Upscaling and Mainstreaming Sustainability Science in Higher Education

Third Symposium on Sustainability Science: Towards Guidelines on Research and Education
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Key issues in Sustainability Science

What are the underlying epistemological assumptions that sustainability research is based on?

How can analytical-descriptive knowledge about global interrelations and context-specific, solution-oriented research to be made mutually utilisable?

How can mutual learning processes between science and other social groups of actors be realized to foster sustainable development?

How can central competencies for shaping a sustainable society be communicated and imparted effectively?

cf. Heinrichs et al. (2016); Wiek and Lang (2016)
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<th>Consequences</th>
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Barth/Michelsen (2013)
SHE delivery

Existing structures

Integrate into existing course(s), minor(s), major(s), or programs(s)

Create new, discipline-specific sustainability course(s), minor(s), major(s), or programs(s)

New structures

Integrate into common core requirements

Create new, cross-disciplinary sustainability course(s), minor(s), major(s), or programs(s)

SHE focus

Narrow (discipline-specific)

Rusinko (2010)
Educating future change agents – Higher education as a motor of the sustainability transformation

- How effective are novel teaching and learning formats in conveying these key competencies?
- Which of such novel teaching and learning formats yield the most profound impact?
- What types of integrating sustainability into curricula are best suited to educate competent and passionate change agents?
- What institutional factors are conducive to adopting such types of sustainability curricula?
- If and how real contributions to the sustainability transformation can get attributed to the acquisition of key competencies during higher education?

Outcomes of discussion on higher education in sustainability science

Guidelines can give guidance for decision makers to broaden the approach of Sustainability Science and inter- and transdisciplinarity in education.

- **Higher education institutions**, due to academic autonomy in many countries, are key stakeholders to advance the crucial role of Sustainability Science.

- **Individual researchers and teachers** can have a substantial contribution to make for fostering sustainability in higher education.

- **Governments** could ensure enabling environments for institutions of higher education to promote Sustainability Science.

- **Society and community** play an important role, since they are both relevant co-producers of knowledge and the target group of Sustainability Science results.
Mainstreaming sustainability science in higher education

- Sustainability Science also requires additional approaches within higher education and even a fundamental reconceptualization of teaching and learning.

- The goal is to academically educate sustainability experts (young students as well as professionals in continuing education) to develop the power of critical thinking and relevant competences to being able to tackle the challenges facing the society from local to global levels.

- Based on the principles of academic freedom, higher education provides a protected space for independent and historically informed reflections, which is both, oriented towards the generation of new knowledge and contributing to meeting societal challenges.

- Progress has been made over the past two decades towards establishment of Sustainability Science in higher education. There is still a lack of bundling together academic expertise in higher education, particularly an insufficient learning from good practice.
UE4SD: University Educators for Sustainable Development

- **Frame:**
  - duration: 2014-2016
  - Supports teaching colleagues at universities in the development of competencies for ESD
  - 53 partner universities in 33 European countries

- **Outcomes:**
  - Mapping State of the Art of ESD training programmes
  - publications
  - ESD academy
  - Online platform – [http://platform.ue4sd.eu](http://platform.ue4sd.eu)

- **Continuation:**
  - Operated by COPERNICUS Alliance
Staged social and educational responses to sustainability

<table>
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<th>Sustainability transition</th>
<th>Response</th>
<th>State of sustainability</th>
<th>State of education</th>
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</thead>
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<tr>
<td>1 Very weak</td>
<td>Denial, rejection or minimum</td>
<td>No change (or token)</td>
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<tr>
<td>2 Weak</td>
<td>’Bolt-on‘</td>
<td>Cosmetic reform</td>
<td>Education about sustainability</td>
</tr>
<tr>
<td>3 Strong</td>
<td>’Build-in‘</td>
<td>Serious greening</td>
<td>Education for sustainability</td>
</tr>
<tr>
<td>4 very strong</td>
<td>Rebuild or redesign</td>
<td>Wholly integrative</td>
<td>Sustainable education</td>
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Sterling (2004)
Leuphana College offers a unified model of study for all subjects. The various preceding undergraduate programs are completely replaced by one model.

- Familiarity with an interdisciplinary perspective and multiple disciplines; exploring foreign languages as key to culture(s); Participation in a practical (social) project
- Work ethics and methodology for both team-oriented and autonomous settings
- In-depth knowledge and general overview in the sense of an ordering matrix
- Autonomous, comprehensive academic work in the chosen field of specialization
- Exemplary in-depth knowledge and general overview in the sense of an ordering matrix
- Additional subject field or further specialization in a Major-related area of study

**LEUPHANA BACHELOR**

- **Major**
- **Minor**

**Complementary Studies**

- 30 CP
- 90 CP
- 30 CP

**Leuphana Semester**

- 30 CP

**CP = Credit Points**
The first Semester: Helping lone warriors to become a durable community of learners. Teamwork and peer learning create transdisciplinary learning successes.

- Emotional identification with degree program and university
- Acceptance into the scientific community of learning
- Creating a welcoming social atmosphere on campus
- Mentoring to ensure productivity and success from the start

### Conference Week

- “Science imparts understanding” for perspective and reflexion
- “Responsibility and Sustainability” with Conference Study
- “Science uses Methods” qualitative & quantitative
- “Science knows disciplinary boundaries” specialization/ Major

### Freshman Week with Case Study

LEUPHANA SEMESTER

http://www.leuphana.de/en/study/bachelor/leuphana-semester.html
The module „Responsibility and Sustainability“ asks:

Which questions arise from the problems of tomorrow?

Interdisciplinary introduction to science
Change of roles and perspectives

University for the Civil Society
Challenges of sustainable development

Learning by research
Participation in science as an open process

Learning objectives: scientific inquiry, arguing, cooperative research, target group-oriented presentation

Focus: Opportunities and limits of societal shaping of the future
→ How does change work?

Project groups present their first ‘research results’ at the conference week
Structure of the Module “Responsibility in Science“: Forms of learning and teaching

(1) Knowledge transfer

(2) Knowledge generation

- Project seminar 1
- Project seminar 2
- Project seminar 3
- ...
- Project seminar X

(3) Knowledge presentation

70 interdisciplinary project-oriented seminars

Adomßent / Higher Education in Sustainability Science
CULTURE OF TEACHING AND LEARNING IN THE RESPONSIBILITY AND SUSTAINABILITY MODULE

LEUFPANA SEMESTER

Project-based seminars in the module Responsibility and Sustainability

- Education for sustainable development
- Undergraduate research

Workshops for lectures

- Undergraduate research
- Interdisciplinary project-based seminars
- Participatory methods of moderation
- Didactics for ESD
- Module themes

Outcomes:
- Development of didactic competences concerning ESD and undergraduate research.
- Identification of lectures with module concept.
- Motivation of lectures.
- Networking among lectures.

Source: Michelsen, Prien-Ribcke (2015) UE4SD Leading Practice Publication
Adomßent / Higher Education in Sustainability Science

Scientific Sustainability Science Community

Higher Education for Sustainable Development

- qualifies young scientists
- qualifies multiplicators (HE) teachers, T-o-T

Provides relevant insights for education

Generation of new knowledge

Societal relevance

Innovation

Scientific counselling

Evaluation

Agenda setting and transdisciplinary exchange

Transfer Adresssees

Working together in transdisciplinary and solution-oriented ways

Figure modified according to Mevissen & Simon (2013)
Recommendations

- Cultural dimension of sustainability is conceptually and strategically indispensable, both for research and education.

- Valuing and deliberately addressing the regulative core of sustainable development and its implications for education are an asset for (science) education.

- Interrelatedness of science and sustainable development deserves educational attentiveness by every professor and lecturer and his/her students.

- To this end, it is essential to make (sustainability) science a tangible experience for students (to familiarise with and practice value-laden conflicts, tensions and incompatibilities of knowledge etc.)
References


