

## COMMUNICATION

## Designing and Implementing an Interfaculty Elective "Sustainable Development" Course at a University: Concepts, Developments and Lessons Learned

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This paper describes the case of a university course addressing Sustainable Development (SD). This interdisciplinary and interfaculty elective course is meant to serve the purpose of teaching sustainability. At the same time, it is also intended to serve as an instrument for the implementation of sustainability at the University of Klagenfurt in Austria. The paper describes the conception and implementation of an interdisciplinary elective as a first appropriate step to implement SD at the University of Klagenfurt across disciplinary and structural barriers. Furthermore, the paper presents reflections of the course based on a series of interviews with the leading teaching team as well as the team's ongoing reflections. As it turns out: The major challenge is that a system based on individual freedom in research and teaching needs to intervene within its own system to create and initiate a new development.

**Keywords:** higher education, sustainable development, intervention, dilemmas

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### Sustainable Development and Education

In our understanding, SD may be regarded as a regulative idea (Kant, 1787/1956). Such thoughts do not determine an objective but serve as heuristic structures for reflection, thus providing direction to research and learning processes. In the context of SD, this implies that the contradictions, dilemmas, and conflicting goals accompanied by the implementation of this vision need to be constantly re-negotiated in a process of discourse between stakeholders in every concrete situation (Minsch, 2004).

Despite the daunting nature of these challenges, they must equally be understood as sources of considerable potential to enhance learning and innovative developments in education (Rauch, 2015). It thus becomes evident that Education for Sustainable Development (ESD) is faced with challenges that go far beyond past educational requirements, as the sustainability concept is described by certain challenges that demand particular attention in educational processes. These are: (1) Normativity without becoming ideological, (2) Orientation towards the future without specifying the future and (3) Design orientation without lapsing into actionism.

Current discussions around ESD in Austria focus on the notions of SD and the resulting challenges for education (Hübner et al., 2020; Rauch & Steiner, 2013). Multiple current international United Nations programmes, the Sustainable Development Goals (especially goal 4 "for Quality Education") (UN, 2015; UNESCO, 2017) and the 2015 UNESCO Global Action Programme on ESD, for example, include the aim to achieve sustainable goals through educational initiatives (Fischer et al., 2015). These initiatives thus serve as primary points of orientation for further development of the landscape of ESD in universities, too and must therefore be considered as essential aspects in navigating the organisation and implementation of an interfaculty elective course on SD.

A central target of SDG 4 is to develop and enhance abilities necessary for the transformation of individuals, organisations and the society towards SD (see target 4.7). ESD must no longer resort to teaching only but must strive to trigger changes in the institution as well (Hübner et al., 2014). This question of inducing transformative processes can be understood as a connection to the theoretical landscape of discourse on transformative learning. Transformative learning is a critical self-reflecting process, which is acknowledged as the shift of one's perspective above internalised presumptions (Mezirow, 1990; Hoggan et al., 2017). Within the concept of transformative learning, two approaches have emerged, one with the focus on individual perspectives and the second with interest in collective awareness and emancipation (Singer-Brodowski, 2016). An important result of collective transformative learning is the element of social action, with the possibility of it leading to change (Meijuni 2017). Transformative learning, therefore, asks for changing the hindering cultures and structures as well.

### Aporetic conflicts as the core concept

What should be preserved and what should change is the standard question of engaging in realising SD, pointing out that changes usually open up conflicting goals, dilemmata and aporetic conflicts. Therefore a theoretical core element of the elective (and the related certificate and extension curricula) are aporetic conflicts. Ossimitz and Lapp (2006) describe the concept of aporetic conflicts in the context of system theory and, subsequently, with SD. An aporetic constellation is characterised by three conditions that must be fulfilled simultaneously: (1) There are two conflicting positions (2) both are valid (3) they are interdependent. In addition, aporias are quite frequent and profound. For instance, many socially difficult situations, which are considered hopeless, are revealed to be based on aporetic constellations at a closer look. Rauch (2004) and Hübner (2012) have pointed out contradictions as essential learning and shaping opportunities.

Additionally, SD is to be regarded as an ongoing intervention into society. It does not offer ready solutions or right answers but has an orientating function; therefore, it contains a normative claim. As such, the concept of SD represents an instrument for a community, an organisation or society as a whole to further develop its values, which (should) regulate social and economic life, the management of emissions and resources with regard to SD, and influence how to deal with uncertainty and conflicts always related to transformation processes (Jungmeier et al., 2016).

### An interfaculty and interdisciplinary approach

The development of the elective started with personal contacts in all faculties and on a very open draft of what the elective could look like with different alternatives. Additionally, interested scientists of all faculties were identified and invited to further develop the elective and – if possible – to commit as a member of the teaching team. In the end, the teaching team included eight representatives of the four faculties (Cultural Sciences, Business Administration & Economics, Technical Sciences, and Interdisciplinary Research and Education).

The course was primarily designed for master's students since an interdisciplinary reflection of sustainability topics requires basic knowledge of a discipline (Huebner et al., 2014). The elective with scholars/lecturers from many disciplines was conceived to support the evolvement of a teaching and learning community. This crossover from different disciplines with both students and lecturers/scholars creates an informal network for sustainability in the university and the region at the same time. (Hübner et al., 2014). Besides having a multidisciplinary teaching team, the course module's interdisciplinary aspect is implemented by requesting students from different disciplines to analyze, synthesize, and harmonize inputs from their disciplines into a coherent result. In a follow-up lecture practice, partners are involved, allowing for the integration of non-academic knowledge into a transdisciplinary outcome.

In comparison to 'traditional' university classes, additional competences have to be taught, such as the competence to critically question our modern information society and/or social

competences such as self-esteem, self-determination, individual initiative, and participation competence. Furthermore, the capability of handling different concepts and contradictions and managing conflicts are seen to be important competences when it comes to SD.

### Basic contents and design elements of the elective

Due to the wide diversity of topics, it is important to have a clear set of issues that are considered necessary basics for teaching and understanding sustainable development. The basic contents of the elective "Sustainable Development" involve inter alia facets and history of SD, sustainable systems and growth, coping with contradictions, social conditions, communication, learning and education (Hübner et al., 2014) (**Table 1**).

These contents require inter- and transdisciplinary approaches. Sustainable teaching stimulates orientation knowledge and systems knowledge (the former offers orientation in a modern world undergoing increasing differentiation), providing inspiration for innovation and exploration (Schneidewind, 2009).

Students have to fulfill different tasks that support the mutual learning process. By discussing their ideas with the lecturers and partners from working practice (industrial and public management, NGOs, etc.), the students identify research questions and methodology, write and discuss text reflections, organize and conduct small research projects in groups, and this work is then followed up by plenary presentations. In addition, students work on selected topics in small groups to discuss sustainability from ecological, economic, technical, geographical, juridical, psychological, sociological, and educational points of view with the aim of working out contradictions and consistent aspects that are important for all students of the course. The results of these group projects have to be documented and prepared to inform other students about the essential outcomes and to support the contribution of further scientific or didactic discourse on the subject.

### Lessons learned through designing and implementing the interfaculty elective

After the course was held for the first time, an external professional was commissioned to evaluate interviews with the core teaching team. The interview guide covered the process of the development of the course as well as the experiences of the interviewees during the first implementation phase. The six interviews were transcribed and categorised using the method of qualitative content analysis (Mayring, 2014). The findings were reported back to the development team. Based on these data and ongoing reflections of the teaching team, the following lessons learned could be extracted (Huebner et al., 2014):

#### *The contradiction of hierarchy and innovations - The teaching team as multipliers*

Finding an approach for transcending faculty borders in order to organise a collective process is an invidious, wicked problem. On the one hand, a basic contradiction between an organisation and creative individuals appears to be the norm. On the other hand, we know from organisation

**Table 1.** Overview of the structure and the didactic concept of the elective "Sustainable Development" (Hübner et al., 2014).

Brief description	The elective module offers an interdisciplinary view on the concepts of sustainability to students of all faculties. Students shall gain an overview of different facets of SD and the history of the concepts. Dilemmas, aporias and contradictions related to SD shall be identified. Methods to develop appropriate solutions are developed, presented and applied by students. Different concepts and methods of the four faculties involved (technical, economic, cultural, integral) are presented and applied. Students and lecturers as well have different scientific and disciplinary backgrounds, which is considered a unique asset for approaching the complex concepts of SD. The elective consists of a series of three courses (SD I-III), going over two terms, always starting in the winter term. Students who want to start with SD II are welcome, as they offer a chance for "senior students" to train their knowledge from the winter term in peer learning constellations.		
Central topics	1) Sustainability: History of idea and concepts; 2) Disciplinarity: working in multi-, inter- and transdisciplinary environments and contexts; 3) Disciplinary perspectives on growth, development and self-fulfillment: ecology, economy, educational sciences; 4) Disciplinary perspectives on norms, rules and patterns: jurisprudence, cultural sciences and sociology; 5) System theory: approaches, system-performance, models; 6) Elaboration of a transdisciplinary research project (field of practice, research question, research design, methods, implementation, presentation).		
Learning goals	1) Theoretical and technical approaches towards SD of different disciplines; 2) Identification of contradictions and aporetic conflicts related to SD; 3) Applying different methods of inter- and transdisciplinary research.; 4) Being able to formulate an interdisciplinary research question (course SD I) and to answer this research question by specifying a practical field and applying adequate research methods (course SD II)		
Didactic approaches	The concept is characterized by the following elements: 1) Concentric structure of lecturers: guiding team, core-team, enlarged team, partners from practical settings; 2) High diversity of input from different scientific disciplines and technical fields; 3) Concrete field of application: topic, actor group-oriented transfer product; 4) Learning progress and evaluation: logbook, essay on a research question, seminar paper.		
Formats of teaching and learning	1.) Different presentation formats, e.g., "conventional" lectures, PechaKucha, presentation of summaries; presenting current research of teachers 2.) Highly interactive formats for exchange, e.g., group work, mental connections, speed-dating, open space, world café; 3.) Software for simulation and visualisation, e.g., i-generator, simulation models; 4.) Experimental formats, e.g., peripatetic exercise, expedition, translocation.		
Winter term	ECTS: 6	Semester hours: 3	SD-Concepts, perspectives from different disciplines
Summer term	ECTS: 4	Semester hours: 2	SD-Research and implementation methods in cooperation with a practical field
	ECTS 2	Semester hours: 1	Modelling SD in board games

theory that the organisation is sensitive to creative networking (Grossmann et al., 2007). Hierarchies at universities have to be seriously considered, and the support of top-level staff is crucial. However, awareness can be raised through effective publicity (e.g., media presentations, etc.).

### *The contradiction of societal normativity and scientific rationality - Societal requirements placed on universities*

The central question, "How can SD be brought into existence at the university and not just be reduced to lip service?" is closely related to the question of how the collective process of decision-making takes place within the university. At the same time, societal demands on all universities are increasing. Societal influence can, therefore, be helpful for the implementation of SD by stimulating the university to meet these requirements and expectations.

### *The contradiction between mandatory curricula and elective - A certificate to overcome the ECTS-corset*

The teaching team implemented a "Sustainable Development" certificate which requires 20 ECTS, 12 ECTS coming from the elective described in this article and 8 ECTS from a pool of courses that deal with sustainability from different perspectives across all faculties. With this certificate, studying sustainability has become more visible and attractive to students.

## Conclusion

The development and implementation of the elective "Sustainable Development" at the University of Klagenfurt is an attempt to leverage the innovative potential of the SD discourse. This potential does not only cover the conceptual and theoretical dimension but also organisational challenges of development in accordance with new governance and the advancement of teaching (and research) cultures at the university. The implementation process of this elective, based on a new type of cooperation among lecturers from all four faculties at the university, turned out to be a challenging intervention, not simply an innovation at the course level. In order to implement SD as a regulative idea across the university as a whole, faculty boundaries must be transcended on both management and structural levels (Huebner et al., 2014).

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