this sustained interaction.
- c. A lot of the projects presented used very small samples, therefore making it very difficult to draw solid conclusions.
- d. Often, it seemed that projects were ‘self-fulfilling prophecies’: the researchers had such a strong bias towards the usefulness of technology that they only saw the factors supporting their argument, not the ones contradicting it. I saw a lack of ‘the scientific mindset’ by which I mean:
 - i. Openness, particularly to errors
 - ii. Transparency
 - iii. Falsification: a strong attempt made to make the proposed theory fall apart (not just the supporting stuff)
 - iv. Hardnosed honesty and self-critical approach
 - v. Complexity: i.e. getting the help from others, not assuming that one understands everything.
 - vi. Humility / modesty.

² Keith G. Tidball, Marianne E. Krasny (eds.): *Greening the Red Zone. Distaster, Resilience and Community Greening* (Dordrecht, Heidelberg, New York, London: Springer, 2014), p. 459. ISBN 978-90-481-9946-4, ISBN 978-90-481-9947-1 (eBook), DOI 10.1007/978-90-481-9947-1

- e. Very often the techno-enthusiasts implied that the sceptics did not have any idea of the field. In my experience it was the same with them. There is by now a well-established literature out there on the long-term effects of the use of electronic devices on social and human-nature interaction³ which none of these studies even bothered to take into account.
- f. I saw an almost complete lack of preparedness to engage in fundamental questions: does it make sense at all? How can, as an example, the use of a computer simulation game (where ‘you can do all the research indoors’ and which is still claimed to promote a sense of place) contribute to the step-change we need for a sustainable society?
- g. A lot of the proposed IT-approaches to generate a sense of place focused on data-generating or mapping, thereby not engaging with the more fundamental issues of how we get from information to understanding and wisdom (E. O. Wilson) or not appreciating the difference between a map and the territory (Gregory Bateson). One presenter even suggested that mapping was all that was needed.

Theme 3

Theme: Environmental Education and Poverty Reduction

Chair: Benjamin Knutsson

Main trends

The discussions within theme 3 could roughly be sub-divided in four strands.

(1) The role of knowledge sharing through ICT tools in combating poverty and promoting sustainable development. These discussions partly revolved around how different web/mobile phone-based solutions can facilitate communication within poor communities but also enable them to have a ‘voice’ and reach out globally. Furthermore this strand involved discussions about Massive Open Online Courses (MOOCs) as tools for global dissemination of knowledge on the relationship between environmental degradation and poverty.

(2) The role of community engagement and non-formal EE in fighting poverty. This strand involved a range of examples on how poor communities in the Global South as well as in the Global North – via non-formal education carried out by NGOs, botanical gardens and other actors – are mobilized in various income-generating activities that are environmentally sensitive.

(3) The role of renewable energy solutions in fighting poverty. The discussions in this strand revolved around how education can be used to promote renewable energy solutions at low cost and how such solutions can benefit the poor.

³ Just two examples: Sherry Turkle: *Alone Together. Why we expect More from Technology and Less from Each Other* (New York: Basic Books, 2011); Richard Louv: *Last Child in the Woods. Saving our Children from Nature-Deficit Disorder* (Chapel Hill: Algonquin Books, 2008).

(4) Critical assessments of contemporary ESD practice. This strand involved various critical interrogations of contemporary ESD practice. The basic message being that ESD interventions have a strong tendency to approach local communities or individuals in “isolation” and thus overlook broader structural inequalities and causes of poverty. By doing so they also, wittingly or unwittingly, tend to reproduce inequality and sometimes even exacerbate poverty.

Provoking ideas or discussions

There were a number of ideas that provoked discussions. The suggestion by some presenting scholars that ESD in fact tends to reproduce inequality was obviously a ‘hot’ topic. Another contested issue concerned whether ESD interventions carried out by various external actors has a tendency to overlook the existence and importance of local/traditional knowledge in relation to environmental sustainability. A third important point that was discussed, particularly in relation to knowledge sharing and ICT solutions, concerned how to deal with “language barriers”, e.g. how to adapt ICT solutions to local languages. In relation to this there was also a discussion on whether MOOCs had to be supplemented with LOOCs, i.e. Local Open Online Courses, to promote fairer distribution of learning opportunities on a global scale.

Theme 4

Theme: Learning in vital coalitions for green cities

Chair: Frans Lenglet

Main trends

Urban gardens
School gardens
Urban governance
Mobilizing authorities and public administration for sustainability

Provoking ideas or discussions

There were no innovative approaches to collaborative social learning on and around urban sustainability issues including a variety and diversity of ‘stakeholders’. The prevailing practice still seems to be heavily dominated by the traditional (and already thoroughly discarded) approaches of (a) awareness → knowledge → behavior change, and (b) KAP: knowledge-attitude-practice. There were (few) examples of simultaneous learning and co-creating of knowledge related to actual practice and action.

Other comments

There seems to be a gap between the sometimes overly theoretical discourses by academic-oriented researchers and the practical issues of running school and urban gardens and urban agricultural efforts. There were too few examples of a close and productive relationship between the practitioners (and enthusiasts) on the one hand and researchers on the other.

Theme 5

Theme: (Re) emerging concepts for environmental stewardship and sustainability

Chair: Bob Jickling

Main trends

Some of the themes that were made explicit in the critiques of environmental and sustainability education and education and education for sustainable development were also implicit in other presentation and shaped some trends:

- Collectively, our work is debilitated by the lack of a robust critique of the dominant socio-economic culture AND the dominant education culture.
- The Western Cartesian thought system is inadequate. We will not resolve current problems “by using the same thinking that created the problems in the first place. “
- A corollary to the above sentiment is that we won’t resolve these problems by “*being* the same people, either.” There were a number of observations that emerged around this idea. But, in sum they amounted to profound extant separations, in many contexts, between people and other beings.
- These observations were often framed in terms of ontological positioning. However, with this trend come cautions. First, talk about this alienation from the world is not new, even if the introduction of the term “ontology” may seem to make it new again. Second, ontology is important, but seems to be used widely and loosely. It will be most helpful if we, collectively, take time to frame our use and understanding of ontology thoughtfully and clearly. Without care, it will just become cliché and empty.
- More importantly, with a long history of concern for this alienation, why haven’t we accomplished more?

Provoking ideas or discussions

There was, within this theme, a collection of presentations that explicitly looked at the (re)emergence in thinking about environmental care and sustainability:

- A persistent sub-theme amongst these presentations was that concepts like environmental and sustainability education and education for sustainable development are, in the words of one participant, “debilitated by a lack of philosophical clarity.” Central to his concern, and that of several other presenters, is that the task at hand is not to add new bits to the curriculum, or new signifiers, but rather, to frame a “new vision for education.”
- The task at hand, then, is to seriously critique education as a whole, and re-imagine a more complete version of education that respond to the challenges of our times.
- For example, instead of thinking about what is required for sustainability, would it mean for education, if we were interesting in “freedom and flourishing.”

- The extent to which environmental and sustainability education and education for sustainable development are useful will be dependent on the degree to which they serve this educational imperative.
- They will be damaging when they suggest barriers between themselves and other signifiers such as conservation education, humane education, sociocultural education, gender education, human rights education and the list goes on.

Theme 6

Theme: Mind the gap! Moving from awareness to action

Chair: Marilyn Mehlmann

Main trends

Within the theme there was a huge diversity of approaches and a wide difference in quality.

Many presentations focused on action as the desired outcome of ESD.

There was a heavy focus on formal school system, and within that strong interest in WSA (whole school approach); strong minority interest in the potential of special Lessons for Sustainable Development.

The presentations were a lot about actual cases, not so much about analysis or synthesis, i.e. success factors, methods, recommendations (with a few excellent exceptions).

Provoking ideas or discussions

The Japanese concept of *genba* was interesting: the positioning of educational experience within its local site and context of human activities.

Theme 7

Theme: Assessing environmental and sustainability education in times of accountability

Chair: Marco Rieckmann

Main trends

Theme 7 has focused on assessing environmental and sustainability education in different educational settings and on different educational levels. It has become clear that there is a *strong interest in making*

the outcomes and impacts of environmental and sustainability education more visible. This includes activities such as

- creating sustainability learning standards for higher education (for instance, the case of Australia where nation-wide standards have been developed) which then also can be used as a basis for assessing students' learning outcomes,
- analysing students' understanding of sustainable development (e.g. the assessment of geographical imaginations of current and future worlds among upper secondary school students, the exploration of schools' journeys to become an eco-school or the analysis of students sustainability attitudes using the NEP scale),
- assessing the provision of sustainability education to female students in formal education in countries with strong gender disparities, or
- assessing students' sustainability knowledge in large-scale surveys (e.g., the Sustainability Literacy Test).

For assessing outcomes of environmental and sustainability education a *broad diversity of methods* is used: for instance, case studies, explorative approaches (using interviews, focus groups, participating observation or participatory modelling), pre- and post-tests, content analysis as well as large-scale assessments.

The *results* of the different assessment activities show that there are outcomes of environmental and sustainability education: for example, increased knowledge about sustainability can be seen in different assessments which have been presented.

A *challenge* is that more holistic outcomes in terms of competence / skill development are much more difficult to assess. Nevertheless, it has become clear that there is a common interest in developing assessment instruments which do also work for assessing competence / skill development. There is still much to be done to be able to assess the outcomes of environmental and sustainability education much better and more comprehensively.

Provoking ideas or discussions

A key question is if everything that environmental and sustainability education aims at *can be assessed and should be assessed*. Assessment also includes the *risk of reductionism and a deterministic view* (losing the whole picture because of separating everything in small pieces which can be assessed).

Large-scale assessments are interesting on the one hand because they make it possible to create big data sets which also can be compared among countries, for instance. On the other hand large-scale assessments have strong limitations when it comes to the assessment of more holistic outcomes in terms of competence / skill development. There is a *great need for operationalising and modelling intended learning outcomes*, such as competencies, as a basis for developing adequate assessment instruments.

Many assessment activities only come up with very limited snapshots of the outcomes and impacts of environmental and sustainability education. There is a need for more *longitudinal studies*.

Other comments

If assessment helps us to make more visible the outcomes and impacts of environmental and sustainability education and its contributions to *high quality education*, this will be a strong support for the Global Action Programme on ESD and its objectives.

Theme 8

Theme: Beyond the green economy: educating and learning for green jobs in a green society

Chair: Magdalena Svanström

Main trends

Generally, but not always, entrepreneurship and change agency is seen as an overarching goal. This seems to be a trend. As important skills, many refer to creativity, understanding the big picture, circular thinking, value chain thinking, managing complexity and cooperation. Means that are discussed include transdisciplinarity in different forms and in general, cooperation between different actors, e.g. cooperation with society and with business.

Provoking ideas or discussions

- ESD has a lot to learn from entrepreneurship education, in particular the focus on creativity and identity.
- We need to encourage students to fail!
- We must make use of dislocatory moments!
- Aquaponics provide an opportunity in teaching STEM.

Theme 9

Theme: New perspectives on research in environmental and sustainability education

Chair: Alan Reid

Main trends

- The emergence of fresh perspectives on the theory and practice of research, the experience of researching and being involved in research, and the priorities for capacity building about research and evaluation in environmental and sustainability education (e.g. after the Decade, and in innovative ways)
- Developing and challenging the focus of a range of research and evaluation projects about environmental and sustainability education, and the value of their impacts
- Questioning the traditional and cutting edge influences on research on environmental and sustainability education, projects and programmes
- Examples and reflections on a wide range of research designs used, and possible, in environmental and sustainability education, across diverse educational and environmental settings
- Researching the various places and spaces of sustainability education around the world

- Researching the focus, design, implementation and outcomes of environmental and sustainability education programmes and projects of a range of scales and durations
- Researching digital environmental and sustainability education practices, collaborations, and communities
- Researching key dimensions of community, collaboration and wellbeing in environmental and sustainability education work, and examining absences, blind spots and blank spots
- Investigating the notion of agency in environmental and sustainability education – of participants, of researchers, of blurred categories, e.g. with the more-than-human world
- Researching changes in identity because of, or in spite of, environmental and sustainability education – i.e. good and bad practice exists, and EE/ESD can be counterproductive.

Theme 10

Theme: Educational policy development for environment and sustainability

Chair: Marcia McKenzie

Main trends

Sessions in the theme varied quite widely – some taking up an explicit focus on policy, and others undertaking research which had implicit implications for policy (such as a focus on various aspects of practice, approaches to environmental and sustainability learning and education, etc.). Several discussions focused on theoretical and methodological approaches to policy, as well as discussing and exemplifying collaborations and tensions between researchers and policy-makers.

Provoking ideas or discussions

One theme that came up in several presentations was what it means to do collaborative and/or critical work. A question is whether policy researchers should be doing one over the other, or whether it may in fact be possible to do both. Many attendees raised their hands to indicate they consider themselves to do both, but discussions suggested that it's not always possible to be both critical and collaborative at the same time, or on the same project. Various presentations in the theme exemplified a more collaborative or a more critical approach. More deliberation seemed it would be valuable to further discussion and collaboration between those in the policy and research domains, with a shared commitment to furthering sustainability in education policy and practice.

Theme 11

Theme: Education and learning for climate change adaptation and resilience

Chair: Ingela Bursjö

Main trends

The theme covered several methodologies: empirical studies, theoretical discussions, workshops on teaching resources, games, long-term programs. The different presentations had many visitors who were engaged in discussing research approaches, trying games, comparing experiences and problematizing how to link EE, ESD and CCE. The common denominator E - as in education- was visible with examples from compulsory school, higher education but mostly life-long learning. It seems as the CCE presented on WEEC2015 has its main source of data from life-long learning, a reason for a wish pointing at the research community; the need of useful educational material produced on a local basis. Good examples were given, as biogeochemical cycles (e.g. Greece). Although the topic is global, some of the examples need to be taken from regional sources to be able to align to a sense of place.

Several studies presented stress that teachers' conceptual knowledge is poor related to climate change. A reason might be that the teachers in the studies not have been trained in teacher education or in continuing professional development. Climate (change) education therefore needs to be more clearly included in EE and ESD- and in the different curricula of course- if we want teachers to include these aspects in their teaching.

A clear theme was ethical aspects of climate change. The ethical approach was both theoretical and pragmatic; in cases and tools for analysing virtues/capabilities, consequences and care aspects.

Another theme was transformation in a plentitude of contexts. Sometimes transformation meant the type of learning; sometimes it meant change in a more generic way. It is a concept which is widely used and therefore always need to be specified. Most presenters were excellent in defining what they meant with climate change, but adaptation, mitigation and transformation were used at more face value. The concepts are related but would benefit from a more explicit description with examples.

Provoking ideas or discussions

The concept of resilience was frequently discussed, partly because it's in the theme headline, but also as it is seen as provoking in the aspects of how some regions in the world and humans are resilient at present - many people are definitely resilient and don't need to be further pressed. It is also described as a form of conservatism. Is there a better concept to describe the capability to adapt/transform? However, resilience is not that controversial when it is used for describing nature/ecology, but suggestions are made in other terms, e.g. transgressive forms of resistance, when it comes to describing human capabilities.

Other comments

A recurrent topic was the relation between media and researchers, as for instance related to IPCC-reports, COP-meetings and other media intense events. There is a need for trained journalists who have excellent knowledge in environmental issues, alternatively more media trained researchers. Teachers are dependent on media reports when educational materials are in scarcity.

Delegates Reactions

At the start of the closing session all participants received a card and were asked to write one or two things on this card in response to the questions: “What did you learn?” and “What do you take away from this congress?” They were requested to leave their answers with the volunteers when exiting the auditorium at the end of the session. But before writing down their thoughts and ideas, they were asked to discuss their possible answers with the neighbour, for 2 minutes.

Two-hundred and fourteen cards were collected, transcribed and grouped into categories having to do with:

- a. The ideas, concepts, skills and tools learned
- b. The impressions, lessons and ‘things’ taken away from the congress, and
- c. The things the participants intend to do after having returned from the congress.

In brackets behind the various categories are the total number of statements and comments.

Results

a. Specific things learned, such as concepts, skills, methods, tools (22)

- How to organize an efficient, sustainable and good congress
- Wild pedagogy (4x)
- Experiential learning
- Importance of creating sense of place (5x)
- Shadow play (from Finland)
- Transformative citizenship
- Cognitive justice (3x)
- Ecological justice
- ‘aprendizaje transformacional’ (transformational learning)
- Heads, hands and hearts approach
- New ESD research methods
- New ideas for planning ESD projects
- The GAP Roadmap

b. Things taken away from congress: Impressions, insights, norms, lessons imperatives (150)

- Heard/learned hopeful and good examples of EE/ESD in practice and policy; insights about great initiatives; ideas; new concepts and ideas (6x)
- Networking, sharing, partnership, collaboration, dialogue (31x)
- New contacts (2x)
- Friendship
- Lots of people care about SD and sustainability
- Lots of great practice is happening on the ground

- Lots of people working in the field
- Lots of energy
- Attending the congress gives strength
- The importance of co-optation (collaboration + competition)
- Great diversity and the importance of diversity (4x)
- We are on the right way
- I am part of a larger movement, where creation can take place
- Capacity to understand each other
- My work matters
- Inspiration (4x)
- New passion
- Excitement i.s.o. hope
- Hope, shared optimism (7x)
- Feeling of 'unitedness'
- I am not the only one struggling
- Utility, importance of interdisciplinary and holistic approach (5x)
- I have more questions than answers (4x)
- There is a serious gap between research (and researchers) and practice (practitioners) (6x); practitioners' knowledge should be more appreciated by researchers
- Moving from theory and awareness to practice and action
- Knowledge without action creates cynics
- A more critical perspective on ESD (2x)
- EE = ESD
- EE/ESD is many things
- Different EE etc. perspectives can fruitfully work together
- Many forms and guises of EE, ESD, etc.
- EE action is political
- New ideas of teaching SD (2x)
- Sustainability learning is not working – disruption, agency and responsibility are needed (4x)
- Broader view and understanding
- Links to good scientific papers
- Necessity of dialogue
- The Sustainability Literacy Test
- There are multiple ways of knowing
- Integrate 'governance' into EE/ESD; open EE/ESD to community, families and politics;
- The time for change is now
- Gained insights in the social context of transformation
- Stop being normative in research, be transgressive!
- SD is the diversity and plurality of alternative solutions
- Importance of empathy
- Link between the cognitive, emotive and affective aspects of learning

- The importance of ethics (in addition to or on top of knowledge and as 'practical' activity) (2x)
- The importance of the Ministry of Education
- Decouple sustainable education from sustainable development, do away with SD, because 'development' = 'business as usual'
- Focus on agency, empowerment and action
- Picking the high-hang fruits in order to get transformation
- Sense of collaboration and consensus among researchers, practitioners and policy makers
- I am confident about the orientation of my research
- Student-led sustainability
- Bring youth and elders together
- Need for intergenerational learning space for youth and adults
- Students need to the opportunity to learn outside the classroom
- Educate all people
- Further research needed about large scale system integration of ESD
- Peoples' sustainable identity is key to sustainable living
- There is a need for assessing EE/ESD learning outcomes (2x)
- Pondering about gaps and factors that hinder strong sustainability
- Even at this congress, there is a huge gap between northern universities (and their views) and the reality of the majority of the world's population
- Is there a cover up?
- There is intellectual stagnation
- The power of collective action
- Sustainable lifestyles into education and higher education NOW
- Understanding European approach, see how far things are in Nordic countries
- The quality of the Latin American network
- Motivated to develop EE
- The touching humility of skilled and knowledgeable people (presenters, key note speakers? FL)
- Believe in children
- Start at pre-school
- Understand difference between concepts such as 'sustainable development' and 'green economy'
- Develop critical thinking and curiosity (2x)
- Make SD central to school and curriculum
- Linking 'whole school' approach to school leadership research
- The importance of values
- There is need for a global revolution (against pervasive financial system)
- Online learning is a global trend
- There is need for joy ('alegría')
- Involve people at all levels
- I have found my PhD field
- Use Wikipedia to spread knowledge about SD

- Despite the complexity of ESD it appears possible to transform our educational practice
- The Italian school is dead
- Planet and people are more connected than I realized
- Stop education that is unsustainable

c. Intentions and Initiatives (44)

- I will walk the talk (2x)
- I will engage young people in the process (2x)
- I will engage students when pushing for change
- I will start student-driven initiative at my university
- I will scale up EE/ESD
- I will take personal responsibility for effecting change
- I will embrace heterogeneity
- I will move beyond the 'safe', it's time to be 'naïve'
- I don't lose hope when educating people
- I will be more radical – not 20 years the same thing
- I will be realistic: realize that the WEEC though well organized) is not the world
- I will be training and coaching teachers (2x)
- I will keep on working with the Australian EfS network
- I will talk with the university rectors about integrating sustainability in whole institution
- I will report about the congress
- I will be a vegetarian
- I will write funding bid
- I will spend more time on strategy and concepts and national frameworks
- I will do more to make own life sustainable
- I will check with university's Sustainability Committee
- I will start new school program on ESD values
- I will change course content
- I will create new teaching methods (e.g. MOOCS and nature education)
- I will create a computer game (transform experience and didactic concepts on climate change)
- I will develop MOOCs on SDGs
- I will read more and check out more
- I will continue to close knowledge-action gap
- I will ask more questions
- I will use IT
- I will talk more about complexity and lifestyles
- I will do more outside the school and let children experience outdoors
- I will focus on research on impact of EE/ESD policy
- I will write article
- I will connect awareness to action
- I will undertake voluntary work in elderly homes

- I will create a network blog for allowing interaction between researchers and practitioners
- I will set up a project 'Wild Train Ride' (to Vancouver) across Canada for young people to attend 9th WEEC 2017
- I will work with different stakeholders and children and municipality (2x)
- I will be sensitive to multiple actors
- I will broaden sustainability definition in my community work
- I will listen to what the planet has to tell me

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