

EDUCATION ALLIANCE QUARTERLY SEPTEMBER 2009. THE INTERNATIONAL ALLIANCE OF LEADING EDUCATION INSTITUTES: The alliance will utilise existing strengths of each institution to: 1. Speak with one voice on educational matters to raise the profile and quality of education with government, international agencies and the public at large. 2. Act as a forum for collaboration to develop understanding in order to address current local and global educational issues. 3. Be a think-tank that draws upon existing expertise and research-based evidence to generate ideas, anticipate trends and develop future scenarios. > The aim of the alliance is to influence policy decisions, secure funding and inspire research- and intervention efforts that will improve education locally and globally.



SUSTAINABLE DEVELOPMENT

★
Jeppe Læssøe
Noah Feinstein
Chankook Kim
Yi Jin
Kim Chuan Goh
Dianne Chambers
Søren Breiting
Karsten Schmack
★

*Education for
Sustainable
Development*

- > *The climate crisis heralds a new educational era*
- > *Reconsider the emotions of climate change*
- > *Sustainability should be a university's badge of honour*

Education
Alliance
Quarterly

EDUCATING CITIZENS OF THE WORLD

* To me, the argument is simple: it is widely recognised that the climate changes are at least in part caused by human behaviour. Education has an impact on human behaviour. Ergo, education is a key element in relation to climate change.

As simple as that sounds, there is a lot more to say about this.

First of all we may agree that human behaviour has some impact on the climate, but there is currently no panacea for how to reduce the global warming. Should we paint the roof of every building white, as the American Secretary of Energy recently suggested? Many people have already pointed out that white roofs, by reflecting sunlight, would make people use more energy on heating their houses in winter. This example shows that even the simplest ideas often carry unforeseen consequences when analysed in a cradle-to-grave perspective.

Secondly, the answer to climate problems may not be climate solutions at all. We don't solve any climate problem by splashing white paint anywhere. One of the things that complicate matters is that some solutions are not just fraught with unintended consequences; certain side effects may be downright unacceptable. We might, for instance, place enormous taxes on fuel, but what would that do to global commerce and in particular the third-world countries that depend on exports?

Thirdly, the development shows that global warming affects more than just the climate, and that it has highly complex and surprising repercussions. In this respect, it is very relevant to talk of a 'risk society', i.e. a society that generates the very things that can threaten it. Erosion of the ozone layer increases the risk of skin cancer. Over-zealous sun screening leads to vitamin deficiencies. The transition from oil to renewable energy, or from large to smaller cars, result in rising unemployment in some regions.

In combination, all this shows that there is no simple solution in merely teaching people to act differently. The solution is rather to empower citizens to make informed choices in a complex and rapidly changing world. People need a basic understanding of the natural sciences, as well as insight into complex social sciences and the ability to make choices based on ethical considerations.

But there is more than just a matter of complexity. Using education to influence the future citizens' behaviour is also more complicated than it would appear at first sight, because the relationship between teaching and learning is much more than a mere stimulus-response relationship. It is not like you turn a knob to generate certain behaviour. Pupils are hypercomplex entities, and the consequence of any given input therefore unpredictable. Furthermore, the aim of teaching in a democratic society is to make the pupils grow up as competent citizens, i.e. to empower them to make their own choices – which means that a teacher cannot 'program' the pupils in a certain way.

Does this mean that, despite all the good intentions, teaching is useless?

By no means. All teaching comes with an element of intention: Which skills and competencies do we try to pass to the children? So even if education has no direct effect, all teaching has an aim. No one teaches completely in the dark.

Therefore I am fully convinced that the premise is valid. Education has an influence on behaviour – just not directly, but indirectly, in that it educates pupils to become competent and responsible citizens, and these days, such a citizen is a citizen of the world, who is fully aware that every action has a global ecological consequence.

This is why we must educate our pupils to become citizens of the world, with the skills and competencies to address the climate changes as they come.

To do this, we must incorporate the climate changes into the teaching as one among several elements in sustainable development. This is why we aim for 'education for sustainability'. This is the general education element

“There is no simple solution in merely teaching people to act differently. The solution is rather to empower citizens to make informed choices in a complex and rapidly changing world.”

in the teaching we give to our children.

And this is why we must approach this as a challenge to education on all levels. In order to implement education for sustainable development in the educational system, we have to see it as a structural challenge. Curricula must change. Teaching will have to be inter-disciplinary. Teachers must be taught and trained differently, both before and after they start teaching in practice.

The argument may be convoluted, but the basic premise is valid: Education is a key response to the climate challenge and sustainable development.



PROFESSOR LARS QVORTRUP
Dean of the Danish School of Education,
Aarhus University



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EDITORS
Dean Lars Qvortrup
(executive editor),
Claus Holm and
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TRANSLATION AND PROOFREADING
Nicolai Paulsen

CONTACT
The Danish School of Education
Aarhus University
Tuborgvej 164
DK-2400 Copenhagen NV

E-mail: quarterly@dpu.dk
Phone: +45 8888 9059

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CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT

THE
RESPONSE
FROM
EDUCATION

★ Climate Change and Sustainable Development are currently among the hottest topics, globally speaking, and the UN Decade of Education for Sustainable Development (2005–2014) has placed them firmly on the educational agenda. Although we are now at the halfway-point of this Decade, the actual role and contribution of education has so far mainly been dealt with in vague terms.

The International Alliance of Leading Education Institutes has therefore decided to pool its unique resources within the field of Education for Sustainable Development in a joint project to explore educational initiatives and experiences in a truly international perspective.

Research teams at each of the ten partner universities have produced reports analysing the state of affairs in their particular country. Based on the national reports,

a cross-national analysis detailing global trends and regional differences within the field has been made.

A set of recommendations based on the project's findings was presented at the International Alliance of Leading Education Institutes' annual conference in Seoul in August 2009 – in time for the United Nations Climate Change Conference (COP15) to be held in December 2009.

In this issue of the Education Alliance Quarterly, you will meet some of the researchers from the project and learn about the global state of the art of Education for Sustainable Development. ■

Read more at:

www.edusud.dk



How can education be a means to sustainable development?



COPENHAGEN
Denmark

Professor **Jeppe Læssøe**
The Danish School of Education, Aarhus University

★

“Sustainable development is about coping with risks even though our knowledge is uncertain. It is about difficult and complex issues. The challenge of education is to motivate people to not react by neglecting these demanding and unpleasant matters but by creating spaces, and by facilitating processes, characterised by critical, innovative and action oriented social learning.”

Read the interview with *Jeppe Læssøe* on pp. 8-11



WISCONSIN-MADISON
Usa

Associate Professor **Noah Feinstein**
School of Education, University of Wisconsin-Madison

★

“Basic education – literacy and numeracy – is crucial for the development of a prosperous and equitable society.

Thus, education is a prerequisite for sustainable development: development that balances economic, social and environmental goals. Basic education is not sufficient, however. To achieve true environmental sustainability, citizens must be able to adapt to ecological and social change, understand the implications of new knowledge, and work together to forge long term plans that integrate their own needs with the needs of their community and the rest of the world. Education, conceived broadly, can help citizens develop and refine these abilities throughout their lives.”

Read the interview with *Noah Feinstein* on pp. 12-15.



SEOUL
South Korea

Dr. **Chankook Kim**
Center for Educational Research, Seoul National University

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“The national ESD vision of Korea is ‘Sustainable development and sustainable society lead by education’. In the vision, everyone learns the values, action competencies, and lifestyles for sustainable development, which lead to a sustainable society. For the vision of ESD, every individual in our society needs to: i) share the vision for sustainable development, ii) be equipped with the capacity to implement sustainable development, iii) have strong partnerships through active communication, and iv) participate actively in creating a sustainable society. Education plays its roles in achieving such vision of ESD in Korea.”

Read interview with *Chankook Kim* on pp. 18-20.



BEIJING China

Associate Professor **Yi Jing**
School of Education, Beijing Normal University

★
“Education, especially basic education, is an important approach to cultivate public awareness of sustainable development, motivate personal actions and life styles appropriate for sustainable development, and encourage public participation in policy-making process for sustainable development. And teaching about sustainable development topics in professional education is quite necessary for developing recycling economy and democratic social system for sustainable development.”
Read the interview with Yi Jin on p. 21.



SINGAPORE

Professor **Kim Chuan Goh**
Singapore National Institute of Education

★
“With increasing numbers of children going to school, education is a good vehicle to get the message on the environment across to the young. If this message is consistently stressed at different levels of education, these children will grow up knowing more about the environment and issues of resource use and sustainable development. Education supplies them with the knowledge that leads to awareness of environmental problems and resource depletion. This is not sufficient. Through involvement in project work, community involvement on environmental issues and field work etc., children can develop the skills and appreciation of environmental and sustainable development issues. But education must go beyond achieving awareness and appreciation of sustainable development issues. It should help children and youths to change behaviour by encouraging them to take action to improve the environment, take control of their lives, and influence others to bring about a change in lifestyle.”
Read the interview with Kim Chuan Goh on pp. 22-23.



MELBOURNE, Australien

Dr. **Dianne Chambers**
Melbourne Graduate School of Education, University of Melbourne

★
“The Australian Government’s vision is that ‘All Australians have the awareness, knowledge, skills, values and motivation to live sustainably’, and reorienting education systems to sustainability is one of the four key strategies to achieve this vision. Through including sustainability – which is all aspects of schools and universities, including operations, curriculum, policy, and so forth – students will not just learn about sustainability in lessons, but will also see sustainable practices modelled every day and see it as a part of the everyday culture. Just teaching and learning ABOUT sustainability is not enough. As is stated in the Australian Government’s vision, people need not only the knowledge, but also the skills, values and motivation to make a change. Educational systems need to teach about sustainability and also need to model good sustainability practices and values in all that they do.”
Read the interview with Dianne Chambers on pp. 24-26.



COPENHAGEN Denmark

Associate Professor **Søren Breiting**
The Danish School of Education, Aarhus University

★
“Education has an important role to play as part of sustainable development, but not so much in the way most people intuitively expect. Since it is much easier to identify aspects of development that aren’t sustainable compared to describing in detail what kind of development will prove to be sustainable in the long run, education for sustainable development (ESD) has to focus on processes and not on products. Briefly put, we can say that sustainable development is ‘the road’ we should follow in our journey – not the destination. ESD is to prepare everyone to be engaged, critical and active participants as part of trying to build that road with competencies useful at the local as well as at the political level.”
Read the interview with Søren Breiting on pp. 27-29.



COPENHAGEN Denmark

Professor **Karsten Schnack**
The Danish School of Education, Aarhus University

★
“Education is not a means to sustainable development. One of the main purposes of education is to qualify people to become competent participants in democratic processes about common challenges. ‘Sustainable development’ is an umbrella that covers a lot of the interconnected fundamental issues of the world. Therefore it is very important that all people have an opportunity to learn about the different interpretations of sustainable development and become experienced in engaging in the reflections, discussions, and actions related to the challenges. In this respect an interdisciplinary, participatory, and action-oriented pedagogy will be relevant.”
Read the interview with Karsten Schnack on pp. 27-29.



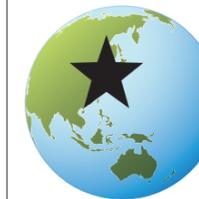
SÃO PAULO Brazil

Associate Professor **Pedro Jacobi**
School of Education, University of São Paulo

★
“Education can be a means to sustainable development when it is combined with other initiatives that enable the promotion of sustainable practices, such as the reduction of consumption, recycling, and reuse of goods. Education plays a strategic role to stimulate and disseminate through social learning initiatives that promote the engagement of the participants.
There is a need to develop awareness within the educational community and the public, which indicates that reorienting education to achieve sustainability is essential. So the school district administrators and directors need to be aware of the critical linkages between education and sustainable development. As much as people can perceive that education can improve the motivation to engage in different types of initiatives at different levels, education will increasingly be in a position to help achieve sustainability and engagement in climate-change related practices.”



*How can
education be
a means to
sustainable
development?*



SEOUL South Korea

Dr. **Namssoo Kim**
Seoul National University

“The pathway to sustainable development includes all stakeholders’ reflection on why current systems are not sustainable and their seeking possible solutions for current and future generations through discussions. In other words, sustainable development can be achieved through reflective social learning processes. Education should play an important role in making rooms for such reflection and discourse.”



TORONTO Canada

Dr. **Ermenia Pedretti**
Ontario Institute for Studies in Education, University of Toronto

★
“Education can be a powerful tool for teaching and learning about sustainable development. If we believe in education as transformation, then the ideals of equity, justice, environmental preservation and restoration, poverty alleviation, and natural resource conservation are possible. Education is ultimately about preparing young people for the future, and issues such as sustainability and climate change are an important part of that future. These issues however, are complex and require balancing environmental, societal, scientific, technological, ethical and economic considerations.”

The International Alliance of Leading Education Institutes is currently analysing the role that education ought to play in a world struggling with climate change. The Alliance's comparative analysis will result in a global 'state of the art' for **Education for Sustainable Development**. The first findings show that there is an enormous discrepancy between the political ambitions concerning **ESD** and the minimal role it plays in practice.

The climate crisis calls for a new educational era

* Polar bears on melting ice flakes. Dried-out rivers and drought-stricken fields. Devastating hurricanes that destroy countless homes. We are all familiar with the terrifying images of a world struck by violent and wide-ranging climate change. This is a world many of us believe we must learn to live in, because we have not yet found the solutions to the climate crisis.

How can we learn to live in a less predictable world – and with the consequences of climate changes? “Education plays a key role in relation to the climate,” says Professor Jeppe Læssøe from the Danish School of Education at Aarhus University. Or rather: Education ought to play a key role as a mediator of a societal learning process about sustainable development, but this is not the case today.

“The importance of education is often overlooked. Maybe people think of the individual in relation to the climate, but if so, only in terms of communication: the population must be informed about this or that,” Professor Læssøe says.

“Everything seems to indicate that we will have to live with major climate changes and that we will experience ‘rolling’ effects of the changes. We already see the first changes in the production patterns of basic foods, for instance in Southern Africa, which would be a fertile area expect for the lack of water. If the region should experience even worse droughts, we face a huge task in transforming production and welfare in that society.”

According to Professor Læssøe, there is little sense in working for sustainable development without factoring in education. Sustainable development is always ‘Education for Sustainable Development’.

However, the key issue in Education for Sustainable Development is not natural disasters, nor rising sea levels. It is the ‘rolling effect’ that climate changes have on

“ESD – or education in general – is impossible if people are thought of as robots that are susceptible to reprogramming.”

our social systems: the conflicts it will lead to between nations and between regions. “Environmental problems are conflicts of interest between different groups. We must possess the commitments and the competence to develop solutions as the problems evolve,” he says.

Ten countries' experiences

The question is what kind of role the educational system should play in a world struggling with climate change. This is a key concern for the think tank International Alliance of Leading Education Institutes, and not least for Jeppe Læssøe, who is the leader of the think tank's interdisciplinary research project on Education for Sustainable Development.

The ten members of the Alliance have each appointed a team of researchers to map the status of ESD in their respective countries. Experiences from each of the ten members, spread out across six continents, will form the basis of a comparative analysis that will result in a global ‘state of the art’ for ESD. In late 2009, the project will conclude with a series of policy recommendations concerning how to support ESD, both locally and globally.

The reason for the think tanks to do this work now is that we are in the middle of the UN's Decade for Education and Sustainable Development (2005–2014) –

but obviously also because climate changes have become a hot topic for politicians and for the people, Professor Læssøe explains.

“If, for instance, you ask people in Denmark to rank political issues, climate change is rated higher than both unemployment and social security. Three out of four Danes are ‘very’ or ‘somewhat’ concerned about climate change. Just five years ago, the climate was barely on the agenda.”

It is quite a different story for Education for Sustainable Development, but the UN's Decade has generated some political interest. This is evident in the state of the art-reports from each of the ten alliance members.

“It is striking how ten different countries from very different areas of the world follow the same discourse about climate and environment in their political strategies. The UN's discourse on ESD has certainly had an impact on national policy-documents in the ten countries. The question is of course what impact there has been in practice, and that we know very little about,” Professor Læssøe says.

From hype to practice

Professor Læssøe points out that there are indications of an imbalance between how much ESD appears in national policy claims and how little ESD there actually is in the world's educational institutions.

“At the moment we have this absurd discrepancy between the lofty ambitions and ideals concerning ESD and the minimal role it plays in practice.”

When the ten research teams sum up the status for ESD, there are a vast number of national and international strategies and policies to write about, but very little to put in the reports about real, practical implementation in schools.

One nation which is ahead of the others in terms of implementing the grandiose political statements is Australia: “Australia has taken the lead here. They are years ahead of the rest of the members. Way back in 2000 they formulated a strategy for ESD, they have an action plan in place and they are carrying out the plan already,” says Professor Læssøe.

One area where Denmark is lagging behind Australia and other countries is in ESD in the universities.

“There is so much international attention to this field, but very, very little in the Danish universities. This is not just about putting timers on coffee machines to turn them off at night. This is about giving highly educated employees the competencies they need to manage and facilitate sustainable development.”

A gap between politics and research

Despite national differences all ten member countries follow the same discourse about climate and environment in their political strategies. Another common trait is, according to Professor Læssøe, that all ten countries have the same arguments and controversies about the practical implementation of ESD. The reason is that the concept is claimed and defined by two radically different realms.

“ESD is a concept with a wide range of meanings, but there is a world of difference between how politicians and environmentalists on the one hand and people in



What is the biggest challenge for climate change education in Denmark?

“In my opinion climate change education should be approached as an integrated part of Education for Sustainable Development (ESD). The biggest challenge in my country is that climate change education is promoted in a situation where ESD is not yet established in the educational sector. It implies a risk that it will be reduced to science information and moralistic campaigns for individual behavioral change,” Professor Jeppe Læssøe says.

the educational sector on the other view ESD. Politicians will usually say something about changing behaviour and about informing the populations about technical solutions. People in the educational sector, on the other hand, will talk about the need for basic competencies to handle societal challenges.”

The fear of simplification

Another shared trait between the alliance members is the risk of turning ESD into an independent process with the aim to promote a scientific understanding of what climate change is all about. In the American report, for instance, ‘climate change education’ is described as a new concept and the concept is taken to mean that we must teach children, and for that matter adults too, “about the scientific understanding of global climate change”.

According to Professor Læssøe, this is a simplistic approach. ESD calls for a broader interpretation to succeed, and it must not be reduced to yet another subject in school:

“There is reason to fear that the concept is reduced to a matter of purely factual scientific communication or suggestions for behavioural change to the public,” he says.

“The meritocracy in the environmental sector have developed a desire to inform the people about the solutions that are available. The way natural sciences produce solutions is typically to first identify some sort of problem in

“At the moment we have this absurd discrepancy between the lofty ambitions and ideals concerning ESD and the minimal role it plays in practice.”

nature, then come up with a solution and then inform the population. This is a technocratic and fairly instrumental approach, which means that solutions are communicated to the people, who then have to implement them.”

Professor Læssøe explains that the technocratic approach contradicts the way pedagogics think about ESD. In pedagogical terms, ESD means to facilitate an improvement of people's competencies and capacity to deal



ISTOCK

with problems. In this paradigm, the role of education is not to inject specific political or technological solutions.

“It can be problematic if education is set up to carry through a certain policy. The educational sector maintains that sustainable development is not a given; it is a learning process for society in general, and the educational institutions must facilitate and qualify that learning process,” Jeppe Læssøe explains.

“ESD – or education in general – is impossible if people are thought of as robots that are susceptible to reprogramming. Of course society must develop mores and norms. The role of education is partly to shed light on these norms and mores, and partly to allow the individual to develop competencies for critical reflection.”

The uncertain knowledge of the risk society

One reason why it is becoming more and more important to go further than simple transfer of knowledge is that the last four decades have shown a global development that fundamentally questions the role of education. Jeppe Læssøe explains:

“The logic of the educational system has been that we can transmit and teach children knowledge that we know is true, i.e. about what is true and what is false, and about how to implement that knowledge. In the risk society, we face a new challenge, and that is to learn how to deal with uncertain knowledge. We can no longer, as we used to, separate knowledge into separate disciplines, each with a core of certain knowledge. It suddenly becomes crucial to be able to grasp complexity and interactions. This challenges the way we design educations, both in terms of form and content.”

This accentuates, for instance, the entire issue of cross-disciplinarity. “Should education about the environment and the climate still be something unique, separate from other topics? Should it still be something that we address for one week a year at school, or should it be integrated into the regular curriculum and the way the schools work?” Professor Læssøe asks rhetorically – and replies that the integrated model makes the most sense.

Learning about sustainable development is in itself a huge undertaking, one with a lot of erroneous information, dilemmas and high degree of complexity. The big challenge for the risk society is that it is very difficult to motivate people to get engaged and to change their behaviour based on some very unpleasant threats. Risks are, by their very nature, threats. We know from risk research that people have two basic responses to a challenging dilemma: To browse through our toolbox for appropriate countermeasures we can implement, or, if that does not help, to deny or redefine the problem at hand, Jeppe Læssøe explains.

“And if you look at how the media present the climate challenge, the two approaches are obvious. You could say that the progress of the entire anti-environment movement has partly been due to a strong desire for the climate problems to simply not exist.”

Collective self-delusion

More and more people think of the climate crisis as ‘An Inconvenient Truth’, with the former American vice president Al Gore and his movie and book at the front.

This is why we go through our toolbox for possible ways to promote a sustainable development. But are we doing enough? According to Jeppe Læssøe, there is a very real danger that we fall prey to the shared delusion that we are all doing a lot of things for the environment, while we are not, in fact, taking any significant steps towards a sustainable world.

“If we all claim to act; if governments say they are taking decisive action, if the corporate sector uses advertising to tell us how much they have improved because gasoline is now 5% organic, if we as private individuals

“It is striking how ten different countries from very different areas of the world follow the same discourse about climate and environment in their political strategies.”

do something, we can all go around telling each other that we are adopting change, but this might very well be a fantasy, a collective self-delusion, which actually obscures the fact that we are failing to incorporate sufficient changes.”

The question is, however, is it enough? The unpleasant answer is that there is no one at the helm.

“There are no objective judges, not even the UN,” says professor Læssøe, “but research can play the role of the critical friend. Research plays a vital role in constantly improving our understanding of what must be done. We need more in the way of dialogue between the experts and people’s preconceptions, in order to produce solutions in a collaboration. Educations ought to play a key role in this process – but this is not the case at present,” Jeppe Læssøe concludes.

In late 2009, the International Alliance of Leading Education Institutes will publish their views on how educations can help to stop the rolling effects of climate changes, and contribute to pave the way for a sustainable future. ■

By Camilla Mehlsen
cme@dpu.dk



JEPPE LÆSSØE

Jeppe Læssøe is Professor at DPU, Aarhus University. He is the leader of the research project ‘Climate Change and Sustainable Development – the Response from Education’ which is set up by the International Alliance of Leading Education Institutes. He is the chairman of the Danish Ministry of Climate and Energy’s climate panel, which was set up to produce recommendations for future specific measures related to sustainable development in society.

Favourite book about climate change?

“Climate change has been debated in mass medias for decades. I will recommend to follow this debate rather than a specific book.”

The debate about climate change has, since its inception, been accompanied by feelings of loss, fear and tragedy. This may be the wrong starting point and should be reconsidered, at least for the sake of education, says Associate Professor **Noah Feinstein**.

The emotions OF CLIMATE CHANGE

* There aren't many areas in the field of science which are as hotly debated as climate change. Everybody has an opinion about climate change and maybe rightly so. It is a serious business which is starting to affect all life on this planet. But for most people it also resonates with the feeling of being witness to an ongoing and prolonged tragedy on spaceship Earth.

A possible metaphor for the debate might thus be 'the five stages of grief' – also called the 'Kübler-Ross' model in psychology. The model states that people go through five emotional stages after losing something they have cherished. The five stages are denial, anger, bargaining, depression and acceptance.

"If that is true," says Noah Feinstein, "If it is true that we have been talking about climate change in terms of loss, and that people go through the five stages of grief, then the question is: can we learn to think about climate change in a different way?"

This is a big challenge, says Noah Feinstein, but it might exactly be the right thing to do. Feinstein is a faculty member at the Department of Curriculum and Instruction and the Department of Agronomy at UW-Madison School of Education, and got the somewhat

daunting task of summarizing the state of education for sustainable development in the United States for a report to be published by the International Alliance of Leading Education Institutions, IALEI, later this year.

"The American environmental movement has been criticized for being too focused on condemnation and crisis and doomsday rhetoric. And I think that what the Danish group wants to do is to think more in terms of empowerment and action competence. That is a very different way to think about things – not how we stop the world from becoming worse, but how to create the change we like."

According to Feinstein, there has been relatively little implementation of such a positive education for sustainable development in the public schools in the US – at least not under that name. On the other hand, the US has been the cradle of the (closely related) environmental education movement, mostly through programs outside of schools. It is through the work of educators and activists that work outside of schools that environmental education has progressed – and it has slowly become more mainstream.

"For instance, let's look at a little thing like recycling, or the new abundance of fuel-efficient cars – although

now this fashion is fuelled by the high price of gasoline, originally there were people who thought it was worthwhile to pay a little extra for them. And that is the result of dedicated educators and activists – mostly outside of the normal school settings. The next challenge is to figure out how to bring the goals and values and the problem-solving strategies of sustainability into the school setting."

Do you wish to achieve that through action research and learning by doing?

"I would say that if anything is emerging out of this international collaboration, it is the insight that it is not enough to teach people about climate change and to expect them to infer from that what they should do. If you wish to make change, you have to empower people, and the way you do that is by showing them they are capable of making a difference."

Work-place-based education

So, one has to try to embed science in practice. But for Feinstein it is not just a matter of science. Education for sustainability balances environmental concerns with economic development and social equity. "When we think about what we have to weave together in sustainability education, it certainly includes science, but also things like economics and social values," says Feinstein.

"One of the examples I like to give is a program called BioSITE, which is run by a children's museum in the city of San Jose in California. They teach young children to use water monitoring equipment to measure and collect data, which is used by the local authorities. For me this is a lovely example of education for sustainable development, because it involves learning scientific inquiry skills and contributing to a socially valuable purpose. Students gain a deeper appreciation of their local environment and a sense of empowerment related to their capacity to foster positive environmental change. They make a real difference by collaborating with environmental scientists."

Some people call this kind of work-place-based education, says Feinstein, because it focuses on helping people understand their local environment – both the ecological and social context – and on working together with other people in their community.

"Another thing we have learned is that education for

"The American environmental movement has been criticized for being too focused on condemnation and crisis and doomsday rhetoric. What the Danish group wants to do is to think more in terms of empowerment and action competence. That is a very different way to think about things – not how we stop the world from becoming worse, but how to create the change we like."



What is the biggest challenge for climate change education in USA?

"Without doubt, the biggest challenge for climate change education in the United States is going beyond the science and embracing the need for social change. American citizens are wary of introducing new values into the public education system, yet the climate change crisis calls for urgent social action of the sort that can only be achieved by citizens acting together," Assistant Professor Noah Feinstein says.

sustainable development is different for different people around the world. Sustainability is a value, and the way this value fits in will depend on social and cultural differences in different countries. In the US we have very strong traditions of local democracy, and I think this is our greatest resource for sustainable development: helping people engage in local decision making that enhances sustainable living in the long term."

Theories without emotions

From a theoretical point of view, Noah Feinstein draws from both situated learning theory and some established cognitive frameworks, citing people like James Greeno, Lev Vygotsky and Jean Lave among others. "The core value from the more recent research, though, is that people understand things in ways that are deeply social, and that sometimes the best way to understand who they are and what they know is to look at what they do and are capable of doing in a social context."

Feinstein's sociological approach to his work has also brought him close to the field of Science and Technology Studies (STS), which focus on how social, political, and cultural values affect scientific research and technological innovation, and how these in turn affect society, politics, and culture. One of the lessons of STS is that certain approaches to public engagement in science seem to do better than others. For instance, the deficit model – the idea that public understanding should always be measured against what scientists know – has been widely discredited. Also, public debates about cloning have shown many unexpected secondary effects from almost any choice of communication strategy. This certainly seems to be the case also for the climate change debate. Sociologists like Ulrich Beck and Bruno Latour have for instance used climate change directly to discuss the interrelations between science and society, but Feinstein finds their work incomplete:

"Science and Technology Studies has responded to the entrenched idea that science is rational by arguing that science is *social*. But another possible alternative to rational is emotional. I think that we are less adept at seeing that than we are at seeing the social aspects of science and technology."

For Feinstein, there is an inevitable but often hidden undercurrent of emotions in public engagement with science. We are willing to talk about misunderstanding and risk, but not about grief or anger. He argues that



POLIFOTO

Hundreds of demonstrators gathered on Boston Common to draw attention to global warming, joining more than 1,300 events organised to press the U.S. Congress to require cuts in gas emissions. "There is an inevitable but often hidden undercurrent of emotions in public engagement with science," Associate Professor Noah Feinstein says.

STS attaches insufficient importance to emotion.

"For instance: I think that Ulrich Beck's 'risk society' is a bit too rational. His work is still influenced by this odd notion from economics that ... people are somehow optimizing. Perhaps you can say that risk is a polite word for fear, or for anger."

Feinstein believes that Peter Galison's idea of trading zones is a much more useful metaphor for the public engagement with science. "For instance, I have done some research about parents with autistic children. One thing that becomes quite obvious when you work with a group like that is that a word like 'autism' has a very particular meaning for them. It is a meaning which is intrinsically emotional and deeply connected to their experiences. The word has a very different meaning for

autism researchers. And therefore, for parents to be interested in the science of autism, they have to negotiate the difference between their own understanding of the word and the researchers' understanding. Autism in this sense becomes a metaphorical trading zone."

Emotional metaphors

It might be more effective to teach about climate change if we understood the role of emotions in public engagement, or if we knew the critical 'trading zones' that enable scientists and citizens to communicate about global climate. But there is not much theory to draw upon. Neither do we have much practical experience, except maybe indirectly through the heated ups and downs of teaching evolution in certain parts of the US.

Feinstein is uncertain about the analogy between evolution and climate change. "I don't know. I think that climate change teaching is quite different from teaching evolution here in the US, because at this point the evolution controversy has very little to do with science. On one side are people who promote teaching evolution in schools because they think that it is important to teach this aspect of science, and on the other are people who oppose it because they think evolutionary science is somehow damaging or corrosive to religious belief. Not many people actively engage with the science."

It seems that there are many people who really oppose climate

change as a matter of values and emotion, because it requires us to abandon a lot of cherished privileges we humans have acquired through history. For instance: If we accept the science of climate change, we implicitly admit that unlimited growth is not going to work.

"The science does not say that unlimited growth doesn't work, because the idea of something 'working' for society is not really about science. Unlimited growth has certain consequences, but the idea that these consequences are bad, that's a matter of values. Whether something is good or bad, or whether we should or shouldn't do something, that's dealing with value. Climate science doesn't tell us what to do – it tells us what will happen."

Is sustainability a value thing?

"Sure. Climate change scientists are experts on climate change, but they have relatively less authority about social values. They are certainly entitled to have a certain opinion. And there will continue to be a very lively debate about what to do about it."

Aren't there many people who would say: 'No, sustainable living is not a value. It is a necessity in order to sustain human life on this planet'?

"Sure. But sustainability always involves value questions. When we talk about environmental sustainability, we have to choose between things like, say, the preservation of a landscape, and sustainable energy. Here in Wisconsin, for instance, we have debates about wind turbines. Wind turbines provide renewable energy, but they also kill birds, especially when they are positioned in a place where migratory birds fly. So the turbines provoke a question about values. Even for those of us who support environmental sustainability we still have questions of value – what environmental sustainability means. The same thing is true for economic sustainability, particularly for the balance between economic prosperity and social equity."

"For instance: If we measure economic prosperity, should we only look at the gross domestic product or are we also interested in things like the level of poverty? The way we choose our road to sustainability involves questions of value. There is no sense of sustainability beyond those questions of value. What sustainability means will be determined by the decisions we make and what we value. If you were to ask 100 people who work in sustainable development to envision what sustainable living looks like, you would get 100 different answers."

"I think that one of the great challenges in the public engagement of science is learning to understand the difference between the questions that science can answer, and the questions that science can't answer. Science is good at telling us the results of our actions, but we have to decide how good or bad that is and what we are willing to sacrifice for our future," Feinstein says.

One thing which is particularly interesting about climate change is that science cannot really say anything 'for sure'. How can you convey the implications of a finding which is 95% probable where you still have to point out that it might not happen anyway?

"My personal view on probability and statistical interpretations of the world is that they need to be taught very early. We avoid it because probability is complex. I wonder if there are ways to start thinking and talking about chance and odds in the elementary grades, because

those concepts underlie so many political, social and scientific decisions. So much of what you read in newspapers, what you see in television and online, is swamped by statistics. It is a critical skill."

It is definitely important to translate scientific concepts of risk and chance to psychological concepts which support empower-

"It is not enough to teach people about climate change and to expect them to infer from that what they should do. If you wish to make change, you have to empower people, and the way you do that is by showing them they are capable of making a difference."

ment and action competence. But are you sure that this 'positive translation' will have the necessary results?

"Any change in that we make in our society will have some advantages and some disadvantages. For instance, if we travel less – Americans move a lot – then this would also create advantages for us all. The word 'co-benefits' in the climate change discussion is sometimes used to describe such social changes in these positive terms."

The proposal of self-empowerment and sustainable life still preserves the central idea of self-determination which nobody wants to give up. But maybe we will have to give it up. Maybe we won't be allowed to have more than 1.5 children?

"Of course there is a push-pull between the things we want to do and the things we have to do. But in any democratic society, the things we have to do will be determined by the people we choose. So if we think about any sorts of catastrophic legislation, they will depend on which government we have installed. So in terms of education it is a matter of tuning people to make the big decisions – or to choose people who will make those decisions." ■

By Robin Engelhardt
Quarterly@dpu.dk



NOAH FEINSTEIN

Noah Feinstein is Assistant Professor at UW Madison School of Education. He has written the country report on ESD in the USA for the Alliance project on 'Climate Change and Sustainable Development – the Response from Education'.

Favourite book about climate change?

I enjoy the new book *Climate Change: Picturing the Science*, by Gavin Schmidt and Joshua Wolfe. Images provide an important way for people to grasp something as complicated as climate change, and the pictures in this book really bring climate change to life. Also, the scientific explanations are detailed enough to be helpful for those who want to know more.

BEST CASES AROUND THE GLOBE

What is a 'good example' of Education for Sustainable Development? The Education Alliance Quarterly has asked the researchers from the project '**Climate Change and Sustainable Development – the Response from Education**' to describe a best case.



BRAZIL

Associate Professor **Pedro Jacobi**

Good examples can be described as those that create initiatives and measure their impacts in the schooling communities. Green schools, where there is an engagement in different initiatives to reduce consumption of energy, water, recycling, reduction and reuse of the main goods used in the daily life of a school.

SOUTH KOREA

Ph.D. Candidate **Heekyung Kim**

One good example of Education for Sustainable Development (ESD) can be found at Tongyoung, a city in southern coast of Korean peninsula. Tongyoung was selected as the 8th city to have a Regional Center for Expertise (RCE) on ESD sponsored by the United Nations University. Inpyung Elementary School, a model school for ESD, has integrated ESD into existing school curriculum and extracurricular activities through a whole-school approach. With the supports of Tongyoung RCE, teachers at the school developed an objective to “increase awareness of harmonious lives through the exploration of the future of the community.”

At first, teachers there had difficulty understanding the concept of ESD and in finding where and how to start the integration processes. After participating in workshops and forums with the Tongyoung RCE, however, they could develop the objective of increasing awareness of harmonious lives. To achieve the objective, the school enhanced its ESD curriculum by studying regional environmental, social, and economic issues in order to understand the key concepts and values necessary for regional sustainability.

To expand ESD within and outside of the school, the school has training programs for teachers and parents and a research exhibition on the 'Future of Our Town'. For the exhibition, a team consisting of students, a teacher, and parents researched a subject of importance to Tongyoung's sustainable development. Though still developing, Inpyung Elementary School's ESD initiative is significant as the entire school strives for sustainability.

SINGAPORE

Professor **Kim Chuan Goh**

A good example of Education for Sustainable Development should involve students in real life issues through actually doing something for people and the environment. One effective way is through service learning. At my institute I have been coordinating a large-scale campus-wide implementation of Group Endeavours in Service Learning (GESL) which involves 2400 student teachers and 130 faculties each year. Students in groups of 20–22 negotiate with the community organisations to develop projects with them so that they could add value to the community and in the process learn about the issues they are engaged in. Many of these projects involve the environment and in the process students from different specialisations learn about environmental and sustainable development issues. It is by serving and doing and getting their hands dirty that they will have impactful learning outcomes that will lead them to be volunteers and activists after the completion of their projects. Students through the GESL process learn about values, life skills, and reflection through service and these prepare them well for the future.

AUSTRALIA

Dr. **Dianne Chambers**

The Australian Sustainable Schools Initiative (AuSSI) is a major success in the area of ESD in Australia. AuSSI is a national initiative with over 2000 participating schools (over 570,000 students). This is the chief Australian ESD initiative in schools and the new National Action Plan continues support for AuSSI, which had been established and funded under the previous government. AuSSI is a systemic approach that seeks to support schools and their communities to become sustainable. The initiative 'involves participants in a whole-of-school approach, to explore through real-life learning experiences, improvements in a school's management of resources and facilities including energy, waste, water, biodiversity, landscape design, products and materials. It also addresses associated social and financial issues'. This holistic and systemic approach encompasses school curriculum and pedagogy and school operations, governance, design, management and grounds. Connections with and influencing the community is another key aspect of AuSSI.

See www.environment.gov.au/education/aussi

DENMARK

Associate Professor **Soren Breiting**

Assignment for students:

- > Investigate the use of a natural resource in the local community by interviewing seniors, who have lived in the area for a very long time, about their memory of how the resource was used in the old days and about who benefited from the resource.
- > Add to this questions about how these seniors see the situation of the resource today and what their feelings about the situation are.
- > Interview active people in the local community about how the resource is used today, and a.) what these people expect to see happen regarding this resource in the future, and b.) what they would like to see happen concerning the use of this resource in the future.
- > In school elaborate the findings, sum up the results of the questionnaire and – very important – put emphasis on visualising the situation with drawings/posters:
- > The situation long ago --> The situation now --> Different futures
- > In practice many people might expect more or less the same to happen concerning the use of the resource. Also what people might wish to happen can be very much the same.
- > Call for a meeting in the local community where the students present the results of their investigation to the interviewed people, to families, to local authorities and the local press. In this way even rather young students might function as catalysts of change in the local community and the students will have their action competence enforced very much – meaning they will become strong citizens in the community in the future.

DENMARK

Professor **Jeppe Læssøe**

Some years ago the Danish Board of Technology organized a scenario workshop on sustainable development in cities. The participants got a written introduction where they could read four concrete stories about possible but social and technical very different types of sustainable everyday life in the future. During the workshop they discussed these scenarios in two phases. First in groups consisting of the same type of agent, and then in groups of mixed agents. I will not call this an ideal example of ESD because in my mind ESD is a continuing process of social learning, but it was great because it was an open and creative way of facilitating social learning on sustainable development.

USA

Associate Professor **Noah Feinstein**

In the city of San Jose, California, over 500 students are helping monitor the health of the Guadalupe River. Although most of them are only 10 or 11 years old, they have learned to use advanced water testing equipment, and the data they collect is good enough to be used by local health and environmental authorities. As they work, they are supervised by older students who receive both academic credit and important leadership training. Many of the students who participate come from demographic groups that have not historically performed well on traditional measures of science achievement or pursued environmental careers. Not only do participants learn scientific inquiry skills and contribute to a socially valuable purpose, they also gain a deeper appreciation of their local environment and a sense of empowerment related to their capacity to foster positive environmental change. This program, which is called BioSITE, is also exemplary collaboration between public, private and non-governmental organizations. Although funded by private sources, it is managed by the San Jose Children's Discovery Museum, an NGO, and serves the public school audience.

CHINA

Associate Professor **Yi Jin**

The good example of Education for Sustainable Development (ESD), the position as well as the requisite conditions such as time and space for teaching and learning about ESD, should be clearly defined, i.e. it is easy to tell when, where and how the teacher and pupil should work or are working on topics of Sustainable Development (SD), no matter as a separate field or as an integrated theme.

Then, although the processes might be diverse and different, such ESD should actually result in pupils' strong wills to pursue a society and a world with SD and powerful actions in both work and daily life that could serve the needs of SD.

THE TIGER TURNS GREEN

Korea's master plan for the next six decades is Green Growth. To begin with, the focus is on growth rather than sustainability, but investment in education could turn the picture around, says Dr. **Chankook Kim** from Seoul National University.

* On the occasion of the sixtieth anniversary of the founding of the nation, the president of Korea, Mr. Lee Myung-bak, declared in August of 2008 that the national vision of Korea for the next 60 years would be 'Low Carbon, Green Growth'.

The aim with the new strategy is to correct an imbalance which has followed from the rapid economic growth in Korea since the 1960s. "This economic development, it turns out, has its disadvantages," says Dr. Chankook Kim from Seoul National University.

"The Republic of Korea is experiencing a seriously ill-balanced development in terms of environmental and social integration. Its development-oriented economic growth resulted in a pollution load that exceeded the environment's auto-purification capacity and increased conflicts between regions, classes and generations. Consequently the level of Korea's national sustainability was evaluated to be weak in 2006."

A new growth engine?

Chankook Kim emphasizes the dual aim with the new strategy:

"It is important to note that the name of new growth strategy starts with 'low carbon'. The 'Low Carbon, Green Growth' strategy was adopted to address both environmental and economic concerns by reducing greenhouse gases and improving energy efficiency. Thus

"A top-down approach often looks effective and time-saving, and some governmental officials or leaderships in this country are used to this way of doing things. One of the problems with this way of doing things is that it is difficult for schools to implement the strategy. They simply do not know how to do it."

Green Growth is considered a win-win strategy for the economy and the environment. Expectations run high. The energy and environmental problems are crucial factors for sustainable growth, especially at a time when unemployment continues to rise and a powerful new growth engine has yet to emerge to take over the information technology industry."

This is a large, not so say enormous project for the Korean society. Chankook Kim mentions an element of coercion in the project: Korea is poised to achieve another breakthrough by advancing green technologies and greening its industry, economy and lifestyles. Korea is the world's thirteenth largest economy. However, due to climate crisis, high oil prices and high energy costs, there is concern of losing momentum for growth in Korea. At the same time, Korea is the tenth largest energy consumer in the world, with 97% of its energy consumption coming from imported energy sources. Its CO2 emissions are on an upward trend. It all boils down to the fact that Korea's socioeconomic structure of low efficiency and high consumption can no longer be viable against a fierce global competition. Korea is forced to pursue this dual strategy, Chankook Kim explains. >

* Green Growth is Korea's new paradigm

In response to the necessity of combining economic growth with environmental sustainability, the countries of Asia and the Pacific have adopted the Green Growth approach. Formally this happened during the 5th Ministerial Conference on Environment and Development in Asia and the Pacific in 2005. The concept had been discussed in UNESCAP (United Nations Economic and Social Commission for Asia and the Pacific) for a strategy of environmentally sustainable economic growth. And in 2008 the new president in Korea, Lee Myung-bak, made the 'green growth' strategy to a new paradigm for his administration.



What is the biggest challenge for climate change education in Korea?

"Recently most governmental supports for ESD or EE have been re-oriented towards Green Growth education. Rhetorically, the concept of green growth education is in line with the core of ESD or EE. It is claimed that to address the challenges of climate change, we need to change our worldviews and lifestyles as well as to find a way to increase energy efficiency.

Such fundamental changes in worldviews and lifestyles can be achieved by education. However, the features of green growth policy seem to have little focus on changing lifestyles and more on economic growth through green technologies or energy efficiency industries.

Furthermore, while the concept of 'green growth' combines the two imperatives of economic growth and environmental sustainability, it places little emphasis on social equity which is another important aspect of sustainable development.

Finally, the path that the Korean government has chosen is far from the participatory principles of sustainable development. In practice, many of Green Growth policies are implemented as a 'top-down' approach without any multi-stakeholder consultations," says Dr. Chankook Kim.

Little general participation

But who is responsible for the harmonization of growth and sustainability in Korea? How is growth and sustainability going to be a successful partnership?

"The challenges to green growth are less discussed than the possibilities in Korea. Personally, I believe that it is important to obtain consensus on the new strategy among stakeholders. Since we need investments by the business sector, participation of citizens as well as leadership by the government, a general consensus is essential for the success for the green growth policy," Chankook Kim says.

But reality differs slightly from the vision. The Korean government does not use the participatory principles of sustainable development. Instead the government uses a top-down approach.

How come? Chankook Kim explains:

"Korea has experienced rapid economic growth and the country values efficiency and a rapid pace. Having multiple stakeholders participate in setting directions of our society may take time and energy. In other words: A top-down approach often looks effective and time-saving, and some governmental officials or leaderships in this country are used to this top-down way of doing things. One of the problems with this is that it is difficult for schools to implement the strategy. They simply do not know how to do it."

According to Chankook Kim, however, every sector in society was urged to adopt the policy and follow the programme after the Korean government chose the green growth strategy in August 2008. The formal school should for example reflect green growth policies in school curricula from the spring of 2009. But the problem is that teachers and principals at most schools do not understand how to incorporate the concept of green growth in the curriculum.

So has the current administration failed to implement the new strategy effectively?

"It is too soon to evaluate the new strategy and furthermore it is not for me to evaluate the current administration's accomplishment. However, I can say that the new 'Green Growth'-strategy of the current administration and the Education for Sustainable Development vision for a sustainable society lead by education are not entirely synchronised."

Education for new lifestyles

The national vision of Korea is "Sustainable development and sustainable society lead by education". In the vision, everyone learn the values, action competencies, and lifestyles for sustainable development. But right now it is most of all a vision. In order to make the vision come about, radical changes in world-view and lifestyles are called for. Dr. Chankook Kim explains just how fundamental these changes would be:

"Korea is one of Asia's most affluent countries with fully developed industries. Its culture of consumerism is reflected in short life-cycles of electronics such as mobile phones and even automobiles. It is relatively easy to use the 'green' to embellish the desire of economic growth. However, it really requires some dedication to change our lifestyles and worldviews. As in many cases and many countries, education is often considered a means to 'green growth' rather than a way to change worldviews and lifestyles fundamentally."

Can education change people's worldviews and lifestyles?

"Yes, such fundamental changes in worldviews and lifestyles can be achieved by education. For example, we have studied students' participation in school forest projects in order to investigate the effects on elementary school students, including changes in their mental image of their own school, attitude towards nature and forests and awareness of their relationship with the school forest. The study demonstrated that youth participation in school forest activities can help them become environmentally responsible and active in community sustainability issues. So education can, in principle, do the job, but the reality is that the features of green growth policy seem generally speaking to be less focused on changing lifestyles than on economic growth," says Dr. Chankook Kim. ■

By Claus Holm
clho@dpu.dk

Read more at www.greengrowth.org



CHANKOOK KIM

Ph.D. in Environmental Education, Seoul National University. His research areas include Education for Sustainable Development and climate change education.

Favourite book about climate change?

How we know what we know about our changing climate: Scientists and kids explore global warming by Lynne Cherry and Gary Braasch. The authors successfully make climate change interesting and less frightening by showing children how to empower themselves as 'citizen scientists'. This book is excellent in separating fact from fiction and in making the topic less depressing.

China's 'recycling economy' – from paper to practice

Climate change and sustainability are now hot topics in China, but it is hard to find research addressing the outcomes of Education for Sustainable Development, says Associate Professor **Yi Jin**.

*** Education Alliance Quarterly:** *In China's Policies and Actions for Addressing Climate Change it is written that a series of educational and publicity activities should "root the idea of a recycling economy deeply in the people's minds and create a sound social atmosphere". Is the idea of a recycling economy now rooted in China?*

Yi Jin: "We often read and hear the words of 'recycling economy', 'environmental protection' and 'sustainable development' in mass media in China, and it is widely accepted in China that economic development or improvement of life standards should not be got at the price of a destroyed environment or hurt of the future generation. However, many people may not understand the exact meaning of these words, especially the first one, and some may view climate change and sustainable development as others' responsibility than every individual including himself. They usually think that their behaviours could hardly make contribution to resolve the climate change problem, i.e. even with their changes in the way of life, the global climate could hardly change without changes in the large companies or industries, thus they would rather keep the way which they were used to. So the issue of climate change should be addressed more in education, especially its connections to every one's life and work."

EAQ: *In the national report about Education for Sustainable Development in China you conclude that few research studies address the actual role education play for sustainable development in China – despite the fact that all policies on sustainable development and climate change highlight the importance of education. How come there is such a difference between policy and research?*

YJ: "In my opinion, one reason might be the administration system in which there is not a specific department in the central government taking charge of designing, mediating and assessing Climate Change (CC) or Sustainable Development (SD). When I was searching in 'China fact file' at the Chinese government's official website, I could not find resources entitled 'sustainable development' or 'climate change' and just found something related to SD under the title of 'environment'. Without such a department, how to guarantee the execution of the CC and SD policies in different social sectors, and what force outside of education could study the role of education in CC and SD?"

Take environmental education as an opposite example: It seems that the Ministry of Environmental Protection

(MEP) was more active and influential than the Ministry of Education (MOE) in promoting environmental education (as well as ESD) in China. It was the MEP that conducted programs assessing EE practices in schools – the Green School program.

Another reason is found within the educational system. Similar to the first reason, it is not clear which department in MOE should take charge of ESD, and there is no procedure or instrument for assessing and evaluating ESD programs. In addition, empirical studies with systematic analysis might not be the dominant approach of educational study in China. So although there are lots of activities of ESD in schools and large amount of literature addressing ESD, nearly half of the papers theoretically are discussing about the concept and approaches of ESD, and the other half simply describe how ESD were conducted in schools. Thus among the literature about ESD, we could hardly find survey studies or investigations addressing the outcomes of ESD and the consequences in society."

EAQ: *What should be done to bridge this gap between policy and practice?*

YJ: "The first is to conduct teacher training based on the real meaning of ESD. The second is to try to establish some cross-disciplinary agencies that are in charge of organising, coordinating, and assessing comprehensive studies and projects of ESD. The third is to conduct empirical studies on ESD with systematic investigation and scientific educational experiments." ■

By Camilla Mehlsen
cme@dpu.dk



What is the biggest challenge for climate change education in China?

"Firstly, the complexity of climate change issue has to be considered and addressed in climate change education, in which there are many unresolved dilemmas and problems. It seems that the climate change issue is more like a political one than a scientific or moral one till now, which may cause confusion in both educators and pupils who are ordinary people with little awareness of or interest in politics. Secondly, under the great pressure of examination and competition, it is difficult to make climate change education really impact on individuals' attitudes and life style rather than just help pupils get high scores. Thirdly, it is not clear who should take the responsibility to monitor climate change education in schools – and in what way," Yi Jin says.



YI JIN

Yi Jin is Associate Professor at School of Education, Beijing Normal University. Her research field is mainly curriculum and instruction. She has written, with Wu Ping, the national report about Education for Sustainable Development in China for the International Alliance's project on ESD.

Favourite book about climate change?

"I do not have a book about climate change, but I do have one about the environmental issue – *Silent Spring* by Rachel Carson."

Snapshots from a leading Eco-city

The government of Singapore wants to make Singapore the leading Eco-city in Asia. Professor **Kim Chuan Goh** explains why this might be an achievable goal.

Education Alliance Quarterly: *The government of Singapore has high ambitions when it comes to making Singapore a sustainable place to live. In a strategy from last year, the aim is to make Singapore the leading Eco-city in Asia. Do you think this aim is realistic?*

Kim Chuan GOH: “Singapore has shown, through its resolve and good leadership in government and the public sector, that if she wants to achieve something that it has set as its goal, it will be able to do it. Very few countries are in this situation. Singapore has shown to the world many examples of great achievements – such as water resource management, cleaning of the Singapore River, housing, urban transport management, port and airport management, etc.

Singapore has what it takes to be a leading eco-city, and future plans have built in the environment as an integral part of its cityscape.

Whether it is in meeting housing needs, urban redevelopment, urban transport, resource use etc., Singapore’s quality of its environment has been given high priority. Hence the concept of Singapore as a ‘garden city’ has been well expressed through the proper planning, design and development of parks and green corridors, planting of not just any trees but trees that provide variety and colour along roads and streets and housing estates. Many times visitors from abroad have commented about the green environment of the Singapore, both in the city as well as outside it.”

EAQ: *The world market is using Singapore as a manufacturing base for multinational corporations. This explains why Singapore has the largest emission of greenhouse gases on a per capital basis in the world and why Singapore is the highest consumer of electrical energy. This world record sounds like a huge obstacle to the political vision of making Singapore Asia’s leading Eco-city. How can Singapore overcome this obstacle?*

KCG: “Manufacturing will continue to play a significant role in Singapore’s growth and emission of greenhouse gases continues to be an issue. However, in its Green Plan (2006) and in the National Climate Change Strategy (2008) steps are being mapped out to promote the use of clean energy, increase energy efficiency and reduce CO2 emissions in the various sectors, not just industry. Again, I think, if Singapore sets its mind to do something it will carry it out. However, it will be unrealistic for Singapore to move all its industries to other countries, which is not a solution to global emission,

as industries such as petrochemicals contribute significantly to its GDP. However, the world record seems to be an obstacle to achieving that goal, but over time as industries become smaller with shifts to more electronics, pharmaceuticals and rapidly into services, this ‘record’ will decline. I think the country is aware of the world’s attention to this record emissions but it is also aware of what the country could do to move towards an eco-city in other areas where it has stamped its mark. The government must make real efforts to narrow this paradox.”

EAQ: *Who is responsible for directing Singapore in a ‘green’ direction?*

KCG: “The Ministry of Environment, now known as the Ministry of Environment and Water Resources, has been active and responsible in directing Singapore’s green direction since the beginning of the nation in 1965.”

EAQ: *Singapore is known for her effective government, efficient bureaucracy and disciplined population. These factors have led the country to achieve success economically. Is this top-down approach to changes good or bad when it comes to Education for Sustainable Development?*

KCG: “For many years the approach was top-down, and in many ways, decisions on what to include in Education for Sustainable Development within the curriculum could have been influenced by the country’s socio-economic priorities and agenda. However, even within the top-down approach of designing the curriculum, within the schools and especially in the co-curricular activities, schools had plenty of space to work on issues that deal with the environment and sustainable development. In recent years, as a policy, greater autonomy is given for schools to decide and design their curriculum and instruction within the broad parameters of the curriculum set by the Ministry of Education, and this holds true for education for sustainable development.”

EAQ: *The Singapore Green Plan has identified public education as key to achieving its goal of a leading sustainable city. So far environmental management has largely been state-driven and state-led. This is opposite the participatory approach to*



What is the biggest challenge for climate change education in Singapore?

“Climate change education does not permeate across the curriculum, but is touched upon in specific subjects in schools. But even in these subjects, it is often embedded within environmental education. In the past two years, discourses on climate change have become more prominent, and blueprints to tackle climate change issues in the country have only recently been articulated through public policy documents. However, as with many issues, the translation of that message from policy into the curriculum will take some time. How prominent a place in the curriculum this topic will be given depends on how important this topic is in relation to other topics which the country puts priority on, such as National Education (citizenship education) as an example. Climate change education should go beyond the school perimeter. The public and even university students in general lack knowledge about climate change. Here the media, civil society and higher educational institutions must do more to raise public awareness through interesting and stimulating articles, discussions, forums, and community engagements,” Professor Kim Chuan Goh says.

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environmental management that is taking place in for example Sweden. Which approach do you recommend – top-down or bottom-up?

KCG: “I think it is not an either/or situation but both. Of course it would be ideal if every member of the community takes ownership of the environment and thus laws and regulations would be unnecessary. However, I don’t think we have reached that point yet in Singapore. Public education must still be emphasised to drive home the point that we need to care for the environment and much effort has been taken by civil society and environmental NGOs. But there are still people who have not got the message. On larger issues the state must lead, and only when it is seen to be doing so that the people would be encouraged to take responsibility for the environment. So I think both approaches are required.”

EAQ: *According to a recent survey, 50% of the citizens of Singapore know nothing about climate change or global warming. How come that every other person in Singapore is ignorant about issues about climate change when the topic is on top of the political agenda?*

KCG: “Although I did include this result in my paper, it was quoted from the media which did a survey. I’m not so sure if the survey was done well, whether the instrument and sample size fulfilled the requirements of a proper survey. I wish to indicate here that it was only a year or two ago that the issue of climate change took centre stage in the local media and public discourse. For a long time it was not an important issue. It will take some time for the message to seep into public consciousness throughout the country. There are many issues on top of the political agenda but may be of little consequence to the ordinary men and women in the streets who are less educated and who are concerned more with their daily struggle to earn a living.”

EAQ: *It seems like there is a huge gap between the high political visions about sustainable development and the impact that sustainability and climate change have on the curriculum.*

Do you think issues of climate change would get a more prominent position if it was explicit in the curriculum – for example as an examinable subject?

KCG: “More will have to be done to make the issue more prominent in the curriculum. The problem is that it will be important in a few subjects but not at all in others. This is the reality of the curriculum – no single issue should dominate the entire curriculum in the school education system. Even when it is an examinable subject, it would be done within subjects like geography, biology, and one or two others, and only as one of the many choices asked. I think while the knowledge of climate change should be addressed in a subject taken by the entire cohort of students, such a subject at best would be offered at the lower secondary levels. This should be reinforced at the higher levels through other means such as project work, co-curricular activities involving the environment and the community. Singapore could also look towards other countries in Europe to see how this issue is addressed in the education system.”

By Camilla Mehlsen
cme@dpu.dk



KIM CHUAN GOH

Kim Chuan Goh is Professor at Singapore National Institute of Education. His area of work is primarily in geography. He has written extensively about water resources and urban environment, especially in Southeast Asia.

Favourite book about climate change?

I like the book by Jared Diamond: *Collapse: How societies choose to fail or succeed* (2005). Though not about climate change per se, it touches on issues that are relevant to current discourse on climate change that bodes ill for many societies and environments if the lessons articulated are not learnt and pitfalls avoided.



Sustainability should be a university's badge of honour

Sustainability has been on the agenda at universities for at least twenty years, but so far most of the changes have been to the daily operations of university infrastructure, says Dr. **Dianne Chambers** of the University of Melbourne. Education for sustainable development requires a change of culture at universities, a change which is just beginning to take place.

* Are you looking for a way to pass the time on those endless summer days? You might consider looking up the University of Florida's Office of Sustainability and ask if you can join their Sustainability Summer Reading Group as they work their way through the 'Choices for Sustainable Living' course material. Or why not apply for that sustainable MBA that you've had your eyes on for so long, like the MBA in Sustainable Carbon Management offered by the University of East Anglia in the UK?

Universities have embraced sustainability at least since the signing of the Talloires Declaration in 1990. Twenty

presidents, rectors and vice chancellors from every part of the world signed the original declaration. As of January 2008, the declaration had 360 signatories from forty countries, and today it is just one of a handful of declarations on the matter. According to the Talloires web page, the signatories are divided equally among low- to middle-income countries and high-income countries, and they represent both large and small public and private colleges and universities, community and technical colleges, and research centers.

"This suggests a growing recognition that academic

research, teaching, and service must address the sustainability challenge," as it says on the web page of the Association of University Leaders for a Sustainable Future, which is the secretariat for the Talloires Declaration.

However, with the drive towards sustainability comes also the risk of green washing: The practice of paying lip service to ideals of environmental protection and sustainability without actually changing the way you do business. Sure, the universities have signed the treaties, but "how they are applied in their local contexts is less well known," concludes Dr. Dianne Chambers, senior lecturer and assistant dean at the University of Melbourne, in a chapter in the forthcoming book 'Sustainability at Universities: Opportunities, Challenges and Trends 2009'.

The Association of University Leaders for a Sustainable Future also is careful not to beat its drums too loudly.

"Undoubtedly, signing the Talloires Declaration for some institutions constituted a symbolic act in the moment. For others, however, the document continues to be an impetus and framework for steady progress toward sustainability."

Critical dimensions of sustainability

It is probably a virtue for universities to be modest when it comes to current achievements. The challenge from sustainability is huge. It goes well beyond greening the campus with solar cells or reused rainwater, which in itself can be a big job. Dianne Chambers points to seven dimensions (from Calder and Clugston) that are critical for the sustainable university:

1. Curriculum, i.e. teaching and learning at the university.
2. Research and scholarship.
3. Operations, i.e. running the physical infrastructure of the university.
4. Faculty and staff hiring, development and rewards.
5. Outreach and service that connects universities with their community.
6. Student opportunities, i.e. student clubs, projects and grants.
7. Institutional mission, structure and planning, i.e. the policies of the university.

"Education for sustainable development, or education for sustainability, as it is known in Australia, needs to be interpreted very broadly and needs to engage all students and educators and all curriculum areas," says Dianne Chambers, and continues: "In an ideal world, all teachers would see it as part of their teaching responsibilities. If it is only seen as in the area of environmental science, then not enough will be done."

In her estimate, most universities adopt operational changes, but education for sustainability requires a cultural change, which few universities have yet made. They have begun, but it will take a long time.

"Recently, when I was sick in hospital, the nurses were so kind and caring and I thought: Where have they learned to be so kind? It's an assumed value. In our teaching, we take caring for the child as an assumed value. We don't explicitly have a subject on caring for the



What is the biggest challenge for climate change education in Australia?

"A major challenge is getting all educators to see sustainability as 'their business', not just something that other people should be doing. In Australia, as in many places, education for sustainability has its roots in environmental education, and much excellent work has been done over a number of decades. However, leaving education for sustainability to the science or geography teacher or classroom is not enough. All educators, from early childhood to tertiary education and whatever their subject specialty need to take on the challenges of sustainability and make it part of what they do. A shift to a culture of sustainability needs to infuse into all aspects of education systems," Dr. Dianne Chambers says.

child and developing its intellect. Similarly, in the future, I hope thinking about sustainability is just something you do in all subjects. It will be part of the culture," says Dianne Chambers.

A badge of honour

Modesty aside, universities are well aware that they have a special role and responsibility when it comes to changing the world. "As educators we play a leading role in training the scientific, social, political and cultural leaders, professionals and policy-makers who will make a difference in the world," the University of Florida state on their website.

Dianne Chambers agrees: "Universities are where scientific breakthroughs happen, technological innovations are born, social researchers allow us to better understand society and where the leaders of today and tomorrow have been and will be educated. Given the challenges that the world is currently facing, universities are of major importance."

She sees a future where universities will almost literally wear sustainability as a badge of honour to show their stakeholders and the community that they take sustainability seriously.

"In job advertisements today, some Australian universities print an equal opportunity employer badge as a quality mark. It would be nice to show sustainability credentials in the same way."

This is looking down the tracks, grants Chambers, and may be too optimistic, at least if the badge is supposed to stand for something meaningful and not just be a free lunch for the universities. But she does believe that sustainability can actually be a selling point for universities, even in a time of financial crisis:

"I think that good corporate citizenship is important for a university. A university runs on reputation, and it needs to have a good one. If it is seen favourably by the community, people will want to work with it."

Today and tomorrow

To get things off the ground, Chambers suggest using a sustainability value framework from the business management literature. In 2003, Hart and Milstein introduced the two-dimensional framework that links



the challenges of global sustainability to the creation of shareholder value by a firm. The idea is to help managers identify strategies and practices that “contribute to a more sustainable world while simultaneously driving shareholder value,” as they write in their article.

One dimension is the internal/external axis, which reflects a tension between the need to operate without distraction and at the same time remain open to fresh perspectives and new, disruptive models and technologies. The other dimension is the today/tomorrow axis, which reflects a tension between the need to realise short-term results while also generating expectations for future growth.

This leaves the organisation with two overall tasks, namely to secure reductions in costs and risks in the internal operations and to secure reputation and legitimacy among stakeholders in the external relations. In planning for the future, the organisation needs to look for innovation and repositioning by generating new products and services in their internal operations while at the same time looking for a growth path and trajectory that is relevant to the society they are part of.

“Firms must perform well simultaneously in all four quadrants of the model on a continuous basis if they are to maximize shareholder value over time,” writes Hart and Milstein.

Chambers believes that universities could apply this four-dimensional model to all seven critical dimensions mentioned above as a way to assess their progress towards sustainability and to identify areas of weakness that need attention.

One specific inspiration from her own university is a Festival of Ideas that took place in June this year. The

* Specific goals for Australia's universities

‘Living Sustainably: the Australian Government’s National Action Plan for Education for Sustainability’ was released in April 2009. The aim according to the government is to “equip all Australians with the knowledge and skills required to live sustainably”. The plan sets out four specific initiatives directed at Australia’s universities:

A whole-of-institution sustainability program will be developed to support and encourage whole-of-institution change for sustainability in universities. This includes research, teaching and learning, and campus management.

The feasibility of an incentives scheme will be examined. Incentives could include funding, grants, awards schemes and practical support for universities to implement the national policy.

Sustainability networks will be supported to improve coordination, share best practice and communicate the concepts of sustainability in universities.

The Australian Government will work to promote integration of sustainability into professional learning qualifications and university degree accreditation for key professions such as engineering, accountancy, economics, law, architecture, planning and teaching. Priority will be given to those professions with the greatest and most immediate impact on sustainability outcomes.

This is Australia’s second national action plan. It builds on the foundation laid by the first plan released in 2000 and represents a “significant contribution to Australia’s participation in the United Nations Decade of Education for Sustainable Development, 2005-2014.”

Source: www.environment.gov.au/education/nap

“In job advertisements today, some Australian universities print an equal opportunity employer badge as a quality mark. It would be nice to show sustainability credentials in the same way.”

festival had its primary focus on climate change and cultural change that follows from this. Among the subjects were food security and the meaning of climate change for Australia. The festival is a way to engage the community and the university in the discussion of sustainability:

“One of the main things we have to achieve at our university is knowledge transfer. The hope is for the community to learn and for the university to respond to their concerns.”

The festival shows just one way to address the dimensions curriculum, research and outreach. Sustainable book clubs and MBA’s are other ways to address some of the dimensions. In April the Australian government published ‘Living Sustainably – The Australian Government’s National Action Plan for Education for Sustainability’, announcing a program to support and encourage whole-of-institution change for sustainability at Australian universities and support for the integration of sustainability into professional learning qualifications and university degree accreditation. “It is still early days, but there is a lot of interest,” says Dianne Chambers. ■

By Torben Clausen
Quarterly@dpu.dk

Read more:
Talloires declaration and Association of University Leaders for a Sustainable Future: www.ulsf.org

University of Melbourne Festival of Ideas:
<http://live.unimelb.edu.au>

Walter Leal Filho (Ed.): ‘Sustainability at Universities: Opportunities, Challenges and Trends 2009’, Peter Lang Publishing.



DIANNE CHAMBERS

Dr. Dianne Chambers is senior lecturer and assistant dean (Learning Technologies), Melbourne Graduate School of Education, University of Melbourne. She has written the Australian country report on ESD for the Alliance’s joint project on ‘Climate Change and Sustainable Development: the Response from Education’.

favourite book about climate change?
The Weather Makers: The history and future impact of climate change by Tim Flannery.

NO
CHILD
IS TOO
SMALL
TO WORK
WITH ESD

Even children in the third grade can learn through **Education for Sustainable Development**, because **ESD** develops their ability to address open questions, to consider various scenarios for the future and to act competently.

* Here is Pedro. He is ten years old, and lives in Guatemala. Pedro and his parents are Indian. Pedro's favourite dish is fish, which is the best food his family can afford, and when he goes to school, he has to walk there.

Pedro looks different from other children. His feet are as long as his arms and legs, and his arms seem to grow from his hips. His clothes reveal that they were made by crayons. Pedro's ID card was not produced by the Guatemalan authorities. It was made by a Danish pupil in the third grade, who invented the character Pedro. The only aim Pedro has is to help Danish pupils to think in terms of sustainable development.

A broad concept

The character Pedro was developed for an ESD-course in a third grade in Denmark. With Pedro as a focal point, Danish teachers have helped even the youngest pupils reflect on the differences between living in an affluent country like Denmark and a developing one such as Guatemala. There have been discussions about the differences in living conditions and everyday life, social tensions and conflicts between impoverished indigenous people and wealthy groups in society, the dependency on natural resources and the environment, the different opportunities for development of the two countries, and the vast difference in individuals' opportunities for influence.

As such, Pedro is a sort of embodiment of how broad the concept of ESD can be. ESD concerns so much more than merely teaching about the environment and natural sciences, according to Søren Breiting from the Danish School of Education, Aarhus University:

"ESD entails a recognition of the complex interactions between the social, economical and ecological issues. It

"We often see how ministries in charge of the environment are the first to get involved in ESD. They think of their populations as someone to be governed, or controlled. It is not until a few years later that they begin to see the longer perspective."

involves important issues such as conflict analysis, global awareness and teaching about the environment."

Pedro is part of a development project which Søren Breiting has conducted in collaboration with another colleague from the Danish School of Education, Professor Karsten Schnack. Four schools in four different cities were involved in the project, which encompassed children in third, seventh and eighth grade.

What does an Indian get for Christmas?

Pedro had clothes for Christmas. When you are an Indian child in Guatemala, you don't get fancy toys, you get something you need. The contrast with the Danish pupils' own lists of expensive unnecessary electronic toys is



What is the biggest challenge for climate change education in Denmark?

"To avoid taking a behaviour modification approach to CCE, instead of an empowerment / action competence approach that will be much more helpful for people to take active part in sustainable development in the long run," Associate Professor Søren Breiting says. "It seems to be to treat the issues of climate change as a good example in a potent ESD and not just as a vehicle for more and better science education, which in itself is important, of course, but that is quite another agenda," Professor Karsten Schnack says.

obvious at a glance. This exercise stimulates the pupils to reflect on the differences in living conditions. The project has demonstrated that even the smallest pupils can reflect and reason rationally about the basic differences that a sustainable development must take into account.

"Some may question whether third-graders aren't too young to relate to issues on that scale. Should they not be spared? The teachers in the classes we observed started various activities that made the pupils identify with the Guatemalan children. One exercise involved counting how many of the pupils' toys required electricity and it really drove home the differences. This shows that no child is too small to work with ESD," says Søren Breiting.

The ability to imagine oneself in the other's place is central to the way the two researchers interpret ESD. Our situation is a product of a historical development. Everything could easily be very different now. In the same way, the future is not fixed, but is shaped by what we do now, all of us. Major challenges such as social inequality and ecological disasters are not set in stone, but topics for discussion and exploration: How can we avert the dire consequences? The aim is to increase the pupils' action competence:

"The concept of 'sustainable development' emphasizes the temporal aspect. Embedded in the concept 'action competence' is a political recognition of the fact that those who act help shape the future. The teaching method must reflect that," Karsten Schnack says.

One way to do this is through project work, where the pupils assume ownership of a problem they address. The pupils in third grade found a good use for mathematics, when they tried to figure out how much space they had in their homes compared to Pedro. Children in the eighth grade made dolls that represented their grandchildren, which made the students reflect on the challenges of future generations. The real winner was a questionnaire about Guatemala that was given to the third-grader's parents. The responses demonstrated that the pupils knew more about Guatemala and the differences between that country and Denmark than their parents did. This type of activity sparks enthusiasm, which is a lead-in to action.

Teacher in a strange land

ESD place great demands on the teachers and the teaching, as demonstrated above, but the actual form of

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teaching is not the key issue. The key is to come up with teaching methods that generate enthusiasm. Søren Breiting explains that ESD can be difficult to fit into the way schools operate today. The past decade's increased focus on tests and evaluations leaves much less room for alternative teaching methods such as project work. This development in the Danish mandatory primary- and lower secondary public schools is a result of e.g. the international PISA tests and political pressure.

ESD can also put pressure on teachers to adopt a new work methodology, for instance if the topic calls for a cross-disciplinary approach and involves a new field that the teacher is unfamiliar with.

There is, however, no reason to lose heart. Karsten Schnack argues that the individual teacher must become better at managing cross-disciplinary projects without necessarily being an expert in all the involved subjects. The teacher must be more ready to include a layman's perspective and to help improve the pupils' own contributions. This requires that the teacher is able to combine a measure of self-confidence with a humility, i.e. that the teacher is neither some kind of know-it-all nor one who sidesteps the issue whenever the discussion goes beyond the familiar.

Both researchers emphasize that ESD teaching must not be moralising or a scare campaign. Who, for instance, says that just because Danes use more electricity than

people in Guatemala, Danes should lower consumption? Maybe the Guatemalans should use more? A moralising campaign or a scare campaign will overshadow the actual educational potential in allowing the pupils to use their good senses to form their own critical opinions about the big issues.

A lesson in democracy

ESD must necessarily adopt the democratic stance that no one knows for certain what the right sustainable solutions are. Therefore the aim must be to improve the pupil's ability to act as competent, i.e. reflective, democratic citizens, to pose critical questions, to think in historical explanations and potential futures, and to not take anything as beyond dispute when they act.

"Action competence also means that we argue as politically educated individuals, who are interested in and committed to the common issues. This does not necessarily mean that you behave any more environmentally sound in a pre-defined manner. Not acting can also be an act, by the way," Professor Schnack says.

Therefore the two researchers share a cautiously optimistic reaction to the increased political attention that ESD has won in connection with the UN's Decade on Education and the climate discussion, which has catapulted sustainability to a position as one of the key issues on the global political agenda. On the one hand, the two

researchers see certain signs of increased support for the broad and radical interpretation of ESD. On the other hand, politicians, both elected and from the NGOs, often approach ESD with their own more or less obvious agenda in mind.

“We often see how ministries in charge of the environment are the first to get involved in ESD. They do this from a very behavioural viewpoint. They think of their populations as someone to be governed, or controlled. It is not until a few years later that they begin to see the longer perspective,” Søren Breiting explains.

The same is true for the NGOs that for obvious reasons are primarily interested in putting their own issues on the agenda through the curriculum.

Hoist the green flag

The pedagogical discussion of how to interpret ESD crops up again when schools attempt to win a ‘green certificate’ or decides to test their pupils’ basic ESD competencies. This is also an area where the immediately obtainable results from a campaign to change people’s behaviour tend to crowd out the long-term pedagogical ambitions that involve a development of the pupils’ ability to think in terms of sustainability.

Denmark represents a specific example of this challenge. In Denmark, the Outdoor Council awards green flags to schools that carry out courses about the environment and who actively do something for the environment in their daily operations. In a recently published (spring 2009) ESD-strategy, the Danish government set as its goal to increase the number of schools that have earned the green flag by 50%. This is a high-profile objective, and one that both politicians and school managers can operate towards. What is crucial, however, is how well the Outdoor Council takes pedagogical criteria into account in the awarding of the flags alongside criteria based on resource expendi-

* The aim of ESD in school

Søren Breiting and Karsten Schnack have, together with their colleague Jeppe Læssøe, listed the following competencies as the aim of ESD in school. The pupils must:

- > Understand and reflect on that sustainable development will often involve a contradiction between conservation, stability and the basic necessities for existence on the one hand, and renewal and development on the other hand.
- > Include risks, uncertainties, complex relations and long-term and global consequences in their analysis of their own and others’ practice.
- > Recognise, reflect on and discuss sustainable development as something that calls for clarification and discussion of values in relation to options.
- > Analyse lack of sustainable development as a problem and a challenge in relation to social, cultural, economic, ecological, institutional and political structures, dynamical interactions, power relations, resource allocation and historical developments.
- > Understand and deal with ecological issues and the relations between societal and ecological development, both locally and globally.
- > Adopt an ethical, active and democratic as well as critical and constructive/innovative stance to sustainable development as socio-cultural change processes at all levels.
- > Think and work cross-disciplinarily, and in terms of comprehensive problems and solutions.

ture or environmental impact here and now. If this is not taken into account, a green flag will say nothing about the pupils’ ability to think in sustainability or about the development of their action competence.

“Sadly, that is much more difficult to test. How do you test for long-term commitment, for instance?” Søren Breiting asks. He took part in an international collaboration on the development of ‘Quality Criteria for ESD-Schools’, a source of inspiration for implementation of ESD in schools (see links below).

The same discussion takes place in many countries, including South Africa, where Karsten Schnack has been involved in the discussion and where he co-authored an article, ‘Perspectives on the Eco-schools Programme: An environment/education dialogue’, in the periodical Southern African Journal of Environmental Education in 2003. In South Africa, they have used portfolio-evaluation, which Karsten Schnack describes as a potentially sensitive method for documenting the learning processes.

Back in Denmark, nine pupils from a seventh grade has mounted their bicycles and has gone to the neighbouring village to purchase FairTrade ingredients for their ecological cake. Rather than go by bus or hitching a ride with someone’s parent, the pupils chose the bikes as the more sustainable choice. ■

By *Torben Clausen*
Quarterly@dpu.dk

For further reading, please refer to:

The article from the Southern African Journal of Environmental Education (vol. 20, 2003) is available at www.eeasa.org.za/publications/v4.pdf

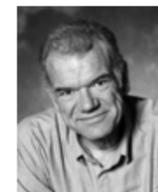
Read more about ESD including quality criteria for ESD-schools at www.educationforsustainabledevelopment.com

Read more about action competence including results from the project MUVIN at www.actioncompetence.com.



SØREN BREITING

Søren Breiting is Associate Professor at the Department of Curriculum Research at the Danish School of Education, Aarhus University, where he conducts research into environmental education and science education. He has written extensively about environmental education, latest as editor of the new book *‘Learning Sustainable Development. Local Cases from a Global World’* (2009).



KARSTEN SCHNACK

Karsten Schnack is Professor at the Department of Curriculum Research at the Danish School of Education, Aarhus University, where he is affiliated to the Research Programme for Environmental and Health Education. Among his research interests are teaching and learning in relation to democracy, environmental education, health education and education for sustainable development.

INTERNATIONAL ALLIANCE OF LEADING EDUCATION INSTITUTES

10 OF THE WORLD'S LEADING EDUCATIONAL INSTITUTES FROM 6 CONTINENTS – UNITED IN 1 THINK TANK

* The International Alliance of Leading Education Institutes is the world’s first think-tank on education. The aim is to produce new insights and recommendations on educational matters – much like what the World Economic Forum does on economic matters.

The Alliance consists of 10 leading Education Institutes from 6 continents: Africa, Asia, Australia, Europe, North and South America.

The Alliance was formed at a summit in Singapore in 2007. Its initial priority was to examine the role and importance of *Teacher Education*, currently a major concern throughout the world. In August 2008, the Alliance published the report ‘Transforming Teacher Education: Redefined Professionals for 21st Century Schools’ including an analysis of teacher education and a list of recommendations.

In October 2008, The Alliance launched a joint research project with focus on *Climate Change and Sustainable Development – the Response from Education*. A set of recommendations based on the project’s findings is published in 2009, in time for the UN Climate Summit to be held later in the year.

Read more:

www.intlalliance.org

* Education Alliance Quarterly

Education Alliance Quarterly is a journalistic print and online magazine with articles on educational research, development and application of educational scientific knowledge. The magazine was launched in August 2008 and is out four times a year. The first four issues have covered ‘Teacher Education’, ‘Leadership in the 21st Century’, ‘Lifelong Learning’ and ‘Education for Sustainable Development’.

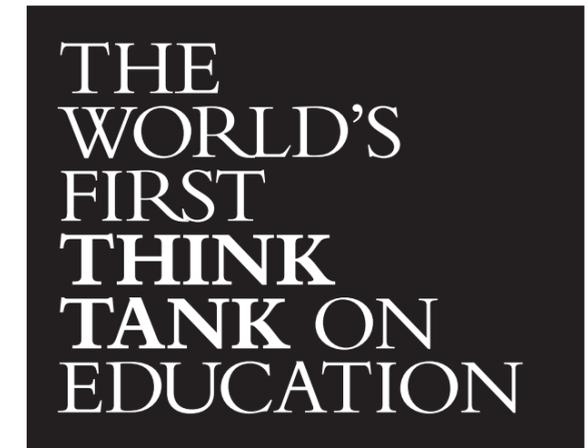
The magazine is published by the Danish School of Education, Aarhus University on behalf of the **International Alliance of Leading Education Institutes**. The Editorial Board consists of the deans of the ten member institutes.

Read more at www.quarterly.dpu.dk

* Three goals

The aim of the Alliance is to provide evidence to policy decisions, secure funding and inspire research and intervention efforts that will improve education locally and globally. The Alliance will utilise existing strengths of each institutions to:

- 1 Speak with one voice on educational matters to raise the profile and quality of education with government, international agencies and the public at large.
- 2 Act as a forum for collaboration to develop understanding in order to address current local and global educational issues.
- 3 Be a think-tank that draws upon existing expertise and research-based evidence to generate ideas, anticipate trends and develop future scenarios.



* Ten members

The International Alliance of Leading Education Institutes comprises ten of the world’s leading faculties and university schools in the field of educational research.

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