



LEUPHANA
UNIVERSITÄT LÜNEBURG

**Higher Education for Sustainable Development:
Developing and Assessing Students' Competencies
For Dealing with Complexity and Uncertainty**

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Higher Education for Sustainable Development

- Universities as important actors for shaping the future of the world society in terms of sustainable development “by addressing sustainability through their major functions of education, research and outreach” (Fadeeva/Mochizuki: 250)
- *Future-oriented Higher Education* should promote the development of such key competencies which enable individuals to contribute to sustainable development (cf. Adomßent et al., 2007, 2009; Barth et al., 2007; UNESCO, 2004)
- Issues of interest:
 - Selection of sustainability key competencies
 - Development of sustainability key competencies
 - Assessment of sustainability key competencies



Selection of Sustainability Key Competencies

- *Different approaches for the selection of sustainability key competencies:* e.g. shaping competence (de Haan, 2006), sustainability literacy (Parkin et al., 2004), sustainability skills (Hopkins/McKeown 2002; Stibbe 2009), „Professional Competences for Sustainable Development“ (Martens et al. 2010), OECD’s DeSeCo key competencies (Rychen/Salganik, 2001, 2003)
- *Research question:* Which individual key competencies are crucial for understanding central challenges facing the world society and for facilitating its development towards a more sustainable future, and thus should be fostered through future-oriented university teaching and learning?
- *Methodology:* Delphi study (cf. Landeta, 2006; Loo, 2002; Okoli and Pawlowski, 2004) with 70 ESD experts from Europe (Germany, United Kingdom) and Latin America (Ecuador, Chile, Mexico)



Selection of Sustainability Key Competencies

- *Competencies* are individual dispositions which include cognitive, affective, volitional (with deliberate intention) and motivational elements; thus a competency is a combination of knowledge, capacities/skills, motives and affective dispositions. Competencies facilitate self-organised action in various complex situations, dependent on the given situation and context. Competencies can be advanced: They are acquired during action – on the basis of experience and reflections.
- *Key competencies* are understood as multifunctional and context-overall competencies which are considered to be particularly crucial for implementing societal goals important in a defined normative framework (e.g. sustainability) and which are important for all individuals.

cf. Erpenbeck/von Rosenstiel, 2003; Erpenbeck/Heyse, 2007; Kaufhold, 2006; Rychen/Salganik, 2001; Weinert, 2001



Selection of Sustainability Key Competencies

Results of the Delphi Study - twelve key competencies crucial for sustainable development:

- Competency for systemic thinking and handling of complexity
- Competency for anticipatory thinking
- Competency for critical thinking
- Competency for acting fairly and ecologically
- Competency for cooperation in (heterogeneous) groups
- Competency for participation
- Competency for empathy and change of perspective
- Competency for interdisciplinary work
- Competency for communication and use of media
- Competency for planning and realising innovative projects
- Competency for evaluation
- Competency for ambiguity and frustration tolerance

cf. Rieckmann 2010



Development of Sustainability Key Competencies

- Universities have to become a “learning academia” (Adomssent 2006: 13) – they should create teaching and learning settings which can be characterised by aspects as inter- and transdisciplinarity, participation, problem-orientation as well as the linking of formal and informal learning and, thus, should facilitate the development of key competencies needed for dealing with (un)sustainable development (Fadeeva/Mochizuki 2010; Barth et al. 2007).
- Minor “Sustainability Humanities” at the Leuphana University of Lüneburg
- The Minor course facilitates the development of sustainability key competencies (cf. Barth et al. 2007).





Assessment of Sustainability Key Competencies

- In general, lack of research on competence assessment in higher education (Zlatkin-Troitschanskaia/Kuhn 2010).
- „...basic research concerning theoretically as well as empirically sound models of competence structures, competence levels, and competence development is still required“ (Koeppen et al. 2008: 64).
- Only a few approaches for assessing the development of sustainability key competencies (cf. Bormann/de Haan 2008; Rost 2005).
- Existing approaches focus on cognitive dispositions (cf. Eggert/Bögeholz 2010; Lauströer 2005; Rost et al. 2003; Klieme et al. 2010; Klieme/Leutner 2006)
- Need for integration and modeling of non-cognitive dispositions
- „particularly heavily abstracting and generalised key competencies face the problem that key factors of these competencies are hardly measurable“ (Barth 2009: 85; cf. Harris 2001).
- As key competencies are context-overall competencies, for their assessment different methods have to be used in different contexts.



Assessment of Sustainability Key Competencies

- Further modeling of sustainability key competencies, in particular of non-cognitive elements
- Elaboration of “tasks” (scenarios) representing different key competencies
- Quantitative survey using the developed tasks (*Pre-Post-Test-Design*: beginning and end of the Minor course)
- Focus group discussions with students who have finished the Minor course already
- Observation



Conclusion

- Universities should integrate HESD in their curricula in order to enable future professionals to cope with issues of SD in their future fields of work.
- Results of the Delphi study show an international common ground for the definition and selection of SD key competencies.
- In particular important are competencies for systemic thinking and handling of complexity, anticipatory thinking and critical thinking.
- Some studies show that interdisciplinary and problem-oriented sustainability courses may facilitate the development of such competencies.
- Further research on the assessment of sustainability key competencies is needed.



Thank you very much for your attention!

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