

A Review on Higher Education for Sustainable Development-Looking Back and Moving Forward

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Introduction: In response both to the fundamental changes in the state of the world we are living in and an increasingly closer connection between nature and society, the idea of sustainable development has emerged on the political agenda over the last thirty years, challenging both science and politics. Based on the definition laid out in the so-called Brundtland-Report, sustainable development is about meeting fundamental human needs while preserving the life-support systems of planet earth (Kates *et al.*, 2001). According to Grosskurth and Rotmanns (2005), a focal point of the sustainability discourse is marked by the integrative examination of the threat to natural resources and an economic development that is both environmentally friendly and socially just.

It is obvious that the journey towards a more sustainable world requires fundamental societal transformations that may only take place as a social learning process (Glasser, 2007). Thus, in the Agenda 21, agreed upon at the United Nations Conference on Environment and Development (Earth Summit) held in 1992 in Rio de Janeiro, education, both formal and informal, is seen as crucial to achieving a more sustainable development. In this process, educational institutions are named as a key factor for the dissemination of the idea of sustainable development. Consequently, in 2002 the United Nations (UN) proclaimed the years from 2005-2014 the World Decade of Education for Sustainable Development, thus underlining the role of education for sustainable development.

Among the various educational institutions, universities are increasingly recognized as playing a crucial role in the context of sustainability by generating, transferring and communicating new knowledge as well as offering education and training as one of their key tasks (Cortese, 2003, Fien, 2002). To meet the challenges mentioned and to support research and network building in higher education for sustainability is the mission of the UNESCO Chair

“Higher Education for Sustainable Development”, established at the University of Lüneburg.

In 2009 the Chair played joint host with the University Sains Malaysia in Penang to the Third International Conference on Higher Education for Sustainability, its topic being the specific implications for higher education in education practice, research and learning. Choosing as its regional focus the Asia-Pacific region, the conference emphasized its international orientation and highlighted its commitment to a cross-cultural dialogue. 2009 marked the half-way stage of the UN Decade ‘Education for Sustainable Development’ and one of the Conference’s goals was to provide an opportunity for critical reflection on what had been achieved so far and what tasks and challenges remained to be addressed. The conference theme centered around the question of what value is added by integrating questions of sustainability into teaching and learning in higher education.

Attended by some 130 participants from more than 20 countries, the Conference aimed to bring together experienced colleagues as well as those newly interested in exploring how higher education is responding to the challenge and opportunities of sustainability. In a 3-day programme of lectures, workshops, poster presentations and round tables, the state of the art in research on higher education was presented. Selected presenters were invited to contribute to a special issue of this journal, and in the end, ten contributions were chosen for inclusion in the present issue. The articles correspond to the three thematic lines that the conference was focusing on:

Mainstreaming higher education for sustainability: Different approaches to mainstreaming higher education for sustainability have taken in to account that the first half of the UN Decade was characterized by more or less systematic attempts to integrate sustainability into teaching and learning. Relevant case studies often led to the further

dissemination of the idea and by now numerous activities of different reach and scope have been launched. Nevertheless, the challenge for the second half of the Decade lies in going one step further: what is needed now is the systematic integration of sustainability into the different modes of teaching and learning in higher education. This process is expected to show how education for sustainable development can function as an innovation impulse for advancing teaching and learning in higher education.

As the introductory article by Bland Tomkinson documents, education for sustainability may offer interdisciplinary learning settings that are innovative in nature and deepen the learning of the students. In the second article, Kanayathu Koshy Aliti Koroi, Neil Netaf and Cresantia Koya-Vaka'utai illustrate how the University of the South Pacific took up the challenge of enhancing the capacity for the sustainable development of Pacific Island Countries and how they systematically dealt with drivers and barriers in that implementation process.

Matthias Barth and Jana Timm closely examine students as a target group of mainstreaming processes. Their paper aims at shedding light on undergraduate students' acceptance and perceptions of higher education for sustainability and concludes that innovative pedagogical approaches may even attract those students who are less familiar with the concept of sustainability. Torsten Richter and Kim Schumacher, in the fourth and last article in this section, report on two interlinked studies in which they asked both students and academic staff the provocative question: "Who Really Cares About Higher Education For Sustainable Development?" They find a large gap between pilot projects on the one hand and the dissemination of education for sustainability in the curricula of universities on the other, and call for improvements for the rest of the UN-Decade on Education for Sustainable Development.

Impact of higher education for sustainability:

As mainstreaming and securing innovative approaches are also actively pursued, the question of the advantages, additional benefits and success of such actions should be raised. This is the concern of the second thematic thread, which deals with the impact of higher education for sustainability and acknowledges an increasing shift to impact assessment. Apart from general quality management and quality control, two strands of activity must be mentioned in this context: first, efforts at developing indicators and, second, the description and assessment of competencies.

The fifth article, written by Sudeshna Lahiri, focuses on teacher education in India and poses the question of the extent to which environmental and scientific attitudes are addressed and responsible environmental behavior is influenced. Based upon rich empirical data, the study suggests a redevelopment of existing teacher education curricula to consider non-cognitive dispositions as learning outcomes. This is in line with the findings of Mageswary Karpudewan, whose paper examines the degree of influence on the learning outcome of students that may be exerted by the introduction of innovative learner-centered approaches.

Simon Burandt, in the seventh article, introduces an approach to measuring the systemic thinking competencies of students. Competence assessment is carried out by measuring students' knowledge structure in a pre/post-test design in which the effects of a scenario exercise on students' competence development are rated. Daniel Fischer, in the eighth article of this issue, changes the perspective to an organizational one, when he examines the potential contributions of educational organizations to the promotion of sustainable consumption. Focusing on evaluative aspects, the paper critically discusses tools and approaches used to monitor sustainable development, and present a synoptic framework of such a monitoring system for an educational organization's culture of consumption.

Innovation in higher education for sustainability:

Integrating sustainability into higher education can be described as an innovation that both necessitates a re-orientation of teaching and learning and questions traditional-conventional approaches. At the same time, it is necessary to advance innovative case studies to move higher education for sustainability forward so that the many challenges in different disciplinary and cultural settings can be addressed. Thus, the two last papers present interesting case studies on innovation. Norhayah Zulkifli examines the issues encountered in integrating sustainability into Malaysian accounting education. He chooses public and private institutions of higher learning that offer accounting programs and analyses the attitudes of educators in these places towards sustainability and social and environmental education. He concludes that there is a need to broaden early approaches and to introduce alternative learning and teaching strategies. In the last paper, Renate Kärchner-Ober and Uwe Dippel analyze the background against which innovation in teaching and learning may take place. By comparing different approaches in Malaysia and

Germany, they raise the question of how curriculum development may be shaped.

Extract of higher education for sustainable development studies: Ten papers collected in this special issue represent current research on higher education for sustainability, especially in South-East Asia and Europe.

Tomkinson (2011) concluded his evaluation in the following statement that the use of collaborative, group-based approaches, notably PBL, offers a key way of approaching the design of curricula for sustainable development and other areas of global societal responsibility that hinge on 'wicked problems'.

Koshy *et al.* (2011) Said in their study that The ACCU-USP and EDULINK-NIU projects attempt to strike a balance between the need for SD capacity building to be multidisciplinary and problem oriented by design and maintaining the status quo that favors discipline based structuring of knowledge creation and dissemination.

Barth and Timm (2011) concluded in their paper that the Leuphana University holistic HESD education approach may not only be attractive to inherently sustainability affiliated prospective students but particularly also to open, tolerant and cosmopolitan young people that are interested to attend interdisciplinary sustainability studies besides their major study subject. The learner-centered approach is connected to students' life world experience.

Richter and Schumacher (2011) recommended that Nevertheless there is a strong approval of the necessity for more courses related to sustainability which offers potential for improvements within the rest of the UN-Decade on Education for Sustainable Development (ESD).

Lahiri (2011) suggested that redesigning activities involved in teachers' training courses and assessing the determinant attitudes which may lead to responsible behavior of pupil teachers towards the green earth. The curriculum for teacher training should focus on developing scientific attitude irrespective of stream of affiliation of prospective teachers along with opening a field of research, eco-psychology, for further research.

Karpudewan *et al.* (2011) extracted in this study in the following way" it is possible by educational means to encourage the inculcation of positive environmental values and to teach the skills and cognitive basis required for active participation as individuals and members of the community.

Burandt (2011) his study showed that Some indications were found that the measurement instrument works in principle, but that its application in the

thematic domain of climate change seems to be problematic due to a relatively high level of general knowledge and systemic interrelations of concepts (of climate change) that cannot be precisely described.

Fischer (2011) Daniel Fischer's results highlighted the need to develop monitoring frameworks that go beyond assessing operative performances and pay greater attention to reflective, interpretative and deliberative capacities in educational organizations.

Zulkifli (2011) his findings suggested that the necessity to develop SEA education as an alternative approach to teaching accounting in the IHL(Institutions of Higher Learning) in Malaysia.

Karchner-Ober and Dippel (2011) said in their final conclusion that Sustainable education is recognized as a not a priori transferable entity in the global context. It must rather be contextualized and suitably embedded into individual and divers societal environs.

They illustrate developing strand of research with a broad variety of approaches that can reassure us that even if we are not at the end of our journey, a great number of exciting initiatives are well underway.

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